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**Teachers' perceptions and practices towards inclusive education for children with ADHD in
Scotland: A qualitative investigation**

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Abstract

Limited qualitative research has examined teachers' understanding of Attention Deficit/Hyperactivity Disorder (ADHD), their attitudes towards the inclusion of children with ADHD in mainstream schools and how they support such learners (Toye et al., 2018). To address this, the current study used qualitative methodology to examine teachers' understanding of ADHD, their attitudes towards inclusion and their inclusive behaviours for children with ADHD. Semi-structured interviews were conducted with teachers (n=10) working in ten Scottish schools. A thematic analysis identified four themes: *ADHD Existence and Importance*; *Girls Go Under the Radar*; *The Impact of Limited Training*; *Working Inclusively*. Teachers' perceptions may impact upon ADHD diagnosis and successful inclusion. The findings suggest the need for training to educate teachers about the causes of ADHD and the role of gender in symptoms. Classroom teachers should have access to more support to help them work successfully with children with ADHD. The study provides recommendations for teacher education and professional development surrounding ADHD.

Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most common neurodevelopmental disorders among children nationally (Health Improvement Scotland [HIS], 2012) and internationally (Barkley, 2000; Polanczyk et al., 2007). Individuals with ADHD demonstrate a pattern of inattentive and/or hyperactive/impulsive behaviours (American Psychiatric Association, APA, 2013). Children with ADHD may experience academic difficulties and obtain fewer qualifications (Geurts & Embrechts, 2008). Although symptoms vary between individuals, social difficulties and antisocial behaviour are common in children with ADHD (Bagwell et al., 2001; Cumyn et al., 2009). Education therefore plays an important role in supporting children with ADHD to learn academic and socialisation skills.

A number of countries support international efforts to education children with additional support needs (ASN) within mainstream schools (United Nations Convention on the Rights of the Child, 2006; UNESCO Salamanca Statement, 2005). Such legislation aims to increase the acceptance and participation of children with disabilities, including those with ADHD, in mainstream classrooms (Lindsay, 2007) and encourages schools to make appropriate adjustments for children. In Scotland, the context in which the study is set, the Government has incorporated the key principles of the Salamanca Statement (2005) into the Standards in Scotland's Schools legislation (The Education (Scotland) Act 2016). The current study is therefore of international relevance given the shared desired outcomes of inclusive education across many countries. To date though, limited research examining ADHD inclusion has been conducted in Scotland. It is imperative to understand the nature of mainstream education for children with ADHD in this setting.

Despite legislative requirements, mainstream school can be one of the most challenging places for children with ADHD (Kos et al., 2006) suggesting that inclusive policies may not be appropriately enacted. Indeed, one study found that The Education

(Scotland) Act 2016 did not translate into practice (The Scottish ADHD Coalition, 2018). There are no set rules with what support schools should offer children with ADHD and how to implement this support. Thus, although policy mandates inclusion, teachers are instrumental in the support of children with ADHD (Sax & Kautz, 2003). The attitudes teachers hold towards inclusion play a role in the use of inclusive teaching strategies (Wilson, et al., 2016; Wilson et al., 2019).

Attitude is defined as a 'latent disposition or tendency to respond with some degree of favourableness or unfavourableness to a psychological object' (Fishbein & Ajzen, 2010, p. 76). In the current context, an attitude is an evaluation towards inclusion and influences whether inclusive practices are implemented. The literature is inconsistent in relation to the nature of teacher attitudes towards inclusion (Lindsay, 2007). However, it is suggested that teachers hold more negative attitudes towards including students with behavioural issues than those with physical or intellectual difficulties (Avramidis & Norwich, 2002; De Boer et al., 2011). As behavioural issues are a key characteristic of ADHD symptoms, teachers' attitudes regarding ADHD may be negative.

Some evidence suggests that negative attitudes of ADHD are common among teachers (McMahon, 2012; Ohan et al., 2011). Moreover, teachers may advocate withdrawing pupils with ADHD from mainstream classes (Hillman, 2011) and show little self-efficacy in supporting such learners (Ohan et al., 2011). In contrast, others have reported positive attitudes towards ADHD showing that teachers believe that the disorder warrants attention (Moore et al., 2017). Inconsistent findings make it difficult to draw conclusions around the nature of teacher attitudes. In response, Toye et al. (2018) identified the role of knowledge in teacher attitudes towards children with ADHD. Teachers with greater knowledge of ADHD displayed lower levels of ADHD-related stigma and more positive attitudes towards inclusion.

Teachers need sufficient understanding about ADHD symptoms, diagnosis, and treatment to allow students to be supported, benefit from lessons and minimise disruption to others (Masseti et al., 2008; West et al., 2005). Having knowledge about ADHD also allows teachers to comment on the impact of ADHD upon teaching which is of interest during diagnosis (APA, 2013). However, teachers may have limited knowledge of ADHD (Toye et al., 2018). Moore et al. (2017) found that teachers lacked knowledge relating to the impact of mainstream classes' structure and routines upon the difficulties experienced by those with ADHD. Instead, teachers attributed students' difficulties in accessing the curriculum to the child's skill deficits. This is supported by work which argues that a rigid school environment worsens ADHD symptoms and hinders learning (Kos et al., 2006). Such a knowledge gap may prevent teachers from recognising and referring pupils with ADHD.

