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ASSESSING PSYCHOTIC SYMPTOMS IN INDIVIDUALS WITH INTELLECTUAL DISABILITY

ABSTRACT

Psychotic disorders have been reported to occur more frequently among people with intellectual disabilities than in the general population. However, scientific knowledge regarding the specific characteristics and diagnostic assessment of psychotic disorders in individuals with intellectual disabilities is limited. In clinical practice, possible psychotic symptoms are often first recognized and addressed in acute situations, although a careful assessment of potential psychotic symptoms almost always requires a multidisciplinary evaluation that takes into account the individual's cognitive and emotional developmental level, other concurrent medical conditions, the aetiology of the intellectual disability and the individual's communication skills. In this review, we discuss health-related and psychosocial factors to consider in clinical assessments within the diagnostic process. In addition, we present some methods and diagnostic tools that could be used for a more thorough evaluation and psychiatric diagnosis when conducting a high-quality diagnostic process.

KEYWORDS: INTELLECTUAL DISABILITY, PSYCHOTIC SYMPTOMS, CHALLENGING BEHAVIOUR, DIAGNOSTICS

INTRODUCTION

Individuals with intellectual disability (ID) have neurodevelopmental deficits reflected in their cognitive, emotional and behavioural abilities, occurring concurrently with limitations in adaptive skills, both affect the ability for an independent life. These cognitive and adaptive deficits must originate during the developmental period, namely childhood and adolescence, but the conceptualization of ID is modified by diagnostic classification criteria used at the time. The American Association of Intellectual and Developmental Disabilities (AAIDD) function-based definition of intellectual disability emphasizes the interaction between intellectual functioning, adaptive behaviour and environmental demands and support (1). The development of adaptive skills is influenced by environmental learning opportunities and available support. Further, the AAIDD stresses that other factors such as linguistic diversity, cultural differences, as well as person's strengths should be taken into account when assessing intellectual disability (1). According to the most widely used diagnostic classification systems (ICD-10/11 and DSM-V), the severity of ID can vary from mild to profound (2–4).

The prevalence of intellectual disability is approximately 1% in the general population, even though recently there have been signs of an increase in the prevalence probably due to more efficient diagnostics (5). Psychotic disorders are defined as a spectrum of severe mental illness that include altered cognition, emotions and behaviour (6). To some extent these disorders are argued to be neurodevelopmental in nature for their course of early onset and loss of skills. Cognitive deficits in schizophrenia, a severe psychotic disorder defined as aberrant thought and perception, are evident already in childhood and adolescence, well before psychosis onset or the prodromal phase (7–9). In fact, what we call schizophrenia these days was initially described as 'dementia praecox' by Kraepelin in the early twentieth century (10). However, a unified description of psychosis is still lacking and the classification systems, such as International Classification of Diseases (ICD) and Diagnostic and Statistical Manual of Mental Disorders (DSM), provide somewhat differing views to this phenomenon (6).

In this article, we do not discuss individual psychotic disorders separately, but rather address the generally presented core symptoms of psychotic disorders and their interpretation in individuals with ID. We describe the core symptoms of psychotic disorders in both classification systems (ICD and DSM) as a

background for understanding the usual approach to interpreting symptoms as psychotic. Moreover, we discuss the challenges regarding symptom interpretation among individuals with ID, because in our clinical experience, many of the classic core symptoms of psychotic disorders are described in a way that would require typically developed cognitive and verbal abilities.

In ICD-11, psychotic core symptoms include delusions, hallucinations, disorganized thinking and experiences of passivity and control. Furthermore, additional symptoms include negative symptoms, grossly disorganized or abnormal psychomotor behaviour, and cognitive, manic or depressive symptoms. In addition, updated versions of ICD-11 and DSM-V have removed the categorical approach to psychotic disorders, thus describing a more dimensional way to look at these disorders. When evaluating individuals with ID, it is useful to know and understand these different classification approaches as well as any peculiarities in these individuals' cognitive, emotional and behavioural features, in order to be able to assess them as profoundly as possible.

Not so long ago, it was thought that psychotic disorders could not occur in people with intellectual disability or autism, mainly due to lack of ability to report so-called core symptoms (11). The core symptoms, such as auditory hallucinations, thought echo, passivity experiences, thought withdrawal, insertion or broadcasting and delusional perception, indeed need to be asserted verbally in order to be detected by others. However, the absence of a mutually understandable means of communication is not a valid reason to assume that psychotic disorders cannot occur in this population. Even though research concerning psychotic disorders in individuals with ID is still scarce and mostly concerns individuals with mild ID, it is well established in the literature that co-occurrence of psychotic disorders and ID is indeed possible (12).

