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Research article

COERCIVE PSYCHIATRIC TREATMENT: UNRAVELING SOCIODEMOGRAPHIC PATTERNS AND THE POLYPHARMACY CHALLENGE

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SUMMARY

Background: *This study aims to analyse certain populations' sociodemographic factors and to investigate the use of polypharmacy for inpatients assigned to involuntary treatment at the National Center of Mental Health, Riga, Latvia.*

Methods: *A retrospective review of clinical data was undertaken in adult inpatients assigned to involuntary psychiatric treatment in the period from December 17th, 2024, till February 4th, 2025. The data about the participants' sociodemographic factors, hospitalisation duration, diagnosis, and treatment strategies were obtained from the hospital's databases. Only data from a fixed 30-day window at the time of analysis were considered, irrespective of hospitalization duration, to ensure consistency and avoid bias from ongoing treatment modifications. The Antipsychotic Total Daily Dose Calculator was used to assess polypharmacy load by estimating the BNF (British National Formulary) coefficient relative to the recommended maximum daily dose. All data were collected in MS Excel and analysed using IBM SPSS 29.0.1.0.*

Results: *The study included 88 inpatients with compulsory medical measures. Results showed a mean age of the participants equal to 41.49±2.41 years, males' dominance making 86.36% (n=76) of the study group, and schizophrenia (F20, ICD-10) noted as the most dominant diagnostic category. Polypharmacy with more than one antipsychotic medication was observed in 89.77% (n =79) of the inpatients. The most common treatment combination was an antipsychotic with a mood stabilizer, prescribed to 44.32% (n=39) of participants. Treatment was primarily guided by antipsychotics, with haloperidol emerging as the most commonly used drug, representing 72.72% (n=64) of the cases, and mood stabilizers received by 57.95% (n=51) of the inpatients. The analysis revealed that 34.09% (n=30) of participants had a BNF coefficient within the recommended maximum daily dose, while the majority, or 65.9% (n=58), exceeded the recommended threshold.*

Conclusions: *This study contributes to existing knowledge of currently available data about polypharmacy in psychiatric practice and certain population groups undergoing involuntary hospitalisation. The results about treatment patterns may support the optimization of treatment practices and warrant closer attention to safety, side effect profiles, and possible long-term outcomes when polypharmacy is used.*

Abbreviations: *IH – involuntary hospitalisation; SCZ – schizophrenia; CDC – Centers for Disease Control and Prevention; BNF – the British National Formulary; NCMH – National Center of Mental Health; ICD-10 – 10th revision of the International Classification of Diseases*

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INTRODUCTION

The use of polypharmacy in psychiatry - commonly defined as the concurrent prescription of more than one antipsychotic medications, is a complex and growing phenomenon, often driven by the need to manage severe psychiatric symptoms that do not respond to monotherapy (Ijaz et al. 2018; Ogawa et al. 2014). Despite advances in psychopharmacology and the promotion of rational prescribing practices, the prevalence of antipsychotic polypharmacy remains high, ranging from 13% to 90% across different settings (Kukreja et al. 2013; Stassen et al. 2022).

Patients undergoing involuntary psychiatric treatment are particularly vulnerable to high-dose and multiple-drug regimens. Coercive treatment in psychiatry, defined as treatment delivered without the patient's consent and including measures such as forced medication and restriction of freedom, poses distinct ethical and clinical challenges (Szmukler 2017). These patients often have severe, chronic mental health conditions, such as schizophrenia or schizoaffective disorder, and may present with acute symptoms like aggression, psychosis, or suicidality that necessitate immediate pharmacological intervention (Wheeler et al. 2020; Kaikoushi et al. 2021).

As a result, this population tends to receive higher doses of psychotropic medications or combinations thereof, either to enhance efficacy or to manage complex symptom profiles and comorbidities (Tajika et al. 2022; Lähteenvuo & Tiihonen 2021). While polypharmacy may sometimes be clinically justified, it also carries significant risks, including increased side effects, potential for drug–drug interactions, development of metabolic syndrome, extrapyramidal symptoms, and reduced treatment adherence (Buoli et al. 2014; Buchanan & Kreyenbuhl 2023).

