

ORIGINAL ARTICLE

Mental health, challenging behaviour, diagnosis, and access to employment for people with intellectual disabilities in Norway

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Abstract

Background: Studies have found that presence of challenging behaviours and mental health problems limits employment for people with intellectual disabilities. This study investigates the associations between age, gender, living condition, level of intellectual disability, diagnoses, behaviour, mental health, and employment in adults with intellectual disabilities in Norway.

Method: A cross-sectional community-based survey including 214 adult participants (56% men) with intellectual disabilities.

Results: In our sample, 25% had no organised day activity, 27% attended non-work day care, 19% attended sheltered employment, or day care with production, without pay and 29% worked in paid sheltered employment. One participant attended mainstream employment. Moderate and severe/profound level of intellectual disability, possible organic condition and irritability significantly reduced the odds of employment (paid and unpaid).

Conclusion: Findings suggest unequal access to the sheltered employment that was meant to be inclusive. More individualised evaluation of prerequisites is suggested to further facilitate employment for this group.

KEYWORDS

challenging behaviour, employment, inclusion, intellectual disabilities, mental health

1 | INTRODUCTION

There is evidence that employment is generally good for the physical and mental health both for people with and without intellectual disabilities (Robertson et al., 2019; van der Noordt et al., 2014). Findings generally point to that the functions work performs for people with intellectual disabilities are similar to that of the general population (Dean et al., 2018; Reinertsen, 2015). At the same time, employees

with intellectual disabilities do not attend the labour market on the same terms as others, which has consequences for the significance of the work for them. The extent to which the activities of employees with intellectual disabilities coincide with what is traditionally associated with work varies in Norway (Tøssebro et al., 2019).

A better sense of autonomy, improved self-reported well-being, reduced depression and anxiety symptoms, personal development and mental health promotion are among the benefits of employment

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(Modini et al., 2016). Findings from longitudinal studies in the general population suggest that employed people, compared to the unemployed, have lower levels of anxiety and depression, lower depressive affect, lower psychological distress, better mood, fewer psychological symptoms, and higher perceived quality of life (Hergenrather et al., 2015).

With the growing recognition of the rights of people with intellectual disabilities, access to employment for this group has become a social and political priority internationally (Blamires, 2015). Equal rights to employment are included in the UN's Convention on the Rights of Persons with Disabilities (CRPD) (United Nations General Assembly, 2007). A more inclusive workforce with equal opportunities in the labour market is also an important political goal in Norway. Laws, legislation, and political initiatives protect the rights of individuals with intellectual disability to lead active independent lives, make use of their resources, and participate in the workforce (Ministry of Children Equality and Social Inclusion, 2012; Ministry of Labour and Social Affairs, 2002). An increasingly knowledge-intensive labour market has distanced people with intellectual disabilities from mainstream jobs and the gap between these individuals' prerequisites and work requirements in mainstream employment has become increasingly large. The labour market policy's principles of integration and normalisation are today founded on the fact that labour market measures for people with disabilities must fill precisely this gap between prerequisites and the work requirements on the labour market (Ministry of Labour and Social Affairs, 2002).

However, there is a disconnect between legislation and practice when it comes to paid and unpaid employment for people with intellectual disabilities, as evidenced by Norway's relatively low rates of both (Halvorsen et al., 2016; Kuznetsova et al., 2017). In a large Norwegian registry-based study, Engeland et al. (2021) reported that 26.1% of people with intellectual disabilities were registered in sheltered employment or facilitated jobs with support. Only 2.4% of Norwegians who were working age with intellectual disability were in mainstream employment, according to a study by Wendelborg et al. (2017).

International studies have investigated how mental health, behavioural problems and functional level are associated with employment for people with intellectual disabilities. Cooper et al. (2007) found no significant association between not having any daytime occupation and mental ill-health. Martorell et al. (2008) on the other hand found a significant association between psychiatric disorders, age, behavioural problems, level of functioning, and paid employment, but no significant association between IQ and paid employment. People with intellectual disabilities may experience psychiatric disorders just like everybody else but reported prevalence rates of dual diagnosis (intellectual disability and a psychiatric disorder) vary greatly. In systematic reviews, Buckles et al. (2013) found the rate ranging from 13.9% to 75.2%, while Whitaker and Read (2006) reported 3.9% to 46.3%. In a recent meta-analysis the pooled prevalence of dual diagnosis was 33.6% (Mazza et al., 2020). Challenging behaviour is described as culturally deviant recurring behaviour of such intensity, or duration that it substantially compromises the physical safety of the person or

others, or the behaviour poses a risk to the use of, or denies access to, common community facilities (Emerson & Einfeld, 2011). Baker and Blacher (2015) reported that a clear association between low intelligence quotient (IQ) and challenging behaviour is evident in people with intellectual disabilities. People with challenging behaviour have been found to have a higher prevalence of psychiatric problems and mental health disorders than people without this behaviour (Poppes et al., 2010; Rojahn et al., 2004).