The knowledge on psychiatric comorbidities, including psychotic disorders, among individuals with ID is scarce. Difficulties in research on the topic are small and varying sample sizes, methodological approaches and confounding factors (13). The literature suggests that the prevalence of psychotic disorders is higher in individuals with ID than among general population. However, the prevalence alters between studies from 1.4% to as high as 7.2% (13–14), possibly indicating challenges in diagnostic evaluation among these persons. In addition, the reported rates are presented to be higher among individuals with mild ID compared to those with moderate or severe ID (14). It should be acknowledged that lower rates of psychotic disorders in individuals with severe ID might be because of the inability to make a diagnosis when it is not possible to evaluate the ideation, thoughts and feelings of a person, e.g. due to communication difficulties. On the other hand, there could be overdiagnosis of psychotic disorders among individuals with mild ID who are able to verbalize their thoughts and feelings, but are not able to express themselves in a way that they are fully understood.

Interestingly, nowadays the potential presence of psychotic symptoms is a relatively often presented hypothesis when an individual with ID is admitted to health services. Sometimes the onset of symptoms is rapid, but in some cases changes in behaviour and interaction with others have changed over a longer period of time. The term challenging behaviour is used to describe behaviour that deviates from cultural or societal expectation and causes physical, psychological, social or economic harm to the person themselves, people around them or environment (15). One of the most common forms of challenging behaviour is aggression, odd or bizarre behaviour, harming oneself or others, disrupting the environment or withdrawing from daily life activities (15–16). Challenging behaviour is stated to reflect the interaction between the person and their environment, thus indicating that it is not an individual characteristic. Therefore, challenging behaviour should always be assessed in the context in which it occurs, taking into account the perspective of the person themself as well as the perspectives of others. Challenging behaviour can occur at any age and typically peaks from adolescence to early adulthood (17), similar to severe mental health disorders (18). Yet, there are multiple factors related to the risk for challenging behaviour and psychotic disorders are only one of them.

Evaluation of psychotic symptoms in individuals with ID is not an easy task and the diagnosis of psychosis may be confounded by various factors related to, for example, communication difficulties, lack of knowledge on the aetiology and severity of ID, as well as somatic symptoms that are reflected as challenging behaviour. The known core symptoms of psychotic disorders may be interpreted as features of ID itself, but on the other hand, features of ID might be interpreted as psychotic symptoms, a phenomenon called diagnostic overshadowing (19). It should be acknowledged that in acute situations there is a primary need to try to ease patients' acute symptoms (e.g. distress, anxiety, aggressiveness) according to those methods that are available at the healthcare setting. Evaluation of the best possible approach to management of an acute situation is based on the knowledge which is available at the time. However, we emphasize that when meeting an individual with suspected psychotic symptoms in the healthcare system, the acute assessment should always be followed with more thorough multiprofessional assessment without delay.

In this article we present a thorough assessment of individuals with intellectual disability that are suspected of presenting with a psychotic disorder. In-depth assessment is based on both somatic and psychiatric factors and should always include evaluation of the primary surroundings of the person's everyday life. The assessment should also always include informants other than the individual him/herself, e.g. family members and carers who know the person well. In most of the cases, a good quality assessment should include a multiprofessional approach and teamwork (12). Clinical experience of both intellectual disability and psychiatric comorbidity is important, and hasty diagnostic conclusions may easily lead to misdiagnosis and potentially risk missing other health complaints or needs. This review aims to present factors that are important in evaluation of psychotic-like symptoms in individuals with ID, and furthermore, to present clinically relevant tools for assessing these persons.

WHAT TO TAKE INTO CONSIDERATION WHEN SUSPECTING PSYCHOTIC SYMPTOMS IN A PERSON WITH ID

When assessing potential psychotic symptoms in a person with ID, it is necessary to identify a number of factors in their personal history, especially those that may contribute to changes in their behaviour. The assessment requires both observation of the person and an interview, the collection of information from previous records, as well as interviews with the person's close relatives and carers. We have summarized the various components of a high-quality comprehensive assessment in *Table 1*. In addition, we will describe in more detail some of the aspects which, according to our clinical experience, are particularly important to identify as part of the assessment. A thorough assessment also guides decision making regarding what further investigations and assessments are justified or even necessary. The aim is to determine whether the symptoms are psychotic or whether the behavioural change is, for example, a reaction to other factors relating to the person's health or their psychosocial environment.

