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ORIGINAL PAPER

Health Practitioner Attitudes to Psychosocial Treatments in ADHD: Impact of Country, Age, Profession, and Beliefs

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Abstract

Objectives Attention deficit hyperactivity disorder (ADHD) affects around 7% of children/adolescents and 3% of adults. Treatment guidelines propose a combination of pharmacological and non-pharmacological approaches. Despite this, research has focused on the use of medication, including how this varies between countries, with differences found between high-income countries (HIC) and low- and middle-income countries (LMIC). Studies have also identified that the role of practitioners is critical with their clinical ambivalence around ADHD impacting treatment. The present study aimed to examine the views of practitioners towards psychosocial treatments for ADHD in the UK (HIC) and Malaysia (LMIC).

Methods Data was collected from health practitioners in the UK and Malaysia using an online survey to assess (i) demographics and employment characteristics, (ii) practitioners' attitudes to psychosocial treatments for ADHD, and (iii) practitioners' beliefs about ADHD.

Results Respondents in Malaysia held more positive attitudes towards psychosocial interventions, despite having similar beliefs about the condition. Furthermore, attitude to psychosocial interventions was predicted by age of the practitioner, their qualification, and belief in ADHD as a real condition with biological markers.

Conclusions This study has revealed some cross-cultural differences in attitudes towards non-pharmacological treatment for ADHD and provides a starting point for future research to move beyond examination of decision-making for pharmacological treatments only.

Keywords Attention deficit hyperactivity disorder · Treatment · Intervention · Clinician · Psychiatrist

Attention deficit hyperactivity disorder (ADHD) is characterised by inattention, hyperactivity, and impulsivity (American Psychiatric Association, 2022). Initially considered a childhood condition affecting 7.2% of children and adolescents (Thomas et al., 2015), it is now recognised to affect an estimated 2.6% of adults (Song et al., 2021). Interestingly, whilst a proportion of adults with ADHD will be those diagnosed as children who continue to exhibit symptoms above the threshold for diagnosis, it is also suggested that ADHD can onset during adulthood (Moffitt et al., 2015) meaning that an individual may present to a practitioner for the first time as an adult. Irrespective of whether an individual is diagnosed with ADHD as a child or adult, the consequences of ADHD are far-reaching and include learning, behavioural and emotional problems, lower academic and occupational status, and relationship difficulties (Doggett, 2004; Faraone et al., 2000). It is unsurprising then that ADHD results in lower quality of life for individuals with the condition and their families (Danckaerts et al., 2010).

ADHD has previously been identified as a condition for which considerable clinical ambivalence arises around the validity of the diagnosis and, subsequently, how the condition should be treated (Pomare et al., 2019; Rafalovich, 2005). Such ambivalence can arise due to macro- and micro-level dynamics within a clinical setting (Waitzkin, 1989) including wider academic and public debate around a condition. Several factors are likely to influence this debate, including the cultural and economic context

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in which a clinician operates. Much of what we currently know about ADHD is derived from research in high-income countries (HIC) but less than 20% of the world's population resides in HIC (The World Bank, 2022). This means that the majority of children under 5 with developmental disabilities, including ADHD, live in low- and middle-income countries (LMIC) (Olusanya et al., 2018) rather than in HIC where research typically focuses. Furthermore, even within HIC, adult populations are underrepresented in ADHD research because of the more recent acknowledgment of adult ADHD. In addition, the sociocontextual implications of ADHD are generally underresearched, including the views of practitioners and any uncertainty they have (Frigerio et al., 2013).