Having an intellectual disability in combination with other diagnoses may affect employment. The employment rate of people with a combination of intellectual disabilities and cerebral palsy has been found to be low (Zwicker et al., 2017), but a relatively high rate of people with Down syndrome, compared to other diagnostic groups of people with intellectual disabilities, are employed (Bush & Tassé, 2017).

Studies have also found level of disability to have a substantial impact on employment, and people with mild intellectual disabilities have a significantly higher likelihood of being employed than those with moderate or severe intellectual disabilities (Hum & Simpson, 1996; Wilkins, 2004). Living condition has also been found to affect employment, where people with intellectual disabilities living with parents or independently were more likely to find and maintain work (Dusseljee et al., 2011; Holwerda et al., 2013). Being capable of handling daily living activities may be the best predictor of successful employment for people with intellectual disabilities (McCausland et al., 2020).

A previous study by Engeland et al. (2020) investigated associations between age, gender, psychiatric hospital admissions and employment in a Norwegian sample with mild intellectual disabilities. Still, no Nordic studies have, to our knowledge, investigated how assessments of mental health and challenging behaviours are associated with employment. Accordingly, the aim of this study was to investigate associations between age, gender, living condition, level of intellectual disability, diagnoses, behaviour, mental health, and employment in a Norwegian community-based sample of adults with intellectual disabilities.

2 | METHODS

2.1 | Study design

The North Health in Intellectual Disability (NOHID) study was a cross-sectional multicentre study based on information from participants living in the north and middle of Norway.

2.2 | Setting and procedure

All data were collected between October 2017 and December 2019 in the Norwegian municipalities of Trondheim, Malvik, Narvik, Balsfjord and Tromsø. All data collection predated the outbreak of the COVID-19 pandemic in Norway, and the pandemic should not have

affected our data material in any way. Research assistants with professional background (research nurses, intellectual disability nurses and a physiotherapist) conducted the recruitment of participants and data collection. To secure the quality of the data collection virtual meetings with all collaborators were held on a regular basis.

Eligible participants were identified using information available from the municipality (receiving relevant services) or as registered recipients of the specialist health services (including mental health services) at the University Hospital of North Norway (UNN) or St. Olav's hospital in Trondheim. An invitation letter to the study was sent out to each eligible person. The person's next of kin or guardian was then contacted by telephone. A reminder letter was sent out to all nonrespondents after approximately a month. Eligible participants not registered at the hospital's specialist health services were contacted directly by staff of the municipalities. The municipal services and the user organisations were informed, and the study was promoted through the services, regional television and radio, and use of the hospital's in-house newspaper (Olsen et al., 2021).

A comprehensive information sheet, including an easy-to-read version, was provided to all potential participants. Informed consent was obtained from each individual or their legal representatives. Information was collected through structured interviews and questionnaires from participants and/or their next of kin, carers, or support staff. In our final analysis 1% of the cases used self-report data, 48% of the cases used a mix of self and proxy data and 51% of the cases used proxy data. Questionnaires were completed at the research unit in the hospital, at the participant's home, at another preferred location, or by telephone. Information on level of intellectual disability and other health conditions was corroborated by participants' medical records (hospital or GP). The study was approved by the Committee for Medical Research Ethics, Health Region North (2017/811) and the Data Protection Officer at UNN and St. Olavs Hospital. The study is registered in Clinical Trials, identification number: NCT05703503.

2.3 | Participants

Potential participants were all adults that had a confirmed diagnosis of intellectual disabilities according to the International Statistical Classification of Diseases and Related Health Problems-10 criteria (World Health Organization, 2019), were at least 16 years of age and lived in the defined municipalities. Both people with and without co-occurrence of other diagnoses were included.

There were no pre-determined exclusion criteria, but some individuals were excluded when valid information was difficult to attain, or the diagnosis of intellectual disability was removed. Eligible non-participant information was available only in the northern municipalities, which included 266 eligible individuals and 140 participants for a 53% participation rate. The 140 participants were younger, with a mean age of 35.3 (SD 14.1), compared with the 126 eligible non-participants, with a mean age of 42.3 (SD 15.9) ($p < .001$), while gender differences were similar between the two groups. In central Norway, the participation rate was lower, as a result there were

74 participants in the sample with a similar age and sex distribution to the northern regions.

Intellectual disability was graded in the categories: mild (IQ 50–69), moderate (IQ 35–49), severe (IQ 20–34) or profound (IQ < 20) (World Health Organization, 2019). The degree of intellectual disability of eight individuals was determined from information on adaptive functioning in collaboration with specialised intellectual disability health staff (Tassé et al., 2019). Severe and profound intellectual disability were combined into one category in the analysis.