Table 1. Factors that should be considered when evaluating a person with ID presenting with psychotic-like symptoms

Background information on intellectual disability • Aetiology and severity of the intellectual disability • Aetiology and the investigative methods used to determine it, if the aetiology remains unclear • Stage of emotional development
Somatic factors • Concurrent medical conditions and the balance of their treatment, particularly epilepsy • Pain conditions (e.g. dental pain/oral health, increased spasticity) • Current medication and medication history, including past history of harmful side effects • Changes in sensory functions (particularly vision and hearing) • Alcohol and other substances use • Nutrition (regularity, quality, caffeinated products, dietary supplements)
Daily life and functional ability • Daily routine and activity (whether they attend a day centre, work programme, school or after-school care) • How their developmental disability and its characteristics (e.g. sensitivity to stress, sensory hypersensitivity, sensory impairments) are taken into account in daily life at home or in other everyday settings • Routines and rituals (targeted daily rhythm, morning and evening routines appropriate to their developmental level) • Modes and aids for communication and interaction • Executive functioning
The progression of symptoms • Changes in behaviour and the progression of symptoms • The significance of symptoms to the persons themselves • The significance of symptoms to those around them • Possible triggering factors underlying the symptoms (losses, changes, etc.)

A person's psychosocial environment and support • Family members, loved ones, friends, carers • Living environment and the services provided within it • Healthcare contacts and follow-up, e.g. the developmental disabilities outpatient clinic • Social work contacts • Opportunities to influence and participate in decision making
Psychiatric conditions • Previous diagnostic procedures, including the use of methods designed for patients with ID • Balance of treatment (pharmacological and psychosocial), means of follow-up • Sleep-wake cycle disorders

AETIOLOGY OF INTELLECTUAL DISABILITY

Based on their underlying aetiology, intellectual disabilities can be broadly categorized into three groups: 1) genetic disorders and syndromes (e.g. Down syndrome, Fragile X syndrome), 2) acquired conditions associated with prenatal factors (e.g. infections and teratogenic exposures), perinatal factors (e.g. birth asphyxia) or postnatal factors (e.g. traumatic brain injury, severe malnutrition or toxic exposures) and 3) conditions of unknown aetiology (20–21). Socio-environmental factors, such as access to services (e.g. access to healthcare and social services), home learning environment (e.g. enriched home environment, opportunities to play and learn, parent-child interactions), parental stress and parental mental health problems and learning opportunities (e.g. access to special education, parental education, intervention services) are also associated with cognitive and adaptive functioning in individuals with intellectual disability (22).

The heterogeneous aetiology presents with varying phenotypes regarding somatic and psychiatric illness, trajectories of cognitive and emotional development, behaviour and communicative abilities (5). Therefore, when suspecting psychotic symptoms in an individual with ID, it should always be confirmed whether the aetiology is known, what kind of aetiological studies have been conducted and when (and are they considered currently relevant and according to current methodology). This is especially important in such situations when the aetiology is not known, and the aetiological studies have been conducted years ago, e.g. in childhood. There are new methods and rapidly increasing knowledge of different aetiologies regarding genetic variations behind different phenotypes of ID. Thus, it should be considered whether aetiological studies be expanded to, for example, exome sequencing (23), especially when the individual presents with new symptoms that affect greatly their functioning and wellbeing. A consultation with a medical geneticist is recommended when in doubt. If the aetiology is known, it should be determined without delay whether this specific aetiology includes heightened risk for psychotic disorders, or for other factors that might be falsely presented and interpreted as psychotic symptoms.

Some genetic syndromes have specifically been associated with increased risk for psychotic disorders. The most commonly known syndrome is 22q11 deletion syndrome, (DiGeorge syndrome), that presents with typically mild to moderate ID and psychosis developing in approximately 40% of individuals (24). In addition, it has been stated that the risk of psychosis is higher in Klinefelter syndrome (25) compared to general population.

As important as it is to know if there is or isn't increased risk for developing psychosis in a specific ID disorder, it is also important to know what other neuropsychiatric features might be associated with the given syndrome. For example, there is an increased risk for early dementia in Down syndrome, which might be confused with negative symptoms or even psychotic catatonia if the diagnostic evaluation is left too superficial. Onset of regression linked to dementia might be detected already at very early age, between 20-30 years of age (26).

