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Mental Health Services for Autistic People with Intellectual Disability: An Exploratory Study on Patient and Treatment Characteristics, and Intervention - Outcome Associations

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ABSTRACT

Introduction: Autistic people with co-occurring intellectual disability have a high risk of mental disorders. This study aimed to investigate specialized mental health services for this group, emphasizing inpatient/outpatient treatment, patient characteristics, interventions, and outcomes.

Methods: The current study used data from a Norwegian multi-center study (the AUP study), 151 participants were included. Statistical analyses included comparisons of the two treatment groups and multiple analyses of variance on outcome measures of behavioral and mental health symptoms for all patients.

Results: Seventy-four patients received outpatient treatment and 77 received inpatient treatment. The inpatients had significantly more “severe” mental disorders and received a higher number of interventions. Both groups improved significantly during treatment, inpatients slightly more. Psychotherapy was associated with positive outcomes. Psychopharmacological treatment or duration were not associated with outcomes.

Conclusion: Treatment of mental disorders is effective in autistic people with co-occurring intellectual disability. Psychotherapy may be beneficial for these patients.

KEYWORDS

Autism; intellectual disability; mental disorder; treatment; intervention; psychotherapy

INTRODUCTION

The prevalence of mental disorders in autistic people with co-occurring intellectual disabilities (ID) is higher than in the general population (Bakken et al., 2010; Lugo-Marín et al., 2019; Rosen et al., 2018). The emotional and social burden of mental disorder for the individual and the family is substantial (Hellerud & Bakken, 2019; Lai et al., 2019), highlighting the need for effective treatment of mental disorder in this group. Compared to individuals with ID who are not autistic, the assessment and treatment of mental disorder in this

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group poses additional challenges. Symptoms of mental disorder may manifest in atypical ways, and these individuals usually have severe difficulties verbally reporting emotional problems and communicating their own experience of mental disorder (Bakken et al., 2010, 2016; Helverschou et al., 2011; Kannabiran & McCarthy, 2009), as well as frequently displaying difficulties with executive functioning (Tsermentseli et al., 2018; Yon-Hernández et al., 2023). Trauma appears to be common in this population, but its presence or impact may not be recognized (Kildahl & Helverschou, 2023; Kildahl et al., 2020). Finally, multiple co-occurring conditions, including somatic disease or physical disabilities that may affect mental health, are common and may complicate differential diagnostic assessment (Mazza et al., 2020; Olsen et al., 2021).

Initiating and evaluating the treatment of mental disorders in autistic persons with ID is as complex as the assessment (Brugha et al., 2015; Kildahl, Oddli, et al., 2023; Vereenooghe et al., 2018), and seems to require specific knowledge of the individual patient's autism-related characteristics, level of ID, levels of adaptive functioning and chronological age, as well as mental health symptoms (Mohiuddin et al., 2011; Rysstad et al., 2022). Such individuals will usually need daily support, and collaboration between different service providers (Bhaumik et al., 2008; Helverschou, Bakken, et al., 2021; Kildahl et al., 2019) such as community services, specialized mental health services, disability services etc. In order to ensure access to appropriate mental health services, as well as effective assessment and treatment of mental disorders for autistic individuals with ID, multimodal and interdisciplinary approaches have been emphasized in numerous accounts (e.g. Bakken et al., 2016, 2023; Dalhaug et al., 2022; Dosen, 2007; Halvorsen et al., 2022; Helverschou, Bakken, et al., 2021; Kildahl et al., 2019; Weise et al., 2017). However, research concerning the treatment types and interventions provided to these individuals, including in specialized mental health services for this population, is scarce.

Mental Health Services

The provision of mental health services for autistic people with co-occurring ID poses multiple challenges. Several international studies on mental health services for people with intellectual and developmental disabilities have been conducted, especially in Canada (Lunsky et al., 2011, 2013), Australia (Whittle et al., 2018), and the UK (Bhaumik et al., 2008; Bouras et al., 2003; Chaplin et al., 2009). A common trait in their findings is that differences between jurisdictions is a major concern, as well as how research is incorporated into policies and practice regarding mental health in this group. These concerns apply also in Norway, as services have been found to be fragmented and showing geographical variations (Bakken et al., 2018). In addition, the Norwegian national guidelines for mental health services prescribe

a differentiation in services depending on the person's level of ID (Norwegian Directorate of Health, 2015). This may lead to reduced access to appropriate services for individuals in this population (Chaplin et al., 2009; Munkhaugen et al., 2021; Whittle et al., 2018). Furthermore, very few studies have focused specifically on treatment of mental disorder in autistic individuals with ID. Recent results from a Norwegian multicenter study (the AUP study; autism, intellectual disabilities, mental disorder) indicate that a protocol involving systematic clinical assessment leading to specialized treatment shows promise in facilitating improved mental health services for autistic people with ID over a vast geographical area (Hellerschou, Bakken, et al., 2021).

Treatment Types – Outpatient and Inpatient Treatment

Studies on outpatient and inpatient mental health treatment for autistic people with co-occurring ID are limited. In studies that focus on patients with ID more generally, the proportion of samples with a co-occurring autism spectrum disorder (ASD) varies from 3% (Alexander et al., 2013) to 51.9% (Bakken & Hoidal, 2019). However, a recent review of literature on in-patient mental health care for people with ID and/or ASD found that most studies did not adequately describe their samples (Melvin et al., 2022).

There has been substantial work with regard to the development of effective outreach services, emphasizing multidisciplinary collaborative effort between service levels (Chaplin et al., 2009; Hackerman et al., 2006; Hall et al., 2006). Specialized collaborative outpatient clinics appear to be helpful (Hackerman et al., 2006; Pickard et al., 2011), and while outpatient treatment may be a good option for the autistic individual with ID it might also be the only accessible alternative (Chaplin et al., 2009; Lunskey et al., 2007). The World Health Organization (WHO) has recommended facilitating treatment closer to where people live (World Health Organization, 2009). This recommendation, as well as the principle of delivering services at the “lowest efficient level of care” (LEON; NOU, 1996, p. 5, p. 16) has led to a downsizing of psychiatric hospitals that provide inpatient treatment throughout Western Europe (Becker & Kilian, 2006; Caldas & Killaspy, 2011). Nevertheless, there is also an evident need for inpatient treatment of mental illness for autistic people with ID (Bhaumik et al., 2016; Cowley et al., 2005; Devapriam et al., 2015; Nawab & Findlay, 2008; Xenitidis et al., 2004). Melvin et al. (2022) reviewed 106 papers, and found that admission to inpatient services was associated with improvements in mental health for people with ID and/or ASD. A recent study on service evaluation at discharge from an assessment and treatment unit for people with ID (Davies et al., 2021) found significant improvement in mental health symptoms, challenging behavior and quality of life. We have limited information on inpatient treatment for autistic people with ID in Norway. Bakken and Hoidal (2019) found that 16 “beds” are designated to treatment of

