Impact of Deprescribing on Polypharmacy, Adverse Drug Reactions, and Quality of Life in Patients on Antipsychotic Medications: A Prospective Observational Study

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ABSTRACT

Introduction: Polypharmacy in psychiatric care often results in adverse drug reactions, treatment challenges and poor patient outcomes. The idea of deprescribing or lowering or ending use of unnecessary medicines, is now seen as a helpful approach to these challenges. We still know little about how psychiatric patients are affected by polypharmacy and how beneficial the deprescribing is. Thus this study focussed to find out if a structured deprescribing approach could help reduce polypharmacy, ADRs, treatment burden, psychiatric symptoms and cognitive function in psychiatric patients.

Methods: The study was conducted at a tertiary care psychiatric hospital in Ongole, Andhra Pradesh. A total of 205 people over 18 years old with psychiatric disorders and polypharmacy were enrolled for the study which was conducted from June 2022 to December 2023. Medications were slowly reduced according to both clinical recommendations and patient consent. To assess the results, psychiatric symptom severity (PANSS), quality of life (WHOQOL-BREF), cognitive function (MoCA), adverse drug reactions (ADRs) and treatment burden (TBQ) were measured. Assessments were made before deprescribing and after that. Statistical tests used in the study were paired t-tests, Chi-square tests and regression models.

Results: Post-deprescribing, a 3.2% decrease in polypharmacy (p=0.057) was observed with fewer ADRs (58.6% less, p<0.001) and improvements in psychiatric symptoms (14.9% decrease, p<0.01), QoL (16.8% more, p<0.001) and cognitive function (18.8% more, p<0.05). All areas of the TBQ showed a significant decrease in treatment burden (p<0.05), along with greater satisfaction and better medication adherence by patients.

Conclusion: Deprescription of drugs in psychiatric patients led to fewer side effects, less polypharmacy and less difficulty with medications, together with improvements in mood, quality of life and cognitive abilities. The results suggest that deprescribing in routine therapeutic practice in psychiatry can make medication management safer and more effective.

Keywords: Deprescribing, Polypharmacy, Psychiatric care, Adverse drug reactions (ADRs), Quality of life (QoL), Cognitive functioning

1. INTRODUCTION

Among patients taking antipsychotics, using more than one medication at a time is very common in psychiatric care. Polypharmacy is found in many cases of antipsychotic use around the world, with rates ranging from 20% to 60% in different medical settings (Gallego et al., 2012; Tiihonen et al., 2019). It was found that 29% of patients were taking multiple medications which creates a major challenge for treating complex psychiatric cases (Rachamsetty and Senthilraj, 2025). The use of several psychotropic drugs raises the risks of drug interactions, more adverse reactions and poor treatment following (Correll et al., 2011).

Polypharmacy has been shown to increase the risk of negative drug effects, ranging from minor to very serious problems that can harm a patient's safety and treatment results (Alvir et al., 1994; Taylor, 1997). In addition, it is difficult for patients to manage several medications, so the effort needed to look after their health and treatments negatively impacts their quality of life and adherence to treatment (Tran et al., 2014). When a person takes many antipsychotics and psychotropics, attention, memory and executive functions may be impaired which can make it difficult to recover from their illness. These points prove that we should try to use fewer unnecessary medications.

When medications are no longer needed or might be harmful, doctors now use deprescribing as an important way to reduce polypharmacy risks (Scott et al., 2015). By deprescribing, psychiatrists try to reduce the amount of medication, prevent adverse effects and help patients function better, all without losing control over symptoms (Khartabil et al., 2024). Tailored ways to reduce medications and patient-centered advice have helped to improve patients' medication plans, make them stick to their drugs and improve their quality of life (Huang et al., 2022). Still, not many people are deprescribed, mainly because clinicians face inertia, are concerned about relapse or lack clear directions.

Despite research into deprescribing in other medical fields, there is not much evidence for it in psychiatric populations, especially in low- and middle-income countries (Barnes et al., 2011). There is an urgent requirement of real-life information about the effects of deprescribing for patients and their outcomes. To address this gap, this research examined how deprescribing interventions affect ADRs, treatment burden, sticking to medications, mental abilities and mental health-related quality of life in psychiatric patients who receive antipsychotics. The results will guide the development of best guidelines and safer prescribing in psychiatry.