COGNITIVE PROFILE AND SEVERITY OF INTELLECTUAL DISABILITY

Intellectual disability is classified into mild, moderate, severe and profound intellectual disability, based on an assessment of cognitive ability supplemented by an evaluation of adaptive skills (2–4). When assessing possible psychotic symptoms, it is advisable to determine whether the severity of the developmental disability has been defined or whether the diagnosis is an unspecified intellectual disability. Further, it is recommended to consider the individual's cognitive profile, particularly their level of concrete thinking. The diagnostic evaluation may become distorted if concrete responses, reflecting language and thinking characteristics, are interpreted as psychotic thoughts. However, it is noteworthy that neuropsychological assessment should not be conducted during the acute phase of a suspected psychotic episode.

Information regarding the cognitive strengths and weaknesses provides insight into how and at what developmental

level the individual perceives and interprets their environment, as well as their ability to perceive signals from their own body and mind. Especially in stressful situations, an individual's ability to distinguish and interpret signals from the environment, body and mind is disrupted. People with developmental disabilities have been found to be more sensitive to psychological stressors than the general population, which likely contributes to the occurrence of challenging behaviour in them (27).

However, the severity of the developmental disability alone does not provide sufficient insight into the individual's cognitive ability profile; whenever possible, it is advisable to examine this profile more closely. For example, significant difficulties with perception can cause a significant increase in stress for an individual whose daily life involves new and changing environments and situations. This can lead to reactions that an outsider might interpret as disorientation or even psychosis, even though the issue is simply a person with a developmental disability being placed in an environment where demands exceed their skill level.

EMOTIONAL DEVELOPMENT

Knowledge of the individual's stage of emotional development can be helpful in interpreting and diagnosing observed aberrant behaviour of patients with ID that may be suspected to be psychotic. Emotional development refers to the differentiation and regulation of emotions, as well as the development of interaction and attachment relationships (28–29). Research indicates that, in individuals with intellectual disability, emotional development typically corresponds to a markedly earlier developmental stage compared to cognitive functioning and adaptive skills (29). The stage of emotional development in individuals with intellectual disability and/or autism spectrum disorder can be assessed using informant-based interview instruments called the SEO R2 and SEED-2 (30–32). This information can help to determine whether a person's behaviour is consistent with their stage of emotional development (even though it is not consistent with their chronological age or cognitive level) or whether it deviates in a way that may indicate possible psychosis. For example, an individual may expect a celebrity to arrive and even report having spoken with that person, which could be interpreted as a disturbance in reality testing. However, from the perspective of emotional development, this behaviour may instead reflect an earlier stage of emotional development and difficulty in distinguishing wishes and fantasies from everyday reality.

CONCURRENT MEDICAL CONDITIONS

Physical vulnerability is a term often used to describe individuals with ID who are more prone to different somatic complaints. Many of these somatic conditions are associated with ID and varying aetiology (17). It has been observed that the identification and treatment of somatic symptoms in people with ID are often delayed, in part because they are unable to express their symptoms or communicate their need for an evaluation. People with ID could actually need more health checks than the general population, but commonly health checks are delayed or even neglected. At its simplest, the assessment may reveal very common and easily treatable somatic conditions, such as constipation, which can cause significant discomfort for the individual. This discomfort itself can very easily manifest as alterations in emotional and behavioural regulation of a person with ID. Therefore, even the treatment of a very simple and ordinary somatic issue can, at best, significantly reduce challenging behaviour and allow the individual to function and interact in a manner that is typical for them. Thus, one of the key aspects to be checked first when evaluating psychotic-like symptoms of any kind in patients with ID is assessment of patient's general physical health. Pain, constipation, problems in oral and dental health are common reasons for altered behaviour in patients with ID (17,33), and it would be questionable to conclude that a patient suffers from psychotic symptoms if the underlying cause is, for example, untreated dental pain to which the individual is reacting.

More complex and demanding common concurrent medical conditions that often require cross-disciplinary assessments include: epilepsy, sensory disability, obesity and cardiovascular diseases (17,33). Individuals with intellectual disabilities experience all of these conditions more frequently than the general population, but on the other hand, recognizing and treating these somatic problems is often more challenging for them.

Particularly with regard to epilepsy, it is important to consider the challenges the condition presents to the patient's functioning and emotional and behavioural regulation. Additionally, it is important to be aware that medications used for treating epilepsy may have side effects that contribute to challenging behaviour, such as increased sleep disturbances, impulsivity and irritability. Furthermore, syndromes associated with intellectual disabilities also carry an increased risk of severe epileptic syndromes, where achieving treatment stability is often very difficult. Drug-resistant epilepsy is a problem especially associated with severe and profound ID (34).