mental disorder in patients with ID throughout the country. Furthermore, their study described 133 adult inpatients admitted to a specialized inpatient unit from 2011 to 2019 and found that the average duration of stay was 9.8 months. The mean age at referral was 30.8 years, with 49.9% of the sample being female. Schizophrenia was the most frequently diagnosed mental disorder, followed by mood disorders. The patients had predominantly mild (46%) and moderate (17.3%) ID. Of the total sample, 46% of the inpatients were diagnosed with ASD, and not all of them had ID (Bakken & Hoidal, 2019). Several international studies on facilities that provide inpatient treatment for individuals with ID have found similarly high rates of psychotic disorder (Alexander et al., 2013; Cowley et al., 2005; Hall et al., 2006; Xenitidis et al., 2004). In all these studies, the mean age of the inpatients' was early 30s'. A retrospective study of five decades of admission trends in an NHS intellectual disability hospital in the UK found a trend of increasing complexity and severity in the patients, and an increasing proportion of patients with ASD (Wong et al., 2015).

Data on the duration of treatment are sparse, especially for outpatient treatment. Inpatient treatment usually involves more clearly defined time-periods, and several studies of inpatient treatment for individuals with ID report duration of stay (Alexander et al., 2013; Lunsky & Balogh, 2010; Sandhu & Tomlins, 2017). However, duration varies considerably in the study samples and provides little generalizable information. For example, Lunsky and Balogh (2010), who studied patterns of psychiatric hospitalization in people with ID, reported duration from one day to >365 days. Some findings suggest that patients with ID stay longer in hospital than patients without ID (Lunsky et al., 2006; Melvin et al., 2022), and that patients in this group are more likely to be readmitted (Lunsky & Balogh, 2010; Lunsky et al., 2013). In sum, further knowledge on what characterizes the patients who receive different types of treatment is required to facilitate effective and fair distribution of treatment for autistic people with ID and mental disorders.

Treatment Interventions

It is evident that autistic persons with ID and co-occurring mental disorder may benefit from the treatment of mental disorders (Hall et al., 2006; Helverschou, Bakken, et al., 2021). However, studies on such treatment generally appear to suffer from a lack of information about which specific interventions were provided (Bakken & Hoidal, 2019; Lunsky et al., 2013; Melvin et al., 2022; Vereenooghe et al., 2018). Moreover, the effective treatment of mental disorders in autistic persons with ID requires knowledge about whether and how different types of treatment and interventions affect outcomes. To the best of our knowledge, no studies to date have compared the mental health outcomes in outpatient versus inpatient treatment or explored

outcomes associated with more specific interventions in this particular patient group. Current recommendations are often based on evidence for the general population (Bakken & Hoidal, 2019; Bakken et al., 2016; Vereenooghe et al., 2018), and individual adaptations to suit the patients' needs is emphasized (Mohiuddin et al., 2011).

First-line treatment for mental disorder in general mental health services is usually psychotherapy and/or psychopharmacological treatment. In the study by Bakken and Hoidal (2019), psychopharmacological treatment (87%) and psychotherapy (78.3%) were frequently provided to inpatients, but no data on interventions were provided for outpatients, nor on outcomes for either inpatients or outpatients.

Psychotherapy comprises a range of methods and approaches. There is some evidence to suggest that psychological therapy is also useful for people with ID (Prout et al., 2011; Vereenooghe & Langdon, 2013) and autistic persons (Anderberg et al., 2017), but that it requires adaptation to the individual's social and communicative functioning (Koenig & Levine, 2010; Peterson et al., 2019). However, there is some critique of the methodological validity of studies on psychotherapy for individuals with ID in general (Sturme, 2012). We found no studies on psychotherapy as an intervention in outpatient or inpatient treatment of mental disorders in autistic people with ID. In Hackerman's et al. (2006) on patients attending a special needs clinic in the USA, the patients received psychotherapy. However, the number of patients who received this intervention was not reported, only "if indicated."

Autistic persons with ID have received psychopharmacological treatment throughout history, often as treatment of problematic behavior rather than mental disorder (de Kuijper et al., 2010; Hess et al., 2010; Sturme, 2012). Nevertheless, studies on the treatment of mental disorders in this group are surprisingly scarce regarding information on whether or not patients receive psychopharmacological treatment and evaluating the effects of such treatment. Drug studies in generic psychiatry tend to exclude participants with co-occurring conditions, such as ASD, ID, and other developmental disorders or physical illnesses.

To date, there is very little knowledge on autistic persons with ID and co-occurring mental disorder who receive specialized mental health care in Norway, including what determines the care pathway. We do not know what characterizes those patients who receive outpatient treatment and those patients who are admitted to an inpatient facility. Even less is known about the specific interventions provided to these patients.

OBJECTIVES

The current study aims to explore specialized mental health services for autistic persons with ID in Norway. Two objectives were chosen:

- (1) To provide patient characteristics of the inpatient and outpatient treatment groups in the AUP study and investigate the distribution of interventions in the two treatment groups.
- (2) To explore changes in mental health over time in the inpatient and outpatient treatment groups, as well as possible associations between specific interventions and outcomes in the total sample. For this exploration, we have chosen to focus primarily on interventions typically provided to patients being treated for mental disorder in generic mental health services, such as psychotherapy and psychopharmacological treatment.

MATERIALS AND METHODS

Design

The current study uses data from a Norwegian, nationwide multi-center study, the AUP (Autism, Intellectual Disability, Mental disorder) study, comprising eight centers throughout the country that provide specialized mental health services for autistic people with ID. Data were collected for patients referred to one of these centers between 2010 and 2020, at three time points, using a standardized assessment protocol: before treatment (T1), after 12 months or end of treatment (T2), and after 24–27 months (T3). The assessment protocol was implemented as part of regular service delivery. The interventions were registered continuously. In the current study, we applied data from all three time points to investigate the first objective; patient characteristics were collected from T1 and T2, interventions in the two treatment groups (inpatient and outpatient treatment) were collected from T2 and T3. We used data collected during the treatment period, i.e., from T1 and T2 (outcome measures) and between T1 and T2 (interventions given) to investigate the second objective, possible associations between interventions and outcome. Data from T2 and T3 were used for the analyses of outcomes during the follow-up period. The protocol and the involved centers, as well as the preliminary results from the AUP study are described in detail in a previous publication (Helverschou, Bakken, et al., 2021). See [Table 1](#) for an overview of the protocol.