The living conditions of the participants were categorised as (1) living independently or with family or (2) living in a group home with care. Adults with intellectual disabilities in Norway generally reside in individual apartments where they receive services from the municipalities as needed. Some live independently, while others live in clustered apartments with shared housing areas.

2.4 | Socio-demographics, functional level, and diagnoses

The internationally developed POMONA-15 (P15) health indicators (Perry et al., 2010) were used to register diagnoses and to assess the socio-demographics: age, gender, living condition and occupation. A collaboration of 13 EU member states created the P15 assessment battery to measure health disparities for adults with intellectual disabilities. A group of health indicators were developed and field-tested as a result of a comprehensive literature search. Indicators were chosen if they were judged significant, practical, quantifiable, and if the data they produced would allow for comparisons between the health of people with intellectual disabilities and the general population (Perry et al., 2010; van Schrojenstein Lantman-de Valk et al., 2007).

2.5 | Employment

When a person's job capacity is deemed low and there is no chance of improvement, a disability pension is granted in Norway. When they turn 18 years old, almost all Norwegians with intellectual disability begin receiving disability benefits (Proba, 2016). Even though employment support is still available, recruitment to mainstream employment among people with intellectual disabilities is low (Proba, 2016; Spjelkavik et al., 2012). People with intellectual disabilities receiving disability benefits more often receive individual facilitation in sheltered workshops via the state support measure called permanently adapted employment (In Norwegian: Varig Tilrettelagt Arbeid, VTA). About 20% of people with intellectual disabilities between the ages of 20 and 69 work in VTA (Engeland & Langballe, 2017; Wendelborg et al., 2017). Such facilitated employment measures are managed as public or public-private partnerships. When individuals participate in a permanently arranged measure, they keep their disability benefit. The employer can pay a small bonus salary that the individual gets in addition to the disability benefit, but this is not a requirement in Norway (NOU, 2012, p. 6). Thus, many individuals in our data

material are employed, perceive themselves as employees and are expected to meet certain production requirements (NOU, 2012, p. 6), but will still not receive the small bonus salary. Activities and assignments in sheltered employment and day care will sometimes be overlapping. Day care facilities are publicly financed and provide productive day activities and alternative daily activities aimed to increase coping (Public Health Act, 2011). About half of all people with intellectual disabilities of working age participated in an organised day activity in 2012 (NOU, 2016, p. 17).

Employment was therefore defined as participation in mainstream or sheltered employment, and included activities with production in day care centres, whether it resulted in the limited salary in addition to a disability pension or not. The rest of our participants reported to be in an organised non-work day activity without production requirements or have no formal out-of-home activity. Those under education were excluded from the analysis. The employment variable in this study was grouped into two categories for analysis: (a) mainstream and sheltered paid or unpaid employment, which included day care with production and (b) organised alternative activities in day care without production requirements or no formal out-of-home activity. The highest-level of day activity was used for the analysis to prevent duplicate registrations of people who reported multiple types of activities.

2.6 | Instruments

The Aberrant Behaviour Checklist-Community (ABC-C) was developed to evaluate behavioural issues in people with intellectual disabilities (Aman & Singh, 2017). The ABC-C is a rating scale with 58 items where each item is scored on a four-point scale from (0), not a problem, to (3), the problem is severe. A type of behaviour rated as a severe problem on the ABC-C corresponds to a challenging behaviour as it is defined by Emerson et al. (2001) These items are summed within five subscales: (I) Irritability (15 items), (II) Social Withdrawal (16 items), (III) Stereotypic Behaviour (7 items), (IV) Hyperactivity/Non-compliance (16 items) and (V) Inappropriate Speech (4 items). The internal consistency, factor structure, and divergent and convergent validity of the Norwegian version of the ABC-C have been found to be satisfactory (Halvorsen et al., 2019).

The MPAS-Check (previously known as the PAS-ADD Checklist) is a questionnaire developed to identify potential mental illness in people with all levels of intellectual disabilities (for an overview see, Moss, 2012). A life-events checklist and 25 symptom items scored on a four-point scale measures the presence of a range of problems that may be part of a mental health disorder. Three subscale scores are generated: Possible Organic Condition, Affective/Neurotic Disorder and Psychotic Disorder. According to Moss et al. (1998), a set of items developed using the ICD-10 criteria corresponding to a condition of dementia was renamed 'possible organic condition'. This was due to the significance of avoiding any inferences about the presence of dementia until after a thorough examination by personnel with the necessary training. Each subscale has a specified threshold score

(6 for affective/neurotic, 5 for organic, and 2 for psychotic), where scores equal to, or above threshold indicates that further clinical or mental health assessment is advised. The MPAS-Check is a screening instrument, thus crossing threshold scores do not prove that the subject has a disorder. This must be assessed by appropriately qualified specialists. The Checklist is designed to be used by non-specialists who know the subject well and the items are expressed in common language (Moss et al., 1998). Independent replication of the psychometric properties of the MPAS-Check has found the internal consistency to be acceptable. The MPAS-Check was found to be sensitive to variations between diagnostic groups and had an overall sensitivity of 66% and a specificity of 70% (Sturmey et al., 2005). Taylor et al. (2004) concluded that the MPAS-Check was a sensitive tool for identifying mental health problems in populations with intellectual disabilities but suggested further investigation regarding the specificity of the instrument.