Obesity is more common among individuals with ID compared to the general population, and significant obesity typically occurs from childhood and adolescence onward. Obesity, along with the structural abnormalities often associated with ID syndromes (such as narrow airways), particularly predisposes individuals to sleep disorders such as sleep apnoea (35–37). Additionally, obesity combined with antipsychotic medication treatment, often related to challenging behaviour in individuals with intellectual disabilities, can lead to an increased risk of metabolic side effects from long-term use. Obesity itself is associated with musculoskeletal symptoms and decreased mobility, which in combination, can readily lead to the development of various musculoskeletal pain conditions (38–39).

The risk for cardiovascular diseases has been reported higher among individuals with ID than general population. The risks seem to be elevated especially when the patient has antipsychotic medication (40). Unfortunately, the monitoring and follow-up of electrocardiograms (ECG) in relation to medication is often inadequate for patients with ID, mostly due to problems of cooperation and communication. Similarly, simple blood pressure measurements are commonly neglected, even though necessary especially in older patients. Preparation for such examination often requires more time than usual, and augmentative communication aids should be used so that the patient would know what is expected of him/her. The need for management of cardiovascular risk factors, such as hypertension, should be better acknowledged in individuals with ID due to their increased risk for severe outcomes and misdiagnosis (40).

Sensory disabilities, such as vision impairment and progressive hearing loss, are more common among individuals with ID than others and should therefore be regularly assessed (41). Surprisingly, deficits in hearing are often unrecognized even though hearing is crucially connected to quality of life. In the study by Zielonkowski et al. 2025, it was found that 44% of the study participants with ID had deficits in hearing, with only 25.9% of them being previously known to have a hearing disability (42). Hearing or vision impairment may manifest as changes in an individual's behaviour, such as increased fear, heightened caution, sensitivity and sudden reactions to changes in the environment. Gradually, the decline in sensory function may lead to withdrawal from situations that were previously ordinary and familiar, but now feel unsafe and threatening. This may present as apathy or flattened, withdrawn behaviour for which there is no apparent explanation. On the other hand, changes in sensory function can also result in situational challenges, leading to sudden changes in behaviour. For example, if a person does not hear someone approaching, they may startle when that person unexpectedly enters their field of vision. In response to this sudden stimulus, an individual with ID may react very strongly, even in a way that may be interpreted as aggressive or threatening. If a decline in sensory function is not recognized, it becomes difficult to prepare for situations in a way that would allow an individual with ID to respond to changing circumstances more calmly and predictably.

Beyond the concurrent medical conditions mentioned, there could be many other somatic complaints that should be considered. Therefore, the aetiology and individual's past medical history should be checked as well as possible, in order to plan further examinations and treatment according to individual needs.

PHARMACOTHERAPY

A careful investigation of patient's history of pharmacotherapy is important when evaluating possible psychotic symptoms and underlying factors. It is well documented in literature that patients with ID have considerably higher levels of pharmacotherapy and polypharmacy compared to patients with no ID (43).

For example, antipsychotic pharmacotherapy is relatively common in treatment of challenging behaviour (44), even without a diagnosis of psychotic disorder. However, in clinical experience it is seen that patients with ID are more prone to side effects and are commonly treated with off-label pharmacotherapy. In addition, systematic follow-up of harms and benefits is unfortunately often neglected with patients with ID due to difficulties in cooperation (e.g. difficulties in getting blood samples) and lack of instruments for interviewing about patient experiences regarding the medication use.

It is documented that ageing and associated tiredness, fatigue and multiple somatic disorders arise at a younger age among individuals with ID than in others (45). Thus, it could be suggested that premature ageing has an effect on changes in pharmacokinetics and pharmacodynamics, similar to ageing in general but just at younger age in individuals with ID: the risk for early Alzheimer's disease and early menopause are especially associated with Down syndrome (46–47).

From a clinical perspective, polypharmacy causes challenges in evaluating both symptoms and also possible negative or harmful effects of pharmacotherapy itself as a potential cause for symptoms that present as psychotic-like features: presentation of negative symptoms could be a side effect of antipsychotic medication use (e.g. extrapyramidal syndrome) than a sign of psychosis. Due to the quite modest number of studies on treatment of psychotic symptoms in

individuals with ID, it is also recommended to see through case reports as a potential source of clinical cues, especially when the aetiology of ID is known. For example, a case report shows a patient with Williams syndrome, who was interpreted to present with psychotic symptoms and thus treated with high-dose antipsychotics. The patient developed a malignant neuroleptic syndrome and by diminishing all antipsychotic medication the patient's state improved so that the severe side effect and also the initial psychotic-like symptoms were gone. The unusual trajectory of both psychotic symptoms and also the response to medication was hypothesized to associate with the genetic profile linked to the aetiology (48).