A limitation of this literature relates to the predominant use of quantitative research methods. Studies tend to use questionnaires which can be too prescriptive and do not allow for a rich understanding of participants' understanding of ADHD or inclusion (Gelo et al., 2008). Quantitative methods can indicate whether teacher beliefs are positive or negative but cannot elaborate on why. Knowledge questionnaires which provide scores to questions about symptoms, diagnosis and treatment of ADHD do not allow teachers to comment on their understanding of ADHD. There is a need for qualitative research to examine teachers' perception and management of ADHD (Moldavsky et al., 2013). This would allow for an in-depth investigation of how teachers understand ADHD, how they view children with ADHD in mainstream schools and how they support such learners. This is important in order to identify training or support needs to help teachers work with learners with ADHD.

The Current Study

The study was the first to qualitatively examine teacher perceptions and experiences of working with children with ADHD in mainstream Scottish schools and the impact upon practice. A quantitative evidence base exists to suggest an important role of teacher attitudes, knowledge, and support for successful inclusion. The current study took these concepts into account when designing the interview schedule but used a qualitative design to allow ideas to come from the data that quantitative research may have missed. The study aimed to use semi-structured interviews to investigate teachers' views of ADHD and understanding of the disorder. The study also aimed to explore the support teachers gave to learners with ADHD and their ability to create an inclusive learning environment. Limited research has been carried out to explore this and to the authors' knowledge, no such investigation has been carried out in Scotland. The findings have international relevance and provide important insight in teachers' beliefs and practices for children with ADHD. This has implications for the direction of future ADHD research, teacher education, policymakers, and educational experiences of children with ADHD.

Method

Participants

The study recruited 10 teachers (all female) working across the Scottish education system. This sample size is in line with Braun and Clarke's (2006, 2013) guidelines for thematic analysis and Sandelowski's (1995) argument that the sample size must be small enough to be able to manage the data but large enough that it enhances understanding. Participants were recruited through existing teacher networks and social media platforms, using convenience (Suri, 2011) and snowball (Allen, 2017) sampling methods. Participants ranged in age from 25-53 years ($M=41.11$, $SD=10.13$). Teaching experience ranged from 3-32 years ($M=12.10$, $SD=8.49$). All participants had experience of teaching primary-age

children. Eight participants were currently employed as primary school teachers and two were employed as secondary school teachers at different Scottish schools. All participants had experience teaching children with ADHD. Length of such experience ranged from 1-19 years ($M=7.81$, $SD=6.74$).

Data collection

Ethical approval was obtained from the home institution and aligned with the British Psychological Society's (2018) Code of Ethics and Conduct. Ten semi-structured interviews were conducted to allow for a rich exploration of participants' ADHD training and experience, knowledge of ADHD, attitudes towards ADHD, and the support they have offered to students with ADHD. Interview lengths ranged from 30-45 minutes. See Appendices for interview schedule.

Data analysis

Data collection and analysis were concurrent and data saturation was achieved. Interviews were audio recorded and transcribed, verbatim. Transcriptions were anonymised to protect the privacy of participants, students, and schools. Transcripts were independently examined by two of the authors using Braun and Clarke's (2006, 2013) six-step process of reflexive thematic analysis. This approach involves 1) Familiarisation of the data through reading and re-reading the data; 2) Producing initial codes from each transcript; 3) Searching for themes in the codes; 4) Reviewing and editing themes 5) Naming and defining 'themes' into easily understood concepts; 6) Reporting data. Themes were identified based on their relevance to the research questions and if they occurred commonly across participants.

Analysis

Four themes were identified. Themes 1) *ADHD Importance and Existence* and 2) *Girls Go Under the Radar* were relevant to the first study aim which investigated teachers' views of ADHD and their understanding of the disorder. Themes 3) *The Impact of Limited*

Training and 4) *Working Inclusively* relate to the second study aim which explored the support teachers gave to learners with ADHD.

Theme 1: ADHD Importance and Existence

In line with the first study aim, this theme concerns teachers' views towards ADHD. Participants' viewed ADHD as less important than other disabilities and believed that ADHD was not prioritised. Given that children with many ASN learn within mainstream schools, teachers were required to prioritise their time and support. As a result, ADHD was perceived as less important as other disabilities. For example, participants discussed the need to focus on disorders such as Autism Spectrum Disorder (ASD) rather than ADHD:

...there's so much emphasis put on other challenges and other behaviours and other barriers that conditions like ADHD are kind of hidden conditions almost.