Participants

Participants in the AUP study were eligible for inclusion when being referred to one of the eight centers, if they had been diagnosed with co-occurring ASD and ID according to the ICD-10 (World Health Organization, 1992), displayed behavior problems and/or mental disorder was suspected or had been previously diagnosed. All participants had been diagnosed with ASD according to

Table 1. Standardized assessment protocol for the AUP multicenter study.

Assessments	Time point		
	T1	T2	T3
Medical assessment	X	X	X
Environmental factors ^{a), b)}	X	X	X
Contextual factors ^{a)}	X	X	X
Vineland ^{c)}	X		
SCQ	X		
ABC^{d)}	X	X	X
PAC^{e)}	X	X	X
Psychiatric symptoms	X	X	X
Carer evaluation		X	
Diagnosis	Final diagnosis and time for diagnosis registered		
Interventions	Continuous registration of interventions and professionals involved		

Assessments applied in the current study in **bold** characters.

^{a)}Norwegian-developed checklist

^{b)}To be rated during the three first months of assessment

^{c)}Assessment is repeated at T3 for individuals with schizophrenia or those who have undergone large changes: Vineland Adaptive Behavior Scales II, expanded version.

^{d)}ABC, Aberrant Behaviour Checklist.

^{e)}PAC, Psychopathology in Autism Checklist.

ICD-10 criteria (World Health Organization, 1992) prior to inclusion in the study, and it was therefore considered not feasible to include the Autism Diagnostic interview-Revised (ADI-R; Rutter, Le Couteur, et al., 2003) or the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 2000) as part of the protocol, although these instruments are routinely used for diagnostic assessment of ASD in Norway. However, the Social Communications Questionnaire (SCQ; Rutter, Bailey, et al., 2003) was completed during the study. If the patients scored below the recommended cutoff (<15), the lifetime version was checked. For patients where the lifetime version was missing or the scores were also below cutoff on this form, the center in charge double-checked that the patient had been diagnosed with ASD. The diagnosis was confirmed for all these participants ($n = 20$).

There were no exclusion criteria such as additional diagnoses or physical ill health. The participating centers selected participants among referred patients from their respective health regions (Hellerschou, Bakken, et al., 2021). For the current study, 151 participants were included. All these participants had complete or sufficient datasets for data on treatment type (inpatient or outpatient treatment). In some of the analyses, the number of participants is lower due to missing data on some variables. For instance, whether or not the patient had received psychotherapy, was registered only for 146 patients. The current sample included 50 (33.1%) females and 101 (66.9%) males with ages ranging from 10 to 68 ($M = 27.5$, $Mdn = 25$, $SD = 10.9$), 102 participants had mild/moderate ID (67.5%), while 49 (32.5%) had severe/profound ID. Regarding geographical affiliation, 99 (65.6%) of the participants were recruited from the Southeastern Health Region of Norway, which is the most populous region, 28 (18.5%)

from the Central Health Region, 14 (9.3%) from the Northern Health Region and 10 (6.6%) from the Western Health Region.

MEASURES

Level of ID

During data collection, participants in the AUP study were assigned into one of two groups, as either having mild/moderate ID, or severe/profound ID, based on their diagnosed level of ID according to ICD-10 Criteria (World Health Organization, 1992).

Psychiatric Diagnostic Groups

The participants were assessed for mental disorder, and the final diagnostic conclusion based on ICD-10 criteria (World Health Organization, 1992) was made during the course of treatment (Helverschou, Bakken, et al., 2021). In the current study, the participants were assigned into one of the three groups:

- (1) *Severe mental disorders* was defined as all psychotic disorders, including schizophrenia, schizotypal, delusional, and other non-mood psychotic disorders, as well as bipolar disorders. These mental disorders are frequently labeled as “severe” in Norwegian government strategies for mental health policies (NOU, 2019, p. 14, p. 67).
- (2) *Other mental disorders* included other mood disorders, phobic anxiety disorders, other anxiety disorders, obsessive compulsive disorders, acute stress reaction and post-traumatic stress disorders, adjustment disorders, unspecified eating disorder, borderline personality disorder, conduct disorder and reactive attachment disorder of childhood.
- (3) *No mental disorder*, comprising those participants who did not receive a final diagnosis of any mental disorder. One inclusion criterion for the AUP study was suspected mental disorder, and while a substantial proportion of the sample met criteria for one or more mental disorders, not all included participants were found to meet such criteria following a comprehensive assessment.

Interventions

Patient-directed interventions comprise the individual interventions provided to a patient during treatment, and comprise the following dichotomized variables:

Treatment type, either inpatient or outpatient treatment. Patients who were referred to outpatient follow-up after inpatient treatment, were consequently

registered as inpatients, patients who received exclusively outpatient treatment were registered as outpatients. All the inpatient units in the study were small, specialized facilities for individuals with ID and/or autism spectrum disorders (4–6 beds). None of the inpatient units provide acute admissions, and all admissions are planned. Outpatient services were largely organized as out-reach services, where the professionals conducted observations and provided treatment and guidance in the patients' home environment. We also used data on the total duration of treatment in months for both treatment types.

Psychotherapy, defined as one-to-one sessions with a psychologist or a specialized nurse. No information on frequency of psychotherapy sessions or the type of therapy provided was reported or collected in the AUP study.

Psychopharmacological treatment, categorized according to type of medication; antidepressants, antipsychotics, anxiolytics, sedatives, anti-epileptics, sleep agents, mood stabilizers and ADHD medication.

Differentiated intervention plan, which is a plan that maps the individual patient's habitual state, manifestation of symptoms in the different stages of the illness and a plan for differentiated interventions.

Identifying warning signs, which comprises the mapping of behavioral equivalents or the patient's own recognition of signs of an increase in personal symptoms.

Crisis plan. A crisis plan is an individual plan for managing crises in the patient's life for example, an overview of health professionals who can be contacted in case of an emergency, a plan for admission to an acute inpatient ward if necessary or relevant medical intervention.

Supportive interventions are indirect, and aim to enable the patient's support system, such as family and service providers. The variables are as follow:

Collaborative meetings, with or without the patient present.

Community staff supervision/training, the supervision being provided by the center in charge of the treatment.

Supervision of county level specialized health care, which means that the center in charge of the treatment provides information or guidance to other specialized services.

Conversation with the patient's family.

Outcome Measures

The Aberrant Behaviour Checklist (ABC) comprises 58 items scored on a 4-point Likert scale, from 0 (not a problem) to 3 (severe problem). The scores are distributed across five behavior scales, I Irritability (15 items), II Lethargy (16 items), III Stereotypy (7 items), IV Hyperactivity (16 items) and V Inappropriate speech (4 items). The ABC is commonly used, including in Norway, and has been shown to have satisfactory to excellent psychometric properties (Aman et al., 1985; Halvorsen et al., 2019; Myrbakk & Von

Tetzchner, 2008a; Newton & Sturmey, 1988), on varying levels of ID (Flynn et al., 2017), and is suitable for evaluating treatment effects (Helverschou et al., 2011; Shedlack et al., 2005; Vereenooghe et al., 2018).