EXECUTIVE FUNCTIONS AND SELF-TALK

Many individuals with intellectual disability often talk out loud or whisper to themselves, which can be considered a form of self-talk or private speech. Self-talk is highly prevalent in persons with Down syndrome, with studies reporting approximate rates of 80–90% (49–50). Self-talk is commonly observed in typically developed young children between approximately 2 and 7 years of age and it supports the development of self-regulation and executive functions (51). Through self-talk, children guide their own actions, behaviour and emotions during tasks and problem-solving situations. In typical development, self-talk decreases with age as it becomes internalized into inner speech during the school years (51). One form of self-talk involves speaking to or interacting with imaginary friends, which are a common and developmentally typical aspect of childhood (52). In adolescents and adults with intellectual disability, self-talk may reflect an early level of development in self-regulation and executive functioning. Further, many adolescents and adults with intellectual disability have imaginary friends, especially individuals with Down syndrome (50). Therefore, it is very important to differentiate whether the behaviour represents self-talk or a manifestation of psychotic symptoms.

MODES OF COMMUNICATION

From the perspective of interaction and communication, altered behaviour can be a sign of a person's need to be understood and heard, rather than a symptom of psychiatric disorder. Therefore, it should always be assessed what the means of communication are of the given person and how they are applied in everyday life by patients themselves, and also the people around them.

Augmentative and alternative communication (AAC) can be used with individuals with ID and other developmental disabilities with complex communication needs. AAC includes unaided systems (manual signs and gestures) and aided systems (technical devices and applications designed specifically for AAC), and AAC interventions are known to increase functional communication skills, language and social competence. In addition, using AAC has shown to increase natural speech (53). When evaluating a patient with communication deficits there should always be suitable communication aids used, and if none are recognized, a consultation with an AAC professional, speech therapist or other professionals familiar with intellectual disability to check possibilities to add other AAC methods to the evaluation. Relatively easily available communication aids, such as using pictures, quick drawing and building social stories can be used to support, for example, a psychiatric interview.

CONCURRENT PSYCHIATRIC CONDITIONS

For psychiatric differential diagnosis, the most relevant disorders to consider are other neurodevelopmental disorders, such as autism spectrum disorder (ASD) (54) and attention deficit hyperactivity disorder (ADHD) (55). There is strong evidence of a markedly increased risk of psychotic disorders among individuals with intellectual disability, and also among individuals with ASD. Prevalence of co-occurrence of ASD and psychotic disorders is estimated to be as high as 35% (56) and for ADHD and psychotic disorders 18.5% (57). However, the co-occurrence of other neurodevelopmental disorders with ID does not necessarily indicate higher likelihood of psychotic disorder, but rather it underscores the need for a careful and thorough assessment of symptoms and their underlying causes. Overlapping symptoms and diagnostic overshadowing in these disorders and intellectual disability is common. Until recently, there has been a lack of diagnosing comorbid neurodevelopmental disorders because it has been thought that all deficits in executive functioning, social interaction or attention could be explained well enough by the intellectual disability itself. Lastly, it is useful to know that a diagnostic tool for assessment of ADHD in individuals with ID has been developed. DIVA-ID includes concrete, real-life examples linked to the features of ADHD in individuals with ID to help in the assessment (58). Validation processes for different language versions are ongoing, and to date, data regarding use of this instrument still remains modest.

Assessment of personality disorders (PD) as potential differential diagnosis should be considered only through careful evaluation and understanding of the cognitive and emotional developmental stage of the patient. Regulation of emotions and behaviour can reflect delays in emotional and cognitive development rather than pure personality disorder. In fact,