Given the impact of ADHD, it is critical that it is treated in a timely manner. Guidelines suggest a combination of pharmacological and non-pharmacological (i.e. psychological, social, and educational) treatment should be provided (Chan et al., 2023; NICE, 2019), although the order in which these are considered differs between countries (Sayal et al., 2018). Evidence indicates that both types of treatment, alone or in combination, can be beneficial, at least in the short term (Coghill et al., 2021; Shaw et al., 2012). However, it is noted that the evidence base for non-pharmacological treatments is smaller and of lower quality (Coghill et al., 2021) and there are few trials that directly compare the two types of intervention (Catalá-López et al., 2017). Despite the guidance recommending that both types of treatment are used, it is the use of medication in ADHD that is particularly controversial and has received widespread attention in research (Fredriksen et al., 2013; Wilens et al., 2008) and the general media (BBC, 2023; Knight, 2022), potentially fuelling macro-level uncertainty for clinicians around treatment. Attempts have been made to examine trends in prescriptions worldwide and have found a significant upward trend in prescribing for ADHD, which does not relate to prevalence, but does relate to GDP per capita and socioeconomic status (Chan et al., 2023). Despite the apparent increase, closer examination of the data indicates that consumption rates of ADHD medication in Middle-Income Countries are considerably lower than the epidemiological prevalence of ADHD, suggesting that whilst there is an overall increase, there are still locations where ADHD is an unmet health need. However, the data also suggest that a ceiling has been reached in some HIC in prescribing, with possible explanations including a shift in attitudes to non-pharmacological treatments (Chan et al., 2023). In-depth examination of data from within a specific country found that there were different trends in prescribing for children and adults (Grimmsmann & Himmel, 2021). All studies agree that beliefs of practitioners may be a factor in prescribing and treatment decisions, and these beliefs are likely to be impacted by any uncertainties around causes, diagnosis, and treatment of the condition.

Although non-pharmacological treatment for ADHD is recommended, no research has examined whether there is a corresponding increase in the use of non-pharmacological treatments for ADHD. This may be in part due to the difficulty in capturing this information as these treatments, which include parent and skills training as well as psychological therapy such as cognitive behavioural therapy, may be sought and provided by those outside of healthcare settings, especially within families of higher socioeconomic status (Raman et al., 2018). Despite the difficulty in capturing data, it might be expected that the use of psychosocial treatments should also be higher in countries with greater GDP per capita and those with higher socioeconomic status because non-pharmacological treatments for ADHD typically cost more than the pharmacological alternative (Quintero et al., 2018). However, as with medication, beliefs of key individuals could also be an important factor in offering and accepting non-pharmacological treatments. For example, research has found that beliefs in a biological basis of ADHD and medicalisation of the condition reduce the likelihood of successful use of psychosocial interventions, as do beliefs which reduce the agency of the individual with ADHD (Moore et al., 2019).

Irrespective of what type of treatment is offered, and accepted, a key first stage in accessing any treatment is to engage with relevant medical or health professionals. For many with ADHD, this will begin with an appointment with a general practitioner and likely involve a referral to specialist psychiatrists or psychologists to support assessment. As such, these individuals are effectively gatekeepers for treatment (Tatlow-Golden et al., 2016). A small number of studies have investigated these gatekeepers' views of ADHD treatment. A review by Tatlow-Golden and colleagues found that GPs held unhelpful beliefs about the validity of ADHD, the use of medication, and the role of parenting in the condition (Tatlow-Golden et al., 2016). They found that most GPs felt that more specialist individuals should be responsible for diagnosing ADHD, as might be expected, given guidelines. However, there were more mixed views around medication for ADHD, with some studies included in the review revealing up to 75% felt medication was the best approach, whilst in another study, 43% felt it was helpful and 17% felt it was never appropriate (Tatlow-Golden et al., 2016). These data indicate there is, in general, and despite a lack of confidence in recognising and diagnosing ADHD, a willingness to continue to prescribe medication for ADHD and monitoring this in GPs, after a plan had been initiated by a specialist. Other work has attempted to understand the decision-making processes for ADHD treatment with the development of a quantitative measure for prescribing decision-making by specialist psychiatrists and paediatricians (Kovshoff et al., 2013). This measure consisted of a 40-item questionnaire, the Influences on Prescribing for ADHD Questionnaire

(IPAQ), to examine practitioners' prescribing practices and divided practitioners into four clusters: Pro-Psychosocial, Medication Focused, Unsystematic, and Response Optimisers. The authors reported differences in attitudes according to gender, practice duration (i.e. professional experience), and type of clinician. Importantly, they also found some differences according to country of practice, comparing the UK and Belgium.

