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Review article

The psychological consequences of the sedating side effects of antipsychotic medication: A systematic review

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ABSTRACT

Background: Sedation is a common side effects of antipsychotic medication. It is poorly defined but is generally understood to encompass excessive daytime sleepiness, difficulty thinking or concentrating, and oversleeping. Sedation is often cited as impacting on functioning and wellbeing, however no review to date has assessed this relationship.
Aims of review: This review aims to explore the impact of the sedating side effects of antipsychotic medication on patient functioning and wellbeing.
Methods: Papers were identified by searching the databases PubMed, PsycINFO, EBSCO, CINAHL, and Clarivate Web of Science. A narrative synthesis and quality appraisal was conducted.
Results: Eleven peer reviewed papers met the eligibility criteria. Sedation was often identified as the most common side effect, but was not uniformly defined. Results consistently supported a negative effect of sedation on functioning (e.g. ability to perform day-to-day tasks and motivation). With respect to wellbeing, a negative impact of sedation was identified on quality of life and anhedonia, but less consistent interactions with other domains (e.g. anxiety), with few papers reporting on these links.
Conclusion: Despite the plausible impact of sedation on patients being widely discussed, there is surprisingly little empirical research in this area. The research that exists broadly supports a negative impact of sedation on functioning and wellbeing, although there are some complexities requiring further investigation, and many domains (e.g. interaction with mood) have not been substantively investigated. Sedation may be an important adverse side effect that is relevant to consider in improving recovery from psychosis.

1. Introduction

Sedation is one of the most common side effects reported from antipsychotic medication and is generally understood to comprise symptoms of excessive sleep duration, difficulty concentrating, and/or excessive daytime sleepiness. A recent meta-analysis of RCTs estimated that 25 % of patients have persistent sedation from antipsychotics (Nomura et al., 2025), although rates vary widely based on medication type, dosing, and patient population and can be significantly higher – for example, 46–49 % of patients on clozapine sleep for 10 h or more each day (Cederlöf et al., 2024; Fernandez-Egea et al., 2021). Sedation is often acknowledged to have a range of impacts on patients – particularly in increasing likelihood of non-adherence to antipsychotic medication (Lambert et al., 2004). However, other impacts are indicated or plausible. For example, another large cohort study indicated that long sleep duration amongst patients with psychosis was linked with reduced exercise and higher likelihood of being overweight (Dong et al., 2025), indicating that sedation is worth considering in the context of concerns over cardiovascular risk in psychosis (Osimo et al., 2023). Yet sedation has been underacknowledged to date in research and clinical practice, including in comparison to other side-effects from antipsychotic medication such as weight gain or movement disorders (Chakrabarti, 2025).

One reason for a lack of attention may be inconsistency in definition. In some cases sedation is taken to mean excessive sleepiness or extended sleep duration (sometimes referred to as somnolence), and in others it is attributed as more of a cognitive concern (e.g. difficulty concentrating) (DiBonaventura et al., 2012). Sedation may be challenging to differentiate from fatigue, negative symptoms, or low mood -which are all common amongst patients with psychosis (Hartley et al., 2013; Waters et al., 2013). There is also a risk that sedation may be easily overlooked -

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for example, a study investigating recorded clinical consultations indicated that sedative side effects reported by patients may be reframed as neutral or even beneficial by clinicians (Seale et al., 2007), and a recent qualitative study identified that patients experience significant difficulty communicating the severity of their excessive sleepiness (Robbins et al., 2025). Overall there is a lack of clarity around sedation and when sedation might become problematic for patients.

While it is often acknowledged that sedation will impact on day-to-day functioning there is also a highly plausible impact of sedation on patient wellbeing. For example, if a patient is not active during the day, they may be more socially isolated or less likely to carry out useful or valued activities. This is likely to impact on their mood, self-esteem, and could impact on their recovery from psychosis (for example, by maintaining paranoia by reducing opportunities for social contact). Similar cycles have been highlighted in studies investigating excessive sleepiness in psychosis (Reeve et al., 2021; Robbins et al., 2025). Difficulties being active or in thinking during the day could also be expected to moderate the efficacy of interventions such as CBT, thereby affecting ability to benefit from care.

There is extremely limited specific research on sedation, with sedation typically being grouped with other antipsychotic medication side-effects. Only one review of the impact of sedation was identified, which was a narrative review considering its potential effect on the ability of mothers to provide appropriate parenting (Seeman, 2012).