the diagnosis of personality disorder in individuals with ID is described as contentious due to the fact that individuals with ID indeed present with inadequate development of cognitive and also emotional functioning (59). Over time, clinicians have debated whether personality disorders can be diagnosed during adolescence, when brain development is still significantly underway, or if the diagnosis of personality disorders should be reserved for a more developmentally mature stage, such as adulthood. Indeed, personality can be conceptualized as the lasting characteristics influencing a person's thoughts, feelings and behaviour, thus shaping a person's way of interacting with others. Personality disorder refers to a state where these characteristics significantly impair a person's wellbeing and social functioning in the long term, and thus does not usually illustrate an acute change in a person's emotions and behaviour (60). Currently, a diagnosis of personality disorder is generally made in late adolescence and adulthood. The prevalence of personality disorders among individuals with ID varies greatly between studies, with antisocial personality disorder being the most common, and unspecified personality disorder presenting as the second most common form of PD (17). Many of the studies have been conducted in forensic settings, and in secure intellectual disability services PD has been reported to be even as high as 50% (59). However, it can be hypothesized that the very high prevalence in literature is biased, e.g. due to study settings (only forensic psychiatry patients) or due to highly variable diagnostic practices.

Diagnosing personality disorders typically necessitates the person to have insight into their own thoughts and emotions, which can be challenging to obtain in individuals with ID. Furthermore, when it comes to borderline or dependent personality disorder, it is important to understand that individuals with ID are more reliant on caregivers than others due to their disability, and it might be hard to distinguish so-called normative from pathological expectations in close relationships. Lastly, antisocial features of personality should include a thorough understanding of the individual's ability to cognitively understand and process norms and laws, as well as causal relationships with actions and outcomes (61). These are examples of difficult entities that should be assessed when evaluating possible personality disorders in persons with ID as one possible differential diagnosis for psychotic symptoms and even disorders. Diagnosis of personality disorders among patients with ID is a challenging task and should be restricted to those professionals who have experience in both ID and psychiatry.

Furthermore, affective disorders should also be considered as potential differential diagnosis for patients with ID who present with altered mood and emotion regulation. However, these disorders should always be assessed with thorough understanding of patient's trajectory of life history, including pharmacotherapy. A Swedish register-based study implied that the rates for affective and anxiety disorders seem to be 11 times higher in individuals with ID than others. In addition, an unspecified non-organic psychosis was reported as a common psychiatric comorbidity with affective and anxiety disorders. Affective and anxiety disorders have many similar features when it comes to symptoms, and there is probably some overlapping of the symptoms among these phenomena. Regarding register-based studies, it is difficult to know the diagnostic procedure behind the diagnoses. We hypothesize that many of the psychiatric diagnoses for individuals with ID have been set in acute settings, due to lack of long-term follow-up, and treatment in clinical settings that would have experience in both ID and psychiatry. In addition, many of the psychiatric diagnoses are left unspecified, reflecting the difficulty of accurate differential diagnosis in individuals with ID (62).

A careful psychiatric examination of a patient always includes a general psychiatric investigation, not only looking into a given symptom or suspected pathology. Further, we present some tools to facilitate psychiatric examination in this patient population concerning not only psychotic symptoms but other psychiatric phenomena.

MEANS OF INVESTIGATION AND EVALUATION

If, on the basis of a thorough interview and assessment, no primary explanatory factors for the change in behaviour emerge from the patient's background, the assessment should proceed to a more detailed psychiatric differential diagnosis. When proceeding to the actual psychiatric differential diagnosis in the assessment of a person with ID, it is important to have a good understanding of how the person's typical wellbeing, functioning and way of interacting with their environment are characterized. For example, intellectual disability itself may be associated with significant motor restlessness compared to non-disabled individuals, but also notable slowness and rigidity. This should be taken into account particularly regarding motor symptoms and altered functioning in relation to the person's previous physical condition, mobility and ability to cope independently.

Assessment tools have been developed for the psychiatric assessment of people with intellectual disabilities, based on commonly used diagnostic classification systems (the ICD and DSM classification systems). When using these instruments, it

is very important to also utilize alternative and augmentative communication aids, particularly in situations where the aim is to ascertain from the person themselves their symptoms and what these mean in their daily life.

The handling of the following assessment methods is necessarily somewhat exemplary in this context, as the diagnostic evaluation of a patient with an intellectual disability must consider the means used on a very individual basis, particularly in relation to communication methods. However, it is crucial to understand that such aids and methods have been developed to support diagnostic evaluation, and their use is recommended.