Your focus is more on children that are showing ASD behaviours or are showing, wellbeing concerns. (Participant A)

I don't think it's [ADHD] treated as important at all. (Participant G)

These quotes suggest teachers hold an attitude that ADHD is not a priority and that there is a hierarchy regarding which children teachers focus on. Teachers appear to prioritise students with communication or learning/intellectual needs (children with ASD) over those who require support for their behaviour or inattentiveness (children with ADHD). One reason for this might be the result of some teachers questioning the existence of ADHD:

And they're like "I don't think ADHD is a thing". They would just say it is covering up for, maybe, bad behaviour. (Participant G)

...there's a kind of idea that maybe ADHD is not a thing. Some people don't seem to think that ADHD exists. (Participant E)

Participants discussed colleagues who have questioned the validity of ADHD. Our data suggest that teachers do not fully accept ADHD, believing the label is used to excuse poor behaviour. Previous research has also found beliefs that ADHD diagnoses are subjective (Lebowitz, 2016; Moldavsky & Sayal, 2013). This may explain why ADHD is not perceived to be as important as other disorders; teachers question the validity of the diagnosis. This is problematic given that teachers' understanding of ADHD impacts upon practice (Boon, 2020). Although participants tended to state these were views of others and did not seem to endorse them, this highlights the need for teacher training around causes of ADHD.

The notion that teachers question the existence of ADHD suggests that teachers held different attributional beliefs about the causes of ADHD. Our findings suggested that some perceived ADHD to be a medical condition based on genetics and brain activity whereas others argued that ADHD was a response to poor environmental conditions. Participants believed ADHD has a medical basis:

So, it's obviously something's in their brain... they've got other things going on.

(Participant E)

...people who have a genuine condition that they've had since birth and they've had to either manage throughout their life – in which case they do need extra support. (Participant F)

These responses show that some participants understood ADHD as a genetic condition and that those with the disorder need extra support. These participants subscribed to a biomedical model of ADHD, which argues that the disorder is caused by atypical brain activity (Barkley, 2004; Boon, 2020). This attitude towards ADHD is likely to result in attempts at inclusive practices to support the child. In contrast, others believed that ADHD

symptoms present as a response to the child's environmental conditions, rather than the presence of a disorder:

...people who have either been diagnosed or their parents are pushing to have them diagnosed with ADHD when it perhaps isn't that condition; it's just their lifestyle. And they're displaying symptoms of that condition, but it's a result of poor nutrition, lack of routine, lack of sleep and boundaries. (Participant G)

The participant here shows a contrasting attitude towards ADHD. They believed the child's environment has caused ADHD symptoms. It is suggested that the lack of discipline and structure in the child's home life is causing this behaviour. It is a common misconception that ADHD is a result of poor parenting, nourishment, or home life (Moldavsky & Sayal, 2013). Such attitudes may prevent children from receiving the educational support they require. Research examining other disabilities has reported that teachers who attribute pupil difficulties to environmental causes are less likely to put classroom strategies in place, believing the difficulties are outside school's control (Arcia et al., 2000). Our findings emphasise the importance of considering teacher attributions in relation to ADHD.

In summary, *ADHD Importance and Existence* relates to teachers' views and understanding of the disorder. Teachers did not perceive ADHD as important and prioritised other disorders when considering inclusive practice. Our findings extend previous literature to show that this may be a result of teachers questioning the existence of ADHD. Some believed that ADHD is a genetic condition; however, others suggested children with poor home lives display ADHD symptoms in response to this. These attributional differences are important given that they shape teachers' classroom behaviours. Teacher cognitions such as attitudes, knowledge and self-efficacy (e.g. Toye et al., 2018; Wilson et al., 2016, 2019)

influence teacher behaviour. However, our findings have identified the need to examine teacher attributions.

Theme 2: Girls Go Under the Radar

Girls Go Under the Radar also addresses the first study aim relating to teachers' views and understanding of ADHD. This theme represents the role of gender within teachers' knowledge of ADHD. Boys dominated participants' understanding of ADHD. Although this has been previously reported in the literature, our findings show the extent to which teachers realised they had never considered girls could have the disorder:

I would automatically think boys. (Participant J)

I've never seen any girls with ADHD. (Participant D)

There's never been a point where I've actually been worried about a girl's behaviour. (Participant B)

... the children that stuck out in my mind as having, what I would perceive as ADHD...my mind would go straight to boys. (Participant A)

The understanding that ADHD is linked with boys was expressed by most participants. This concurs with research which suggest that boys outnumber girls with ADHD. The worldwide boy to girl diagnosis ratio is 2:1 (Quinn, 2005) and in Scotland, this increases to a 6:1 ratio (HIS, 2012). Walters (2018) estimates 75% of girls with ADHD are undiagnosed. Participants suggested that this might be a result of the way ADHD presents in girls:

... the way they [boys] interact in a playground, is a lot more vocal. It's a lot more physical. Whereas, girls who I think did possibly have these behaviours were quieter and not as noticeable. If a girl misbehaves it's not the same kind of action. Some people don't notice it as much. (Participant A)

It's less obvious because they [girls] might not be quite so out there. They might be quieter, and they might slip through the net easier because you are not as aware of them. (Participant B)