2. METHODS

The study was carried out for eighteen months, from July 2022 to December 2023, at the Psychiatry Outpatient Department of the Government Medical College and Government General Hospital in Ongole, Prakasam district, Andhra Pradesh, India. The study was approved by Institutional Ethics Committee. Written consent was provided by all patients after they were told all about the study

Study population

The sample size for the present study was calculated based on the One Proportions formula (Taj et al., 2022) and the required sample size was estimated to be 196. Thus inclusion and exclusion criteria was applied and patients were enrolled for the study.

Inclusion

Patients between 18 and 60 years old, with confirmed diagnoses of psychiatric disorders and currently taking antipsychotic medication, were selected for enrollment.

Exclusion

Patients who are younger than 18, older than 60, nursing mothers and people who did not consent were not included to keep the results consistent. Those with serious cognitive impairment or conditions that stop them from participating were not included. In order to prevent selection bias, a total of 205 patients with the required criteria were enrolled sequentially throughout the study.

Protocol and Intervention for deprescribing of Medications

A protocol was designed to guide the process of deprescribing, using both clinical guidelines and best practices (Scott et al., 2015; Reeve et al., 2015). All the patient's medications were checked for inappropriate or unnecessary use, mainly focusing on antipsychotics, antidepressants, anxiolytics, mood stabilizers and sedatives. The patient's health was checked and they were counseled about deprescribing, benefits and other parameters to be observed like confusion, congnitive decline etc. All the prescription changes were approved after getting informed consent.

The review of medications was done to identify possible tapering or stopping when there was no clear reason to use them, they caused moderate to severe side effects or they had a high risk of interacting with other drugs. Chlorpromazine, haloperidol, lorazepam and certain mood stabilizers were given priority for this analysis.

Patients were given gradually lower doses over 4–12 weeks, depending on the drug that they were using and patient response. Benzodiazepines were reduced by 10–25% every 1–2 weeks and antipsychotics by 10–20% every 2 weeks, introducing alternative drugs when necessary. Patients were given continuous psychological support and information to guide them during the deprescribing. After the end of 18 months, patients were evaluated for psychiatric symptoms, ADRs, their mental functions, the challenges of using the drugs.

Outcome Measures

Everyone involved in the study was assessed at the beginning by documenting their medication history, using standard scales for psychiatric symptoms (PANSS), looking for adverse drug reactions (ADRs) and measuring treatment burden with the Treatment Burden Questionnaire (TBQ) (Tran et al., 2014). Participants' cognitive ability was checked using the Mini-Mental State Examination (MMSE) (Nasreddine et al., 2005; Folstein et al., 1975). The collected ADR data was processed as per Hartwig Severity Scale to classify them into mild (level 1 & 2), Moderate (level 3-5) and Severe (level 6 & 7) (Hartwig et al., 1992)

Statistical Analysis

All statistical analysis was done using IBM SPSS Statistics software, version 26. The summary of patient demographics and baseline medical data was provided by descriptive statistics. Differences in results before and after deprescribing were checked using paired t-tests for continuous variables, Wilcoxon signed-rank tests for continuous variables and Chi-square tests for categorical variables. By using multivariate linear regression models, we found that reducing ADRs and improving quality of life are independent predictors of successful deprescribing. Acceptable internal consistency for patient perception scales was determined using Cronbach's alpha, with a minimum value of 0.7. All tests were considered significant when $p < 0.05$.

3. RESULTS

Patient Demogrpahics

In total, 205 patients participated in the study. The average age was 38.6 years and slightly more males (51.2%) were included than females (48.8%). The typical length of time patients had a psychiatric illness was 5.8 years. Similarly to previous findings, the baseline rate of polypharmacy was 29.9% (±25.1).

Decresing in polypharmacy with deprescribing

With the intervention, patients took on average 3.2% fewer psychotropic medications which was almost statistically significant. Table 1 reports that after deprescribing, there were fewer examples of antipsychotics paired with antidepressants (13.65% to 9.76%, p=0.040), antipsychotics paired with anxiolytics and other combinations. There was a near-significant trend towards decreasing polypharmacy, as the mean polypharmacy prevalence dropped from 29.9 ± 25.1 to 26.7 ± 21.5 (t = 1.93, p = 0.057). Reductions were found in a number of combinations, including antipsychotics with antidepressants (p = 0.040), antipsychotics with anti-anxiety drugs (p = 0.048) and other groups of combined medications. Importantly, the number of patients who did not take multiple medications increased from 7.8% to 10.24% (p = 0.040).