Improving our understanding of the impacts of sedation is relevant to both clinicans and patients. It will allow clinicians to advise and guide patients in making informed medication choices, and in considering how any impact of sedation might be mitigated in clinical management. Antipsychotic medication (and associated sedation) may be an unavoidable aspect of treatment for many individuals with psychosis; however, this does not mean that negative impacts of this treatment should be unexamined. Within this framework the current review seeks to examine what is known about how sedation from antipsychotics may impact a person's functioning and wellbeing (including socio-occupational functioning, quality of life, and psychiatric symptoms).

2. Method

The review adhered to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidance (Moher et al., 2015) and was pre-registered with PROSPERO (CRD4202342587).

2.1. Search strategy

A systematic search was carried out across PubMed, PsycINFO, EBSCO, CINAHL, and Clarivate Web of Science between May 2023 and March 2024, updated in June 2025. Search terms were utilised to identify studies reporting on sedation and antipsychotic medications (see Table 1) in their title or abstract. With respect to wellbeing and functioning, we did not generate specific search terms as we aimed to include the broadest range of possible domains within functioning (including socio-occupational functioning, cognitive functioning, and motivation) or wellbeing (including quality of life and mental health related measures). The inclusion of aspects relevant to wellbeing and functioning was assessed in title/abstract and full-text screening by SR and KR.

Table 1
Search terms.

Sedation or Somnolence Terms	Antipsychotic Medication Terms
sedat* OR somnolence	Antipsychotic OR neuroleptic OR amisulpride OR aripiprazole OR asenapine OR benperidol OR cariprazine OR chlorpromazine OR clozapine OR flupentixol OR fluphenazine OR haloperidol OR levomepromazine OR lurasidone OR olanzapine OR paliperidone OR periciazine OR pimozide OR prochlorperazine OR promazine OR quetiapine OR risperidone OR sulpiride OR trifluoperazine OR zuclopenthixol

2.1.1. Eligibility criteria

Inclusion criteria for papers were as follows:

- Peer-reviewed empirical literature
- Published after 1980, available in English
- Reporting on adult participants (average age ≥18 where unspecified) or adult participant subgroup
- Reporting on sedation as occurring in the context of antipsychotics in the treatment of a psychotic disorder (i.e. not including where antipsychotics are used outside of psychosis presentations such as dementia, or where elements of sedation such as sleepiness are identified but not labelled as sedation)
- Including a measure or variable linked to well-being or functioning
- Reporting either a statistical test of relationship between sedation and wellbeing or functioning or (for qualitative investigations) a comment on this relationship within a theme.

Exclusions were applied as follows:

- Reporting on post-injection sedation syndrome (a specific rare side effect occurring immediately after depot administration, due to this being considered a different phenomenon to longer-term sedation)
- Papers reporting on the effect of sedation on medication attitudes and adherence – while this might indirectly influence wellbeing (e.g. if a patient discontinues medication and then relapses into psychosis) this was felt to be out of scope for the current review
- Case reports, clinical advice or opinion pieces, letters, and conference abstracts.

2.1.2. Screening and selection of studies

The search yielded 11,015 results. Using Rayyan (http://rayyan.qcri.org), duplicates were removed, leaving 4771 articles for title and abstract screening. 86 studies were assessed at full text with 11 identified as meeting inclusion criteria. See Fig. 1 for PRISMA flow diagram.

For the initial searches (March 2024) KR was the primary rater, with random samples of 25 % of papers at title and abstract ($N = 35$) and at full text ($n = 4$) reviewed by SR. Inter-rater agreement was 90 % for titles/abstracts ($N = 32$) and 100 % for full text ($N = 4$). Where eligibility was unclear papers were discussed by SR and KR throughout screening to reach consensus on inclusion vs exclusion. For the supplemental search in June 2025 (addition of CINAHL database and identifying papers published since initial search) SR conducted all ratings. The final list of included studies was reviewed and approved by all authors.

2.2. Quality assessment

Due to the heterogeneity in the studies identified, 'The 'Mixed Methods Appraisal Tool (MMAT)' was used for quality appraisal (Hong et al., 2018), with KR and an independent reviewer completing quality ratings. The independent reviewer and KR had a high rate of agreement (90 %), with any disagreements resolved through consultation between KR and SR.