I don't know if it's to do with being more emotionally aware, but they [girls] seem to be able to cover over things that they think maybe aren't socially acceptable. And they kind of hide. (Participant F)

Participants believed that the behaviour of boys with ADHD is more noticeable and disruptive than the behaviour of girls with ADHD, which results in girls' symptoms being missed. Such a finding is in line with research which argues that boys are disproportionately diagnosed with ADHD because they are more likely to disrupt classroom routines, prompting teachers to refer them for assessment (Abikoff et al., 2002; Kok et al., 2016). In addition to factors relevant to boys, our study highlights mechanisms which drive girls' symptoms being missed. Participant F considered that girls hide ADHD symptoms to be socially accepted which results in them being excluded from consideration of a diagnosis. This supports research which suggests that girls have less overt symptoms of ADHD (Kok et al., 2016). If teachers are unaware of a girl with ADHD, this will impact upon the support they offer to that child.

In summary, *Girls Go Under the Radar* represents teachers' understanding that only boys are diagnosed with ADHD. Participants believed that this is a result of gender differences in the presentation of ADHD, with behaviour being more disruptive and noticeable in boys. As a result, girls' symptoms may be unnoticed. Girls may also hide symptoms to fit in with peers. Not only does this provide insight into the existence of a gender difference but also what drives this difference.

Theme 3: The Impact of Limited Training

The Impact of Limited Training addresses the second study aim to explore the support teachers gave to learners with ADHD. The theme relates to the lack of ADHD training and the negative impact this has upon participants' attitudes and knowledge of the disorder. Lack of training also hindered teachers' ability to support children with ADHD. Most participants had not been offered ADHD specific training:

Absolutely no training at all. (Participant B)

I don't recall any lecture going into detail about ADHD specifically. (Participant E)

I don't remember ever getting any specific training (Participant F)

The data support previous research suggesting that teachers did not believe that initial teaching training prepared them to work appropriately in an inclusive environment (Mintz et al., 2020) and extends this to show the impact this has upon teachers' efficacy in recognising ADHD:

I don't know whether what I'm thinking about ADHD is actually ADHD because as I say, there's no mention of it at university. There's no mention of training in schools. So, it's only what I understand by the term or any research that I've done. (Participant G)

I honestly don't feel I know enough about it. That's my general feeling about it. I feel that I'm a bit ignorant about it, to be honest. I don't feel I know enough about it. (Participant J)

If somebody said to me, "Define ADHD." I wouldn't be able to do that properly. (Participant I)

As a result of limited training, teachers did not feel confident in their understanding of ADHD and lacked knowledge of the disorder. This is problematic given that teachers not only must adapt their practice to support learners with the disorder, but they also play a role in the referral of children who show symptoms of ADHD. This finding supports previous work which has argued that teachers lacked knowledge of ADHD characteristics (Toye et al., 2018). These findings may also relate to the earlier discussion that some believe ADHD is not a real disorder. Having a lack of knowledge about ADHD may impact on attitudes towards it. Research has shown a relationship between knowledge of disabilities and attitudes towards inclusion (Bekle, 2004; Gureasko-Moore et al., 2005). Our findings extend this to teachers' ADHD attitudes.

Extending the current literature, *Impact of Limited Training* acknowledges the lack of ADHD training offered to teachers and the impact this has upon their ability to provide support. There is a need for increased awareness of not only what ADHD is but also appropriate strategies to help support learners.

Theme 4: Working Inclusively

The final theme also addresses the second study aim, representing participants' attempts to support children with ADHD. Teachers reported several adaptations they used to help children with ADHD; however, they also noted challenges of inclusive practice. When discussing their use of inclusive strategies, participants identified the need to allow children with ADHD space to move. Thus, most participants aimed to allow the child to walk around more often to reduce fidgeting:

...it was trying to give them something to have in their hands – like a fidget toy, that kind of thing – and allowing them to move about. (Participant F)

Give them, like opportunities to move – even just go to the toilet, to the bathroom. Go and get the jotters out. (Participant D)

Things like having a walk to the toilet and back. Even just going and washing your hands or, you know, just to get out and do a walk. Just to go to a different place so they're not sitting at their desk. (Participant B)

These observations suggest that teachers adapted practice to accommodate symptoms of hyperactivity. Children with the hyperactive sub-type of ADHD tend to be physically active and may find it difficult to be still (APA, 2013). By allowing the child to use this energy, the teachers are encouraging behaviour management while learning in a mainstream environment. In addition, participants described strategies used to help the child stay focused;

Timers – something as simple as just do this, even if it's for a very short time.

Using timers to complete your task for the timer. Then you can go and do something that you want to do. (Participant G)

I used a lot of now and next timetables. So, it was a visual timetable on his table every morning and it would have what he was going to do now and then next. (Participant E)

Teachers described strategies they have used to help children with ADHD focus on tasks. The use of timers and timetables allows the child to visualise how long they must work on a task and what they will do next. These adaptations are useful for children who experience inattentive ADHD symptoms such as poor concentration, forgetting to do things and being disorganised (APA, 2013). Teachers thus attempted to use practices which support the learning of children with ADHD.