Given the prior focus on medication for ADHD, there is a significant gap in the literature around attitudes towards psychosocial interventions in medical and health professionals for ADHD. As concern continues to rise about the use of medication and more psychosocial interventions are being tested in clinical trials (Nazarova et al., 2022) to address gaps in the research about their effectiveness (Goode et al., 2018), it is important to understand what determines a pro-psychosocial attitude to ADHD treatment. Furthermore, as indicated above, treatment provision varies by geographical location and is impacted by economic factors. As such, the aim of the present study was to examine the attitudes of health practitioners involved in diagnosing and treating ADHD to psychosocial treatments for the condition and the factors that predict this, in both HIC (UK) and LMIC (Malaysia, identified as under-represented in ADHD research (Lewczuk et al., 2024)) settings.

Methods

Participants

Practitioners involved in the diagnosis and treatment of ADHD were recruited through mailing lists via professional groups, social media posts, and relevant organisations (e.g. British Psychological Association, Royal College of Psychiatrists). Advertisements included a direct link to the participant information sheet in Qualtrics XM from where consent to participate could be given. Those who consented were then directed to the anonymous survey. As compensation, participants who completed the questionnaire were redirected to a section where they could enter a prize draw to win 100 GBP/550 MYR worth of shopping vouchers valid for Amazon (UK) or Shopee (Malaysia). The study was approved by the Institutional Research Ethics Committee in advance (King's College London Reference: MRA-20/21-22701).

Survey

Surveys for both countries were conducted in English. This decision was made on the basis that most health-related degrees, including medicine, are taught in English in Malaysia, and this is the dominant language within healthcare settings. The survey took approximately 15 min to complete and consisted of 3 sections measuring: (1) demographics and employment characteristics, (2) practitioners' attitudes to psychosocial treatments for ADHD, (3) practitioners' beliefs about ADHD.

Demographic information was collected for age, gender, and country of practice. Information about their employment characteristics were collected, including which professional qualification allowed them to work with people with ADHD and the number of years since this was obtained, which sector(s) they work in, and which mukim (Malaysia) or NHS Trust (UK) they are based within. Finally, participants were asked to indicate the age group of their patients (children < 13, adolescents 13–18, adults > 18), and if more than one applied, they also indicated which group they most worked with.

To assess attitudes to psychosocial treatments for ADHD, we used the psychosocial subscale of the previously developed IPAQ (Kovshoff et al., 2013). This consists of 5 items (e.g. I always want families to agree to psychosocial treatments alongside medication) which must be rated on a 7-point Likert scale ranging from 1 = "Not at all important", to 7 = "Extremely important". The total score is calculated by summing individual item scores, after the reversal of one item. The IPAQ was developed with psychiatrists and paediatricians in the UK and has not previously been used with those outside of this country. The internal reliability of this 5-item subscale was previously noted as 0.73 (Kovshoff et al., 2013). In the current study, we calculate Cronbach's alpha for both UK and Malaysian respondents and found it to be reliable in both cases, 0.744 and 0.721, respectively.

Multiple scales exist to measure knowledge of ADHD with good validity and reliability, although some are very lengthy (Robledo-Castro et al., 2024). The most established of these is the Knowledge of Attention Deficit Disorders Scale (KADDS) (Sciutto et al., 2000), which has been used in various countries and translated into many languages. However, recent studies by the original authors of the scale and others have suggested that the scale needs to be updated to align with more recent diagnostic changes and to adjust dimensionality and subscales (Robledo-Castro et al., 2024; Sciutto et al., 2016). Furthermore, whilst the scale is well-used, it is intended for teachers rather than clinicians. As such, we opted to create a small number of specific items for this study (Table 1). To develop these, we considered commonly held beliefs, including incorrect beliefs about ADHD, identified through searching online articles from mental health organisations and blogs and based on the previous areas identified in research with health professionals (Tatlow-Golden et al., 2016). These allowed the development of questions relating to the aetiology and practice of ADHD.