Table 1: Prevalence of Medication Combinations Before and After Deprescribing (n=205)

Drug Combination	Prevalence Before (n, %)	Prevalence After (n, %)	p-value
Antipsychotics + Antidepressants	28 (13.65%)	20 (9.76%)	0.040
Antipsychotics + Anti-anxiety drugs	35 (17.07%)	24 (11.71%)	0.048
Antipsychotics + Mood Stabilizers	18 (8.78%)	12 (5.85%)	0.064
Antipsychotics + Sedatives	11 (5.36%)	8 (3.90%)	0.071
Multiple Antipsychotics	3 (1.46%)	2 (0.98%)	0.089
Multiple Antidepressants	29 (14.14%)	20 (9.76%)	0.061
Multiple Anxiolytics	33 (16.09%)	23 (11.21%)	0.053
Antipsychotics + Antidepressants + Anxiolytics	22 (10.73%)	16 (7.80%)	0.045
Antipsychotics + Antidepressants + Anxiolytics + Mood Stabilizers	10 (4.97%)	7 (3.41%)	0.068
Non-Polypharmacy	16 (7.80%)	21 (10.24%)	0.040

The significance difference between groups was observed when p<0.05 in the chi-squared test

Table 2: Prevalence of Polypharmacy Before and After Deprescribing (Adjusted for Near Significance)

Medication Category	Medication	Medication counts			
		Initial (a)	Deprescribed (b)	Post-Deprescribing (a-b)	Reduction
First Generation	Chlorpromazine	113	15	98	13.3%

Medication Category	Medication	Medication counts			
		Initial (a)	Deprescribed (b)	Post-Deprescribing (a-b)	Reduction
Antipsychotics	Flupentixol	85	12	73	14.1%
	Haloperidol	48	6	42	12.5%
	Promethazine	19	3	16	15.8%
	Sulpiride	14	2	12	14.3%
Second Generation Antipsychotics	Amisulpride	27	4	23	14.8%
	Clozapine	39	5	34	12.8%
	Olanzapine	21	3	18	14.3%
	Quetiapine	18	2	16	11.1%
	Risperidone	24	3	21	12.5%
Anti-depressants	Amitriptyline	31	4	27	12.9%
	Citalopram	29	3	26	10.3%
	Duloxetine	44	6	38	13.6%
	Escitalopram	27	3	24	11.1%
	Fluoxetine	25	4	21	16.0%
	Venlafaxine	41	5	36	12.2%
Mood Stabilizers	Carbamazepine	16	2	14	12.5%
	Lamotrigine	12	1	11	8.3%
	Sodium Valproate	21	3	18	14.3%
Anti-Anxiety Drugs	Clonazepam	33	5	28	15.2%
	Lorazepam	27	3	24	11.1%
Sedatives and Hypnotics	Diazepam	23	3	20	13.0%
Overall Polypharmacy Prevalence (Initial)		29.9±25.1			
Overall Polypharamcy Prevalence (Post-Deprescribing)		26.7±21.5			
Mean Reduction		3.2±2.9			
p-value		0.057 (Near Significant)			

Deprescribing lowers the incidence of ADRs

After deprescribing, patients who reported ADRs went down from 106 (51.71%) at baseline to 87 (42.44%) (p = 0.044). There was a major decrease in mild ADR's according to the Hartwig Severity Scale (p = 0.038) and a trend toward fewer moderate and severe ADR's (Table 3). The number of severe ADRs was much lower for mild and moderate cases (Table 4). Amisulpride, amitriptyline and haloperidol all had ADR reductions of 55-71% and each of these was shown to be significant (p < 0.05). Frequencies of ADRs associated with lorazepam, duloxetine and haloperidol fell by 71%, 67% and 67%,

respectively and all were significant (p = 0.01). In total, ADRs were reduced by 60.8% (p < 0.001).

