BRITISH JOURNAL OF HOSPITAL MEDICINE

SYSTEMATIC REVIEW

Psychiatric Comorbidity in Intellectual Developmental Disorders: A Systematic Review

Borja Astilleros Martínez[1], Maria Pilar Martin[1,*], Yasuhiro Kotera[2,3]

[1]Department of Psychiatry and Social Psychology, Faculty of Psychology, University of Murcia, Murcia, Spain
[2]Faculty of Medicine and Health Sciences, University of Nottingham, Nottingham, UK
[3]Center for Infectious Disease Education and Research, Osaka University, Osaka, Japan
*Correspondence: mpmartin@um.es (Maria Pilar Martin)

Abstract

Aims/Background Intellectual developmental disorders (IDD) are characterized by significant limitations in intellectual functioning and adaptive behavior, affecting conceptual, social, and practical skills. They impact 1% of the global population, with mild cases being more common. Major causes include prenatal, perinatal, and postnatal factors, although a clear cause is often not identified. This study aims to evaluate the comorbidity of psychological disorders in individuals diagnosed with IDD.

Methods Following the "Preferred Reporting Items for Systematic reviews and Meta-Analyses" (PRISMA) statement, studies from 2014 to 2024 were considered using the databases Web of Science, PsycInfo, and PubMed. Articles focusing on psychopathology in individuals with IDD from birth were selected, excluding studies involving individuals under 16 years old and cases of severe and profound IDD.

Results Of the 2895 articles retrieved, 11 were included. These studies showed heterogeneity in comorbidities such as schizophrenia spectrum and other psychotic disorders, mood disorders, anxiety disorders, developmental disorders, personality disorders, substance use disorders, and adjustment and stress reaction disorders.

Conclusion Individuals with IDD are more vulnerable to mental health conditions, underscoring the need for comprehensive assessments and multidisciplinary treatments to improve their quality of life and optimize public resources. Future research should develop validated diagnostic tools for IDD and conduct longitudinal studies on their impact on quality of life. It should also explore gender differences and address specific needs in disadvantaged contexts with tailored interventions.

Systematic Review Registration PROSPERO (CRD42024529405).

Key words: intellectual disability; psychopathology; incidence; prevalence; frequency; systematic review

Submitted: 23 September 2024 Revised: 8 December 2024 Accepted: 18 December 2024

How to cite this article:
Astilleros Martínez B, Martín MP, Kotera Y. Psychiatric Comorbidity in Intellectual Developmental Disorders: A Systematic Review. Br J Hosp Med. 2025. https://doi.org/10.12968/hmed.2024.0686

Introduction

Intellectual developmental disorders (IDD) are characterised by significant limitations in both intellectual functioning and adaptive behaviour, manifesting in conceptual, social, and practical skills. IDD affect approximately 1% of the global population, with mild cases being more common (American Psychiatric Association, 2022). However, the prevalence of IDD varies considerably across regions and socioeconomic statuses. In middle-income countries, the prevalence can reach 1.6%, while in high-income countries, it is approximately 0.9% (Barasoain et al, 2022).

This variation is largely attributable to differences in healthcare access, diagnostic criteria, and the availability of support services. Additionally, IDD disproportionately affect younger individuals, as prevalence tends to decrease with age due to higher early-life mortality rates in individuals with severe forms of the disorder (González et al, 2013).

Comorbidity with psychiatric disorders presents a major challenge for individuals with IDD. Researches consistently show that between 30% and 40% of individuals with IDD are diagnosed with comorbid mental health conditions such as anxiety, depression, and psychotic disorders (Flygare Wallén et al, 2023; Tromans et al, 2019). This prevalence rate is significantly higher than that of psychiatric disorders in the neurotypical population, indicating a particular vulnerability in individuals with IDD. This increased risk is thought to be driven by a combination of cognitive deficits, limitations in adaptive functioning, and exposure to adverse social environments (Nieto del Rincón, 2017).

The etiology of IDD is complex and heterogeneous, often involving a combination of prenatal, perinatal, and postnatal factors. While genetic or chromosomal abnormalities are frequently identified as the primary cause of IDD, a substantial proportion of cases remain idiopathic, meaning no clear cause is determined (DeLisi et al, 2019). In these cases, interactions between biological, environmental, and social factors likely play a significant role. The multifactorial nature of IDD also complicates the presentation of comorbid psychiatric conditions, which often manifest differently from the general population due to the underlying intellectual limitations. For example, individuals with severe IDD and depression may exhibit restlessness or agitation rather than verbally expressing feelings of sadness (Nieto del Rincón, 2017).

Despite the growing body of research, significant gaps in knowledge remain, particularly in the accurate identification and treatment of psychiatric comorbidities in individuals with IDD. The concept of diagnostic overshadowing, where mental health symptoms are misattributed to intellectual disability, has been widely reported (Caoili et al, 2023). This phenomenon contributes to the underdiagnosis and mismanagement of psychiatric disorders in this population, further complicating their care. While several systematic reviews have explored the prevalence of psychiatric disorders in IDD, few have critically evaluated the effectiveness of current diagnostic tools and their applicability in diverse healthcare settings (Flygare Wallén et al, 2023; Strålin and Hetta, 2019).

The high prevalence of psychiatric comorbidities in individuals with IDD, combined with the limitations of existing diagnostic practices, underscores the need for comprehensive and specialized assessment tools. The current review aims to address these gaps by synthesizing the available literature on psychiatric comorbidities in individuals with IDD and evaluating the diagnostic challenges faced in clinical practice. Additionally, this review compares its findings with previous meta-analyses and systematic reviews to highlight its unique contribution to the field and emphasize the urgent need for improved diagnostic strategies and intervention approaches for this vulnerable population.

The primary aim of this systematic review is to synthesize the existing literature to evaluate the prevalence and influencing factors of psychiatric comorbidities in individuals with IDD. The review also seeks to address the gaps in current diagnostic practices and highlight the critical need for improved tools and interventions tailored to this population. By providing a comprehensive overview, this study aims to guide future research and clinical practices in improving the diagnosis and treatment of psychiatric comorbidities in individuals with IDD.

Our research questions (RQs) were the following:

- RQ1: Is there a greater prevalence for IDD to develop psychological disorders compared to the normotypic population?

- RQ2: What factors influence the comorbidity of psychological disorders associated with IDD?

- RQ3: Are there specific assessment instruments for this type of population?

Methods

This systematic review (SR) compiles information from studies investigating psychopathological assessment in IDD. To ensure the rigor of this SR process, the PRISMA statement (Page et al, 2021).

Search Strategy

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al, 2021), guidelines were utilized to ensure methodological transparency and rigor in this systematic review. PRISMA is a widely accepted framework that promotes structured and reproducible processes for systematic reviews, helping researchers ensure that all relevant studies are included and that selection criteria are consistently applied.

The PRISMA checklist (**Supplementary Table 1**) is a comprehensive way to ensure that all essential elements of the systematic review are thoroughly addressed. The article provided meets most of the key elements specified in the PRISMA 2020 checklist. The title clearly identifies the report as a systematic review, and the abstract provides a clear summary of the objectives, methodology, results, and conclusions.

The introduction includes both the rationale for the review and its objectives, ensuring readers understand why the research was undertaken and what questions it aims to answer. Eligibility criteria, including inclusion and exclusion parameters, are well specified in the methodology, with a detailed description of the information sources and search strategies utilized.

The article provides a comprehensive overview of the study selection process, data collection procedures, and the instruments used to evaluate the quality and bias in the included studies. The results include detailed characteristics of each study, outcomes of individual research, and summaries of syntheses with statistical analysis. Importantly, the study addresses reporting biases, assessing the confidence in the findings using established National Institutes of Health (NIH) quality criteria.

In the discussion section, the results are interpreted in the broader context of existing evidence, highlighting the strengths and limitations of the current work

and its implications for practice and policy. Registration information (PROSPERO, CRD42024529405, https://www.crd.york.ac.uk/PROSPERO/view/CRD42024529405) and funding disclosures are included, adding transparency to the review process. Overall, this systematic review appears to be well aligned with PRISMA guidelines, ensuring rigor and reproducibility.

A comprehensive search of the literature was conducted across three major databases: Web of Science, PsycInfo, and PubMed. These databases were selected for their relevance to the fields of IDD and psychiatric comorbidities. The search terms were formulated to capture the most relevant studies in these areas, using the following keyword combinations:

• *("Intellectual Disability") AND ("Psychiatric Disorders" OR "Mental Disorders" OR "Mental Illness" OR "Psychopathology") AND ("Incidence" OR "Prevalence" OR "Frequency").*

The search was restricted to publications between January 2014 and December 2024. Only studies published in English and Spanish were included, reflecting the linguistic capabilities of the research team. The search was first conducted in January 2024.