Table 1 Items assessing beliefs around ADHD

Category	Items	Likert scale range
Aetiology	There are no biological markers of ADHD, therefore, it is not a real condition ADHD is a heritable condition ADHD can be caused by poor parenting	1 = "Strongly disagree" 5 = "Strongly agree"
Practice	ADHD is only a childhood condition and I do not diagnose adults with it For an ADHD diagnosis to be made, the person must demonstrate hyperactive/impulsive features ADHD is only presented in males	1 = "I do not consider it in my practice" 2 = "Sometimes I adhere to it in my practice" 3 = "I adhere to it in my practice"
Stigma and acceptance	I believe an ADHD diagnosis exposes people to unnecessary stigmatisation My patients have expressed they have felt stigmatised due to their ADHD diagnosis Patients and/or parents of patients have not accepted the ADHD diagnosis as true or accurate	1 = "Strongly disagree" 5 = "Strongly agree"

Stigma was also considered an important area to examine. A range of scales exist to measure stigma associated with health conditions in general, often from the patient's perspective (Wei et al., 2015). Additionally, the ADHD Stigma Questionnaire (ASQ) was developed to measure stigma from the patient's perspective (Kellison et al., 2010) and later adapted for use in education practitioners and teachers, where it has been extensively used (Bell et al., 2011; Mueller et al., 2012). Although a valuable tool, the ASQ has been criticised for not being specific enough to ADHD, specifically with regard to medication and social functioning, and for not adequately considering adult experiences (Fuermaier et al., 2012). Furthermore, the scale is designed to address public beliefs about ADHD and so may not be suitable for health practitioners engaged in the diagnosis of ADHD. As such, we opted to develop three items based on previous research into stigmatisation (Hanafiah & Van Bortel, 2015).

Results

Sample Characterisation

Forty-nine participants from the UK and Malaysia took part in the study. Sample characteristics are outlined in Table 2. Malaysian respondents were from 10 different states, but the majority were practising in the Federal Territory or Selangor. Within these states, 17 different mukim were identified, although most were based in Kuala Lumpur. For UK respondents, nine different NHS Trusts were identified by respondents, with around 50% being affiliated to the South London and Maudsley (SLaM) Trust.

Comparison between the cohorts sampled in the UK and Malaysia revealed some similarities and differences. Excluding the "Prefer not to say" sample due to its small size, there was no significant association between country of practice and gender (χ^2 (1) = 0.106, $p = 0.744$). In contrast, age did differ between countries. We collapsed age groups around the midpoint (< 40 vs. ≥ 40) to avoid multiple small categories violating the assumptions of the analysis and found a significant association between country and age with younger respondents in Malaysia (χ^2 (1) = 0.406, $p = 0.044$). Despite this, a two-group comparison of duration since qualifying (< 5 years vs. ≥ 5, collapsed due to small categories) showed no significant association with country (χ^2 (1) = 0.608, $p = 0.436$). Excluding those working in both the private and public sector due to low cell counts, there was no significant association between sector and country (χ^2 (1) = 1.709, $p = 0.191$). There was also no significant association between the type of qualification and country (χ^2 (3) = 0.412, $p = 0.938$). Finally, there was no significant association between the age of ADHD individuals worked with and country of practice (χ^2 (2) = 0.626, $p = 0.7131$).

More Favourable Attitudes to Psychosocial Treatments Are Found in Malaysia

Given the age difference between respondents in Malaysia and the UK, an ANCOVA with age as a covariate was used to examine differences in attitudes towards psychosocial treatments. Total attitude scores were more positive in Malaysia (M ± SD, 22.75 ± 4.33) than in the UK (20.72 ± 5.63), and these differences were significant after accounting for differences in age, $F(1, 43) = 8.36$, $p < 0.006$). The scores for individual scale items within this subscale are shown in Fig. 1. Further univariate analyses for individual items controlling for age revealed no significant difference for belief in medication as the only effective treatment ($F(1, 44) = 2.62$, $p = 0.112$) or that families should always agree to psychosocial treatment alongside medication ($F(1, 43) = 1.83$, $p = 0.194$), but

Table 2 Demographic and employment characteristics of the sample displayed as *N* (%)