The Psychopathology in Autism Checklist (PAC) is a caregiver completed mental disorder screening checklist for autistic individuals with ID (Helverschou et al., 2009; Helverschou, Bakken, et al., 2021). The PAC includes 42 items scored on a 4-point Likert scale from 1 (no problem) to 4 (severe problem). The scores are distributed across five scales: Psychosis (10 items), Depression (7 items), Anxiety (6 items), Obsessive compulsive disorder (5 items), and General adjustment problems (12 items). The PAC has been found to distinguish between core symptoms of ASD and mental disorders (Dalhaug et al., 2022; Helverschou et al., 2009) and fairly well between autistic individuals with ID and different psychiatric disorders (Helverschou, Ludvigsen, et al., 2021).

Informants completing the ABC and the PAC were either the patients' family members or their professional caregivers.

In this study, the main point of interest was the measurement of the total symptom burden on the three time points rather than the scores on specific symptom scales. Consequently, a total score from ABC and PAC was used as a proxy measure of total behavioral and mental disorder symptom burden, respectively. Potential sum scores on the ABC ranged from 0 to 174, and on the PAC from 42 to 168. A higher score on both checklists indicates a higher symptom burden, and a lower score indicates a lower symptom burden.

Statistical Analysis

An alpha level of .05 was chosen due to the explorative nature of the study. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 28.

Analysis of Patient Characteristics and Distribution of Interventions in Outpatient and Inpatient Treatment Groups

We used Pearson's chi-square test of independence (McHugh, 2013) to compare categorical data between inpatient and outpatient treatment groups. Yate's continuity correction values for 2×2 tables were interpreted when the expected count was lower than 5. Cramer's V was used to evaluate effect size. Independent samples t -tests (Welch t -test) were used to compare continuous variables between the two groups (Delacre et al., 2017). Cohen's d_s were subsequently calculated (Cohen, 1992), including the upper and lower 95% confidence intervals (Dunst & Hamby, 2012). Welch's F -test was used for robust testing of equality of means when unequal variances and differences in skewness were present (Delacre et al., 2019).

Analysis of Outcomes and Possible Association Between Interventions and Outcomes

Analysis of outcomes was conducted using a repeated measure ANOVA, a mixed design including the two treatment groups (inpatient and outpatient) as between-subjects variables and sum scores on PAC and ABC on the three subsequent time points as within-subjects variable. For within-subjects effects sphericity was assumed, and Partial Eta Squared was used to evaluate effect size on time (Richardson, 2011). Pairwise comparisons of T1 and T2, and T2 and T3 were conducted, using the Bonferroni correction for multiple comparisons. To analyze the possible effects of treatment interventions on outcome, univariate analysis of variance were conducted on PAC and ABC, with sum scores on T2 as the dependent variable, while controlling for sum scores on T1, age, duration of treatment, and gender. After confirming that gender had no association with the dependent variable, we chose to remove gender as a covariate from the statistical model because inclusion of gender as a covariate would entail cells with zero observations, which would prevent us from performing a multivariate analysis. Tests of between-subjects effects were conducted on three dichotomous intervention variables (yes/no): *Psychopharmacological treatment*, *psychotherapy*, and *treatment type*. Partial eta squared was used as an effect size measure. When interaction effects between two variables were detected, an additional univariate analysis on other possible variable effects was conducted on standardized residuals from T2. The control variables used were level of ID and psychiatric diagnostic group. No effects were found. Cronbach's alpha (α) was calculated for all scales of PAC and ABC at T1, to verify the internal consistency of the scales on this study sample. Although this study uses mean sum scores and not the specific scales, it is of general interest to verify the internal consistency of the instruments used. The results were satisfactory for all scales ($.67 < \alpha < .88$). See [appendix 1](#) for all values.

ETHICAL CONSIDERATIONS

The AUP multicenter study was approved by the data protection supervisor at Oslo University Hospital, Oslo, Norway. Approval # 2010/19, 579. The patients and/or their legal guardians gave their informed consent. All data were anonymized and processed with no directly identifiable information.

RESULTS

Outpatient Treatment Group Compared to Inpatient Treatment Group

Of the total sample of 151 individuals 74 (49%) received outpatient treatment and 77 (51%) received inpatient treatment. Welch's t-test revealed no significant differences in symptom scores at T1 between the two treatment groups on neither the PAC nor the ABC.

Table 2. Demographics, diagnostic distribution and health region affiliation of participants receiving outpatient or inpatient treatment.

Variables	Outpatient treatment <i>n</i> = 74(49%)	Inpatient treatment <i>n</i> = 77(51%)	<i>Df</i>	<i>p</i>	φ_c	χ^2	<i>F</i>	<i>d_s</i>
Gender^{a)}			1	.605	0.04	0.26		
Females	26(35.1%)	24(31.2%)						
Males	48(64.9%)	53(68.8%)						
Age at consent^{b)}			149	.655			0.27	-0.07 95% CI {-.39, .25} ^{c)}
Min-max	10–60	10–68						
Mean (Median)	27.2 (23), SD = 11.1, iqr _d = 17	27.9 (26), SD = 1.7, iqr = 16						
Level of ID^{a)}			1	.037*	0.17	4.33		
Mild/moderate	44(59.5%)	58(75.3%)						
Severe/profound	30(40.5%)	19(24.7%)						
Diagnostic groups^{a)}			2	<.001**	0.32	15.37		
Severe mental disorder	11(14.9%)	32(41.6%)						
Other mental disorder	33(44.6%)	30(39.0%)						
No mental disorder	30(4.5%)	15(19.5%)						
Health Region affiliation^{a)}			3	<.001**	0.59	51.78		
North	14(6.9%)	0(0.0%)						
Middle	22(29.7%)	6(7.8%)						
West	10(13.5%)	0(0.0%)						
Southeast	28(37.8%)	71(92.2%)						

p* < .05, *p* < .001.

^{a)}Pearson’s Chi-Square Test of Independence, Cramer’s *V* for effect size.

^{b)}Independent Samples T-test. Cohen’s *d_s* for effect size.

^{c)}Lower and Upper 95% Confidence Interval for Cohen’s *d_s*.

^{d)}Interquartile range

Age and gender were relatively equally distributed in the two groups. There were significant differences between those individuals who received inpatient compared to outpatient treatment regarding diagnostic distribution, health region affiliation and patient treatment interventions. Demographic and diagnostic characteristics and health region affiliation is found in [Table 2](#).