2.3. Data synthesis

A narrative synthesis was chosen to present findings. This approach summarizes diverse study findings in a storytelling format following their six-step guidance (Popay et al., 2006) . The eleven studies were familiarized and annotated using a coding system. Key characteristics and results were extracted into tables, and a written summary highlighted key findings.

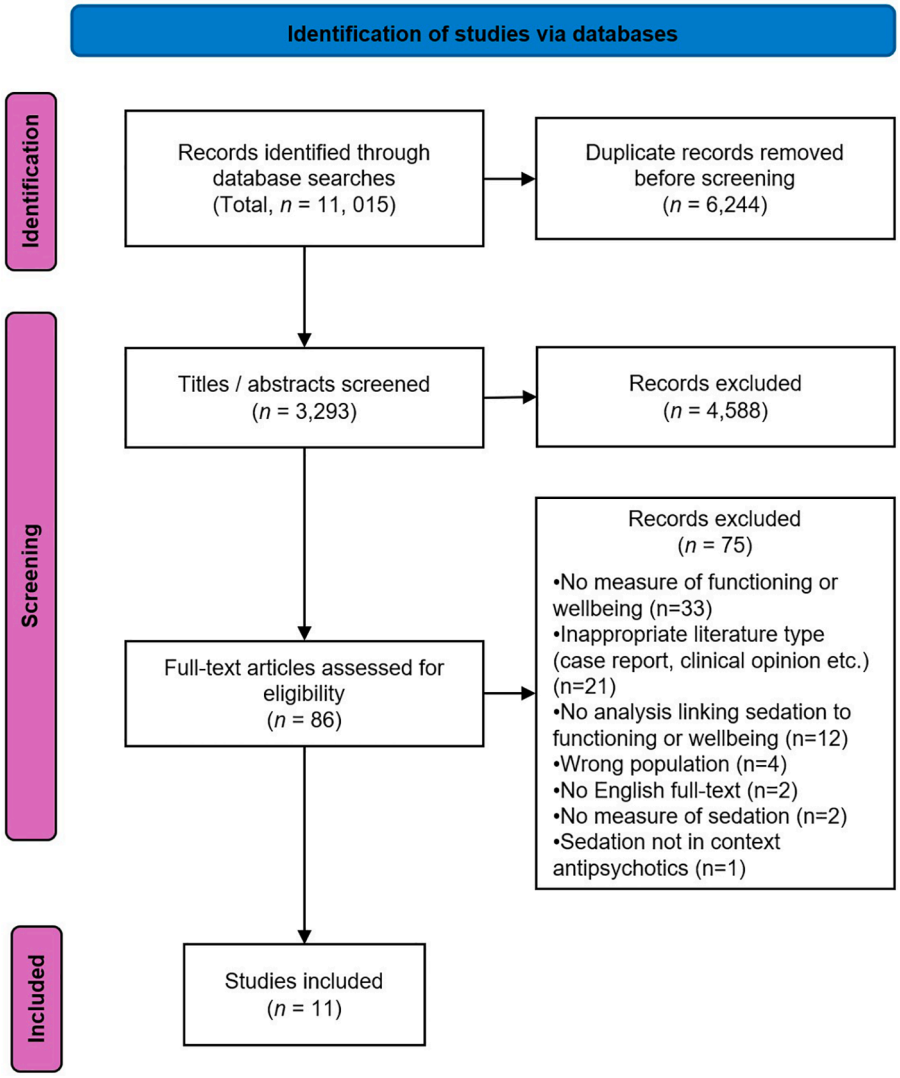

Fig. 1. PRISMA flow diagram.

3. Results

3.1. Data extraction outcome

Table 3 summarises the eleven studies identified in the review. Four studies were primarily qualitative (Gray and Deane, 2016; Morant et al., 2023; Morrison et al., 2015; Waite et al., 2022) . Two studies applied a mixed methods analysis approach to data extracted from publicly available web forums (Hughes and Matheson, 2016; Moncrieff et al., 2009). One study applied a descriptive content analysis approach to patient and clinician interviews and focus groups (Llorca et al., 2017). Three longitudinal secondary data analysis studies made use of existing randomised controlled trial data (Fervaha et al., 2015; Loebel et al., 2014) or anonymised clinical records (Wolpe et al., 2023) with observation periods ranging from 6 weeks (Loebel et al., 2014) to two years (Wolpe et al., 2023). The final study was a cross-sectional quantitative online survey (Tandon et al., 2020).