	Overall (*N* = 49)	Malaysia (*N* = 28)	UK (*N* = 21)
Gender			
Male	9 (18.4)	6 (21.4)	3 (14.3)
Female	29 (79.6)	21 (75.0)	18 (85.7)
Prefer not to say	1 (2.0)	1 (3.6)	0 (0)
Age			
20–30	12 (24.5)	7 (25.0)	5 (23.8)
31–40	17 (34.7)	13 (46.4)	4 (19.0)
41–50	14 (28.6)	8 (28.6)	6 (28.6)
51–60	3 (6.1)		3 (14.3)
60 +	3 (6.1)		3 (14.3)
Qualification type			
Psychiatrist	15 (30.6)	9 (32.1)	6 (28.6)
Other medical doctor	13 (26.5)	8 (28.6)	5 (23.8)
Clinical psychologist	9 (18.4)	5 (17.9)	4 (19.0)
Other qualification	12 (24.5)	6 (21.4)	6 (28.6)
Duration since qualified			
< 5 years	17 (34.7)	11 (39.3)	6 (28.6)
5–10 years	17 (34.7)	13 (46.4)	4 (19.0)
11–20 years	11 (22.4)	4 (14.3)	7 (33.3)
21–30 years	2 (4.1)		2 (9.5)
30 +	2 (4.1)		2 (9.5)
Sector			
Private	10 (20.4)	8 (28.6)	2 (9.5)
Public	32 (65.3)	16 (57.1)	16 (76.2)
Both	7 (14.3)	4 (14.3)	3 (14.3)
ADHD cohort			
Children (< 13 years)	39 (79.6)	26 (92.9)	17 (81.0)
Adolescents (13–18 years)	35 (71.4%)	18 (64.3)	12 (57.1)
Adults (18 + years)	24 (49.0)	12 (42.9)	5 (23.8)

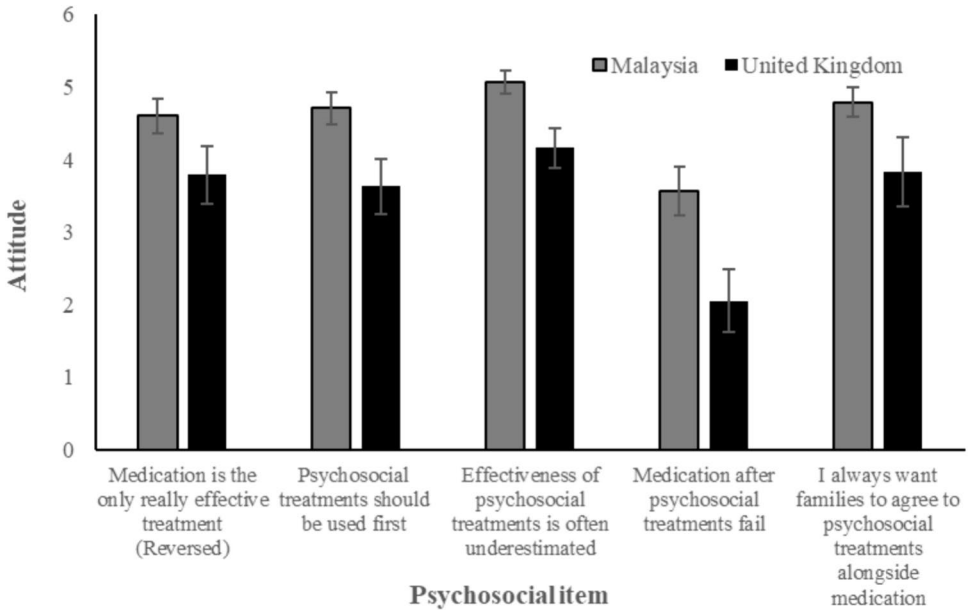

Fig. 1 Psychosocial scale items show more favourable views in Malaysia for all measures indicating a more pro-psychosocial attitude, although individually only three reached significance. Note that the item "Medication is the only really effective treatment for ADHD" is reversed such that a higher score indicates this is not their belief

there was a significant difference for all other measures (range from $p < 0.05$).

Beliefs Regarding ADHD Did Not Differ Between Countries

Given that beliefs about a condition are likely to impact approaches to managing it, we conducted a series of ANCOVAs with age as a covariate for the different beliefs. Descriptive data, along with the main effects of country after controlling for age, are shown in Table 3 and indicate no significant differences between the UK and Malaysia.