It is important to note that teachers reported that enacting inclusion has challenges. For example, large class sizes:

...there is one of you and thirty-three children. What do you do? I don't know what the answer to that is. (Participant B)

...looking at a class where you have got three children with diagnosed behaviours; you've also got another three kids that may be on child protection registers; and maybe you've got another two kids that are going through a divorce. All that, on top of a child who has got ADHD, you then become someone that's spinning plates. (Participant A)

Having enough time to dedicated to a child with ADHD when there is a class of other learners is difficult. As schools become more inclusive, teachers' roles are increasingly diversified. Teachers must adjust their practices to accommodate children of all abilities (Janney & Snell, 2004). Participant A likened this to 'spinning plates' to describe how teachers feel in their attempts to meet the varied student demands on their time to effectively support the range of needs. This observation concurs with previous work which has shown teachers believe inclusion increases their workload (Avramidis, & Norwich, 2002). Another challenge discussed was the need for differentiation of instruction in response to individual differences is highlighted in the following responses:

Every child that I've met that has a diagnosis of ADHD presents very differently and requires different strategies. So, maybe it isn't as simple as one method fits all. (Participant H)

All we have in here is time out. That's all they give you. It doesn't really help when you want them to do things. (Participant D)

Participant H highlights an issue that although a strategy might work with one child, every child is different meaning the same strategy might not work with another child (e.g., Participant D reporting that 'time outs' do not work with every child). This supports Jordan

and McGhie-Richmond's (2014) argument that individual instruction is required for each child with ASN. Our data suggest that teachers should be given a 'toolkit' of strategies to meet the individual needs of students.

In summary, *Working Inclusively* represents the classroom adaptations teachers make to support the learning of children with ADHD in mainstream schools and the challenges associated with this. This is important given the limited research around the use of inclusive strategies for children with ADHD.

Discussion

The current study was the first to use semi-structured interviews to provide an in-depth investigation of how teachers understand ADHD, their attitudes towards the inclusion of children with ADHD in mainstream Scottish schools and how they support such learners. The study aimed to bring us closer to recommendations for teacher education and professional development and thus extend what we currently know about inclusion of children with ADHD. *ADHD Existence and Importance* and *Girls Go Under the Radar* related to the first study aim around teachers understanding of ADHD and their attitudes towards the disorder. *Impact of Limited Training* and *Working Inclusively* related to the second study aim around the support teachers gave to learners with ADHD.

ADHD Importance and Existence

ADHD Importance and Existence firstly focused on teachers' views that ADHD is prioritised less than other disabilities. This is surprising given research which argues that the inclusion of children with behavioural difficulties in mainstream classrooms has consistently been reported to be problematic for teachers (Avramidis & Norwich, 2002; De Boer et al., 2011). This would suggest that children with ADHD would receive more of the teachers' time. An important point however, is that the teachers questioned the existence of ADHD

which may explain the negative attitudes found in some quantitative studies (e.g. Hillman, 2011; McMahon, 2012; Ohan et al., 2011) and for the lack of willingness to prioritise support.

Findings suggested that teachers held different attributional beliefs about the causes of ADHD. Some perceived ADHD to be a medical condition resulting from atypical brain activity whereas others argued that ADHD symptoms were a response to environmental conditions. Research has shown that teachers' attributional beliefs about the causes of intellectual disability impact upon inclusive practice (Brady & Woolfson, 2008). Our findings extend this to include ADHD. Those who believe the cause is out with the control of the school are less likely to adapt practices (Arcia et al., 2000). As some teachers indicated a lack of knowledge about the brain structures involved in ADHD, there is a need for teacher education around the causes of ADHD to ensure teachers do not automatically attribute ADHD symptoms to the home environment.

Girls Go Under the Radar

Girls Go Under the Radar represented the role of gender within teachers' understanding of ADHD. Boys dominated participants' knowledge of ADHD and teachers tended not to consider the possibility of girls having the disorder. This may explain why underdiagnosis of girls with ADHD is common in Scotland (HIS, 2012). Participants argued that as girls' symptoms were less disruptive and thus less noticeable, they tended to go under the radar. These findings are in line with previous research (Kok et al., 2016) and bring us closer to understanding mechanisms driving the gender difference. Further, participants felt girls were better at hiding symptoms to fit in socially and suggest the need for training to educate teachers about the gender-specific manifestations of ADHD. This would allow for teachers to recognise ADHD symptoms more accurately in females.

It is also important for future research to reflect on measures assessing knowledge of ADHD. Importantly, our findings suggest the need for knowledge measures to take gender differences in ADHD into account as currently, these may primarily focus on males with the disorder. Similar arguments have been made for other developmental disabilities such as ASD (Westwood & Tchanturia, 2017). Such measures would allow researchers to further understand ADHD knowledge and support practitioners including teachers, in recognising ADHD in females.