Table 2
MMAT Quality Assessment of studies.

Study	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5	Quality Percentage
Fervaha et al. (2015)						Y	Y	N	N	Y						60 %
Gray and Deane (2016)	Y	Y	Y	Y	Y											100 %
Hughes and Matheson (2016)	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	N	Y	60 %
Loebel et al. (2014)						Y	Y	Y	Y	Y						100 %
Llorca et al. (2017)						N	Y	N	Y	Y						60 %
Moncrieff et al. (2009)	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	60 %
Morant (2023)	Y	Y	Y	Y	Y											100 %
Morrison et al. (2015)	Y	Y	Y	Y	Y											80 %
Tandon et al. (2020)						Y	Y	Y	N	Y						80 %
Waite et al. (2022)	Y	Y	Y	Y	Y											100 %
Wolpe et al. (2023)						Y	N	Y	Y	Y						80 %

3.2. Quality assessment of studies

All studies were evaluated using the Mixed Methods Appraisal Tool (MMAT), with results in Table 2. Six of the 11 studies scored 80 % or higher. Lower scores ($n = 4$ at 60 %), in all were awarded due to sampling and/or analysis methods not being well justified (Fervaha et al., 2015; Hughes and Matheson, 2016; Llorca et al., 2017; Moncrieff et al., 2009). All studies apart from the secondary data studies ($n = 8$; (Gray and Deane, 2016; Hughes and Matheson, 2016; Llorca et al., 2017; Moncrieff et al., 2009; Morant et al., 2023; Morrison et al., 2015; Tandon et al., 2020; Waite et al., 2022) are vulnerable to response and/or survivorship bias due to likelihood that those experiencing more negative effects of antipsychotic medication would be more likely to be included in the sample.

It is notable that no studies identified collected primary data with the specific aim of assessing the impact of sedation on patients. The majority ($n = 7$) aimed to assess the impact on a range of side effects from antipsychotic medication, and provided comment on sedation within this (Gray and Deane, 2016; Hughes and Matheson, 2016; Llorca et al., 2017; Moncrieff et al., 2009; Morant et al., 2023; Morrison et al., 2015; Tandon et al., 2020). Another study included was focused on the side effect of weight gain in psychosis, but included comment on sedation within this remit (Waite et al., 2022). The remaining studies ($n = 3$) utilised data that was originally collected for other purposes to explore impacts of sedation (Fervaha et al., 2015; Loebel et al., 2014; Wolpe et al., 2023).

3.3. Measurement of sedation

There was a wide range of approaches to measuring sedation across the included studies. In the qualitative and content analysis studies ($n = 7$) mentions of sedation were coded from transcripts or web content. Three studies used standardised questionnaires or individual items including the Glasgow Antipsychotic Side-effect Scale (GASS) items on sedation (Tandon et al., 2020), the Epworth Sleepiness Scale (Loebel et al., 2014) and an idiosyncratic 0–3 sedation severity rating from clinicians (Fervaha et al., 2015). One study operationalised sedation as sleeping >10 h over a 24-hour period (Wolpe et al., 2023). It is worth adding that in studies assessing multiple side effects ($n = 7$) sedation was identified as the most common in five studies (Gray and Deane, 2016; Moncrieff et al., 2009; Morant et al., 2023; Morrison et al., 2015; Tandon et al., 2020) and in the top three most frequent side effects in the remaining two (Hughes and Matheson, 2016; Llorca et al., 2017).

3.4. Measurement of wellbeing and functioning

As with sedation, wellbeing and functioning were captured by a range of methods across the included studies. Within the qualitative and content analysis based studies ($n = 7$) terms related to wellbeing (e.g. mood, anxiety, self-efficacy) or functioning (e.g. being able to have a job, socialise, complete day-to-day tasks) were identified from the transcripts or web content (Gray and Deane, 2016; Hughes and Matheson, 2016; Llorca et al., 2017; Moncrieff et al., 2009; Morant et al., 2023; Morrison et al., 2015; Waite et al., 2022). The remaining four studies used validated measures including domains such as motivation and anhedonia (Fervaha et al., 2015; Wolpe et al., 2023), functional capacity (Loebel et al., 2014), quality of life (Tandon et al., 2020), and psychotic symptoms (Loebel et al., 2014).