Age, Profession, and Beliefs About ADHD Predict Attitudes to Psychosocial Treatments

To assess which variables predict total attitude to psychosocial treatments, we conducted a backward linear regression to include demographic variables (age, gender, country of practice), professional variables (qualification type), and beliefs about ADHD aetiology and practice. To achieve the most parsimonious predictive model, backwards stepwise elimination was used, whereby redundant hypothesised predictors are systematically removed from the model, until further refinement is not possible without losses in predictive utility. All regression model assumptions were met (Field, 2013): no multicollinearity or singularity was observed among predictors at any stage within the backwards model, with all tolerance values above 0.1, and all variance inflation factor scores approximating 1, and none above 10. In the first step, the model containing all variables explained 56.6% of the variance ($R^2 = 0.566$, Model F (14, 43) = 2.703, $p = 0.012$). The final model after the removal of redundant variables explained 49.1% of the variance ($R^2 = 0.491$, Model F (6, 43) = 5.949, $p < 0.001$, Table 4). Within this model, most significant predictors were negative predictors. As age increased, there was a reduction in positive attitude to psychosocial treatments. Similarly, those employed as psychiatrists were less likely to hold a positive attitude, along with those holding another type of qualification (i.e. not a medical doctor or clinical psychologist). Finally, scores on the statement regarding the absence of biological markers of ADHD meaning it was not a real condition were a positive predictor of attitude to psychosocial treatments. This means that individuals more strongly agreeing with this statement were more likely to support psychosocial interventions. It

Table 3 Beliefs about ADHD did not differ between countries

Belief	Malaysia M (SD)	UK M (SD)	Significance
There are no biological markers of ADHD, therefore, it is not a real condition	1.44 (0.64)	1.35 (0.93)	$F(1, 44) = 0.01$, $p = 0.920$
ADHD is a heritable condition	4.18 (0.72)	4.15 (1.09)	$F(1, 45) = 0.426$, $p = 0.517$
ADHD can be caused by poor parenting	2.36 (1.19)	1.95 (1.32)	$F(1, 45) = 0.780$, $p = 0.382$
ADHD is only a childhood condition and I do not diagnose adults with it	1.43 (0.69)	1.35 (0.75)	$F(1, 45) = 0.014$, $p = 0.907$
For an ADHD diagnosis to be made the person must demonstrate hyperactive impulsive features	1.75 (0.80)	1.90 (0.91)	$F(1, 45) = 0.875$, $p = 0.355$
ADHD is only presented in males	1.04 (0.19)	1.15 (0.49)	$F(1, 45)$, 3.210, $p = 0.08$
I believe an ADHD diagnosis exposes people to unnecessary stigmatisation	2.89 (1.20)	2.95 (1.36)	$F(1, 45) = 0.418$, $p = 0.521$
My patients have expressed they have felt stigmatised due to their ADHD diagnosis	3.54 (1.0)	3.40 (1.0)	F (1, 45) = 0.527, $p = 472$
Patients and/or parents of patients have not accepted the ADHD diagnosis as true or accurate	3.32 (1.1)	2.8 (1.2)	$F(1, 45) = 2.367$, $p = 0.131$

Table 4 Predictors in the final model to predict attitudes to psychosocial treatments
*$p < 0.05$

Final model	Unstandardised B	Standardised Error	Standardised coefficient βeta
Age	−1.861	0.741	−0.347*
Country	−2.678	1.542	−0.232
Psychiatrist	−3.275	1.537	−0.274*
Other qualification	−4.180	1.939	−0.297*
Aetiology: There are no biological markers of ADHD, therefore, it is not a real condition	3.218	1.017	0.442*
Practice: ADHD is only presented in males	−4.726	2.370	−0.298
R^2		0.491	
Model F		5.949	

is noteworthy, however, that respondents in both countries tended to strongly disagree or disagree with this statement (see Table 3). Although belief in ADHD being found only in males was in the final model, this failed to reach significance ($p = 0.054$). Furthermore, despite the overall differences in psychosocial attitudes between countries, this predictor failed to reach significance in any of the models (Model 1 $p = 0.054$, Final Model $p = 0.091$), although the direction of effect aligned with the ANCOVA results, i.e. those in Malaysia had more positive attitudes.