2.7 | Data analysis

All analyses were performed using IBM SPSS Statistics for Windows Version 28.0.1.0. We adopted the imputation methods recommended in the manual of the screening instruments (Aman & Singh, 2017) that assigned values for missing responses to compensate for missing data. A recommended maximum amount of missing data would be tolerated before discarding the data for that subscale. A total of 15 participants had more missing data than recommended and were omitted from the analysis. In regression analysis, the default is to eliminate any cases with missing data on any of the variables. As a result, six additional participants were not included in the regression analysis. Of these 6, the level of intellectual disability was unknown in 5 participants and 1 additional participant had missing data in the other diagnostic variables. Additionally, participants enrolled in full time education with no other occupation ($n = 13$) were excluded from the final analysis ($n = 180$) because this was irrelevant to the research questions at hand.

As 99% of cases included in the analysis involved proxy respondents a variable concerning data source was not included in the analysis. The cases where data were obtained through self-report (1%) did not deviate significantly from the other cases.

Descriptive statistics including the frequency, mean and standard deviation (SD) were used to describe population characteristics.

Dummy variables of the three levels of intellectual disability on an ordinal scale were created with 'mild intellectual disability' as the reference category.

A series of checks were done to ensure that the relevant assumptions for logistic regression were met in our data material. There was an adequate number of events per independent variable and a lack of strongly influential outliers that could distort the outcome and accuracy of the model. Nominal variables were checked in crosstabs making sure there were adequate expected counts (above 5). The assumption of linearity of independent continuous variables and their logit/ log-odds were checked. Multicollinearity was checked between

independent variables. All variance inflation factor (VIF) values for the independent variables were below 3, which indicated that multicollinearity would not be a problem in our regression model. All our variables met the relevant assumptions for logistic regression and the enter method was applied. Deciding which variables to include in the final model based solely on significance after univariate analysis can lead to bias and increase the risk of capitalising on chance features of the data (Judd & McClelland, 1989). Instead, the inclusion of variables in the final model was based on our initial hypothesis grounded in previous research (Engeland et al., 2020; Foley et al., 2014; Martorell et al., 2008; Modini et al., 2016; Stephens et al., 2005).

A multivariate logistic regression analysis was then performed to predict the relationship between the independent variables: gender (male/female), age (scale), level of intellectual disability (ordinal scale 1–3), the three subscale scores generated by the MPAS-Check: Organic Condition (scale), Affective/Neurotic Disorder (scale), Psychotic Disorder (scale), the five subscales from the ABC-C: (I) Irritability (scale), (II) Social Withdrawal (scale), (III) Stereotypic Behaviour (scale), (IV) Hyperactivity/Non-compliance (scale) and (V) Inappropriate Speech (scale), Down syndrome (yes/no), autism (yes/no) and cerebral palsy (yes/no), living condition (living independently or with family/ living in a group home with care) and our dependent binary variable of employment. The effect sizes of the predictors/independent variables are given as odds ratio (OR) with 95% confidence interval. The level of significance was set to $p < .05$. This study reports multiple analyses that leaves it vulnerable to getting false-positive results. The Hommel correction was applied to control for the family-wise error rate.

The degree of pseudo-explained variance was reported according to Nagelkerke R^2 , while the Hosmer and Lemeshow test was used to investigate model fit of the final model.

3 | RESULTS

3.1 | Participant characteristics

A total of 214 participants [44% women, mean age 36.1 (SD 13.8) years] were included in the study. The participants' levels of intellectual disability were distributed as mild (38%), moderate (26%), severe (24%) profound (8%), and unknown (4%). Further, 22% were diagnosed with autism, 19% with Down syndrome and 11% with cerebral palsy.

In our sample, 25% had no organised day activity, 27% attended an organised non-work day activity/ day care, 19% attended unpaid sheltered employment or activity with production requirements in day care and 29% attended sheltered employment with pay. Only 1 participant had mainstream employment. Thus, 48% of the participants were employed according to the previously described definition of work used in this study.