3.5. Impact of sedation on functioning

Sedation was consistently linked with negative impacts on functioning across studies. In the qualitative studies sedation was described as linked to a 'zombie-like' state (Morrison et al., 2015), being unable to get out of bed (Gray and Deane, 2016), supported by accounts of improvement in energy and 'mental clarity' with reduction in medication (Morant et al., 2023). Within the content-analysis based studies, sedation was described as 'profound and disabling' in its impact across a range of socio-occupational activities including day-to-day tasks and self-care (Moncrieff et al., 2009), socialising with family and friends (Llorca et al., 2017), and attending school or work (Hughes and Matheson, 2016).

Two quantitative studies investigated functioning. Tandon et al. (2020) reported from their large survey of 435 patients that sedation (indicated by reporting 'feeling drugged or like a zombie' or 'sleepy during the day') was the side effect with the most impact on functioning, including with effects on employment. Loebel et al., (2013) similarly reported that an increase in sleepiness resulting from antipsychotic medication was associated with a decrease in functioning over a 6-month period. In this context it is notable that in the one study comparing clinician and patient views on side effects, sedation was listed as a 'bothersome' side effect by patients but not by clinicians (Llorca et al., 2017). Only once was sedation described as having a positive impact on functioning, specifically in stopping patients from leaving home and therefore preventing them being in dangerous situations (Gray and Deane, 2016).

Motivation was investigated more specifically with inconsistent results – Fervaha et al. (2015) found no relationship between sedation and changes in motivation, whereas Wolpe et al. (2023) reported that higher sedation was related to reduced motivation across the observation period. A negative impact of sedation on motivation was identified in one qualitative study, in the context of exacerbating the challenge of addressing weight gain in psychosis (Waite et al., 2022)

3.6. Impact of sedation on wellbeing

Multiple negative impacts of sedation on wellbeing were noted across the studies included, although the domains investigated were less consistent than for functioning. Qualitative results linked sedation with lowered self-esteem (Llorca et al., 2017), poor self-image and reduced feelings of being able to cope (Morrison et al., 2015), and frustration and dissatisfaction (Tandon et al., 2020). Participants in Morant et al. (2023) identified a reduction in sedation as contributing to a reduction in anxiety as patients felt more able to regulate their responses and cope with life's challenges. Two quantitative studies reported that increased sedation was associated with increased anhedonia (Wolpe et al., 2023) and decreased enjoyment and life satisfaction (Tandon et al., 2020). However no relationship was identified between sedation and emotional expressivity (Wolpe et al., 2023).

Some positive impacts of sedation on wellbeing were also noted. Improved sleep resulting from sedation was identified by patients as leading to improvement in psychotic symptoms (Moncrieff et al., 2009), and as allowing escape from negative feelings such as anxiety and depression (Hughes and Matheson, 2016). Sedation was also linked with reduced agitation in a secondary analysis (Loebel et al., 2014), although this relationship was only significant for one medication tested (quetiapine).

4. Discussion

This review sought to examine what is known about the impact of sedation from antipsychotics on patient functioning and wellbeing. Surprisingly few studies have reported on this relationship, with none being specifically designed to explore this issue. Caveats must be applied to the results as many studies were limited by recruitment method (e.g. self-selecting samples and likelihood of consequent response bias) or in measures (e.g. using idiosyncratic measures rather than validated questionnaires). Nevertheless, a consistent negative impact of sedation is indicated by this literature, particularly with respect to functioning. Patients endorsed 'feeling like a zombie', a lack of motivation, and a consequent impact on day-to-day tasks and socio-occupational functioning e.g. accessing employment. The impacts on wellbeing were also indicated to be generally negative (particularly with respect to lower

Table 3
Characteristics of identified studies.