Table 3: Frequency and Severity of ADRs Pre- and Post-Deprescribing

ADR Severity	Before deprescribing	% Before	After deprescribing	% After	p-value
No ADR	99	48.29	118	57.56	0.041
Any ADR	106	51.71	87	42.44	0.044
Mild (Level 1 & 2)	78	73.58	60	56.60	0.038
Moderate (Level 3-5)	24	22.64	20	18.87	0.067
Severe (Level 6 & 7)	4	3.77	3	2.83	0.081

Percentages relative to total ADR cases. The significance difference between groups was observed when p<0.05 in the chi-squared test

Table 4: ADR Frequency Pre- and Post-Deprescribing for Selected Drugs

Medication	Pre-Deprescribing ADR	Post-Deprescribing ADR	Reduction in ADR	p-value
Amisulpride	5	2	60%	0.03
Amitriptyline	11	5	55%	0.02
Clozapine	7	3	57%	0.04
Duloxetine	6	2	67%	0.01
Escitalopram	10	4	60%	0.03
Fluoxetine	12	5	58%	0.02
Haloperidol	9	3	67%	0.01
Lorazepam	7	2	71%	0.01
Olanzapine	7	3	57%	0.04
Total ADR Reduction	74	29	**60.8%**	<0.001

Percentages relative to total ADR cases. The significance difference between groups was observed when p<0.05 in the chi-squared test

Deprescribing alleviates the Treatment Burden and improves Quality of Life

There was a significant improvement in treatment burden, as measured by the TBQ, for every item in the deprescribed group (Table 5). There were improvements in handling medications, setting up appointments and paying for care (all p values were less than 0.05). MHQoL rose by 16.8% on average (p < 0.001) and improvements were seen in mood, independence and relationships. All 15 items on the TBQ showed that patients in the deprescribed group had less difficulty with managing medications, attending appointments, monitoring their health and paying for treatment. Selected item scores and their p-values are given in Table 6, all of which are significant at p < 0.05. The questionnaire showed a Cronbach's alpha of 0.88 which indicates high internal reliability (Mohd et al., 2018).

Table 5: Significance of Deprescribing on Treatment Burden Reduction

Slno	TBQ Item	Mean scores (n=205)		p-value
		Pre-deprescribing	Post-deprescribing	
1	**Tablet taste, shape, or injection annoyances**	1.85	2.45	<0.05

2	Number of daily doses	1.60	2.05	<0.01
3	Effort to avoid forgetting medication	1.70	2.25	<0.05
4	Necessary precautions (e.g., timing with meals)	1.82	2.35	<0.05
5	Lab tests/exams frequency and inconveniences	1.70	2.50	<0.01
6	Self-monitoring frequency and inconveniences	1.88	2.45	<0.05
7	Doctor visits and appointment difficulties	1.65	2.45	<0.01
8	Relationship difficulties with healthcare providers	1.50	2.10	<0.05
9	Appointment/transportation scheduling	1.70	2.30	<0.05
10	Administrative burden	1.60	2.40	<0.01
11	Financial burden	1.65	2.30	<0.01
12	Dietary change burden	1.80	2.25	<0.05
13	Physical activity recommendations	1.70	2.40	<0.05
14	Impact on relationships with others	1.55	2.30	<0.01
15	Regular healthcare reminders of health problems	1.60	2.35	<0.01

The significance difference between groups was observed when $p<0.05$ in the t-test

Table 6: Significance Analysis of Deprescribing Impact on Treatment Perception

slno	Item	Post-Deprescribing	Pre-Deprescribing	p-value
1	Disruption to daily routine	3.5	2.1	<0.01
2	Side effects frequency	3.8	1.9	<0.001
3	Confidence in medication management	3.6	2.0	<0.05
4	Satisfaction with medication count	3.4	2.2	<0.05
5	Quality of life	3.9	1.8	<0.001
6	Reduction in appointments/lab visits	3.3	2.0	<0.05
7	Energy levels	3.7	2.1	<0.01
8	Adherence to treatment	3.5	2.0	<0.01
9	Financial burden	3.8	1.9	<0.001
10	Overall physical and mental health	3.6	2.1	<0.05

The significance difference between groups was observed when $p<0.05$ in the t-test

Deprescribing improves Psychiatric Symptoms, QoL, and Cognitive Functioning

Major improvements were seen in psychiatric symptoms (14.9% decrease, $p < 0.01$), quality of life (16.8% improvement, p

< 0.001), the number of adverse effects (29.6% reduction, p < 0.001), cognitive performance (18.8% improvement, p < 0.05) and daily function (14.7% improvement, p < 0.01) after deprescribing.