Importantly, evidence suggests that clinical guidelines are not always consistently followed in the treatment of psychotic symptoms (Remington et al. 2017). Therefore, it is essential to understand prescribing practices, particularly in high-risk groups such as those undergoing coercive treatment, and to identify sociodemographic patterns that may be associated with high-dose or multi-drug regimens. Factors such as gender, age, psychiatric diagnosis, socioeconomic status, and previous treatment history have been shown to influence prescribing behaviors (Walker et al. 2019; Kaikoushi et al. 2021).

This study aims to analyze the pharmacological treatment of inpatients undergoing involuntary psychiatric care, with a specific focus on the prevalence of polypharmacy and associated sociodemographic characteristics. Using data from the National Center for Mental Health (NCMH) collected between December 17, 2024, and February 4, 2025, we examined the average daily doses, commonly used drug combinations, and whether prescribed antipsychotic regimens exceed recommended maximum dosages. The insights gained may help inform clinical practice, guide future policy decisions, and improve care for this highly vulnerable patient population.

SUBJECTS AND METHODS

Data Collection

The study was conducted in the period from December 17th, 2024, till February 4th, 2025. Adults (≥ 18 years) inpatients with undergoing involuntary hospitalisation and treatment were included in the study. Inclusion criteria included adults inpatients with a diagnosed mental health disorder according to the 10th Revision of the International Classification of Diseases criteria and compulsory medical measures. Exclusion criteria included incomplete medical records or voluntary treatment in NCMH. Patient sociodemographic information, including age, gender, and medication received, was obtained from the electronic hospital database. Treatment patterns were analyzed by examining pharmacotherapy received in the previous 30 days. The collected data were used to describe the study group and identify potential demographic profiles and patterns of therapeutic approaches, including polypharmacy.

Determinants related to treatment

Data on the treatment used were analyzed by examining the pharmacotherapy received by the patients during the last 30 days. The study focused on the profile of the prescribed medications, determination of the average daily dose and characterization of the most frequently used drug combinations. To calculate the average daily dose over a 30-day period, the total amount of medication prescribed (mg) was determined, consistent units (mg/day) were ensured by converting the different drug forms (solution, tablet, capsule) into a single drug, all doses were summed over the 30 days and the resulting number was divided by 30. Attention was paid to the class of psychotropic medications, including antipsychotics, mood stabilizers and anxiolytics.

Determinants related to polypharmacy

The Antipsychotic Total Daily Dose Calculator was used to assess polypharmacy load by estimating the British National Formulary (BNF) coefficient relative to the recommended maximum daily dose. BNF factor with a score of 1.0 indicates that the recommended maximum daily dose has been reached (Northwood et al. 2020).

RESULTS

Sociodemographic characteristics

Table 1 represents sociodemographic characteristics of the study participants. The study included 88 inpatients with compulsory medical measures, where males represented 86.36% (n=76) of the study group and females represented 13.63% (n=12). The mean age of all the inpatients was 41.49±2.41 years, with a slight difference between male and female – 43.16 ±7.35 years for females and 41.22±2.53 for males. The mean hospitalization duration time was 1,099.61±280.69 days in all the participants, 1,066.53±294.49 days for males, and 1,309.17±861.46 days for females. Male maximal hospitalisation time was 6505 days, and female reached 4269 days of hospitalisation. The largest age group represented was from 35 to 43 years, making up 28.41% (n=25) of the total participants. This is closely followed by the age group of 44 to 52, which accounts for 25% (n=22). On the lower end, participants aged 17 to 25 made up 7.95% (n=7). This distribution highlights a middle-aged dominance in our sample. Table 2 shows the distribution of the diagnoses of the study participants. Among all the study participants 82.95% (n=73) were diagnosed with schizophrenia (ICD-10, F20.XX), 5.68% (n=5) represented any kind of personality and behavioural disorders due to brain disease, damage and dysfunction (ICD-10, F07.XX), 3.41% (n=3) were diagnosed with moderate intellectual disabilities (ICD-10, F71.XX) and 2.27% (n=2) represented diagnosis of vascular dementia. Other diagnoses included schizotypal disorder (ICD-10, F21.XX), schizoaffective disorders (ICD-10, F25.XX), other mental disorders due to brain damage and dysfunction and to physical disease (ICD-10, F06.XX), unspecified dementia (ICD-10, F03.XX) and dementia in other diseases classified elsewhere (ICD-10, F02.XX), each of them representing 1.14% (n=1) of the study group.