Discussion

The aim of the present study was to examine the attitudes of practitioners involved in diagnosing and treating ADHD to psychosocial treatments for the condition and the factors that predict this, in the UK and Malaysia. We found that those in Malaysia were significantly more positive about psychosocial interventions overall and specifically regarding the order of use of psychosocial interventions and medication, with the former being preferred first, and the effectiveness of psychosocial interventions. These differences were not underpinned by differences in specific beliefs about the aetiology, practice, or stigma beliefs around ADHD. Data across countries suggested that age and profession were important in pro-psychosocial attitudes with older individuals and those holding psychiatric qualification (as opposed to other medical or clinical psychology qualifications) were less likely to hold positive views. Differences in gender and professional experience (which relates to age) have also been reported in previous studies examining treatment decisions, albeit not specifically with regard to psychosocial interventions (Kovshoff et al., 2013), suggesting our results are not at odds with previous work. The current study also revealed that those who believed ADHD did not have any biological markers and subsequently was not a real condition were more positive about psychosocial interventions. The current finding could have arisen due to greater diagnostic uncertainty if they did not believe the condition was real. However, the phrasing of our item combining the lack of biomarkers, which is not contentious (Chen et al., 2023) with the realness of the condition, makes this difficult to interpret conclusively. Additionally, in general, respondents did not agree with this statement, suggesting this belief is not widely held.

The findings of the current study indicating country differences in attitude are the first to reveal that practitioners in HIC and LMIC countries may hold distinct views about psychosocial interventions for ADHD, as might be expected given that clinical ambivalence is likely to be impacted by wider academic and public debates on a topic, which will in turn vary with country or culture. However, the findings do align with previous research which has demonstrated that culture may impact on the views of mental health professionals more generally. For example, even between HIC, differences have been found for beliefs around ADHD treatment, albeit not regarding psychosocial interventions (Kovshoff et al., 2013). Additionally, research in Bali has indicated that typical western psychiatric therapeutic approaches exist alongside more traditional healing approaches for psychiatrists practising in this location (Suryani & Jensen, 1992). Furthermore, work in Japan has shown a greater interest in the mind, as compared to the brain, in trainee psychiatrists (Kato et al., 2010), and a study in Hong Kong found biopsychosocial beliefs were higher than in the UK for primary care physicians, albeit for a different medical condition, something which the authors attributed to greater training in psychosocial elements in Hong Kong (Sit et al., 2015). Collectively, these findings suggest that practitioners in non-western countries may have more positive beliefs regarding psychosocial interventions than western countries where a biomedical model may be more preferred.

Whilst no research to date has examined practitioner attitudes in Malaysia, other research from this country aligns with the results of the current study. For example, examination of ADHD treatment approaches reveals that psychosocial treatments were more common than medication in Malaysia compared to New Zealand, with the author suggesting that practitioners in Malaysia took a very cautious approach to medication, opting to deploy other approaches where possible (Sa'ari, 2004). Furthermore, research in Malaysia with parents has indicated that medicines are not always well-received for children with research showing that over one-quarter of parents would try to avoid giving medicines and over one-third considering them unnatural (Hadi & Shah, 2022). If similar views are held by practitioners, or they are influenced by parental views of this kind, it is likely a more positive attitude towards non-drug treatments could develop. Related to this, previous research has indicated that ADHD diagnosis in Malaysia focuses on parent interviews rather than other assessment tools, which does indicate parents strongly influence practitioners (Sa'ari, 2004). However, it is also important to recognise that in recent years, several standardised assessment tools including the Adult ADHD Self-Report Scale (ASRS) and the Swanson, Nolan, and Pelham Parent Rating Scale of attention deficit hyperactivity disorders symptoms (SNAP-IV) have been developed for use in Malaysia (Jusoh et al., 2021; Lewczuk et al., 2024), which may have reduced the possible impact parental views have. In the current study, we did not ask practitioners how they diagnosed ADHD or what tools or instruments they used, but future studies could explore this topic further. It is noteworthy that ADHD-specific beliefs, similar to those assessed in previous work (Tatlow-Golden et al., 2016), did not differ between countries in the present study. This lack of differences is surprising given the differences in psychosocial

attitude. However, it is possible that an over-arching belief in a biopsychosocial approach and caution towards medication, irrespective of whether this is influenced by parents, may override condition-specific beliefs. This should be considered in future research.