Regarding the search strategy, we carefully selected keywords related to psychiatric comorbidity in individuals with IDD. We also included terms associated with prevalence, frequency, and diagnostic tools, allowing us to capture relevant studies in the field of psychiatric comorbidity in this specific population.

The use of the Boolean operators "AND" and "OR" allowed us to efficiently structure and focus the search query. By using the "AND" operator, we refined the search to focus specifically on studies addressing both intellectual developmental disorders and psychiatric comorbidities. Meanwhile, the "OR" operator broadened the search to include synonyms and related concepts, such as different types of mental disorders and diagnoses, ensuring greater coverage of the existing literature.

We acknowledge that our choice of search terms may not encompass all possible aspects of psychiatric comorbidity in individuals with IDD. There is a possibility that some relevant studies were omitted due to variations in terminology used by the authors or in database indexing practices. However, we made every effort to include a wide range of keywords and synonyms to mitigate this limitation and ensure that most relevant studies were captured.

Inclusion and Exclusion Criteria

The inclusion criteria for selecting articles were as follows:

• Studies conducted between 2014 and 2024.
• Research with full text available.
• Studies in English and Spanish only.
• Studies referring exclusively to psychopathology in individuals with congenital IDD.

The exclusion criteria were:

• Studies involving minors (<16 years old).
• Studies involving individuals with severe IDD.
• Studies involving individuals with profound IDD.

• Studies involving individuals with Global Developmental Delay (GDD) and Unspecified Intellectual Disability (UID).

• Meta-analyses or systematic reviews related to this topic.

In this study, we established specific inclusion and exclusion criteria to ensure that the results were as accurate and applicable as possible to the target population of individuals with intellectual developmental disorders (IDD). We selected studies published between 2014 and 2024 to ensure that the data used were recent and reflected current advances in the diagnosis and treatment of psychiatric comorbidities in this population. Research in the field of developmental disabilities and psychiatry has evolved significantly in recent years, so we prioritized recent studies to obtain updated and relevant information. We also included only studies that had the full text available, as this allowed us to thoroughly assess the methodology and results. Requiring that studies be available in English or Spanish enabled us to work with languages in which the authors had professional competence, ensuring a precise review without misunderstandings in the interpretation of the results. Furthermore, we focused exclusively on studies addressing psychopathology in individuals with congenital IDD, as this population has specific characteristics that distinguish it from other acquired intellectual disabilities, such as those caused by injuries or illnesses. This was essential to focus our review on a homogeneous population and achieve applicable results.

Regarding the exclusion criteria, we decided to exclude studies involving individuals under the age of 16 because the psychiatric and neurological development of children differs significantly from that of adults, and the prevalence and presentation of comorbidities may vary considerably. We also excluded studies that included individuals with severe or profound IDD due to the inherent difficulty of making reliable psychiatric diagnoses in this population. This is based on the concept of "behavioral equivalents of mental illness", where the symptoms of psychiatric disorders in individuals with severe or profound IDD may manifest differently, complicating the precise identification of mental disorders (Esteba-Castillo and García-Alba, 2015). Excluding this population allowed us to avoid bias in the results, as standard diagnostic tools are not always reliable in individuals with lower cognitive functioning. Additionally, we excluded studies involving individuals with Global Developmental Delay (GDD) or Unspecified Intellectual Disability (UID), as these conditions encompass a broader range of diagnoses and levels of functioning that could obscure the results and make it more difficult to identify clear patterns of psychiatric comorbidities in individuals with IDD. Lastly, we chose not to include previous meta-analyses or systematic reviews on this topic in order to focus exclusively on original research that provided new data and to avoid duplicating findings already synthesized in prior studies. This allowed us to present a fresh review focused on first-hand research, reflecting the current state of knowledge on psychiatric comorbidities in individuals with mild to moderate IDD, where diagnostic tools are more effective and accurate (American Psychiatric Association, 2022).

Quality Assessment of the Included Studies

The risk of bias in the studies included in this systematic review was thoroughly assessed using the NIH quality assessment tool, which is specifically designed for both observational cohort and cross-sectional studies. These tools, developed by the National Institutes of Health (NIH), evaluate critical domains such as participant selection, measurement of exposures and outcomes, control of confounding variables, and overall study design.

Two reviewers independently evaluated each study using a 14-item checklist provided by the NIH. The items were scored as "yes" (criteria met), "no" (criteria not met), or "unclear" (insufficient information). Based on the total score, studies were classified into three categories:

- High quality (12–14 points)
- Moderate quality (8–11 points)
- Low quality (<8 points)

Discrepancies between the reviewers were addressed through consensus, and if needed, a third reviewer was consulted to ensure objectivity. This rigorous process helped minimize the inclusion of studies with significant methodological flaws, thereby increasing the reliability of our findings. The final results of the bias assessment are summarized in Table 3 and **Supplementary Tables 2**,**3**.

For interventional studies, we applied the NIH quality assessment of controlled intervention studies, while observational studies were assessed using the NIH quality assessment tool for observational cohort and cross-sectional studies (version 2021; https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools, accessed 2 January 2024, NIH, Bethesda, MD, USA). Both tools use the same 14-item checklist, with items coded as either "present" (1) or "absent/unclear" (0). Any discrepancies in scoring were resolved through discussion until consensus was reached.

Data Extraction

A coding manual was developed for the extraction and collection of the most relevant information from each of the included studies. This manual covered the following variables: Title, author, year, country, number of participants, gender, age, degree of IDD, associated comorbidities, assessment instruments, and conclusions.

Data extraction was performed by co-author (BAM). Subsequently, these data were independently verified by a second person. Any discrepancies were resolved through a consensus session. Finally, a thorough verification of the data presented in the review was carried out.

After an initial selection stage conducted by co-author (BAM), a second external coder (PROSPERO, 2024 CRD42024529405) and a third person (co-author), MPM were designated to review the inclusion and exclusion criteria to validate the selection.

Table 1. Final selection of review articles.

Article	Title	Participants	Assessment tool	IDD	Conclusions
1. Flygare Wallén et al (2023)** Sweden	The prevalence of self-harm and mental disorders among individuals with intellectual disabilities	n = 1298 M = 699 F = 599 Age: (0–85+)	Administrative healthcare data with diagnoses of mental disorders and self-harm	F70-F79	Individuals with IDD (excluding DS) have higher mental disorders and self-harm rates, especially in women. DS cases show lower anxiety and affective disorders, no self-harm, and higher rates with ASD/ADHD.
2. Nieuwenhuis et al (2021) Netherlands/UK	Increased prevalence of intellectual disabilities in higher-intensity mental healthcare settings	n = 1213 M = 597 F = 616 Age: $\bar{x}$ = 43.1	Psychiatric diagnoses were inferred based on the intensity of care settings (e.g., outpatient, inpatient, long-term care)	F70	Patients with intellectual disability or suspected of it, especially those in long-stay units, show a higher prevalence of severe diagnoses such as schizophrenia and substance use disorders, as well as a higher risk of cognitive decline and lower functionality.
3. Tromans et al (2019) UK	Study protocol: an investigation of the prevalence of autism among adults admitted to acute mental health wards: a cross-sectional pilot study	n = 15 ± 5 No difference between genders. Age: (18–65)	Hospital Anxiety and Depression Scale (HADS), Semi-Structured Interviews	F70-F73	ADHD + IDD is associated with high risks of substance use disorders and self-harm, while ASD + IDD comorbidity is associated with longer treatments and higher doses of antipsychotic medications.
4. Strålin and Hetta (2019) Sweden	First episode psychosis and comorbid ADHD, autism and intellectual disability	n = 2091 M = 1337 F = 754 Age: (16–25)	Swedish national registries with diagnoses based on ICD-10 codes and data on psychiatric medications	F70, F71, F79	ADHD + IDD is associated with high risks of substance use disorders and self-harm, while ASD + IDD comorbidity is associated with longer treatments and higher doses of antipsychotic medications.

Table 1. Continued.