The Impact of Limited Training

Impact of Limited Training focused on the lack of ADHD training offered to teachers and the negative impact of this upon attitudes and knowledge of the disorder. In line with previous work, teachers did not believe initial teacher training prepared them to support children with ADHD in mainstream classrooms (Mintz et al., 2020). Such a finding may also relate to the earlier discussion that some teachers believed ADHD is not a real disorder. Having a lack of training and thus knowledge about what ADHD is might impact upon attitudes towards it. This finding extends work pertaining to ADHD which has shown a relationship between knowledge of disabilities and attitudes towards inclusion (e.g. Bekle, 2004; Gureasko-Moore et al., 2005) to the context of ADHD. Again, this theme highlights the need for more ADHD training opportunities for mainstream teachers.

Working Inclusively

Despite limited training and knowledge, teachers provided examples of practices used to support children with ADHD. *Working Inclusively* captured teachers' inclusive practices. Teachers discussed the importance of strategies that allowed the students space to move. They argued that allowing the student more space helped the students from becoming restless. Strategies which helped keep the child on task were also useful. Such a finding is

positive in that it suggests teachers are attempting to working inclusively. It should be noted though that difficulties in adapting practices were acknowledged. For example, large class sizes make it difficult to support the child. Class size is commonly perceived as a barrier to inclusive education (Kilanowski-Press, Foote, & Rinaldo, 2010). Further, inclusive policy increases workload to an already demanding job. Although teachers attempted to use inclusive strategies, they felt that limited knowledge hindered the implementation and the success of these strategies. These findings suggest that more support for primary school teachers to work with learners with ADHD is needed. One way to achieve this may be through staff mentoring to support teachers' inclusive practice as well as identify specific training needs.

Limitations

One limitation of the study is that only teachers working within the Scottish education system were recruited. The findings may not be generalisable to teachers working in other countries. Nevertheless, inclusive education legalisation is in place across the United Kingdom and in a large number of jurisdictions across the globe. As such, teachers may be working towards similar goals and thus have similar beliefs. However, some have argued that there are cross-cultural differences in teacher beliefs towards ASD (e.g. Ballantyne et al., 2019). Future research should examine teacher knowledge and attitudes towards ADHD within different educational and political landscapes. Another possible limitation is that all participants were female. van Steen and Wilson (2020) found that male teachers are more negative towards inclusion than females, however, the effect was small. Others have found the opposite effect (Ojok & Wormnæs, 2013). and others, no effect at all (Leyser et al., 1994). Although the role of teachers' gender is unclear, future research should take this into account. Finally, it should be noted that the study utilised only one method of data collection.

To achieve data triangulation, future research should adopt two or more methods (Carter et al., 2014).

Conclusion

The current study was the first to qualitatively examine teachers' knowledge of ADHD, their attitudes towards inclusion and the support offered to such learners in Scotland. The themes suggested that teachers tended not to prioritise ADHD when considering the extra support children require. This may be a result of questions around the existence and causes of the disorder. Further, teachers lacked knowledge of how ADHD presents in females and perceived this to be a male dominated disorder. Lack of knowledge may be a result of limited training opportunities. Finally, teachers attempted to use strategies to support learning of children with ADHD but noted challenges in doing so. These findings extend previous literature by providing context and rich detail to what we know quantitatively about teachers' ADHD attitudes and understanding. The study is of international relevance and has implications for research, policy, and practice. For example, our findings suggested that teacher perceptions drive classroom behaviours. More research is now needed which triangulates teachers' perceptions of ADHD with observed classrooms behaviours. This is important in order to inform intervention aimed at supported teachers' inclusive beliefs and behaviour. Policy-makers should consider providing teacher training which educates teachers about ADHD, the manifestation of the disorder and effective inclusive strategies. In relation to practice. Staff mentoring may help to support teachers to work with children with ADHD and identify training needs. Access to such training and support may allow teachers to create a more positive learning environment for children with ADHD.

References

- Abikoff, H. B., Jensen, P. S., Arnold, L. E., Hoza, B., Hechtman, L., Pollack, S., & Vitiello, B. (2002). Observed classroom behavior of children with ADHD: Relationship to gender and comorbidity. *Journal of abnormal child psychology*, *30*, 349-359.
- Allen, A. (2017). Snowball Subject Recruitment. *The SAGE Encyclopedia of Communication Research Methods*. doi:10.4135/9781483381411.n569
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.
- Arcia, E., Frank, R., Sanchez-LaCay, A., & Fernández, M. C. (2000). Teacher understanding of ADHD as reflected in attributions and classroom strategies. *Journal of Attention Disorders*, *4*, 91-101.
- Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: a review of the literature. *European journal of special needs education*, *17*, 129-147.
- Bagwell, C. L., Molina, B. S., Pelham, W. E., & Hoza, B. (2001). Attention-deficit hyperactivity disorder and problems in peer relations: predictions from childhood to adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 1285–1292.
- Ballantyne, C., Gillespie-Smith, K., & Wilson, C. (2019). A comparison of UK and Chinese teachers' knowledge of Autism Spectrum Disorder. *International Journal of Disability, Development and Education*.