Table 7: Improvements in Psychiatric Symptoms, QoL, and Cognitive Functioning Post-Deprescribing

Outcome Measure	Pre-Deprescribing	Post-Deprescribing	Reduction (%) / Improvement (%)
Psychiatric Symptoms (PANSS)	80.2 ± 12.1	68.3 ± 11.4	14.9% (reduction)
Quality of Life (WHOQOL-BREF)	58.4 ± 8.5	68.2 ± 7.7	16.8% (improvement)
Adverse Effects (UKU Scale)	25.3 ± 6.2	17.8 ± 5.4	29.6% (reduction)
Cognitive Functioning (MoCA)	21.8 ± 4.3	25.9 ± 3.5	18.8% (improvement)
Daily Functionality Score	65.3 ± 10.5	74.9 ± 9.0	14.7% (improvement)

The values were expressed as (Mean ± SD).

Factors to consider for deprescribing to achieve desired outcomes

The results show that certain factors (such as using fewer unnecessary drugs and keeping up with follow-up) are important in achieving good outcomes from deprescribing. Predictors with p-values less than 0.05 show they help increase the effectiveness of deprescribing as shown in table 8.

Table 8: Regression Analysis on Predictors for Optimal Deprescribing

Predictor	Coefficient (β)	Standard Error	p-value	Interpretation
Total Number of Medications	0.45	0.08	<0.001	Reducing the total number of medications predicts
Regular Review of ADR	-0.32	0.07	<0.05	Regular monitoring and adjustments can decrease ADRs
Patient Adherence to Follow-Up	0.28	0.05	<0.01	Consistent follow-up improves deprescribing outcomes
Assessment of Non-Essential Drugs	-0.40	0.06	<0.01	Deprescribing non-essential drugs predicts better QoL
Health Provider's Adherence	0.35	0.08	<0.001	Provider involvement ensures effective deprescribing

The significance difference between groups was observed when p<0.05 in the **t-test**

Deprescribing improves cognition scores

Those who were deprescribed had better cognitive scores, suggesting that not taking many medicines at once may help in patients with improved concentration leading to improved memory and functioning as evident from the scores given in table 9.

Table 9: Cognitive Functioning Assessment Post-Deprescribing

Cognitive Domain	Post-Deprescribing	Pre-Deprescribing	p-value
Attention & Concentration	25.8 (2.1)	22.7 (2.9)	<0.01
Memory	26.4 (1.8)	23.1 (2.7)	<0.001
Executive Functioning	27.1 (1.6)	24.0 (2.5)	<0.01
Language	28.0 (1.5)	24.3 (2.3)	<0.001

Mini-Mental State Examination (MMSE), Score Range 0–30; The values were expressed as (Mean ± SD), The significance difference between groups was observed when p<0.05 in the t-test

4. DISCUSSION

The purpose of this study was to check if deprescribing certain medicines could reduce polypharmacy and improve response of patients with psychiatric disorders to treatment. The results demonstrate a decline in polypharmacy, a lower number of adverse drug reactions, better treatment burden and better psychiatric symptoms, quality of life and cognitive functioning. The findings back up the hypothesis that cutting down on medications can help psychiatric patients in clinical and everyday living, along with reducing their need for multiple drugs.

Polypharmacy is common in psychiatry and can cause drug interactions, unwanted side effects and make treatment harder. The results of our study show that deprescribing was close to reducing polypharmacy, with a mean drop of 3.2% (t = 1.93, p = 0.057). This result agrees with earlier studies that showed that organized deprescribing efforts can lower the number of drugs patients take which reduces the ADRs of polypharmacy (Scott et al., 2015; Reeve et al., 2015). A reduction in these combinations was observed, as they are known to increase the risk of adverse drug reactions (Rollason et al., 2003). Patients saw better results such as fewer side effects and greater satisfaction with their treatments, after the reduction in polypharmacy. After deprescribing, the number of patients using simpler medication regimens increased from 7.8% to 10.24% which is good news for future attempts at deprescribing.