Article	Title	Participants	Assessment tool	IDD	Conclusions
5. Singh et al (2019) India	Do comorbidities among patients with mental retardation differ across various age groups?	n = 426 There is no number of participants by gender in IDD. Age: $\bar{x}$ = 15.1	Clinical diagnoses based on ICD-10 criteria	F70-F73	Most frequent: Behavior disorders: Most common in all age groups. Epilepsy: Second most common comorbidity. Autism/ADHD: Third most common in age groups under 10 years. Depression/Anxiety: Third most common in age groups over 11 years. Psychosis: Less common but present.
6. Plana-Ripoll et al (2019)** Denmark	Exploring comorbidity within mental disorders among a danish national population	n = 23,143 No differences between genders. Age: $\bar{x}$ = 32.1	Medical records, diagnostic databases	F70-F79	Comorbidity within mental disorders is widespread and the risk persists over time. This study provides specific relative and absolute risks by disorder, sex, and age for mental disorder comorbidity.
7. Bond et al (2019) Ireland/USA	The association of life events and mental ill health in older adults with intellectual disability: results of the wave 3 intellectual disability supplement to the irish longitudinal study on ageing	n = 598 M = 266 F = 332 Age: $\bar{x}$ = 59.21	Clinical interviews, life event questionnaires	F70-F79	Life events are significantly associated with mental health problems in the older IDD population. Service providers should focus on limiting exposure to these events and, when unavoidable, should support and manage individuals compassionately and effectively, prioritizing their mental and physical well-being.
8. Young et al (2018) UK	Neurodevelopmental disorders in prison inmates: comorbidity and combined associations with psychiatric symptoms and behavioural disturbance	n = 35 M = 35 Age: $\bar{x}$ = 30.30	AQ, DIVA 2.0, LDSQ, BSI, DBSP, MVQ	F70-F79	They show the magnitude of neurodevelopmental disorders in prison, their interrelations, and associations with other mental health problems. Vulnerabilities conferred by neurodevelopmental disorders within the criminal justice system should be addressed through interventions and preventive strategies.

Table 1. Continued.

Article	Title	Participants	Assessment tool	IDD	Conclusions
9. Thygesen et al (2018) UK	Neurodevelopmental risk copy number variants in adults with intellectual disabilities and comorbid psychiatric disorders	n = 599 M = 376 F = 223 Age: $\bar{x}$ = 43.2	Medical records, diagnostic databases	F70-F73	In adults with intellectual disabilities and comorbid psychiatric disorders to date, we find a high rate of pathogenic CNVs. These variations can influence the risk of developing various disorders, including neurodevelopmental and some psychiatric illnesses.
10. Axmon et al (2016) Sweden	Psychiatric care utilization among older people with intellectual disability in comparison with the general population: a register study	n = 7936 M = 4327 F = 3609 Age: $\bar{x}$ = 58.5	Medical records, diagnostic databases	F70-F73 F78 F79	Although individuals with intellectual disabilities utilized psychiatric services more than the general population during the 11-year study period, this does not correspond to the high prevalence of psychiatric disorders in this population. Future research is needed to determine if the level of service utilization is adequate among older people with intellectual disabilities.
11. Scott and Havercamp (2014) USA	Mental health for people with intellectual disability: the impact of stress and social support	n = 10,627 M = 6018 F = 4609 Age: $\bar{x}$ = (18–55+)	Structured interviews, behavioral assessments	F70-F73	Relates stress and social support to the mental health of adults with IDD. Lack of social support was associated with the presence of mental illness; individuals lacking social support were twice as likely to have a mental illness. The importance of considering these factors in the prevention, diagnosis, and treatment of mental health in this population is discussed.

**Studies with gender differences. M, Male; F, Female; IDD, intellectual developmental disorders; ASD, Autism Spectrum Disorder; ADHD, Attention-Deficit/Hyperactivity Disorder; F70, mild intellectual disability; F71, moderate intellectual disability; F73, profound intellectual disability; F78, other intellectual disabilities; F79, Unspecified Intellectual Disability; AQ, Autism Quotient; DIVA 2.0, Diagnostic Interview for ADHD in Adults - 2.0; LDSQ, Learning Disability Screening Questionnaire; BSI, Brief Symptom Inventory; DBSP, Disruptive Behavioural Social Problems questionnaire; MVQ, Maudsley Violence Questionnaire; DS, Down Syndrome; ICD-10, International Classification of Diseases, 10th Revision.

Results

Search Results

After removing 244 duplicates, a total of 2651 articles were retrieved from the databases. Of these, 1694 articles were screened based on titles and abstracts, narrowing the selection down to 34 articles. A full-text review of these 34 articles resulted in 12 being initially included. Discrepancies arose in only one paper, which were resolved through a joint evaluation between co-authors ("MPM" and "BAM"), leading to the final inclusion of 11 articles. The selection process is outlined in Fig. 1.

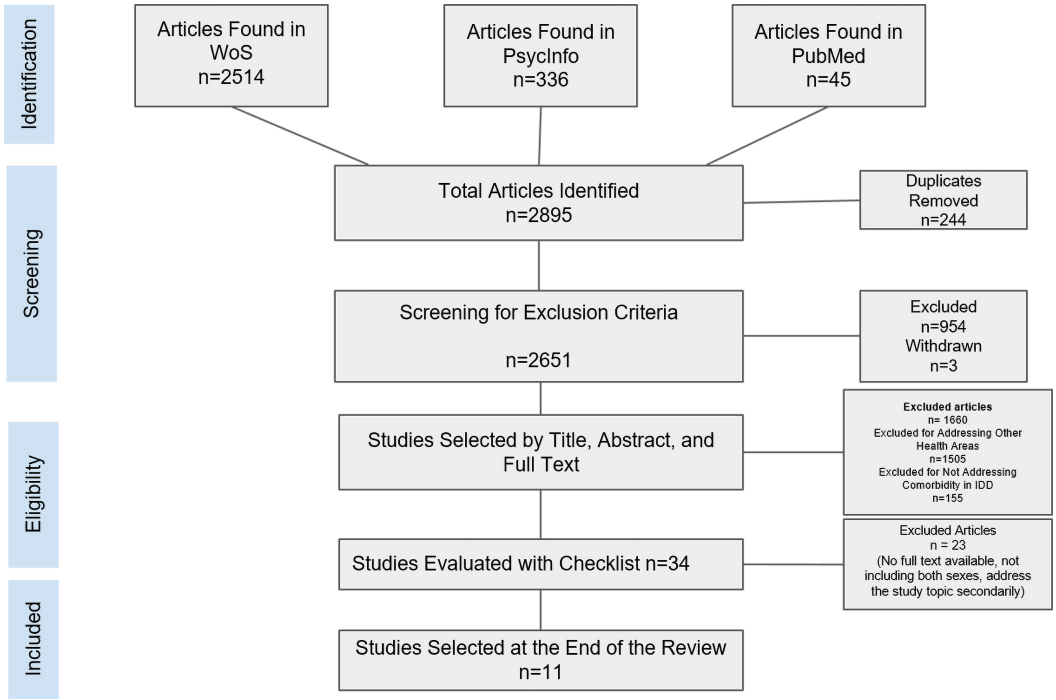

Fig. 1. PRISMA flowchart. The figure was created using Google Slides by Google LLC, Mountain View, CA, USA.

Characteristics of Included Articles

The 11 studies included in this review provide valuable insights into the psychiatric comorbidities associated with IDD across different populations and research methodologies (see Table 1). These studies cover a range of geographic regions, including Europe (Sweden, the Netherlands, the UK, and Denmark), the USA, and India. This broad geographical representation helps enhance the generalizability of the findings but also introduces variability due to differences in healthcare practices and diagnostic criteria.

The total sample size across the studies was 57,943 participants, with an average age of 40.15 years. Most studies focused on adults with mild intellectual disability (F70) to moderate intellectual disability (F71), though some included participa-

Table 2. Prevalence of psychiatric comorbidities in "systematic review (SR)" studies on IDD.

Study	Autism (%)	ADHD (%)	Mood disorders (%)	Psychotic disorders (%)	Anxiety (%)	Self-harm (%)	Substance use (%)	Other disorders (%)
Flygare Wallén et al (2023)	10	18	14	15	12	4	5	3
Strålin and Hetta (2019)	11	20	N/A	30	N/A	6	23	N/A
Plana-Ripoll et al (2019)	8	25	18	22	19	N/A	13	N/A
Axmon et al (2016)	5	9	20	12	10	2	N/A	4
Young et al (2018)	N/A	15	19	25	16	7	10	N/A
Bond et al (2019)	9	18	21	20	14	5	12	N/A
Tromans et al (2019)	7	10	15	18	13	3	8	N/A
Scott and Havercamp (2014)	12	17	23	21	15	4	N/A	6
Singh et al (2019)	6	14	16	17	18	9	10	N/A
Thygesen et al (2018)	14	21	N/A	28	20	N/A	15	8
Nieuwenhuis et al (2021)	13	22	19	24	17	N/A	N/A	5

N/A indicates that those studies did not investigate or report on those specific pathologies.