The average hours worked per week, by the 48% of our participants in our employed group, was 20.4 h with a standard deviation of 8.9 h. Hours worked ranged from 5 to above the standard 37.5 h

working week (40 h). Characteristics of the participants in relation to our binary variable of employment are presented in Table 1.

3.2 | MPAS-check

The overall prevalence of mental health problems, represented by scores at or above threshold in one or more subcategories, found in the study population using the MPAS-Check was 18.5%. The prevalence rates on the checklists three diagnostic categories were: affective/neurotic disorder 12.8%, possible organic condition 5.1% and psychotic disorder 11.2%. The average score on each of the three subscales ranged from 0.39 to 1.77, with the lowest score on the subscale for psychotic disorder and highest on the subscale for affective or neurotic disorder.

3.3 | Aberrant behaviour checklist-community (ABC-C)

Thirty-two participants had one or more items on the ABC-C scored as a severe problem, thus 16.1% of our sample were reported to show

TABLE 1 Population characteristics and differences in relation to day activity ($n = 186$).

Characteristic	Non-work day care or no formal out-of-home activity ($n = 97$)	Paid/unpaid mainstream/sheltered employment, including activities with production in day care ($n = 89$)
Age (years), mean (SD)	41 (14.6)	34 (11.1)
Median (range)	41 (18–78)	31 (17–61)
Gender, n (%)		
Women	48 (57)	36 (43)
Men	49 (48)	53 (52)
Level of intellectual disability, n (%)		
Mild	21 (29)	52 (71)
Moderate	25 (50)	25 (50)
Severe/profound	48 (83)	10 (17)
Down syndrome, n (%)	16 (42)	22 (58)
Autism diagnosis, n (%)	23 (61)	15 (39)
Cerebral palsy, n (%)	19 (79)	5 (21)
Living condition, n (%)		
Group home with care	79 (58)	58 (42)
Lives with family or independently	18 (37)	31 (63)

at least one form of challenging behaviour (Emerson et al., 2001). The 15 items on the irritability subscale were most frequently scored as severe problems. The average score on each of the five subscales ranged from 1.27 to 4.99, with the lowest score on subscale (III) Stereotypic Behaviour and highest on subscale (I) Irritability. The average total score was 15.75.

3.4 | Variables associated with employment in the multivariate logistic regression analysis

In the binary logistic regression analysis presented in Table 2, moderate level of intellectual disability (OR = 0.09, 95% confidence interval (CI) 0.03, 0.31), severe/profound level of intellectual disability (OR = 0.02, 95% CI 0.01, 0.09), the MPAS-Check subcategory: possible organic condition (OR = 0.44, 95% CI 0.26, 0.75), the ABC-C subscales (I) irritability (OR = 0.79, 95% CI 0.69, 0.90) and (V) inappropriate speech (OR = 1.75, 95% CI 1.21, 2.53) were significant explanatory variables for employment after the Hommel correction was applied. The Hosmer and Lemeshow test indicated a good model fit (χ^2 6.132, df = 8, and p = .633). The Nagelkerke R^2 was 0.592.

As shown in Table 2, no significant age differences were found and there were no significant differences between genders regarding employment. Compared to participants with mild intellectual disability, those with moderate and severe/profound level of intellectual disability were less likely to be employed. Further, there were no significant associations between employment and the two MPAS-Check subcategories: psychotic disorder and affective or neurotic disorder. However, participants scoring higher on the third subcategory: possible organic condition, were less likely to be employed. Scoring higher on the (I) irritability subcategory of the ABC-C, decreased the odds of being employed. In contrast, scoring higher on the ABC-C subcategory (V) inappropriate speech, increased the odds of being employed. The other three ABC-C subcategories showed no significant differences. No other significant diagnostic differences than levels of intellectual disability were found regarding employment. Worth noting is that before controlling for the familywise error rate with the method of Hommel, people with Down syndrome were significantly more likely to be employed (OR = 5.21, 95% CI 1.58, 17.2). However, this result was close to, but no longer significant (p = .078) after the Hommel correction was applied. There were no significant differences in employment between the groups: (1) living independently or with family and (2) living in a group home with care.

Characteristic	OR	95% CI	<i>p</i>	Hommel
Age	0.98	0.94–1.02	.365	0.747
Gender				
Women (n = 90)	3.52	1.30–9.51	.013	0.143
Level of intellectual disability				
Mild			<.001	0.015
Moderate	0.09	0.03–0.31	<.001	0.015
Severe/profound	0.02	0.01–0.09	<.001	0.015
MPAS-Check subcategories				
Psychotic disorder	2.16	0.90–5.20	.085	0.652
Possible organic condition	0.44	0.26–0.75	.003	0.039
Affective or neurotic disorder	1.24	0.98–1.57	.070	0.560
ABC-C subcategories				
Irritability	0.79	0.69–0.90	<.001	0.015
Social withdrawal	0.97	0.83–1.13	.715	0.747
Stereotypic behaviour	0.86	0.60–1.24	.423	0.747
Hyperactivity/noncompliance	1.02	0.91–1.14	.747	0.747
Inappropriate speech	1.75	1.21–2.53	.003	0.039
Down syndrome	5.21	1.58–17.2	.007	0.078
Autism	1.68	0.47–5.97	.424	0.747
Cerebral palsy	0.23	0.49–1.06	.060	0.480
Living condition	0.65	0.22–1.95	.446	0.747

TABLE 2 Factors associated with employment in multivariate regression analysis (n = 180).