Author (s), Date and Country	Aims	Design	Sample characteristics	Measures	Data Analysis	Summary of relevant findings
Fervaha et al. (2015) USA	To examine whether motivational deficits were related to antipsychotic treatment in patient with schizophrenia in a dose-dependent manner	Secondary analysis of RCT data	520 patients with schizophrenia randomised to one of five antipsychotics and monitored for 6 months	Motivation: Heinrichs-Carpenter Quality of Life Scale - motivation subscale only Sedation: Single item reported by clinicians (0–3 where higher scores indicated higher severity)	Correlation and repeated measures ANCOVA	• Clinical ratings of severity of sedation were not associated with the degree of motivational deficit. • No effect of antipsychotic medication on motivation deficits over 6 month period.
Gray and Deane (2016) UK	To explore the experience of taking antipsychotic drugs amongst young people experiencing a first episode of psychosis (FEP)	Qualitative - semi-structured interviews	20 young people with psychosis	N/A	Thematic Analysis	• Sedation was 'by far and away the most commonly reported side effect' • Sedation reported to impact day-to-day functioning in being unable to get out of bed and feeling weakened by the need to sleep. • Sedation perceived to have a positive consequence in preventing one from being in dangerous situations through feeling too drowsy to leave the home.
Hughes & Matheson (2016) USA	To explore how antipsychotic users portray their drug experience in terms of the desirability or helpfulness of drug effects and the burden drug effects place on their lives	Mixed methods design using anonymous internet data	819 user reviews on WebMD and Ask a Patient sites	N/A	Qualitative content analysis	• Increased sleepiness, drowsiness as a negative impact reported by 20.1 %, reported as a positive impact by 12.3 % • Negative consequences of sedating side effects noted in the impact on the ability to function in day-to-day tasks such as attending college. • Respondents reported welcome consequences of the sedating side effects when needing to sleep or wanting to escape feelings of anxiety or depression
Llorca et al. (2017) USA	To explore patient and physician perspectives of the occurrence and burden of the treatment emergent adverse effects (TEAEs) of atypical antipsychotics	Focus groups and interviews with patients and clinicians	42 patients (25 with depression, 17 with schizophrenia) and 4 psychiatrists	Sedation: List of TEAEs and frequency endorsed by patients and clinicians Functional impact: ranking of 'bother' attached to each TEAE	Quantitative Content analysis	• The impact of sedation/somnolence on participants was described as 'significant' and included: missing time with family and friends, missing social activities, lack of energy leading to not eating properly, and poor self-esteem. • Sedation was rated as frequent by clinicians and patients, but only bothersome by patients. Not rated as 'important' by clinicians (NB patients not asked about importance).
Loebel et al., 2013 USA	Evaluate the effects of daytime sleepiness on treatment outcomes in patients with schizophrenia	Secondary analysis of RCT data	486 patients with schizophrenia randomised to lurasidone 80 mg, luraisone 160 mg, quetiapine XR 600 mg, of placebo per day, followed for 6 weeks.	Sleepiness: Epworth Sleepiness Scale Wellbeing and functioning: Psychotic symptoms (Positive and Negative Symptom Scale; PANSS), functional capacity (University of California-	Mediation analysis	• Increased sleepiness mediated an improvement in agitation (PANSS) and a worsening in functional capacity (relationships only observed in Quetiapine study group) over the 6 weeks,

(*continued on next page*)

Table 3 (*continued*)