Table 3. NIH study quality assessment.

Study	Study type	Quantitative score	Qualitative evaluation
Plana-Ripoll et al (2019)	Cohort study	11	Moderate quality
Strålin and Hetta (2019)	Cohort study	13	High quality
Thygesen et al (2018)	Cohort study	13	High quality
Axmon et al (2016)	Cohort study	11	Moderate quality
Flygare Wallén et al (2023)	Intervention study	8	Moderate quality
Nieuwenhuis et al (2021)	Intervention study	9	Moderate quality
Bond et al (2019)	Intervention study	9	Moderate quality
Singh et al (2019)	Intervention study	3	Low quality
Scott and Havercamp (2014)	Intervention study	6	Low quality
Tromans et al (2019)	Intervention study	5	Low quality
Young et al (2018)	Intervention study	5	Low quality

NIH, National Institutes of Health.

nts with severe intellectual disability (F72) and profound intellectual disability (F73). This variability complicates direct comparisons across studies, particularly due to the concept of behavioral equivalents of mental illness, where psychiatric symptoms manifest differently in individuals with severe IDD. As a result, studies involving participants with severe IDD may report lower prevalence rates of psychiatric disorders since behaviors like agitation or self-injury may not easily align with standard psychiatric classifications (Flygare Wallén et al, 2023; Nieuwenhuis et al, 2021).

Regarding the assessment of psychiatric comorbidities, a variety of diagnostic tools and methodologies were used, including diagnostic databases, psychometric tests, and standardized clinical interviews. Notable instruments included the Psychiatric Assessment Schedule for Adults with Developmental Disabilities (PAS-ADD) and the Aberrant Behavior Checklist (ABC). However, significant heterogeneity existed in the methodologies applied. For example, studies relying on standardized diagnostic interviews (Flygare Wallén et al, 2023; Tromans et al, 2019) tended to report higher rates of anxiety, depression, and psychosis compared to those using caregiver reports (Axmon et al, 2016) or less structured assessments (Young et al, 2018). This finding suggests that the choice of diagnostic tool can heavily influence the reported prevalence of psychiatric conditions.

Table 2 and Fig. 2 summarize the prevalence of psychiatric comorbidities across the 11 key studies involving individuals with intellectual developmental disorders (IDD). The results indicate considerable variability in the prevalence of comorbid conditions, such as Autism Spectrum Disorder (ranging from 0% to 14%), Attention-Deficit/Hyperactivity Disorder (ADHD) (9% to 25%), mood disorders (0% to 23%), psychotic disorders (12% to 30%), anxiety (0% to 20%), self-harm (0% to 9%), substance use disorders (0% to 23%), and other disorders (0% to 8%). This wide range underscores the heterogeneity of IDD populations and highlights the differential risks of psychiatric comorbidities depending on study characteristics and participant demographics. For instance, psychotic disorders were most commonly identified in the study by Strålin and Hetta (2019) (30%), while anxiety disorders were more frequently identified in the sample evaluated by Thygesen et al (2018) (20%). These variations reflect differences in sampling, study methodologies, and participant characteristics, emphasizing the need for standardized assessment protocols.

Most studies utilized descriptive statistics to report the prevalence of comorbidities, while some employed inferential statistics to compare comorbidity rates between individuals with IDD and control groups. For instance, Flygare Wallén et al (2023) and Nieuwenhuis et al (2021) performed chi-square tests to examine the significance of differences in prevalence rates. Additionally, Tromans et al (2019) and Plana-Ripoll et al (2019) applied logistic regression models to determine factors associated with increased risk of psychiatric disorders in IDD populations, accounting for confounding variables such as age and gender.

A range of diagnostic tools was used across the studies. The Psychiatric Assessment Schedule for Adults with Developmental Disabilities (PAS-ADD) was commonly employed to assess psychiatric symptoms in IDD populations (e.g., Tro-

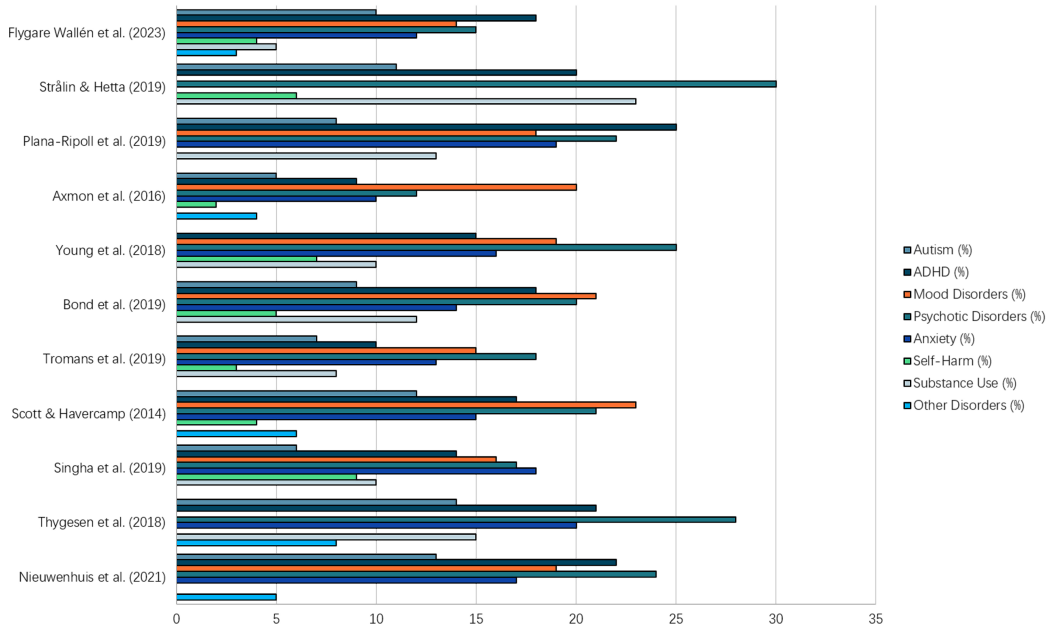

Fig. 2. Prevalence of psychiatric comorbidities in "systematic review (SR)" studies on IDD. The figure was created using Google Sheets by Google LLC, Mountain View, CA, USA.

mans et al, 2019). Other studies utilized standardized clinical interviews, such as the Diagnostic Interview for ADHD in Adults - 2.0 (DIVA 2.0) (Young et al, 2018), while some relied on medical records and diagnostic databases for retrospective analyses (e.g., Axmon et al, 2016; Plana-Ripoll et al, 2019). This variation in diagnostic tools contributes to the differences observed in reported prevalence rates, further underscoring the need for psychometrically validated instruments specifically tailored to the IDD population.

Moreover, five studies included control groups without IDD to provide a reference for comparing psychiatric disorder prevalence (Axmon et al, 2016; Flygare Wallén et al, 2023; Nieuwenhuis et al, 2021; Scott and Havercamp, 2014; Young et al, 2018). They explored psychiatric care utilization among older individuals with IDD compared to the general population, identifying that approximately 20% of individuals with IDD had at least one psychiatric care registration during the study period, compared to just 6% in the general population (Axmon et al, 2016). Flygare Wallén et al (2023) examined rates of mental health disorders and self-harm, reporting that individuals with IDD without Down Syndrome were 9.01 times (females) and 8.50 times (males) more likely to have a mental health disorder than the general population, with similarly elevated risks for self-harm (8.00 and 6.60 times higher for females and males, respectively). Nieuwenhuis et al (2021) analyzed the prevalence of intellectual disability across various mental health settings and found that 41.4% of patients in these settings had mild intellectual disability or borderline intellectual functioning, a significantly higher prevalence compared to the general population. Scott and Havercamp (2014) investigated the relationship between stress, social support, and mental health, noting that individuals with IDD were twice as likely to have a mental illness if they lacked social support, highlighting the compounding effect of stressors in this population. Finally, Young et

al (2018) studied neurodevelopmental disorders in a prison population, reporting that 9% of inmates were identified with intellectual disability, a notable overrepresentation compared to the general population, and these individuals exhibited significantly higher levels of disruptive behaviors and mental health symptoms.