Note: Employment was defined as participation in paid or unpaid mainstream employment or facilitated employment measures, including activities with production in day care centres. Mild intellectual disability is the reference category for the participants' levels of intellectual disability.

Abbreviations: ABC-C, The Aberrant Behaviour Checklist-Community; CI, confidence interval; Hommel, p -value adjusted by the Hommel correction; MPAS-Check, Moss Psychiatric Assessment Schedules; OR, odds ratio; p , unadjusted p -value.

4 | DISCUSSION

This study found level of intellectual disability, mental health problems identified as a possible organic condition and certain challenging behaviours, that is, irritability and inappropriate speech to be significant explanatory variables for paid and unpaid employment in a Norwegian community-based sample of adults with intellectual disabilities.

Only one participant in our sample attended mainstream employment. This is comparable with low prevalence in previous Norwegian reports (Proba, 2016). The UN committee on the CRPD expressed concern about Norway's lack of implementation of the convention and the limited inclusion of people with disabilities in the mainstream labour market (Committee on the Rights of Persons with Disabilities, 2019). The organised effort to help more people with lower capacity to work into employment in Norway started with the development of measures based on a social medicine model and sheltered employment. A sheltered sector was, therefore, developed instead of other possible routes such as quotas for mainstream employment or an emphasis on wage subsidies in mainstream work (NOU, 2012, p. 6). This facilitated a strategy that may explain the low prevalence of mainstream employment among people with intellectual disabilities in Norway.

Of our participants, 48% attended mainstream or sheltered paid or unpaid employment, including activities with production in day care centres, and were categorised as employed. The remaining 52% attended organised non-workday care/day activities or had no formal out-of-home activity.

The employed proportion of our participants was larger than previous Norwegian reports from 2013 where 25% of people with intellectual disabilities of working age were registered in paid or unpaid employment. More than 90% of these employed participants worked in sheltered employment (NOU, 2016, p. 17). More recently in a large study ($n = 14,517$), Engeland et al. (2021) reported 26.1% registered in sheltered employment or facilitated jobs with support among people with intellectual disabilities in Norway. Only people registered in public daycare, sheltered employment or facilitated jobs with support were included in the Norwegian report and the study by Engeland et al. (2021). There may be people employed who are not registered with the employment services and this could partly explain the higher number reporting to be employed in our study. Reasons for not registering with the employment services could, for example, be believing registration is needed only if the work includes a salary (in addition to the disability pension) or if the job is offered from friends or family. A more obvious reason for a higher number of employed people in our study, compared to the other Norwegian study (Engeland et al., 2021), is differing definitions of employment. Our study defined organised day care with production as employment and therefore included more people to the employed group. Government agencies around the world adopt a range of terms to define and calculate employment rates. These many definitions highlight the intricate interplay between employees with intellectual disabilities and the labour market, as well as the challenges this poses for measuring and comparing

employment rates (Lysaght et al., 2015). Depending on the definition of employment used by the agency, the participation rates for people with disabilities ranged from 9.4% to 61.1% in a study by Weathers and Wittenburg (2009) on employment rates provided by 4 U.S. agencies. Many international studies use payment as a measure of work outcome (Martorell et al., 2008). In Norway, people with intellectual disabilities may be employed without receiving wages. In this context, it was natural to include unpaid work in our definition of employment. Still, it should be mentioned that the Norwegian arrangement is controversial and could be considered a fundamental violation of the rights of people with intellectual disabilities. Further, the productivity-based wage systems in other countries are meant to increase the employment rates of individuals with disabilities in the workforce. Lysaght and Bobbette (2023) concluded that these wage systems may improve worker inclusion and autonomy for people with disabilities.

This study found that higher levels of intellectual disability reduced the odds of employment. Resources may differ according to a person's level of intellectual disability, and therefore, better employment rates among people with mild intellectual disability would be expected. In accordance with our findings, previous studies have also found level of intellectual disability to have a large impact on employment rate, where people with mild intellectual disabilities have a significantly higher likelihood of being employed than those with severe intellectual disabilities (Hum & Simpson, 1996; Wilkins, 2004). There are notably too few job openings relative to the stated need for sheltered employment in Norway (Spjelkavik et al., 2012). Furthermore, many sheltered workplaces have requirements for production that may intensify competition for employment. People with moderate and severe levels of intellectual disability may not be able to compete with people whose diagnoses involve a potentially higher capacity for production (Engeland & Langballe, 2017). Such discrimination within different functioning levels of intellectual disability demonstrates an unequal access to the sheltered employment opportunities that were meant to be inclusive.