DIAGNOSTIC DISTRIBUTION

Pearson’s Chi-Square test of independence revealed some minor differences in level of ID between the treatment groups (*df* = 1, X^2 = 4.33, *p* = .037, φ_c = 0.169). In the outpatient group, 59.5% had a mild/moderate level of ID and 40.5% had severe/profound ID. In the inpatient group, 75.3% had mild/moderate ID and only 24.7% had severe/profound ID. The diagnostic distribution of participants differed significantly in the two treatment groups regarding mental disorder diagnosis (*df* = 2, X^2 = 15.37, *p* < .001, φ_c = 0.319). There was a higher proportion of patients with “severe mental disorder” in the inpatient vs. the outpatient group (41.6% and 14.9%, respectively). “Other mental disorder” was more evenly distributed 39% of inpatients vs 44.6% of outpatients. “No mental disorder” was recorded in the case

of 40.5% of the outpatients and 19.5% of the inpatients. The analyses found no significant association between level of ID and diagnostic group ($df = 2$, $X^2 = 4.59$, $p = .101$).

HEALTH REGION AFFILIATION

The Chi-Square test found a strong relationship between treatment group and health region, ($df = 3$, $X^2 = 51.78$, $p < .001$, $\varphi_c = 0.586$). In the inpatient group, 92.2% were affiliated with the South-Eastern Health Region whilst none of the patients from the northern and western health regions received inpatient treatment.

Patient-Directed Interventions

The statistical analyses found that inpatient treatment differed from outpatient treatment in multiple ways; see Table 3. Nine different interventions were explored (5 patient directed, 4 supportive), with inpatients receiving a higher number of interventions ($Mdn = 7$) than outpatients ($Mdn = 4$). Welch's t-test revealed a strong relationship between treatment group and number of interventions during treatment $t(141) = -5.70$, $p < .001$, $d_s = 0.95$. Chi-Square tests found that 50% of inpatients received psychotherapy whereas only 10% of outpatients received this intervention ($df = 1$, $X^2 = 27.34$, $p < .001$, $\varphi_c = 0.433$). Psychopharmacological treatment was also more frequent in inpatient treatment, with 85.5% vs 56.9% in outpatient treatment. The types of psychopharmacological medication for inpatients and outpatients, respectively, were distributed as follows: 30.6% vs 20.3% received antidepressants, 70.6% vs 33.8% antipsychotic, 1.4% vs 4.1% anxiolytic, 4.2% vs 9.5% sedative, and 25.0% vs 25.7% anti-epileptic medication, 8.3% vs 13.5% received sleep agents, 8.3% vs 2.7% mood stabilizers and 1.4% from both groups were treated with ADHD medication. There was a strong association between treatment type and psychopharmacological treatment ($df = 1$, $X^2 = 14.86$, $p < .001$, $\varphi_c = 0.317$). Welch's F-test revealed that the mean duration of treatment was 18.60 months for outpatients and 5.86 months for inpatients, median duration 18 months and 5 months, respectively. Although the difference is large ($F(1, 45.7) = 40.8$, $p < .001$, $d_s = 1.53$), there was a wide range in the duration of treatment in both groups, 1–52 months for outpatients and 1–24 months for inpatients.

Patients receiving inpatient treatment were more frequently (51.9%) provided with a crisis management plan than outpatients (27.4%) as measured by a Chi-square test ($df = 1$, $X^2 = 9.41$, $p = .002$, $\varphi_c = 0.250$) and inpatients also had a differentiated intervention plan more often (53.3%) than outpatients (34.4%) ($df = 1$, $X^2 = 5.32$, $p = .032$, $\varphi_c = 0.192$). The effect sizes were moderate and weak, respectively. More than half the outpatients

Table 3. Interventions in outpatient and inpatient treatment groups.

Interventions	Outpatient treatment n = 74(49%)	Inpatient treatment n = 77 (51%)	Df	p	ϕ_c	χ^2	t	F	d_s
Patient directed interventions									
Psychotherapy n = 146	7(10.0%)	38(50.0%)	1	<.001**	0.433	27.34			
Psychopharmacological treatment n = 148 ^{a)}	41(56.9%)	65(85.5%)	1	<.001**	0.317	14.86			
Differentiated intervention plan n = 145 ^{a)}	24(34.3%)	40(53.3%)	1	.032*	0.021	5.32			
Crisis management plan n = 150 ^{a)}	20(27.4%)	40(51.9%)	1	.002*	0.250	9.41			
Warning signs identified n = 150 ^{a)}	39(53.4%)	50(64.9%)	1	.051	0.110	2.05			
Supportive Interventions									
Collaborative meetings n = 151 ^{a)}	62(83.8%)	72(93.5%)	1	.103	0.154	0.16			
Community staff supervision/training n = 151 ^{a), d)}	72(97.3%)	74(96.1%)	1	1.000	0.033	0.00			
Supervision of county level health services n = 150 ^{a)}	25(16.7%)	60(77.9%)	1	<.001**	0.441	29.11			
Conversations with patients family n = 151 ^{a)}	31(41.9%)	47(61%)	1	.028*	0.192	5.54			
Total number of interventions n = 143 ^{b)}			141	<.001**			-5.70	0.04	0.95 95% CI {.60, 1.30} ^{e)}
Min-max	1-9	1-9							
Mean (Median)	4.49 (4), SD = 1.881, iqr ^{d)} = 3	6.36 (7), SD= 2.038, iqr = 3							
Duration of treatment in months n = 114 ^{c)}			1 (45.7)	<.001**			40.8		1.53 95% CI {1.10, 1.96}
Min-max	1-52	1-24							
Mean (Median)	18.60 (18), SD=12.812, iqr = 17	5.86 (5), SD=3.453, iqr = 4							

*p < .05, **p < .001.

^{a)}Pearson's Chi-Square Test of Independence, Kramer's V for effect size.

^{b)}Welch's Independent Samples T-test. Cohen's ds for effect size.

^{c)}Welch's F-test was used for robust testing of equality of means due to non-normally distribution and differences in skewness.

^{d)}Yates' continuity correction for 2 x 2 tables.

as well as inpatients had their personal warning signs identified during the treatment period.

SUPPORTIVE INTERVENTIONS

Collaborative meetings and community staff training/guidance were highly frequent intervention components in both groups. Family conversations were

used more often in the inpatient group (61%) than in the outpatient group (41.9%), although the difference was not statistically significant. The Chi-Square test revealed that guidance of county level specialized health care was a significantly more frequent supportive intervention for inpatients (77.9%) than for outpatients (16.7%), ($df = 1$, $X^2 = 29.11$, $p < .001$, $\phi_c = 0.441$).