Author (s), Date and Country	Aims	Design	Sample characteristics	Measures	Data Analysis	Summary of relevant findings
				SanDiego Performance Based Skills Assessment -Brief Version),		• Increased sleepiness was not associated with improvement in any other PANSS domain
Moncrieff et al. (2009) UK	To explore the subjective effects associated with the antipsychotics: olanzapine (Zyprexa), risperidone (Risperdal) and older antipsychotics	Mixed methods design using anonymous internet data	449 Ask a Patient comments (233 on risperidone (Risperdal), 170 on olanzapine (Zyprexa), 46 relating to other antipsychotics)	N/A	Chi-square test Content analysis	• Sedation was the most commonly reported effect across all three of the drug types included • The impact of sedation on participants was described as 'profound and disabling' by many respondents, • The consequence of sedation experienced as impacting the ability to function day-to-day and engage in self-care tasks such as: getting out of bed, to engage in normal day to day routines and to get dressed in the morning. • Sedation was perceived by some respondents as having positive consequences on their wellbeing in ending a cycle of insomnia and inducing feelings of calmness that helped reduce hallucinations
Morant et al., 2023	To explore participants' experiences of antipsychotic reduction or discontinuation	Qualitative - semi-structured interviews	26 patients with non-affective psychosis who had reduced or discontinued medication within RCT	n/a	Thematic analysis	• Reduced sedation reported with reduced or discontinued use of antipsychotics – most common reduction of adverse effect reported • Reduced sedation associated with increased ability and motivation for daily activities, greater mental clarity and motivation. • Reduced sedation reported to reduced anxiety as felt more able to regulate responses to everyday challenges.
Morrison et al. (2015) Australia	To explore people's experience of living with antipsychotic medication side-effects	Qualitative - semi-structured interviews	10 mental health community care users	N/A	Phenomenological approach and content analysis	• Sedation was the most commonly reported side effect • The impact of the sedating effects was in producing the state of feeling 'zombie like' which resulted in impacts on self-image and ability to cope.
Tandon et al. (2020) USA,Canada, Australia, Spain, Italy, Norway, Denmark	To understand how key side effects of second-generation antipsychotics impact the functioning and quality of life (QoL of patients with schizophrenia	Cross-sectional web-based survey	435 patients with psychosis taking second generation antipsychotics	Sedation: The Glasgow Antipsychotic Side Effect Scale (GASS) Functional impact: 0–100 VAS attached to GASS symptoms Quality of Life: Quality of Life and Enjoyment Scale Short Form (Q-LES-Q-SF)	Spearman correlations Simple and multiple linear regression analyses	• 'Feeling sleepy during the day' the most common side effect – 24.9 % reporting 'Every day'. • A greater frequency of sedating side effects significantly predicted lower enjoyment and satisfaction with life (−3.52, SE = 0.94) • Sedating side effects were the most frequently reported to impact functioning, "Feeling drugged or like a zombie"

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Table 3 (*continued*)

Author (s), Date and Country	Aims	Design	Sample characteristics	Measures	Data Analysis	Summary of relevant findings
						(75.1 %) and "Sleepy during the day" (76.5 %) • Sedating side effects were associated with feeling 'frustrated' and 'dissatisfied' • The most frequently reported functional impact of the sedating side effects was 'ability to do or get a job'
Waite et al. (2022) UK	Examining first-person accounts of weight gain in psychosis	Qualitative - semi-structured interviews	10 patients with psychosis	n/a	Grounded theory analysis	• Sedative effects identified exacerbating burden of weight gain – increased fatigue, lack of motivation, and rapid exhaustion.
Wolpe et al. (2023) UK	To examine the effect of antipsychotic-induced sedation on motivation, pleasure, and impaired emotional expressivity	Cohort observational study	Clinical records of 187 patients with schizophrenia taking clozapine over 2 years	Motivation and emotional expression: Brief Negative Symptoms Scale (BNSS) Sedation: total number of hours of sleep per day (overall daytime and night-time sleep) and self-reported total numbers of hours slept	Multilevel regression models	• Increased levels of sedation were linked to reduced motivation and pleasure. • Sedation was not associated with emotional expressivity • The impact of sedation on motivation and pleasure was independent of other negative symptoms

quality of life, and reduced enjoyment and pleasure), although some positive impacts were indicated e.g. improved sleep as leading to increased calmness and reduction in psychotic symptoms. Given that many studies noted sedation as amongst the most common side-effects from antipsychotic medication, and the results here supporting a potential interaction with patient recovery, further investigation is imperative.

Considering further the impact of sedation on functioning, there are significant gaps in understanding in this area. For example, the identified reduction in motivation could itself preclude activities such as seeking or gaining employment, or it could be a result of perceived low likelihood of ability to successfully engage in these activities, and therefore understood within existing cognitive models of negative symptoms of psychosis (Beck and Rector, 2005; Saperia et al., 2025). It is also crucial to investigate this functional impact of sedation in light of significant and enduring social disability within psychosis (Fowler et al., 2019) and especially in the context of treatments that seek to address social recovery given the role of sedation as factor that may moderate the efficacy of this approach (Frawley et al., 2023).