Table 1. Sociodemographic characteristics of the study participants (n=88)

Variables	Female n=12 (13.63%)	Male n=76 (86.36%)	All respondents
Age	43.16 ±7.35	41.22 ±2.53	41.49 ±2.41
Maximal age	63 (16.66%)	70 (1.31%)	70 (1.13%)
Minimal age	18 (8.33%)	19 (1.31%)	18 (1.13%)
Mean hospitalization duration time (days)	1.309.17±861.46	1.066.53±294.49	1.099.61±280.69
Maximal hospitalization duration time (days)	4269 (8.33%)	6505 (1.31%)	
Minimal hospitalization duration time (days)	57 (8.33%)	13 (1.31%)	
Age groups (years)			
17-25	n=1 (8.33%)	n=6 (7.89%)	n=7 (7.95%)
26-34	n=3 (25.00%)	n=16 (21.05%)	n=19 (21.59%)
35-43	n=2 (16.66%)	n=23 (30.26%)	n=25 (28.41%)
44-52	n=3 (25.00%)	n=19 (25.00%)	n=22 (25.00%)
53-61	n=1 (8.33%)	n=9 (11.84%)	n=10 (11.36%)
62-70	n=2 (16.66%)	n=3 (3.94%)	n=5 (5.68%)

Table 2. Diagnoses of study participants based on the ICD-10 classification (n=88)

ICD-10 diagnosis	Female n=12 (13.63%)	Male n=76 (86.36%)	All respondents
F20.XX	n=10 (83.33%)	n=63 (82.89%)	n=73 (82.95%)
F21.XX		n=1 (1.31%)	n=1 (1.14%)
F25.XX		n=1 (1.31%)	n=1 (1.14%)
F71.XX	n=2 (16.66%)	n=1 (1.31%)	n=3 (3.41%)
F07.XX		n=5 (6.57%)	n=5 (5.68%)
F06.XX		n=1 (1.31%)	n=1 (1.14%)
F03.XX		n=1 (1.31%)	n=1 (1.14%)
F02.XX		n=1 (1.31%)	n=1 (1.14%)
F01.XX		n=2 (2.63%)	n=2 (2.27%)

Table 3. Study participants receiving antipsychotics (n=88)

Medication Antipsychotics	Female n=12 (13.63%)	Male n=76 (86.36%)	Total (n=88)
Haloperidol	n=9 (75.00%)	n=55 (72.36%)	n=64 (72.72%)
Zuclopenthixol		n=1 (1.31%)	n=1 (1.14%)
Zuclopenthixol decanoate	n=5 (41.66%)	n=33 (43.43%)	n=38 (43.18%)
Chlorprothixene		n=12 (15.78%)	n=12 (13.63%)
Chlorpromazine	n=2 (16.66%)	n=7 (9.21%)	n=7 (7.95%)
Levomepromazine	n=1 (8.33%)	n=15 (19.73%)	n=16 (18.18%)
Sertindole		n=2 (2.63%)	n=2 (2.27%)
Trifluoperazine		n=6 (7.89%)	n=6 (6.81%)

Table 4. The most used antipsychotic medication in inpatients' treatment (n=88)

Medication Antipsychotics	Total (n=88)
Haloperidol	n=64 (72.72%)
Clozapine	n=43 (48.86%)
Zuclopenthixol decanoate	n=38 (43.18%)
Olanzapine	n=22 (25.00%)
Quetiapine	n=17 (19.31%)
Fluphenazine	n=17 (19.31%)

Treatment patterns

Inpatients' treatment mainly consisted of first-generation antipsychotics (or typical antipsychotics) and/or second-generation antipsychotics (or atypical), mood stabilizers, anxiolytics (benzodiazepine group) in various combinations. Trihexyphenidyl hydrochloride was used in 86.36% (n=76) of the cases to correct extrapyramidal disorders, while biperiden was received by 4.54% (n=4) of the inpatients reaching the same purpose. Polypharmacy with more than one antipsychotic medication was observed in 89.77% (n=79) of the inpatients, and 10.22% (n=9) of the study participants were treated with one antipsychotic medication. As shown in Table 3, the most frequently used antipsychotics in inpatient treatment were identified. The most commonly prescribed typical antipsychotic was haloperidol, which was received by 72.72% (n=64) of the participants, followed by zuclopenthixol decanoate, which was prescribed in 43.18% (n=38) of the cases. Of the atypical antipsychotics, the most commonly used medication was clozapine, received by 48.86% (n=43) of the study participants, olanzapine was prescribed in 25.00% (n=22) of the cases, quetiapine and fluphenazine were used in the treatment of 19.31% (n=17) of the inpatients. Table 4 summarizes