The overall prevalence of mental health problems found in our study population using the MPAS-Check screening instrument was 18.5% compared to 20% overall prevalence found by Taylor et al. (2004). Other studies using screening instruments have found higher prevalence rates among people with intellectual disabilities (Iverson & Fox, 1989; Roy et al., 1997). Roy et al. (1997) using the MPAS-Check reported a 33% prevalence rate with 127 participants. Various aspects concerning sampling methods, for instance, composition, size, and living arrangements may explain these differences. Studies using clinical evaluation guided by assessment protocols have reported prevalence rates of mental illness among people with intellectual disabilities below 20% (Deb et al., 2001; Eaton & Menolascino, 1982). This may be indicating that the MPAS-Check is over-inclusive, which is a significant quality for a screening instrument (Taylor et al., 2004).

Previous studies have found that mental health affect employment for people with intellectual disabilities (Martorell et al., 2008). This study found mental health problems categorised by the MPAS-Check as 'possible organic condition' to be a factor that counteracted

employment. Alzheimer's disease, delirium, amnesia, and dementia are organic mental conditions/disorders. These conditions may be the result of genetic developmental abnormalities in the brain, physical trauma or other illness and result in changes in personality or behaviour (Bastert et al., 2012). People with organic conditions may be irritable and confused to a level that impairs daily functioning (Bosia et al., 2022) and thereby reduces chances for employment. As with moderate and severe level of intellectual disability, organic conditions have been found to be associated with lower employment rates. Vocational and social skills may affect assumptions concerning workplace competency for these groups (Kirsh et al., 2009). More thorough assessment of work environment, the job and the individual may further facilitate integration towards employment for these groups. The previously mentioned MPAS-Check may be a useful screening instrument when interventions directed towards improving work outcomes are planned.

A total of 16.1% of our sample were reported to show severe behaviour disorder or challenging behaviour. This is somewhat lower, but close to the 20% found in the comparable Norwegian sample reported by Myrbakk and Von Tetzchner (2008) using the Aberrant Behaviour checklist (ABC). The items on subscale (I) Irritability were most frequently scored as severe problems in our study as well as the study by Myrbakk and Von Tetzchner (2008). The range (1.27–4.99) found of the average scores on each of the subscales, with the lowest score on subscale (III) Stereotypic Behaviour and highest on subscale (I) Irritability compares well with the range (1.3–5.6) found by Myrbakk and Von Tetzchner (2008) where the same subscales (III) and (I) got the lowest and highest average score, respectively. Challenging behaviour may be a consequence of the interaction between a person and the environment. A problematic life situation or an insecure attachment, for instance, may be the cause of challenging behaviour (Owen et al., 2004). The ABC-C manual states that observations of behaviour in different environments are encouraged and that raters should consider additional observations of other responsible adults when appropriate (Aman & Singh, 2017). It is therefore important to note that the ABC-C was rated by a family member or healthcare professional who knew the participant well in different environments but may still have had more limited information about the participants behaviour at work or in day activities.

Behavioural problems have previously been found to be causing a worse work outcome for people with intellectual disabilities (Martorell et al., 2008). In contrast, inappropriate speech was a factor that increased the odds of being employed in our study. This was unexpected since this type of behaviour can be difficult to handle in collaborative work, where trust and politeness are needed between the employees. However, a recent study by Hermann et al. (2022) found inappropriate speech to be associated with higher cognitive functioning in people with intellectual developmental disorder. Our study found that people with mild intellectual disabilities, and likely higher cognitive functioning, have better odds of being employed than those with severe intellectual disabilities. As we see, this result could be explained by a strong correlation between inappropriate speech and any other independent variable. Still, multicollinearity was checked

between all independent variables in our study and all variance inflation factor values for the independent variables were below 3. This indicated that there were no problematic correlations between our independent variables. Inappropriate speech may, however, be correlated with additional factors that were not included in this study, like self-determination, that previously have been found to be associated with employment (Martorell et al., 2008).