Patient Outcome and Inpatient and Outpatient Treatment Association from T1 to T2

The repeated measures ANOVA revealed a significant decrease in symptom burden between T1 and T2 in both inpatient and outpatient groups as measured by the ABC, ($F(2, 244) = 45.7$, $p < .001$, $\eta^2_p = 0.27$), and the PAC, ($F(2, 245) = 44.4$, $p < .001$, $\eta^2_p = 0.27$). Pairwise comparison shows that there was a significant reduction in scores measured by ABC and PAC from T1 to T2.

The univariate ANOVA showed that Treatment group was associated with outcome measured by ABC ($F(1, 90) = 4.41$, $p = .039$, $\eta^2_p = 0.047$), the effect being of a moderate effect size. See Table 4 for the between-subjects effects of treatment intervention on PAC & ABC during treatment period from T1 to T2. Treatment group was not associated with outcome measured by PAC ($F(1, 85) = 0.73$, $p = .397$, $\eta^2_p = 0.008$). Pairwise comparison based on estimated marginal means revealed that inpatients had a larger decrease in symptoms measured by ABC than outpatients (mean difference 16.95).

Intervention Association with Patient Outcome from T1 to T2

Regarding the specific interventions, the univariate ANOVA revealed that psychotherapy moderately affected patients' outcome measured by PAC ($F(1, 85) = 4.34$, $p = .040$, $\eta^2_p = 0.049$), as well as by ABC ($F(1, 90) = 6.42$, $p = .013$, $\eta^2_p = 0.067$), see Table 4. Pairwise comparison showed that patients who received psychotherapy had a higher reduction in symptom burden measured by both ABC (mean difference 17.84) and by PAC (mean difference 9.03) than those who did not.

Table 4. Between-subjects effects of treatment intervention on PAC & ABC during treatment period from T1 to T2.

Intervention	PAC				ABC			
	df	F	P	η^2_p	df	F	p	η^2_p
Inpatient/outpatient treatment	1,85	0.73	.397	0.008	1,90	4.41	0.039*	0.047
Psychopharmacological treatment	1,85	0.65	.422	0.008	1,90	0.27	0.604	0.003
Individual therapy	1,85	4.34	.040*	0.049	1,90	6.42	0.013*	0.067
Duration of treatment	1,85	1.51	.223	0.017	1,90	2.56	0.113	0.028
Age	1,85	0.93	.339	0.011	1,98	0.02	0.892	0.000
T1	1,85	27.95	.000*	0.247	1,90	8.91	0.004*	0.090

* $p < .05$, large effect sizes in **bold**.

Duration of treatment, age, and sum scores at T1 were used as covariates.

Table 5. Mean sum scores on PAC & ABC at the three time points for inpatients vs outpatients and pairwise comparisons of mean difference between time points, Bonferroni correction for multiple comparisons.

Measure	T1		T1-T2		T2		T2-T3		T3		T1-T3	
	M	SD	Mean difference	<i>p</i>	M	SD	Mean difference	<i>P</i>	M	SD	Mean difference	<i>p</i>
PAC			12.2	<.001**			3.6	.037*			15.8	<.001**
Outpatients <i>n</i> = 62	90.1	17.6			79.4	15.1			73.9	16.9		
Inpatients <i>n</i> = 63	87.9	22.0			74.3	15.1			72.5	19.5		
ABC			17.7	<.001**			5.6	.018*			23.3	<.001**
Outpatients <i>n</i> = 63	63.7	29.5			48.4	25.6			39.4	26.1		
Inpatients <i>n</i> = 61	55.4	32.8			35.2	26.2			33.1	24.5		

p*<.05, *p*<.001.

PAC range: 42(min)-168(max), ABC range: 0(min)-174(max).

Psychopharmacological treatment as an intervention showed no effect on outcome on either the PAC ($F(1, 85) = 0.65, p = .422, \eta^2_p = 0.008$), or the ABC ($F(1, 90) = 0.27, p = .604, \eta^2_p = 0.003$). Duration of treatment was not associated with outcome on neither the ABC ($F(1, 90) = 2, 56, p = .113, \eta^2_p = 0.028$), nor the PAC ($F(1, 85) = 1, 51, p = .223, \eta^2_p = 0.028$).

Follow Up and Total Outcome

Pairwise comparisons found that outcome after the one-year follow-up period from T2 to T3 showed a continuous decrease in mean scores measured by PAC ($F(1, 123) = 4.44, p = .037, \eta^2_p = 0.035$), and by ABC ($F(1, 122) = 5.79, p = .018, \eta^2_p = 0.045$) in both groups, (mean difference = 3.6 and 5.6, respectively). Repeated measures found a total decrease in mean scores from T1 to T3 measured by PAC ($F(1, 129) = 84.06, p < .001, \eta^2_p = 0.395$), and by ABC ($F(1, 127) = 77.03, p < .001, \eta^2_p = 0.378$). Statistical comparisons between all three time points can be seen in Table 5.

DISCUSSION

The results from the current study indicate that autistic persons with ID who receive inpatient treatment for mental disorder differ from outpatients in multiple ways. In the current sample, psychotic and bipolar disorders were more frequent among inpatients and severe/profound ID were more frequent in the outpatient group. On average, inpatients received a higher number of interventions; they were more likely to be provided with psychotherapy, psychopharmacological treatment, assistance in the mapping and future managing of symptoms and a more comprehensive collaborative effort from different levels of service providers. Patients in both treatment groups had

a significant decrease in symptoms during treatment, indicating that treatment intervention for mental disorders in this population is associated with reductions in behavioral and mental disorder symptom burden. These findings further suggest that psychotherapy for autistic individuals with ID appears to be a promising approach in the treatment of co-occurring mental disorders.

Inpatient or Outpatient Treatment, Possible Determinants of Treatment Type

It has previously been suggested that people with more severe levels of ID are more likely to be admitted to specialized inpatient facilities than those with mild ID (Bakken & Martinsen, 2013). In the current study, the proportion of patients with severe/profound ID were higher among outpatients (40.5%) than inpatients (24.7%). However, population prevalence rates of ID in general have been found to be around 1% (Maulik et al., 2011; McKenzie et al., 2016), and individuals with severe/profound ID constitute a small minority if the ID population, with prevalence estimated at 0.13% (Arvio & Sillanpää, 2003). This may suggest that individuals with severe/profound ID were over-represented in both inpatient and outpatient treatment in specialized mental health services for people with ID. One possible explanation may be that some autistic individuals with mild ID may be provided treatment in more generic mental health services. As for the discrepancy between inpatient and outpatient treatment in the current sample, the high number of outpatients with severe/profound ID could reflect the patients' living arrangements. It is possible that many of the autistic persons with severe/profound ID are living in stable environments such as residential homes, and that these stable environments enables mental health treatment in the patients' home environments, see also Bakken and Hoidal (2019). The ages of inpatients and outpatients did not differ significantly, but the overall sample was slightly younger than previous studies (e.g. Hall et al., 2006; Xenitidis et al., 2004).