Adaptations of the most commonly used diagnostic criteria have been designed specifically to support the diagnostic processes concerning individuals with ID. Diagnostic Manual—Intellectual Disability (DM-ID): A Textbook of Diagnosis of Mental Disorders in Persons with Intellectual Disability is based on both evidence-based methods and the expert-consensus model. It covers a broad examination of the topic, with a description of each disorder and a summary of the DSM-V diagnostic criteria. DM-ID also includes a review of the literature and an evaluation of the strength of evidence supporting the literature conclusions, a discussion of the aetiology and pathogenesis of the disorders and adaptations of the diagnostic criteria for the ID population. DM-ID has been developed as adaptation of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition—Text Revision (DSM-IV-TR) by The National Association for the Dually Diagnosed (NADD), in association with the American Psychiatric Association (APA) (61).

The Psychopathology in Autism Checklist (PAC) (12) is a validated instrument that has been used to assess psychotic symptoms in patients with ID and autism spectrum disorder. It encompasses five subscales and 42 items: general adjustment problems (GAP) 12 items, psychosis 10 items, depression 7 items, anxiety 6 items and OCD 7 items, and therefore serves as a method for larger differential diagnosis. PAC is a carer-completed instrument for screening possible psychiatric symptoms, including psychotic symptoms. The carer as an informant could be a family member or a professional carer. However, the most important thing is that to be able to report any changes in individual's mood and behaviour, the informant has to know the assessed individual well. PAC has been shown to discriminate well between individuals with ID and autism with and without psychiatric symptoms (63).

Psychiatric symptoms can also be assessed by using the Moss-PAS (ID), which is an informant-based semi-structured interview that covers seven different psychiatric symptom categories (depression, anxiety, elevated mood and hyperactivity, obsessive compulsive disorder, psychosis, possible organic disorders, autism). The Moss-PAS (Diag ID) is a more comprehensive assessment tool, designed for individuals with ID who have enough verbal skills to be interviewed regarding their own symptoms with a semi-structured interview (64). The Moss-PAS diagnostic tools are adaptations of ICD and DSM classifications with the latest updates from ICD-11 and DSM-V diagnostic criteria (65).

Other diagnostic tools designed for general population can also be used to assess individuals with ID. Diagnostic tools in assessing psychotic disorders in individuals with ID are described thoroughly by Bakken (12). However, when using structured or semi-structured interview, it should be acknowledged that the patient might have limitations in understanding complex questions and expressing inner sensations, thoughts and emotions. AAC methods are recommended to support communication with the individual, and the chosen method of examination should always be selected based on the patient's cognitive abilities. Self-report questionnaires are typically not useful in psychiatric examination of individuals with ID and should only be used as a basis for interview. Thus, a good-quality informant is an extremely crucial factor in the careful assessment of symptoms.

DISCUSSION

Psychiatric diagnosis in individuals with intellectual disabilities is challenging and often requires a thorough multidisciplinary assessment. We acknowledge that the presented approach is likely to be time-consuming and requires in-depth knowledge and experience regarding psychiatric differential diagnosis in individuals with ID. However, we would like to emphasize the fact that before assessing actual psychotic symptoms, it is important to consider whether the more common causes of challenging behaviour have been ruled out. This is especially important among these patients who lack the abilities and opportunities to express themselves without communication aids. In cases of acute symptoms, one must, of course, act in accordance with the principles that ensure the safety of the patient and their environment, and in such cases, more extensive investigations may have to wait—but they should not be forgotten.

Information regarding psychotic disorders in individuals with developmental disabilities and their differential diagnosis remains quite scarce (12). To support clinical assessment, it is therefore important to seek information and assistance from a variety of sources, transcending the boundaries of specialized fields. It is important to reflect the assessment of behaviour

and interaction against the person's cognitive and emotional developmental stage and to take into account the aetiology of the developmental disability and its possible specific characteristics.

We want to emphasize that it is naturally possible to reach a situation in which the diagnosis of a psychotic disorder is justified. Just as it is important not to diagnose something that is not a psychotic illness as such, it is equally important not to dismiss a condition that meets the diagnostic criteria for a psychotic disorder as merely challenging behaviour. It is essential that individuals with intellectual disabilities are diagnosed with the psychiatric disorders they suffer from, which significantly impact their functioning. Careful diagnosis enables appropriate treatment and follow-up, as well as increasing knowledge and understanding of mental health disorders in individuals with intellectual disabilities. Therefore, this review, with its numerous perspectives to consider, serves as a crucial description of the factors that can lead to the identification of a psychotic disorder, or another possible reason, behind altered behaviour.

Through careful assessment, psychotic disorders in individuals with developmental disabilities can be better identified and diagnosed than before. Furthermore, a careful assessment ensures that phenomena and symptoms that can be explained by the developmental disability itself or by other somatic or psychiatric factors are not misinterpreted as psychotic symptoms.

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