Psychotropic medication uses also varied significantly across the studies, with widespread use of antipsychotics and mood stabilizers, particularly among individuals with more severe IDD (Axmon et al, 2016; Strålin and Hetta, 2019). These differences in treatment approaches underscore the lack of standardized guidelines for managing psychiatric comorbidities, suggesting a pressing need for consistency. Inconsistent medication use complicates the interpretation of psychiatric symptom severity and treatment outcomes, highlighting a critical area for future research (Singh et al, 2019).

Despite these methodological and sample differences, a common finding across all studies was the increased vulnerability of individuals with IDD to psychiatric comorbidities, such as anxiety, depression, and psychosis (Flygare Wallén et al, 2023; Nieuwenhuis et al, 2021; Tromans et al, 2019). Key contributing factors identified included cognitive limitations, environmental stressors, and a lack of social support. The studies consistently reported that psychiatric comorbidities significantly impair the quality of life of individuals with IDD, emphasizing the need for early intervention, accurate diagnosis, and comprehensive treatment plans (Bond et al, 2019; Scott and Havercamp, 2014).

In conclusion, the reviewed studies establish a strong foundation for understanding psychiatric comorbidities in individuals with IDD. However, the variability in assessment tools and research methodologies highlights the need for more standardized diagnostic instruments tailored specifically to the needs of this population. Future researches should address these inconsistencies, focusing on developing reliable diagnostic criteria and exploring the long-term outcomes of psychiatric interventions (Thygesen et al, 2018; Young et al, 2018).

Answering Research Questions

In response to our research questions (RQs) were the following:

RQ1: Is there a greater prevalence for IDD to develop psychological disorders compared to the neurotypical population?

Yes. The findings from the studies included in our review consistently demonstrate that individuals with IDD are at a significantly higher risk of developing psychological disorders compared to the neurotypical population (Flygare Wallén et al, 2023; Nieuwenhuis et al, 2021; Tromans et al, 2019). Higher rates of anxiety, depression, and psychosis were commonly reported, attributed to cognitive limitations, poor adaptive functioning, and insufficient social support.

RQ2: What factors influence the comorbidity of psychological disorders associated with IDD?

Key factors influencing psychiatric comorbidities in individuals with IDD include the severity of intellectual disability, genetic predispositions, and environmental stressors (Plana-Ripoll et al, 2019; Scott and Havercamp, 2014; Thygesen et al, 2018). More severe impairments and exposure to adverse life events were

linked to increased prevalence of mental health issues, highlighting the importance of adequate social support and timely interventions.

RQ3: Are there specific assessment instruments for this type of population?

Current assessment tools, such as PAS-ADD, are used for diagnosing psychiatric disorders in IDD populations but are often insufficient for capturing the complexity of symptoms in individuals with more severe impairments (Axmon et al, 2016; Tromans et al, 2019). Our review suggests an urgent need for more tailored diagnostic instruments to avoid misdiagnosis and improve treatment planning.

Results of Quality Assessment

The results of the quality assessment are displayed in the cohort and intervention study quality score (Table 3). The two cohort studies were of moderate quality (Axmon et al, 2016; Plana-Ripoll et al, 2019), with scores ranging from 10 to 11 points, and other two cohort studies were rated as high quality (Strålin and Hetta, 2019; Thygesen et al, 2018), each achieving a score of 13 points (Table 3). These studies demonstrated strengths in defining populations and consistent application of exposure measures. However, limitations such as a lack of justification for sample size and repeated exposure measures resulted in none of the studies being classified as high quality.

For the seven interventional studies, only two studies (Bond et al, 2019; Nieuwenhuis et al, 2021) achieved a score of 9 points, placing it in the moderate quality range. Flygare Wallén et al (2023) were classified as moderate quality range and achieved a score of 8. The remaining four studies (Scott and Havercamp, 2014; Singh et al, 2019; Tromans et al, 2019; Young et al, 2018) were classified as low quality, with scores between 3 and 6 points. Common issues among these studies included inadequate randomization methods and a lack of blinding in participants or evaluators, which significantly impacted their quality classification (**Supplementary Tables 2,3**).

Blinding was not adopted in any of the cohort or intervention studies, and randomization was deemed inadequate in several intervention studies, with only Nieuwenhuis et al (2021) showing moderate strength in this regard. The lack of these critical methodological components contributed to the lower quality scores across the majority of the interventional studies.

In summary, while all the cohort studies were classified as high-moderate quality, the interventional studies mostly fell into the low-quality category, highlighting important areas for methodological improvement, particularly in terms of randomization and blinding procedures.

Discussion

This systematic review (SR) aimed to evaluate the prevalence and factors contributing to the comorbidity of psychological disorders in individuals diagnosed with intellectual developmental disorders (IDD). Understanding these comorbidities is essential to address the multifaceted needs of this population and to design interventions that are both effective and equitable. The results reveal a significantly higher prevalence of mental health disorders among individuals with IDD

compared to the general population, aligning with previous findings (Buckley et al, 2020). This high prevalence underscores the urgency of implementing tailored interventions for this vulnerable group. Notably, the prevalence of intellectual disability is disproportionately higher in low- and middle-income countries, reaching 16.41 per 1000 individuals compared to 9.21 per 1000 in high-income nations (Rubin, 2024). This disparity highlights the compounded challenges in accessing adequate healthcare services in resource-constrained settings, further elevating the risk of comorbidities. It raises critical questions about the role of socio-economic disparities in health outcomes for individuals with IDD and calls for urgent policy interventions to mitigate these inequities.

The increased vulnerability of individuals with IDD to psychiatric comorbidities is driven by a complex interaction of biological, psychological, and sociological factors, including neurodevelopmental anomalies, cognitive limitations, and socioeconomic stressors. From a biological perspective, neurodevelopmental anomalies play a critical role in the increased susceptibility to psychiatric disorders among individuals with IDD. Many individuals with IDD exhibit alterations in brain structures and functions, such as changes in gray and white matter volume, which contribute to the development of comorbid mental health issues. Flygare Wallén et al (2023) identified structural brain changes, such as reductions in gray and white matter volume, which are linked to an increased prevalence of anxiety and psychosis among IDD populations. This supports the hypothesis that neuroanatomical differences, particularly in regions responsible for emotional regulation and executive function, predispose individuals with IDD to psychiatric conditions. Additionally, Nieuwenhuis et al (2021) highlighted that individuals with lower cognitive function tend to exhibit higher rates of schizophrenia and other psychotic disorders, suggesting a strong biological predisposition tied to intellectual impairment severity. These findings align with broader perspectives on the neurodevelopmental foundations of psychiatric disorders. Schizophrenia, for example, is increasingly recognized as a disorder rooted in early brain development, with genetic and epigenetic risk factors dynamically influencing neurodevelopmental trajectories. Emerging evidence highlights that disruptions during key stages of brain maturation, particularly in the prenatal and early postnatal periods, may predispose individuals to psychiatric conditions later in life (Birnbaum and Weinberger, 2024).

Psychological mechanisms also significantly influence mental health outcomes in individuals with IDD. Tromans et al (2019) and Strålin and Hetta (2019) indicate that individuals with IDD often face challenges related to adaptive behavior and cognitive processing, which increases their vulnerability to mental health disorders as they struggle to cope with daily stressors and life changes. These findings align with the perspectives of Pouls et al (2024), which highlight that individuals with IDD face cumulative vulnerability due to their cognitive and adaptive limitations, compounded by mental health problems. Furthermore, Young et al (2018) found that individuals with IDD in correctional settings displayed higher levels of interpersonal sensitivity and paranoid ideation, underscoring the critical role of psychological resilience in managing environmental stress. This highlights the importance of early psychological interventions tailored to individuals with IDD, focusing on

enhancing coping strategies and resilience. Both Pouls et al (2024) and Young et al (2018) underscore the importance of addressing the specific psychological needs of individuals with IDD. While Pouls et al (2024) focus on cumulative vulnerability within primary care settings, Young et al.'s (2018) findings on elevated levels of interpersonal sensitivity and paranoid ideation in correctional environments complement this perspective by emphasizing how environmental stress can exacerbate psychological challenges in individuals with IDD.