The current study found that severe mental disorder, comprising schizophrenia spectrum and bipolar disorders, was significantly more frequent among inpatients. This is in line with several previous studies, which have found severe mental disorders among inpatients to be around 30–59% (Alexander et al., 2013; Bakken & Hoidal, 2019; Cowley et al., 2005; Hall et al., 2006; Sheehan et al., 2021). This is also in line with the Norwegian national guidelines regarding the general population (NOU, 2019, p. 14). These disorders may involve a need for close monitoring and protection that can be difficult to provide in a community setting. Moreover, this may suggest that behavior problems can be a factor when it comes to deciding care pathway. A study by Wong et al. (2015) found that “behavior problems” have been the leading cause of admission to a specialized hospitals for people with ID for decades, while Tsakanikos et al. (2007) found “externalizing problem behaviors” predicting interventions. Hall et al. (2006) explored the determinants

for inpatient care in individuals with ID and mental disorder, and found that the perceived risk and unmet needs were the significant factors. A link has been suggested between behaviors such as self-harm and aggression and mental disorders (Helverschou, Bakken, et al., 2021; Myrbakk & von Tetzchner, 2008b; Painter et al., 2018). A recent study of the relationship between challenging behavior and mental health symptoms (Kildahl, Ludvigsen, et al., 2023) concluded that though these behaviors may constitute atypical expressions of mental health symptoms, the lack of specificity in challenging behaviors indicates that such behaviors cannot be used to reliably identify specific mental disorders. In light of this complexity, and the general complexity of assessing mental disorder in autistic persons with ID (Bakken et al., 2016; Kildahl, Oddli, et al., 2023), it may not be surprising that some participants were not diagnosed with a mental disorder following comprehensive assessment. A previous study on referral trends of autistic people with ID and suspected mental disorder found that almost half the population did not meet criteria for a mental disorder (Tsakanikos et al., 2007), which is higher than in the current study. Notably, the proportion that did not meet criteria for a mental disorder was lower among participants referred for inpatient treatment.

In the sample from the current study, the patients receiving inpatient treatment did not have a higher mean score on the ABC than the patients receiving outpatient treatment, indicating that the occurrence of challenging behavior was similar in the two treatment groups. However, two of Norway's four health regions did not have specialized inpatient facilities for autistic persons with ID at the time of the study, thereby eliminating this treatment option for 24 participants. These results indicate that the patient-needs do not solely determine the care pathway, as this also seems to be affected by health region affiliation.

The level of ID and the severity of mental disorder, appear to have affected the choice of treatment in the current study. In the regions that have access to inpatient facilities, autistic patients with mild or moderate ID and co-occurring severe mental disorder appear to be more likely to be referred to inpatient treatment.

Do Inpatients Get “More” Treatment?

Inpatient treatment will inevitably lead to closer contact between patient and professionals, and it is not surprising that we find a higher number of treatment interventions provided for inpatients compared to outpatients. This is consistent with findings by Hall et al. (2006) who compared community and inpatient groups and found that inpatients received three times as many interventions. In the current study, outcome measured by ABC improved more with the inpatient treatment group compared to the outpatient

treatment group. Inpatients were more often provided with interventions such as creating a crisis plan and a differentiated intervention plan, as well as family conversations and guidance of county level specialized health services. This could reflect the importance of collaborative efforts from the surrounding network. Interdisciplinary collaboration has been highlighted as a key factor for the successful management of mental disorders in autistic persons with ID (e.g. Bhaumik et al., 2008; Hackerman et al., 2006; Hall et al., 2006). In a recent study in which inpatients with ID were interviewed about their experiences of a specialized inpatient ward, feeling safe, contained, and validated were highlighted as important for these patients, and their relationships with hospital staff were found to be a key factor for patient satisfaction (Sommerstad et al., 2021).

It is noteworthy that the inpatient facilities in this study are all specialized services for people with ID. According to a study of service satisfaction for individuals with mental health problems and dual disabilities (Man & Kangas, 2019) parents are generally more satisfied with specialized mental health services than generic services. A recent review from Melvin et al. (2022) found evidence that admission to inpatient services was associated with improvements in mental health for patients with ID, and indications of better outcomes for those patients admitted to specialist services. Chaplin et al. (2009) evaluated mental health services for persons with ID and other developmental disorders in the UK, and found that people are not satisfied with generic services. The debate on generic vs specialized services is ongoing, and recent findings from Norway, indicate that patients with moderate, severe, or profound ID have very limited access to generic mental health services (Munkhaugen et al., 2021).

Half of the inpatient sample received psychotherapy during their admission, while only 10% of the outpatients received this intervention. Mental health professionals providing psychotherapy are likely to be more easily accessible to patients in an inpatient setting, allowing for greater flexibility in the timing of such an intervention. Moreover, inpatient settings may allow the patient to get to know and interact with the therapist in more informal settings prior to receiving psychotherapy, which may also be helpful for autistic people with ID. The large geographical area served by outpatient clinics can be an obstacle for both patient and therapist, while there may also be other possible explanations associated with the way treatment is organized in inpatient and outpatient facilities, respectively.

The high proportion of inpatients receiving psychopharmacological treatment (85.5%), particularly antipsychotic medication (70.6%), may reflect the severity of the mental disorder (Bakken et al., 2023). However, 56% of the outpatients also received medication, 33.8% of which were provided antipsychotics. In both groups, the proportion of patients provided with antipsychotics is substantially higher than the proportion of

patients diagnosed with severe mental disorder. This may also reflect the practice of prescribing medication for a large range of indications, rather than targeting specific mental disorder (Matson & Hess, 2011). While we found no association between being provided with psychopharmacological treatment and outcomes, despite controlling for the severity of mental disorder, we have no information concerning prescription practices for the current sample and these findings must therefore be interpreted with caution.

Treatment Interventions Seem to Be Effective

Patients in both treatment groups had a decrease in symptoms from T1 to T2 measured by the PAC and the ABC, and a small but continuous improvement during the follow-up period from T2 to T3. This finding is similar to the study on inpatients and community groups by Hall et al. (2006), which found substantial improvement in both groups.