Table 5. Study participants receiving mood stabilizers (n=51)

Medication Mood stabilizers	Female	Male	Total n=51 (57.95%)
Acidum valproicum	n=1 (8.33%)	n=44 (57.89%)	n=45 (88.23%)
Gabapentin	-	n=2 (2.63%)	n=2 (3.92%)
Carbamazepine	n=3 (25.00%)	n=5 (6.57%)	n=8 (15.68%)
Oxcarbazepine	n=2 (16.66%)	-	n=2 (3.92%)

Table 6. Study participants receiving tranquilizers (n=13)

Medication Tranquilizers	Female n=3 (25%)	Male n=10 (13.16%)	Total n=13 (14.77%)
Diazepam	n=1 (33.33%)	n=6 (57.89%)	n=7 (53.84%)
Lorazepam	n=2 (66.66%)	-	n=2 (15.38%)
Clonazepam	-	n=4 (40.00%)	n=4 (30.76%)

the antipsychotic medications administered to inpatients during treatment. Aripiprazole, flupentixol decanoate, chlorprothixene, chlorpromazine, levomepromazine, sertindole, and trifluoperazine were also used in the treatment. Table 5 provides an overview of mood stabilisers utilized during the therapy. Mood stabilisers were observed to be received by 57.95% (n=51) of the participants. The most used mood stabiliser was acidum valproicum, applied in the therapeutic process of 88.23% (n=45) of those receiving such therapy. Overall, 57.89% (n=44) of the males received acidum valproicum, 6.57% (n=5) were treated with carbamazepine, and 2.63% (n=2) received gabapentin. Gabapentin was not used in the treatment of females. For treatment purposes, 8.33% (n=1) of females received acidum valproicum, 25.00% (n=3) got carbamazepine in the therapy, and 16.66% (n=2) received oxcarbazepine. Oxcarbazepine was not used in the treatment of males. As illustrated in Table 6, tranquilisers were also administered throughout the therapy. A total of 14.77% (n=13) of inpatients received tranquilizers. Among them, 53.84% (n=7) were treated with diazepam, 15.38% (n=2) received lorazepam, and 30.76% (n=4) were administered clonazepam. Among patients receiving tranquiliser therapy, 76.92% (n=10) received it on a daily basis. The most common medication combination observed when analyzing the treatment profile of study participants was the combination of antipsychotic and a mood stabilizer, received by 44.32% (n=39) of study participants. The second most common medication combination within the study was the combination of antipsychotic, mood stabilizer, and tranquilizer, which was observed in 7.95% (n=7) of the cases.

Average doses of drugs used in the treatment of the study group

Only therapies with the most frequently prescribed medications were considered. We found that 42.18% (n=27) of the patients receiving haloperidol 72.72% (n=64) got prescribed 16-30 mg per day, 40.62% (n=26) received 11-15 mg per day, and others received 0-10 mg per day. Of the patients receiving clozapine (48.86%, n=43), 46.51% (n=20) were administered a daily dose of 101–200 mg, 27.91% (n=12) received 25–100 mg/day, 13.95% (n=6) got prescribed 201-300 mg daily, while the remaining patients 11.62% (n=5) were prescribed doses ranging from 301-600 mg/day. Among the cohort prescribed zuclopenthixol decanoate (43.18%, (n=38), 76.31% (n=29) received 200 mg on two occasions within a one-month period, 15.78% (n=6) received 200 mg administered at three separate intervals over the course of one month, and 7.89% (n=3) received a total of four 200 mg doses within a single month. Among patients prescribed olanzapine (25.00%, n=22), 36.36% (n=8) received 11–20 mg per day, 36.36% (n=8) received 21–30 mg per day, and the remainder were given 0–20 mg daily. Within the cohort receiving quetiapine (19.31%, n=17), 41.17% (n=7) were prescribed a daily dose of 25–100 mg, 29.41% (n=5) received 201–300 mg/day, 11.76% (n=2) were treated with 101-200 mg/day and 11.76% (n=2) received 401–500 mg/day, while remaining 5.88% (n=1) were prescribed doses ranging from 501–600 mg/day. Among patients on levomepromazine (18.18%, n=16), 37.5% (n=6) received daily doses in the range of 101–150 mg, 31.25% (n=5) were prescribed 0–50 mg daily, 25.00% (n=4) took 51–100 mg per day and remaining 6.25% (n=1) were given 151–200 mg daily. Acidum valproicum was prescribed to 51.13% (n=45) of the study cohort, where 68.88% (n=31) were given 1001-1500 mg daily, 24.44% (n=11) received doses of 501–1000 mg per day, and the rest 6.66% (n=3) were administered 0–500 mg daily. The data demonstrate considerable variability in medication dosing among patients, reflecting the need for individualized treatment approaches based on symptom severity and clinical response.