Sociological factors further compound the vulnerability of individuals with IDD to psychiatric comorbidities. Socioeconomic disparities, including limited access to healthcare, inadequate social support, and exposure to adverse life events, exacerbate the prevalence of psychiatric disorders. Bond et al (2019) observed that adverse life events, such as financial instability or lack of family support, are strongly associated with reactive affective symptoms and anxiety in individuals with IDD. Scott and Havercamp (2014) emphasize the role of living conditions, noting that individuals with IDD residing in institutional settings or facing social isolation have significantly higher rates of mental illness. These findings underscore the need for addressing social determinants of health through policy measures and community support initiatives that aim to reduce the risk factors associated with socioeconomic disadvantage. The studies by Bond et al (2019) and Scott and Havercamp (2014) align with the findings of Ince et al (2024) by highlighting how social and structural factors exacerbate the vulnerability of individuals with IDD to psychiatric comorbidities. While Bond et al (2019) and Scott and Havercamp (2014) emphasize the impact of adverse life events, such as financial instability, lack of family support, and social isolation, on increasing psychiatric disorders, Pouls et al (2024) address how cognitive and emotional barriers reinforce this vulnerability. Additionally, all studies agree on the importance of addressing social determinants of health through policies and community support, as well as implementing tailored, collaborative care approaches involving support networks to improve mental health outcomes for this vulnerable population.

One of the most critical barriers to improving mental health outcomes in individuals with IDD is diagnostic overshadowing, where symptoms of psychological disorders are misattributed to cognitive impairments (Dell'Armo and Tassé, 2024). Standard mental health diagnostic tools are often inadequate for this population, leading to underdiagnosis and mismanagement of mental health conditions. The failure to adapt these tools to account for the unique functional and psychological profiles of individuals with IDD limits diagnostic accuracy and perpetuates a cycle of inadequate care. This is particularly problematic when considering the potential for early intervention to mitigate long-term adverse outcomes.

Fletcher and Miciak (2024), emphasize the importance of accurate diagnosis and treatment of psychiatric disorders in individuals with IDD, particularly in adulthood. This population experiences higher morbidity rates but is less likely to receive adequate psychiatric care due to diagnostic complexities. This gap reflects a systemic failure in healthcare, where the lack of tailored mental health services exacerbates vulnerability. Developing specialized diagnostic tools and interventions

is not merely a recommendation but an ethical imperative to ensure individuals with IDD receive appropriate care and treatment.

The heterogeneity within the IDD population further complicates the picture, as comorbidities vary significantly depending on individual characteristics such as age, severity of IDD, and environmental context. As Navas Macho et al (2018) point out, individuals with IDD are far more likely to develop psychiatric comorbidities than the general population, but variability in associated conditions presents challenges for developing generalized interventions. Novell-Alsina et al (2012) report a broad range in the incidence of mental disorders among individuals with IDD, from 10% to 50%, reflecting methodological biases in diagnostic practices, severity of IDD, and healthcare access. This suggests that the prevalence of psychiatric disorders in IDD populations is likely underreported due to inconsistent diagnostic practices, emphasizing the need for rigorous, context-sensitive assessments (Krysta, 2022).

Moreover, there is significant variability in the prevalence of psychiatric conditions in occupational centers, ranging from 20% to 35% (Novell-Alsina et al, 2012). A major challenge in these settings is the frequent misinterpretation of psychiatric conditions as behavioral issues or cognitive deficits, complicating diagnosis. The study suggests that only a fraction of individuals with psychiatric disorders are properly diagnosed, with as many as 50% remaining undetected (Novell-Alsina et al, 2012). This gap highlights the need for targeted training for healthcare providers to recognize psychiatric comorbidities in IDD populations, as well as the adaptation of diagnostic tools to better suit this group. The higher prevalence of psychiatric disorders in severe or profound cases of IDD further emphasizes the need for specialized care tailored to the severity of disability (Peña-Salazar et al, 2018).

Stress is a critical factor in the development and severity of psychiatric disorders among individuals with IDD. Kotera et al (2021a) and Kotera et al (2021b) report that each additional stressor increases the likelihood of mental health disorders by 20%, and the absence of social support doubles the risk. This finding is concerning because individuals with IDD often face structural challenges, such as low staff-to-user ratios in care settings and frequent service cuts, which exacerbate stress levels (Bishop-Fitzpatrick et al, 2015). This underscores the urgent need for structural reforms in care systems to improve mental health outcomes. Additionally, enhancing social support networks through community programs has been identified as a key protective factor for the mental health of individuals with IDD (Grindle et al, 2024).

The literature also points to significant risks associated with psychiatric comorbidities in IDD populations, such as the higher likelihood of developing schizophrenia, psychotic disorders, and substance use disorders (Bond et al, 2019; Strålin and Hetta, 2019). These comorbidities often require higher doses of antipsychotic medications, indicating lower treatment responsiveness in IDD and Autism Spectrum Disorder (ASD) populations (Curley and Kotera, 2023). The association between ADHD and elevated risks for substance use and self-harm underscores the need for careful monitoring and individualized support. Multidisciplinary approaches are

critical for improving clinical outcomes and overall quality of life in these vulnerable populations (Bond et al, 2019).

To enhance the originality and clinical relevance of this review, a comparative analysis with existing systematic reviews was conducted. The current findings align with and extend those of prior research, adding nuance to our understanding of psychiatric comorbidities in IDD populations. For example, the findings of Flygare Wallén et al (2023) on self-harm and mental disorders are consistent with those of previous studies that highlight increased vulnerability among IDD individuals, but this review provides additional insight into gender-specific variations, particularly among women without Down Syndrome (DS). Similarly, the conclusions drawn by Plana-Ripoll et al (2019) regarding the associations between developmental disorders and subsequent psychiatric issues are expanded by including a more detailed examination of how different types of intellectual impairment influence the nature and prevalence of comorbidities. This is consistent with the work of Codina Cobo (2024), which highlights the vulnerability of individuals with IDD to specific risks, albeit from different perspectives. Both emphasize how factors such as gender, social environment, and individual characteristics amplify this vulnerability. The first text addresses victimization, revealing alarming rates of physical, sexual abuse, and neglect, particularly among women and individuals in residential settings, while the second text focuses on psychiatric comorbidities, also noting gender and contextual differences. Both underscore the importance of a multifactorial approach to understanding the intersections between disability, gender, and environment, advocating for specialized care and greater protection for this vulnerable population.

In comparing methodologies, this review highlights inconsistencies across studies regarding diagnostic criteria and assessment tools, as previously noted by Tromans et al (2019). Such discrepancies may influence reported prevalence rates and the interpretation of psychiatric comorbidity. This review adds to the existing literature by emphasizing the urgent need for standardized, psychometrically validated diagnostic instruments tailored specifically for IDD populations, which would help reduce inconsistencies and enhance the comparability of future studies.

In conclusion, while the evidence highlights the significant comorbidities faced by individuals with IDD, critical gaps in diagnosis, treatment, and care need to be addressed. Without the development of tailored diagnostic tools and interventions, individuals with IDD will continue to be underserved in the mental health system. The complexity of their needs requires a nuanced, multidisciplinary approach that recognizes the unique challenges posed by both genetic and environmental factors. Future research should prioritize the development of standardized diagnostic tools and longitudinal studies to assess the long-term effectiveness of interventions designed for individuals with IDD. Additionally, greater emphasis should be placed on examining the role of gender and specific genetic profiles to further understand the variability in psychiatric outcomes within this population.

This study has several limitations, suggesting that its conclusions are preliminary and may change with more comprehensive research. One major limitation is the scarcity of literature on the impact of mental disorders on IDD, which complicates result comparison and validation. Intellectual developmental disorders (IDD)

encompass a broad spectrum of conditions with significant variations, making it challenging to generalize findings and identify consistent patterns in the relationship between IDD and psychiatric comorbidities.

The second limitation is the reliance on secondary data from previous research, which varies in quality and methods, thus introducing uncertainty and variability into this study's findings. This variability can lead to a lack of consistency in the results obtained, especially when the original studies used different diagnostic tools or participant selection criteria (Kotera et al, 2023). The lack of psychometrically validated instruments for the IDD population further affects the accuracy and validity of assessments, which in turn impacts the reliability of the conclusions drawn (Kotera et al, 2023). This deficiency highlights the need for such instruments to improve reliability in diagnoses and assessments, thereby reducing the risk of misdiagnosis and enhancing the precision of interventions aimed at this population.

Thirdly, the complexity of contextual and genetic factors influencing IDD and its comorbidities cannot be fully addressed in a systematic review. Studies reviewed indicated a high heterogeneity in both sample populations and the settings in which research was conducted, which makes it challenging to achieve a clear consensus on prevalence rates or effective interventions. This heterogeneity includes differences in age groups, socioeconomic backgrounds, and cultural contexts that can all influence the occurrence of comorbidities (Kotera and Taylor, 2023). The elevated heterogeneity of the studies also makes it difficult to directly compare results across different studies, further complicating the interpretation of findings.