The impact of sedation on wellbeing deserves further attention and exploration. The review supported a negative impact of sedation on quality of life and anhedonia, yet the improvement in sleep resulting from sedation was indicated to improve psychotic symptoms and agitation. A straightforward interpretation is that when patients are acutely unwell there is a role of sedating medications in addressing immediate distress and agitation. However, when considered longer term, the same sedating side-effects may be detrimental to recovery (Chakrabarti, 2025). A more challenging consideration in the longer-term is the potential role of sedation in enabling avoidance – some impacts of sedation that were identified as 'positive' by papers in this review (e.g. not leaving the house, sleep used to avoid anxiety) may reduce wellbeing and functioning in the longer term. This is especially relevant given the high levels of social avoidance in psychosis (Freeman et al., 2019). These interactions were supported by a recent qualitative study on excessive sleepiness in psychosis, which also indicated that cognitive-behavioural interventions may help address these difficulties (Robbins et al., 2025). Other patient studies have also identified similar cycles of sleep-related inactivity and avoidance as problematic (Faulkner and Bee, 2017; Reeve et al., 2021). If sedation is maintained by these states of low activity and avoidance, it may be possible to improve sedation - and patient recovery – by addressing these or other maintenance factors, in line with treatment development approaches applied successfully elsewhere in psychosis (Freeman, 2024).

With respect to current clinical implications, the results of this review support clinicians carefully considering the impact of sedation on patient functioning and wellbeing, and adapting treatment plans where required. Given the above, clinicians should also consider that even where sedation is not identified as problematic (or is even welcomed) by the patient, it may yet be impacting on recovery. Further research is needed to inform clinical decision making around sedation given the limited work on this topic to date.

4.1. Limitations and directions for future research

A key limitation was the study heterogeneity in both design and measures used, which precluded the possibility of meta-analysis or meta-synthesis. Many studies recruited samples that are unlikely to be representative due to response bias, and there was limited demographic diversity, mainly western and predominantly white males - these constrain the generalizability of the findings.

With respect to further understanding the relationship between sedation and impacts on patient wellbeing and functioning, one major challenge is that patients who are more unwell may be more likely to be placed on higher doses and/or more sedating medication, clozapine being a specific example as being the antipsychotic of last resort and the most sedating medication (Nomura et al., 2025). This means that patients with more sedation may appear to have worse functioning or wellbeing, without sedation being the active causative factor. This requires further investigation in studies that can adequately control for this relationship.

Future research should focus on specific sedation symptoms like excessive sleepiness, prolonged sleep, and concentration issues, and use clear definitions and validated measures for these symptoms or experiences. Ideally work would be undertaken to standardise sedation

assessment and definition to assist with future research synthesis, and with clinical practice. As well as likely involving input from patients, pharmacists, psychiatrists, and other professionals, it would be helpful for this work to incorporate objective assessment of sleep and activity (e.g. actigraphic recording) to validate the measurement of sedation, given the inevitable subjectivity of appraisals of sleep and energy levels.

A potential gap between patient and clinician appraisals of sedation deserves further investigation. It would be worthwhile to explore clinician perspectives on the impact of sedation, as only one study in this review incorporated clinicians as participants (Llorca et al., 2017). Qualitative work with patients specifically around their experiences of sedation and interactions with clinicians would be valuable, given the likely benefit of patient-centred and participatory approaches in this area. As identified in limitations above it will be important for future research to involve under-represented groups given the preponderance of white and western participants in studies to date, and overall to aim for greater representativeness in study recruitment.

Many notable domains were not investigated by any studies included in this review. No study substantially tested any relationship between sedation and symptoms such as depression, anxiety, trauma, paranoia, hallucinations, cognitive disorganisation, or negative symptoms (beyond motivation/anhedonia). While quality of life and functioning have been considered, they have not been addressed using the most widely used measures (e.g. ReQoL or EQ-5D-5l; (Herdman et al., 2011; Keetharuth et al., 2018)). No identified study reported on the link between sedation and relationship status, parental status, employment status, or time use. These are clear targets for future research to better understand and consider mitigation routes for impacts of sedation on patients with psychosis, which as above would ideally be supported by improved definition and measurement of sedation.

In summary, the current review is the first to assess the impact of sedation from antipsychotics on patient functioning or wellbeing. Limited research was identified, within which it was clear that sedation was one of the most common side-effects experienced by patients, and linked with poor functioning, and with reduced wellbeing. Improving understanding of the impact of sedation on patients with psychosis has the potential to improve patient recovery by advancing our clinical approach to this common and disabling side effect.

CRediT authorship contribution statement

Sarah Reeve: Investigation, Writing – review & editing, Supervision, Project administration, Methodology, Formal analysis, Conceptualization. **Kate Robbins:** Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Jo Hodgekins:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors have no competing interests to declare.

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