In our study, the presence of behavioural problems on subscale (I) Irritability were significantly more frequent among the participants attending organised day care/activities without production or no formal out-of-home activity. The presence of behavioural problems may, by the same processes as level of intellectual disability and mental health problems, prevent good functioning. Level of functioning has been found to be a significant variable that predicts employment in people with intellectual disabilities (Martorell et al., 2008). Also, no formal out-of-home activities, often with isolation in own home, may lead to increased irritability. Despite the lack of evidence supporting their efficacy, antipsychotic medications are frequently used to treat challenging behaviours like irritability (Tyrrer et al., 2009). A more thorough evaluation of the individuals' wishes and prerequisites, making use of instruments like the ABC-C, and adjusting the sheltered workplace thereafter might reduce irritability and improve employment for this group. Our results indicate that the integration of people with moderate to severe intellectual disabilities, irritable behaviour or an organic condition may be falling behind. The Norwegian labour market policy's principles of integration and normalisation are founded on the fact that labour market measures for people with disabilities must fill precisely this gap between such individual prerequisites and the work requirements on the labour market (Ministry of Labour and Social Affairs, 2002). Still, no evaluation of the needs and resources of people with intellectual disabilities is required by law before a disability pension is granted (Engeland et al., 2021). Most people with intellectual disabilities are granted a disability pension at the age of 18 and are thus perceived by the Norwegian welfare-system to have low capacity for work (Proba, 2016).

4.1 | Strengths and limitations

The NOHID-study was cross-sectional, and therefore, establishing a causal direction in the relationship between employment and mental health is difficult due to mental health being potentially both a consequence and a cause of employment status. That is, does employment improve mental health, or are more healthy people employed? In the general population the relationship between overall health and employment may be accounted for by two separate processes. The first is a health selection process where healthier people are more likely to obtain and stay in employment. The second process involves specific health advantages associated with employment (Avendano & Berkman, 2014; van der Noordt et al., 2014). Due to the challenges people with intellectual disabilities have finding and keeping jobs, 'health selection' in respect to them is likely to include discriminatory biases (Equality and Human Rights Commission, 2017).

Longitudinal research may further explore the directionality of the relationship between our predictor variables and employment in people with disabilities over time (Dean et al., 2018). Still, in a longitudinal study by Foley et al. (2014), the authors stated that they cannot confirm the direction of the relationship between change in behavioural problems and day occupation.

Another possible limitation to consider when interpreting the results is selection bias. Identifying our eligible participants by whether they received health or care services may have affected how well our sample represents the population. Further, the included participants were significantly younger than the eligible nonparticipants, according to representativity analyses. This selection might affect the occurrence of mental health conditions and challenging behaviour. The prevalence of mental health problems and challenging behaviour, however, was comparable to the results of Taylor et al. (2004) and Myrbakk and Von Tetzchner (2008). A possible limitation was that 99% of our cases involved proxy respondents. The proxy respondents were a support person who knew the participant well. In 64% of the cases, it was a family member, and in 34% of the cases, it was a healthcare professional who had worked at least 1 year with the individual.

Participants in full time education and not working were excluded ($n = 13$). In combination with the number of missing values registered on the instruments this resulted in up to 34 participants being excluded from the final regression analyses. This reduced the statistical power of the study.

The obstacles to employment may be varying in the different municipalities. To acquire more complex knowledge about employment for people with intellectual disabilities, future research may add in additional sociodemographic variables and differing public services.

The study's capacity to gather information about level of intellectual disability from the participants' medical records was one of its strengths.

5 | CONCLUSION

This cross-sectional study among adults with intellectual disability found level of intellectual disability, mental health problems identified as a possible organic condition, and certain challenging behaviours, that is, irritability and inappropriate speech to be significant explanatory variables for paid and unpaid employment in a Norwegian community-based sample. All these variables reduced the odds of employment except inappropriate speech that unexpectedly was found to increase the odds of employment. Any discrimination within different functioning levels of intellectual disability, behaviours, or conditions demonstrates unequal access to the sheltered employment that was meant to be inclusive. Labour market measures for people with intellectual disabilities are meant to fill the gap between the individuals' prerequisites and the requirements for employment in the workplace. Challenging behaviour may be the result of an interaction between the person and her various environments like day care or work. Currently, no evaluation of the needs and resources of people

with intellectual disabilities are required by law before a disability pension is granted (Engeland et al., 2021). More individualised evaluation of the wishes and prerequisites of this population, making use of instruments like the MPAS-Check and the ABC-C, and adjusting the workplace thereafter might reduce irritability and improve employment for this group.

Based on the findings from this study, future studies should analyse the excluding mechanisms of intellectual functioning, organic mental conditions, and irritability that were found to reduce the odds of employment. More studies are needed to identify additional factors that policymakers and service providers should address to ensure equal access to employment for people with intellectual disabilities.

AUTHOR CONTRIBUTIONS

EEL, AA, and ES developed conceptualization and design of the current study. MIO, AA, and ES collected data. ERP analysed the data and performed the main drafting of the manuscript. All authors verified the analytical methods, discussed the results, and participated in revisions of the draft manuscript, as well as read and approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

No conflicts of interest have been declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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