Fourth is the small sample sizes of some of the included studies, which reduces the power of the statistical analyses and increases the risk of Type II errors, making it difficult to detect true effects. Many studies included in this review did not have sufficient sample sizes to provide robust conclusions, leading to potential biases in the results. The issue of small sample sizes is particularly significant in studies focusing on rare genetic conditions, where recruiting a large number of participants is inherently challenging (Powell et al, 2014).

Although a meta-analysis was considered to further synthesize the results, the heterogeneity in study designs, diagnostic tools, and outcome measures precluded a meaningful statistical synthesis. Future research should prioritize standardization of these parameters to enable more robust and comparable analyses across studies.

Lastly, the possibility of research bias, including publication bias and selection bias, cannot be overlooked. Publication bias, where studies with positive results are more likely to be published than those with negative or null findings, may have skewed the overall conclusions of this review. Selection bias, on the other hand, was a concern in some studies, particularly those that only included individuals with access to specialized healthcare, thus excluding marginalized populations who might present different comorbidity profiles (Esteba-Castillo et al, 2022). These limitations affect the external validity of the results and suggest that caution is required when generalizing these findings to broader populations.

To address these issues in future research, it is crucial to focus on improving the quality and consistency of study designs. Larger, more diverse sample sizes should be prioritized to enhance statistical power and ensure the findings are repre-

sentative of the broader IDD population. Additionally, future research should strive for more standardized methodologies to reduce heterogeneity, including consistent use of diagnostic tools that are psychometrically validated for the IDD population. Addressing these limitations will help in achieving more reliable and generalizable findings, thereby providing a more robust understanding of the psychiatric comorbidities associated with IDD and improving the quality of care for this vulnerable population.

Conclusion

Understanding the comorbidities associated with IDD are essential for accurate diagnosis and effective treatment. People with IDD are at a significantly higher risk of having psychiatric disorders, which complicates both diagnosis and treatment. One major challenge is the phenomenon of diagnostic overshadowing, where symptoms of psychiatric disorders are mistakenly attributed to the IDD itself, leading to underdiagnosis or misdiagnosis. Additionally, the presentation of psychiatric symptoms often varies based on the level of intellectual functioning; those with lower intellectual abilities may show behavioral equivalents of mental illness rather than typical psychiatric symptoms. To address these challenges, it is crucial to develop validated assessment tools specifically designed for this population. These tools will help ensure more comprehensive evaluations and include the perspectives of caregivers. Current diagnostic approaches need improvement by incorporating these adapted tools, ensuring a holistic approach that accounts for the specific complexities of IDD.

This review highlights several key findings. First, people with IDD are disproportionately affected by psychiatric comorbidities, which requires more precise diagnostic methods. Second, the difficulty of making an accurate diagnosis is worsened by diagnostic overshadowing and the unique behavioral manifestations of psychiatric symptoms in those with lower intellectual functioning. Recognizing these complexities is crucial for effective treatment and early intervention. Specific interventions should be designed to address the different presentations of psychiatric symptoms across the range of intellectual abilities.

For clinical practice, the implementation of adapted diagnostic tools is recommended to improve the early detection and treatment of psychiatric comorbidities in people with IDD. These tools should be designed to identify not only typical psychiatric symptoms but also behavioral equivalents of mental illness, particularly for individuals with lower levels of intellectual functioning. This would help reduce the risk of diagnostic overshadowing and ensure that individuals receive appropriate and timely treatment. In terms of public health policy, there is a need to train healthcare professionals to recognize the specific manifestations of psychiatric disorders in people with IDD and to use these adapted tools effectively. Additionally, public policies should integrate support programs that offer individualized interventions, ultimately leading to significant cost savings for public healthcare systems by preventing unnecessary consultations and avoiding crisis situations that require intensive interventions.

The economic benefits of early and accurate diagnosis are substantial. Ensuring that psychiatric comorbidities are identified and managed appropriately can reduce the frequency of emergency room visits and prevent the escalation of untreated symptoms, resulting in significant cost savings for public health systems. Moreover, creating interventions and support systems based on accurate diagnoses can help anticipate and prevent many common reasons for seeking urgent care, thereby improving overall patient outcomes and optimizing resource allocation.

For future research, it is recommended to validate these findings through larger-scale prospective studies that can provide stronger evidence for the effectiveness of adapted diagnostic tools and interventions. Additionally, detailed subgroup analyses should be conducted to better understand variations in the presentation of psychiatric symptoms across different levels of intellectual functioning, addressing the limitations of the current study. These analyses will enable the development of targeted interventions that are specifically tailored to the diverse needs of the IDD population. Future research should also explore the long-term outcomes of individuals who receive early and tailored interventions, providing further evidence of the benefits of an adapted diagnostic approach.

Key Points

- Individuals with IDD are disproportionately affected by psychiatric comorbidities, emphasizing the need for tailored and precise diagnostic strategies.
- Diagnostic overshadowing is a significant barrier, as psychiatric symptoms are often mistakenly attributed to IDD themselves, leading to misdiagnosis and inadequate treatment.
- The development and implementation of validated, population-specific assessment tools are crucial to effectively capture the psychiatric symptoms present in individuals with IDD, including those with behavioral equivalents of mental illnesses.
- Psychiatric symptoms manifest differently depending on the level of intellectual functioning, particularly for those with severe IDD, necessitating customized approaches in both diagnosis and intervention.
- Integrating adapted diagnostic tools in clinical settings can enhance the early detection and appropriate treatment of psychiatric disorders in individuals with IDD, improving overall patient outcomes.
- Future research should focus on large-scale studies validating adapted tools and on subgroup analyses to understand differences across intellectual functioning levels, while healthcare policy should focus on training providers to recognize IDD-specific psychiatric manifestations and incorporate preventive measures.

Availability of Data and Materials

All data included in this study are available upon request by contacting the corresponding author.

Author Contributions

BAM, MPM designed the research study. BAM performed the research. BAM, MPM and YK provided help and advice on the systematic review. BAM analyzed the results. YK analyzed the results time and advice in the discussion and conclusion. First draft was writen by BAM and MPM, the main co-authors. All authors contributed to revising the manuscript critically for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgement

Not applicable.

Funding

This research received no external funding.

Conflict of Interest

The authors declare no conflict of interest.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at https://www.magonlinelibrary.com/doi/suppl/10.12968/hmed.2024.0686.

References

American Psychiatric Association. Diagnostic and statistical manual of mental disorders. (5th edn). American Psychiatric Association: Washington, D.C. 2022.

Axmon A, Björne P, Nylander L, Ahlström G. Psychiatric care utilization among older people with intellectual disability in comparison with the general population: a register study. BMC Psychiatry. 2016; 16: 389. https://doi.org/10.1186/s12888-016-1094-0

Barasoain AC, Fabián AH, Villena AP, Gotor CT, Perrone ALF. Discapacidad intelectual. Asociación Española de Pediatría. 2022; 1: 51–64. https://www.aeped.es/sites/default/files/documentos/06.pdf

Birnbaum R, Weinberger DR. The Genesis of Schizophrenia: An Origin Story. The American Journal of Psychiatry. 2024; 181: 482–492. https://doi.org/10.1176/appi.ajp.20240305

Bishop-Fitzpatrick L, Mazefsky CA, Minshew NJ, Eack SM. The relationship between stress and social functioning in adults with autism spectrum disorder and without intellectual disability. Autism Research. 2015; 8: 164–173. https://doi.org/10.1002/aur.1433

Bond L, Carroll R, Mulryan N, O'Dwyer M, O'Connell J, Monaghan R, et al. The association of life events and mental ill health in older adults with intellectual disability: results of the wave 3 Intellectual Disability Supplement to The Irish Longitudinal Study on Ageing. Journal of Intellectual Disability Research. 2019; 63: 454–465. https://doi.org/10.1111/jir.12595

Buckley N, Glasson EJ, Chen W, Epstein A, Leonard H, Skoss R, et al. Prevalence estimates of mental health problems in children and adolescents with intellectual disability: A systematic review and meta-analysis. The Australian and New Zealand Journal of Psychiatry. 2020; 54: 970–984. https://doi.org/10.1177/0004867420924101

Caoili A, Hecker M, Klick S, McLaren J, Beasley J, Barnhill J. Integrated mental health treatment guidelines for prescribers in intellectual and developmental disabilities. Journal of Policy and Practice in Intellectual Disabilities. 2023; 20: 164–176. https://doi.org/10.1111/jppi.12447