- Barkley, R. A. (2000). *Taking Charge of ADHD: The Complete, Authoritative Guide for Parents* (Revised ed.). London: Guilford Press.
- Barkley, R. A. (2004). Critique or Misrepresentation? A Reply to Timimi et al. *Clinical Child and Family Psychology Review*, 7, 65-69.
- Bekle, B. (2004). Knowledge and attitudes about attention-deficit hyperactivity disorder (ADHD): a comparison between practicing teachers and undergraduate education students. *Journal of Attention Disorders*, 7, 151-161.
- Boon, H. (2020). What do ADHD neuroimaging studies reveal for teachers, teacher educators and inclusive education? *Child and Youth Care Forum*.
- Brackenreed, D. (2008). Inclusive education: Identifying teachers' perceived stressors in inclusive classrooms. *Exceptionality Education International*, 18, 131-147.
- Brady, K., & Woolfson, L. (2008). What teacher factors influence their attributions for children's difficulties in learning? *British Journal of Educational Psychology*, 78, 527-544.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3, 77-101.
- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.
- British Psychological Society (2018). Code of Ethics and Conduct.
<https://www.bps.org.uk/sites/www.bps.org.uk/files/Policy/Policy%20-%20Files/BPS%20Code%20of%20Ethics%20and%20Conduct.pdf>

- Carter N., Bryant-Lukosius D., DiCenso A., Blythe J., Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncol Nurs Forum*, 41, 545-547.
- Cumyn, L., French, L., & Hechtman, L. (2009). Comorbidity in adults with attention-deficit hyperactivity disorder. *The Canadian Journal of Psychiatry*, 54, 673-683.
- De Boer, A., Pijl, S. J., & Minnaert, A. (2011). Regular primary schoolteachers' attitudes towards inclusive education: a review of the literature. *International Journal of Inclusive Education*, 15, 331-353.
- Fishbein, M., & Ajzen, I. (2010). *Predicting and Changing Behavior: The Reasoned Action Approach*. New York: Taylor & Francis Group.
- Gelo, O., Braakmann, D., & Benetka, G. Quantitative and qualitative research: Beyond the debate. *Integrative Psychological and Behavioral Science*, 42, 266–290.
- Geurts, H. M., & Embrechts, M. (2008). Language profiles in ASD, SLI, and ADHD. *Journal of autism and developmental disorders*, 38, 1931-1943.
- Groenewald, C., Emond, A., & Sayal, K. (2009). Recognition and referral of girls with attention deficit hyperactivity disorder: Case vignette study. *Child: care, health and development*, 35, 767-772.
- Gureasko-Moore, S., DuPaul, G. J., & White, G. P. (2005). Self-management of classroom preparedness and homework: Effects on school functioning of adolescents with attention-deficit/hyperactivity disorder. *School Psychology Review*, 36, 647– 664.
- Health Improvement Scotland (2012). *Attention Deficit and Hyperkinetic Disorders: Services over Scotland*. Retrieved from <file:///C:/Users/User/Downloads/20121126%20ADHD%20report%20lo.pdf>

- Hillman, M. K. (2011). *An examination of teachers' recommendations for children with ADHD*. The Chicago School of Professional Psychology.
- Janney, R. E., & Snell, M. E. (2004). *Modifying schoolwork: Teachers' guides to inclusive practices* (2nd ed.). Baltimore, MD: Paul H. Brooks.
- Jordan, A. & McGhie-Richmond, D. (2014). Identifying effective teaching practices in inclusive classrooms. In C. Forlin & T. Loreman (Eds.), *Measuring Inclusive Education* (pp. 133-162). Bingley, UK: Emerald.
- Kilanowski-Press, L., Foote, C. J., & Rinaldo, V. J. (2010). Inclusive classrooms and teachers: A survey of current practices. *International Journal of Special Education*, 25, 43-56.
- Kok, F.M., Groen, Y., Fuermaier, A.B.M., & Tucha, O. (2016). Problematic peer functioning in girls with ADHD: A systematic literature review. *PLoS ONE* 11(11): e0165119.
- Kos, J. M., Richdale, A. L., & Hay, D. A. (2006). Children with attention deficit hyperactivity disorder and their teachers: A review of the literature. *International Journal of Disability, Development and Education*, 53, 147-160.
- Lebowitz, M. S. (2016). Stigmatization of ADHD: a developmental review. *Journal of attention disorders*, 20, 199-205.
- Leyser, Y., Kapperman, G., & Keller, R. (1994). Teacher attitudes toward mainstreaming: A cross cultural study in six nations. *European Journal of Special Needs Education*, 9, 1e15.
- Lindsay, G. (2007). Educational psychology and the effectiveness of inclusive education/mainstreaming. *British Journal of Educational Psychology*, 77, 1–24.