Whether or not the clinicians reported that participants had been provided psychotherapy as a treatment intervention was associated with reduced symptom load measured by both PAC and ABC. There are no comparable studies of this size on psychotherapy for autistic persons with ID and co-occurring mental disorder. In a systematic review of the effectiveness of various psychotherapies for individuals with intellectual and developmental disabilities, Shepherd and Beail (2017) found indications of positive outcome, though controlled studies remain scarce. Adaptations for psychotherapy have been described for autistic persons (Koenig & Levine, 2010) and individuals with ID (Jackson & Beail, 2013). In a sample of autistic students without ID, Anderberg et al. (2017) found that these students showed similar level of improvement to the non-autistic students, but needed a longer time in therapy. Despite the growing body of evidence on adaptations, Osugo and Cooper (2016) state that psychosocial interventions such as psychotherapy are less accessible, even for people with mild ID. Though knowledge of the core features of ASD and the implications of ID appear to be important in the adaptation of psychotherapy for these groups, lack of such knowledge can be a barrier for professionals in attempting to provide psychotherapy, thereby reinforcing the difficulties that some individuals experience accessing treatment (Camm-Crosbie et al., 2019). A pragmatic approach has been suggested, acknowledging the need to apply interventions developed for the general population to ensure the treatment of mental disorders for people with ID, rather than waiting for sufficient evidence on the effectiveness of the interventions for this group (Osugo & Cooper, 2016). The findings from the current study also support this approach for autistic people with ID, and suggest that psychotherapy is an important aspect of the treatment of mental disorder for this population.

LIMITATIONS AND STRENGTHS

One of the strengths of this study is the high number of participants, as well as the inclusion of autistic persons with ID and multiple complex co-occurring physical conditions and mental health issues, who are often excluded from research (Hellerschou, Bakken, et al., 2021). We are currently not aware of any other studies of this size that aim to evaluate treatment outcomes using a mental health assessment tool developed especially for this population (PAC).

The findings of this study represent a specific population recruited over a ten-year period in Norway. The specialized centers did not necessarily include all the referred autistic people with ID and mental health problems, indicating that the sample is unlikely to be representative and therefore not necessarily generalizable. The sample had a wide age range and included participants across different developmental periods, which may have affected the manifestations of mental health symptoms. However, the sample was predominantly comprised of adults, and only six participants were below the age of 18. It should be noted that the PAC is yet to be validated for children and adolescents, and may not have been an appropriate assessment tool for these six individuals.

Some participants had more than one psychiatric diagnosis, and this has not been considered in the current study. Rather, the participants were grouped in a hierarchical order, based on their most severe diagnosis. This way of conceptualizing “severity” may or may not be in accordance with the subjective distress of the participants or the severity of their symptom burdens. Moreover, traumatic experiences may have affected participants in ways that were not captured by their mental disorder diagnoses, as recently described in a study using a partially overlapping sample (Kildahl & Hellerschou, 2023), and this was not controlled for in the current study. Somatic disease or other medical conditions, which were not included in the current study may similarly have affected the mental health of the participants, as well as the trajectory during treatment.

All intervention variables were dichotomized, according to whether or not the patients were provided with a certain intervention. Thus, one of the weaknesses of the study is that we do not have further information regarding the content or extent of the interventions, or by whom the interventions were provided. The AUP study is a multi-center study conducted over a period of 10 years in eight clinical departments across a large geographical area and multiple hospitals. Thus, the level of detail in the data had to be balanced with the feasibility of collecting longitudinal data in different clinical environments. Therefore, we have no information about the nature or frequency of the psychotherapy the patients received nor the qualifications of the therapists, and the finding concerning psychotherapy is based only on clinicians’ reports about whether or not each participant had been provided psychotherapy. This study did not investigate the diagnostic distribution, level of ID or other characteristics of the patients who received therapy. There was no control group. Consequently, no

assumptions of causality between the interventions and outcome could be made. Level of ID was reported by clinicians as a dichotomous variable during data collection, as mild/moderate or severe/profound, and further exploration of effects according to level of ID was not possible.

Not all Health Regions have access to specialized inpatient treatment, thereby eliminating this treatment option for 24 patients. This may have affected the results regarding care pathway for the patients in the current study.

The lack of association between psychopharmacological treatment and outcomes may have been affected by variations in prescription practice, rather than the lack of effect of such treatment. Moreover, a large majority of the sample received various kinds of psychopharmacological treatment and a more differentiated approach to investigating this intervention might have been necessary to delineate its effects.

Duration of treatment were highly variable in the study sample, and it is unclear how this may have affected the outcome measures. Moreover, the duration of outpatient treatment may involve a high degree of heterogeneity when it comes to treatment intensity, as no information was available with regard to the number of sessions within the treatment period.

Data were collected by clinicians as part of regular assessment and treatment and not by trained researchers, which could increase the risk of bias.

Finally, no self-report measures were included in the study protocol. We therefore have no information regarding the patients' subjective experience of their symptoms or the interventions provided. The reliance on behavioral checklists such as the PAC and the ABC used with proxy informants may involve a risk of over-emphasizing externally observable symptoms at the expense of intra-psychic symptoms (Kildahl, Oddli, et al., 2023).

CLINICAL IMPLICATIONS

The geographical differences show that two of Norway's four health regions have no accessible inpatient psychiatric facilities for autistic people with moderate, severe, or profound ID. This highlights the need for guidelines regarding hospitalization for this group (Bakken & Martinsen, 2013), as well as the need for developing new ambulatory models on delivering mental health services to this group, including education and training of service providers. Our findings suggest that psychotherapy can be a helpful intervention for some autistic patients with ID.

FURTHER RESEARCH

Further studies are needed on the efficacy of treatment interventions for autistic persons with ID and co-occurring mental disorders. In particular, there is a need for more in-depth studies of such interventions. Moreover, more differentiated investigations of potential associations between patient characteristics and the

effects of various treatment interventions, as well as more detailed exploration of the characteristics of interventions such as psychotherapy when provided in this population, are likely to be fruitful avenues for further research. Also, there is a need for research involving further exploration of patients' individual trajectories throughout the treatment course, including, for example, characteristics associated with treatment effects and risk of relapse. Exploration of associations between specific mental disorder diagnosis and psychopharmacological intervention for this group would also be of interest.

CONCLUSION

The results from the current study indicate that the treatment of mental disorders is effective in autistic people with co-occurring intellectual disability, and that the provision of psychotherapy may be a currently underutilized aspect of such treatment in this population.

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Appendix 1.

Cronbach's Alpha for PAC calculated from scores on T1

Scale	Number of items	α
General adjustment problems	12	.69
Psychosis	10	.76
OCD	7	.75
Depression	7	.76
Anxiety	6	.67

Cronbach's Alpha for ABC calculated from scores on T1

Scale	Number of items	α
Irritability	15	.87
Lethargy	16	.88
Stereotypy	7	.77
Hyperactivity	16	.82
Inappropriate speech	4	.69