Codina Cobo M. Exploring violence and vulnerability: Experiences of victimization among adults with intellectual disabilities. 2024. http://hdl.handle.net/10803/691126

Curley K, Kotera Y. Qualitative Investigation into the Perception towards Compassionate Parenting among Parents of Autistic Children: Cross-Cultural Comparison between the UK and The Netherlands. Healthcare. 2023; 11: 1199. https://doi.org/10.3390/healthcare11081199

DeLisi LE, Grice DE, Kennedy JL, Moreno-De-Luca D. What Should a Psychiatrist Know About Genetics? Journal of Clinical Psychiatry. 2019; 80: 17nr12046. https://doi.org/10.4088/JCP.17nr12046

Dell'Armo K, Tassé MJ. Diagnostic Overshadowing of Psychological Disorders in People With Intellectual Disability: A Systematic Review. American Journal on Intellectual and Developmental Disabilities. 2024; 129: 116–134. https://doi.org/10.1352/1944-7558-129.2.116

Esteba-Castillo S, Garcia-Alba J, Rodríguez-Hildago E, Vaquero L, Novell R, Moldenhauer F, et al. Proposed diagnostic criteria for mild cognitive impairment in Down syndrome population. Journal of Applied Research in Intellectual Disabilities. 2022; 35: 495–505. https://doi.org/10.1111/jar.12959

Esteba-Castillo S, García-Alba J. Neuropsicología de la discapacidad intelectual. Neuropsicología pediátrica (pp. 163–188). Síntesis: Madrid. 2015. (In Spain)

Fletcher JM, Miciak J. Assessment of specific learning disabilities and intellectual disabilities. Assessment. 2024; 31: 53–74. https://doi.org/10.1177/10731911231194992

Flygare Wallén E, Ljunggren G, Wahlström L, Pettersson D, Carlsson AC, Wändell P. The prevalence of self-harm and mental disorders among individuals with intellectual disabilities. Nordic Journal of Psychiatry. 2023; 77: 712–720. https://doi.org/10.1080/08039488.2023.2228292

González G, Raggio V, Boidi M, Tapié A, Roche L. Advances in the identification of the aetiology of mental retardation. Revista De Neurologia. 2013; 57: S75–S83. https://doi.org/10.33588/rn.57S01.2013242

Grindle C, Denne LD, Roberts-Tyler EJ, Sapiets SJ, Apanasionok MM, Hughes JC, et al. Collective effort to enhance the quality of research evidence in intellectual and developmental disabilities: a case study of an academic-practice network. Tizard Learning Disability Review. 2024; 29: 5–13. https://doi.org/10.1108/TLDR-08-2023-0018

Ince HY, Palffy A, Malas N. Neurodevelopmental Disorders: Intellectual Disability. In Tasman A, et al. (eds.) Tasman's Psychiatry. Springer: Cham. 2024. https://doi.org/10.1007/978-3-030-51366-5_34

Kotera Y, Chircop J, Hutchinson L, Rhodes C, Green P, Jones RM, et al. Loneliness in online students with disabilities: qualitative investigation for experience, understanding and solutions. International Journal of Educational Technology in Higher Education. 2021a; 18: 64. https://doi.org/10.1186/s41239-021-00301-x

Kotera Y, Newby C, Charles A, Ng F, Watson E, Davidson L, et al. Typology of mental health peer support work components: systematised review and expert consultation. International Journal of Mental Health and Addiction. 2023; 1–17. https://doi.org/10.1007/s11469-023-01126-7

Kotera Y, Pope M, Chircop J, Kirkman A, Bennett-Viliardos LA, Sharaan S. Resilience intervention for families of autistic children: Reviewing the literature. Journal of Concurrent Disorders. 2021b. https://doi.org/10.54127/SWJS6679

Kotera Y, Taylor EC. Defining the diagnostic criteria of TKS: Unique culture-bound syndrome or sub-categories of existing conditions? Asian Journal of Psychiatry. 2023; 81: 103383. https://doi.org/10.1016/j.ajp.2022.103383

Krysta K. Multidisciplinary approach in diagnosing patients with mental health and intellectual disability. European Psychiatry. 2022; 65: S53. https://doi.org/10.1192/j.eurpsy.2022.178

Navas Macho P, Verdugo Alonso MÁ, Martínez Torres S, Sainz Modinos F, Aza Hernández A. Derechos y calidad de vida en personas con discapacidad intelectual y mayores necesidades de apoyo. 2018. (In Spain)

Nieto del Rincón PL. Discapacidad intelectual. In Polaino Lorente A, Chiclana Actis C, López Cánovas F, Hernández Torrado G (eds.) Fundamentos de Psicopatología. 2017. (In Spain)

Nieuwenhuis JG, Lepping P, Mulder NL, Nijman HLI, Veereschild M, Noorthoorn EO. Increased prevalence of intellectual disabilities in higher-intensity mental healthcare settings. BJPsych Open. 2021; 7: e83. https://doi.org/10.1192/bjo.2021.28

Novell-Alsina R, Rueda Quitllet P, Salvador Carulla L, Forgas Farre E. Salud mental y alteraciones de la conducta en las personas con discapacidad intelectual. Guía Práctica Para Técnicos y Cuidadores. 2012. https://www.plenainclusion.org/sites/default/files/libro_saludmental.pdf (In Spain)

Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ (Clinical Research Ed.). 2021; 372: n71. https://doi.org/10.1136/bmj.n71

Peña-Salazar C, Arrufat Nebot F, Fontanet A, García-León N, Más S, Roura-Poch P, et al. El infradiagnóstico del trastorno mental en la población con discapacidad intelectual: Estudio de prevalencia en población con diferentes grados de discapacidad intelectual. Siglo Cero. 2018; 48: 27–39. (In Spain)

Plana-Ripoll O, Pedersen CB, Holtz Y, Benros ME, Dalsgaard S, de Jonge P, et al. Exploring Comorbidity Within Mental Disorders Among a Danish National Population. JAMA Psychiatry. 2019; 76: 259–270. https://doi.org/10.1001/jamapsychiatry.2018.3658

Pouls KPM, Mastebroek M, Ligthart SJ, Assendelft WJJ, Leusink GL, Koks-Leensen MCJ. Primary mental healthcare for adults with mild intellectual disabilities: Patients' perspectives. European Journal of General Practice. 2024; 30. https://doi.org/10.1080/13814788.2024.2354414

Powell BJ, Proctor EK, Glass JE. A Systematic Review of Strategies for Implementing Empirically Supported Mental Health Interventions. Research on Social Work Practice. 2014; 24: 192–212. https://doi.org/10.1177/1049731513505778

Rubin A. Special Olympians. Sideline Management in Sports (pp. 57–65). Springer International Publishing: Cham. 2024.

Scott HM, Havercamp SM. Mental health for people with intellectual disability: the impact of stress and social support. American Journal on Intellectual and Developmental Disabilities. 2014; 119: 552–564. https://doi.org/10.1352/1944-7558-119.6.552

Singh S, Singh LK, Sahu M, Tikka SK. Do comorbidities among patients with mental retardation differ across various age groups? Asian Journal of Psychiatry. 2019; 39: 12–14. https://doi.org/10.1016/j.ajp.2018.11.001

Strålin P, Hetta J. First episode psychosis and comorbid ADHD, autism and intellectual disability. European Psychiatry. 2019; 55: 18–22. https://doi.org/10.1016/j.eurpsy.2018.09.007

Thygesen JH, Wolfe K, McQuillin A, Viñas-Jornet M, Baena N, Brison N, et al. Neurodevelopmental risk copy number variants in adults with intellectual disabilities and comorbid psychiatric disorders. The British Journal of Psychiatry. 2018; 212: 287–294. https://doi.org/10.1192/bjp.2017.65

Tromans S, Yao GL, Kiani R, Alexander R, Al-Uzri M, Brugha T. Study protocol: an investigation of the prevalence of autism among adults admitted to acute mental health wards: a cross-sectional pilot study. BMJ Open. 2019; 9: e033169. https://doi.org/10.1136/bmjopen-2019-033169

Young S, González RA, Mullens H, Mutch L, Malet-Lambert I, Gudjonsson GH. Neurodevelopmental disorders in prison inmates: comorbidity and combined associations with psychiatric symptoms and behavioural disturbance. Psychiatry Research. 2018; 261: 109–115. https://doi.org/10.1016/j.psychres.2017.12.036