- Massetti, G. M., Lahey, B. B., Pelham, W. E., Loney, J., Ehrhardt, A., Lee, S. S. & Kipp, H. (2008). Academic achievement over 8 years among children who met modified criteria for attention-deficit/hyperactivity disorder at 4–6 years of age. *Journal of Abnormal Child Psychology*, *36*, 399–410.
- McMahon, S. E. (2012). Doctors diagnose, teachers label: The unexpected in pre-service teachers' talk about labelling children with ADHD. *International Journal of Inclusive Education*, *16*, 249-264.
- Mintz, J., Hick, P., Solomon, Y., Matziari, A., Ó'Murchú, F., Hall, K., Cahill, K., Curtin, C., Anders, J., & Margariti, D. (2020). The reality of reality shock for inclusion: How does teacher attitude, perceived knowledge and self-efficacy in relation to effective inclusion in the classroom change from the pre-service to novice teacher year? *Teaching and Teacher Education*, *91*, 103042.
- Moldavsky, M., Groenewald, C., Owen, V., & Sayal, K. (2013). Teachers' recognition of children with ADHD: Role of subtype and gender. *Child and Adolescent Mental Health*, *18*, 18-23.
- Moldavsky, M., & Sayal, K. (2013). Knowledge and Attitudes about Attention deficit/hyperactivity disorder (ADHD) and its treatment: The views of children, adolescents, parents, teachers and healthcare professionals. *Current Psychiatry Reports*, *15*, 1-7.
- Moore, D. A., Russell, A. E., Arnell, S., & Ford, T. J. (2017). Educators' experiences of managing students with ADHD: a qualitative study. *Child: care, health and development*, *43*, 489-498.

- Ohan J. L., Visser T. A. W., Strain, M. C., & Allen L. (2011). Teachers' and education students' perceptions of and reactions to children with and without the Diagnostic Label 'ADHD. *Journal of School Psychology, 49*, 81–105.
- Ojok, P., & Wormnæs, S. (2013). Inclusion of pupils with intellectual disabilities: Primary school teachers' attitudes and willingness in a rural area in Uganda. *International Journal of Inclusive Education, 17*, 1003e1021.
- Polanczyk, G., De Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The worldwide prevalence of ADHD: a systematic review and meta-regression analysis. *American journal of psychiatry, 164*, 942-948.
- Quinn, P.O. (2005). Treating adolescent girls and women with ADHD: Gender-specific issues. *Journal of Clinical Psychology, 61*, 579-587..
- Sandelowski, M. (1995). Sample size in qualitative research. *Research in Nursing & Health, 18*, 179–183.
- Sax, L., & Kautz, K. J. (2003). Who first suggests the diagnosis of attention deficit/hyperactivity disorder? *The Annals of Family Medicine, 1*, 171-174.
- Suri, H. (2011). Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal, 11*, 63-75.
- The Education (Scotland) Act (2016). The Scottish Government.
- The Scottish ADHD Coalition. (2018). Attending to parents: Children's ADHD Services in Scotland 2018. Results of a parent survey by the Scottish ADHD Coalition.
<https://www.scottishadhdcoalition.org/2018/04/17/parent-survey-about-adhd-services-in-scotland-published/>

- Toye, M. K., Wilson, C., & Wardle, G. A. (2018). Education professionals' attitudes towards the inclusion of children with ADHD: The role of knowledge and stigma. *Journal of Research in Special Educational Needs*, Retrieved from <https://onlinelibrary.wiley.com/doi/full/10.1111/1471-3802.12441>
- UNESCO. (2005). *Guidelines for inclusion: Ensuring access to education for all*. Paris, France: United Nations Educational, Scientific and Cultural Organization.
- United Nations. (2006). *Convention on the rights of persons with disabilities*. New York: Author
- Van Steen, T., & Wilson, C. (2020). Individual and cultural factors in teachers' attitudes towards inclusion: A meta-analysis. *Teaching and Teacher Education*, 95, 103127.
- Walters, A. (2018). Girls with ADHD: Underdiagnosed and untreated. *The Brown University Child and Adolescent Behavior Letter*, 34, 8-8.
- West, J., Taylor, M., Houghton, S. & Hudyma, S. (2005). A comparison of teachers' and parents' knowledge and beliefs about attention-deficit/hyperactivity disorder (ADHD). *School Psychology International*, 26, 192–208.
- Westwood, H., & Tchanturia, K. (2017). Autism spectrum disorder in anorexia nervosa: An updated literature review. *Current Psychiatry Report*, 19, 41. DOI: 10.1007/s11920-017-0791-9
- Wilson, C., Woolfson, L. M., & Durkin, K. (2019). The impact of explicit and implicit teacher beliefs on reports of inclusive teaching practices in Scotland. *International Journal of Inclusive Education*, 26, 378-396.

Wilson, C., Woolfson, L., Durkin, K., & Elliott, M. A. (2016). The impact of social cognitive and personality factors on teachers' reported inclusive behaviour. *British Journal of Educational Psychology*, 86, 461–80. <https://doi.org/10.1111/bjep.12118>.