The study found that ADRs became less frequent and less serious after patients were deprescribed. A drop in ADRs of 58.6% was found which matches the 49% decrease in ADRs reported in a similar deprescribing trial with older adults (Reeve et al., 2015). Lorazepam, duloxetine and haloperidol were the drugs that most successfully decreased ADRs, showing that reducing these drugs which often cause drowsiness, side effects on metabolism and issues with movement, is beneficial.

This study is consistent with data suggesting that reducing the use of high-risk medications such as benzodiazepines and antipsychotics, can greatly lower the risk of ADRs and improve outcomes for patients (Delera et al., 2022). A drop in ADRs matters for both patients' health and to prevent future problems like mental decline and metabolic disorders which can often be made worse by using polypharmacy (Rollason et al., 2003). Treatment burden which covers things like side effects from drugs, difficulty keeping appointments, financial issues and problems with doctors, is a major problem for patients receiving long-term psychiatric care. Because their medication became simpler, patients said they experienced fewer problems with their daily schedules, fewer adverse effects and less difficulty paying for treatments. This outcome is in line with previous research, proving that decreasing the number of drugs patients take can greatly ease their treatment burden and improve adherence to their treatment plan (Liu et al., 2023).

The lower scores on PANSS (by 14.9%), better WHOQOL-BREF results (up by 16.8%) and improved MoCA scores (by 18.8%) demonstrate that deprescribing benefits mental and cognitive health. The changes support research that suggests reducing antipsychotics and sedatives can help people with dementia have fewer problems, better mental health and less risk of side effects (Lucchetti and Lucchetti, 2017; Hori et al., 2006). The decrease in negative effects (29.6%) also backs up these findings, because patients were less likely to experience the emotional and mental side effects that are typical with polypharmacy in psychiatric care (Rollason et al., 2003). The gains in attention, memory and executive functioning are especially important and notable. Taking people off antipsychotics which can lead to cognitive issues, appears to have helped achieve these outcomes.

A number of factors were found to predict successful deprescribing, including lowering the total amount of medications, regularly checking for ADRs, ensuring patients follow up and getting healthcare providers involved. The results agree with the literature that suggests working together and monitoring patients helps them achieve better outcomes from deprescribing (Scott et al., 2015). It was very important to regularly check how patients were doing as the drugs tapered off. This study's findings are important for clinical applications. As part of routine care for people on many medicines, doctors should consider deprescribing, mainly in psychiatric cases where medicines may be given for a long period. This research points out that a structured patient-centered approach to deprescribing is important, including reviewing each patient's medication, slowly tapering them, counseling them and involving other providers. As the deprescribing has shown to reduce ADRs, decrease in

the need for treatment, lower psychiatric symptoms and help patients follow their regimens better, it could be made a regular practice in psychiatry. More research is required to find out the effect of deprescribing in long term and to set clear guidelines for managing medications in different psychiatric groups.

Limitations

1. Because this study was done at only one tertiary care center, the results may not apply to everyone. The patient group used in research may not show the same diversity found in other primary care or regional healthcare settings. Further studies across different populations are necessary to check the findings and test the wider use of the deprescribing intervention.

2. The deprescribing in this study was tailored according to the patient needs and complaints. Since patients vary so much, it was hard to develop a single deprescribing plan and assess results among different groups. In the future, researchers could focus on creating guidelines for both standard deprescribing and for specific drugs to ensure things are done the same way.

5. CONCLUSION

The study makes it clear that lowering polypharmacy in psychiatry can greatly enhance patient outcomes. The findings suggested that medication optimization is essential and, in addition, show that deprescribing improves patient safety and comfort. As a result, it is clear that including deprescribing in regular psychiatric care can give patients better, more personalized treatment. The fact that deprescribing both reduces treatment and improves quality of life shows it is a key method for long-term psychiatric care. Yet, the results show that future research should improve guidelines for stopping medications, assess the long-term effects and extend deprescribing to a broader range of people. Deprescribing could change psychiatric care by making the treatment process simpler, safer and more supportive of a strong relationship between patients and their doctors. All in all, this study supports the use of deprescribing in psychiatric treatment and suggests that further study, standardization and adoption by many will improve care, lower risks from medications and make life better for those with psychiatric problems.

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