Detection for polypharmacy

The analysis revealed that 34.09% (n=30) of participants had a BNF coefficient within the recommended maximum daily dose (defined as less or equal to 1), while the majority, or 65.9% (n=58), exceeded the recommended threshold (defined as more than 1). The mean BNF coefficient was 1.3593, the median was 1.1900, the minimum value recorded was 0.03, and the maximum went as high as 3.75. These findings suggest that a significant proportion of the study population is being prescribed doses above the BNF recommended limits.

DISCUSSION

This study examines a population subject to compulsory medical measures and affected by severe mental illness. Nearly all of the study group were men. The results of the present study are consistent with studies that have demonstrated that male gender significantly increases the odds of involuntary psychiatric hospitalization (Walker et al. 2019, Kaikoushi et al. 2021). Inpatients included in this study have already spent years in the psychiatric hospital, with a case of a prolonged hospital stay lasting almost 17 years, highlighting the severity of their condition. The vast majority of study participants were diagnosed with schizophrenia (ICD-10, F20.XX) that corresponds with the finding that individuals diagnosed with schizophrenia or other psychotic disorders have consistently been found to be at elevated risk of involuntary admission (Umama-Agada et al. 2018). Involuntary hospitalisation with compulsory treatment has been linked to a higher likelihood of both polypharmacy and the use of high-dose antipsychotic medications (Kaikoushi et al. 2021). A key segment in our study population was being prescribed doses of antipsychotic medication above the recommended daily limits, indicating that polypharmacy is being used. The results of the study are also consistent with research findings that the prevalence of polypharmacy in psychiatry is increasing and ranges widely from 13% to 90% (Kukreja et al. 2013, Stassen et al. 2022) and in our study polypharmacy were being observed in 89.77% of the inpatients. A study by Stassen et al. concluded that the use of multiple medications may be an appropriate and necessary therapeutic option in some cases for patients with F2X.X diagnoses, but should remain an exception rather than the standard of care (Stassen et al. 2022). A review of polypharmacy in schizophrenia found that, although global treatment recommendations in the 21st century increasingly emphasize monotherapy, polypharmacy is more frequently observed in clinical practice (Lähteenvuo & Tiihonen 2021). All the preceding information points to the importance of reviewing polypharmacy risks and benefits, especially in cases where patients are receiving compulsory measures.

Limitations

Although informative, the study's findings should be interpreted in light of certain limitations. First, only 88 inpatients' data were analysed, which may limit the statistical power and generalizability of the findings, and the study was conducted at a single site, so its results may not be representative of broader clinical contexts. Second, adverse effects and clinical response to therapy were not assessed, which limits the ability to acknowledge the full impact of polypharmacy. Third, the data were collected over 30 days, so later treatment changes or complications may have been missed. Finally, while age, gender, and diagnosis were included, other important factors such as socioeconomic status, marital status, admission count, ethnicity, education level, and the duration of psychiatric disorder were not analyzed, which could influence treatment practices and risk profiles.

CONCLUSIONS

This study adds to the growing body of evidence on polypharmacy in psychiatric care, particularly among patients undergoing involuntary hospitalization. The findings highlight consistent sociodemographic patterns, with middle-aged males diagnosed with schizophrenia being the most frequently affected. The observed treatment trends, including the high prevalence of polypharmacy and frequent use of high-dose antipsychotics, underscore the need for cautious prescribing, regular monitoring, and adherence to clinical guidelines. These insights may support the refinement of current treatment protocols and promote safer and more effective care for this vulnerable population.

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Contribution of individual authors:

Karina Cernika: developed the concept and design of the study, conducted data collection, performed data analysis and contributed to the manuscript preparation.

Jelena Vrublevska: developed the concept and design of the study, performed data analysis and contributed to the manuscript preparation.

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