The finding that those with qualifications in psychiatry were less likely to hold positive attitudes to psychosocial interventions aligns with previous research which has indicated the persistence of a mind-brain duality in psychiatry, despite the recognised ideals of the biopsychosocial approach (Kendler, 2001; Miresco & Kirmayer, 2006). Furthermore, it has been shown that psychiatry training increases "interest in the brain" to similar levels as "interest in the mind" where these are not already equal (Kato et al., 2010). It is unclear why the "Other" category of qualification was a significant predictor. Within this category, participants reported other psychology, nursing, and therapy qualifications, making it difficult to pick apart the effects. Future research should explore more about the different qualifications. It is unclear why age was a predictor of attitude towards psychosocial interventions. One possibility is that more experienced practitioners are more familiar with the difficulties in achieving compliance with psychosocial interventions (Evans et al., 2014). Given that duration of practice and age were heavily correlated, we opted to include age only in the regression and so are not able to fully distinguish these factors here. The final significant predictor was the belief that ADHD had no biomarker and was not a real condition. It is perhaps unsurprising that individuals holding this belief are more likely to hold positive views about psychosocial interventions, as they may be reluctant to prescribe medication, which can have significant side effects, for something they do not believe is real. Indeed, previous research has indicated that belief in a clear biological basis reduces the use of psychosocial treatments (Moore et al., 2019), so it is logical that belief that there is no biological basis would enhance attitudes towards psychosocial intervention. Furthermore, previous research in the USA has indicated that concerns about valid diagnosis do reduce the likelihood of prescribing medication (Rafalovich, 2005), which could, in turn, increase willingness to support other interventions. Unlike the between-group country comparisons which did show attitudes to psychosocial interventions varied significantly between countries, country was not a significant predictor in the regression model. One likely explanation for this is a lack of statistical power for that specific analysis, and therefore, future studies should engage a larger sample size.

Whilst the present study is the first to our knowledge to demonstrate that attitudes to psychosocial interventions in ADHD can be predicted by characteristics of the practitioners and that these attitudes may differ between countries, there are some limitations to the work. Firstly, our study was small with only 49 participants in total. Our initial planned *t*-test analysis would have required 51 participants to detect a medium effect size ($d = 0.50$, $\alpha = 0.05$, $1 - \beta = 0.80$) and, as such, we would have just fallen short of this and so could have missed small or medium effects. However, the presence of age as a covariate required an ANCOVA, which would need 52 participants to detect a large effect ($f = 0.40$, $\alpha = 0.05$, $1 - \beta = 0.80$). This means that whilst we did find significant country differences, it is possible that smaller effects were missed due to the small sample size. Similarly, the sample size of the present study was sufficient only to detect large effect sizes in our regression ($f^2 = 0.35$, $\alpha = 0.05$, $1 - \beta = 0.80$) which would have required 46 participants, but smaller effects could have been missed. Additionally, within our small sample, most respondents from both countries identified as female. This is in line with previous work which has reported a greater proportion of females (Kovshoff et al., 2013), and data on health practitioners does suggest that both countries have a female-dominated workforce in this field (Daojuin et al., 2021; NHS England, 2023); however, the proportion of females here was still disproportionately high, and future work should endeavour to ensure representation from male practitioners and overall sample size are increased. Secondly, our study only examined two countries, the UK and Malaysia. Although the latter had been identified as a country where ADHD research is under-represented (Lewczuk et al., 2024), future work should consider other areas as well. Thirdly, whilst we collected information on country of practice and qualification, we did not ask participants to disclose the country in which they receive their qualification (Alarcón, 2009), or their own nationality, both of which could have impacted their professional practices. Fourthly, we did not verify the qualifications that individuals reported having given the anonymous nature of the survey. Whilst there was little incentive to lie and most respondents gave detailed information, future research should consider more detailed data collection, verification, and analysis of the results here. Fifthly, although we made use of the IPAQ instrument for measuring attitude to psychosocial treatments, we did not use a previously validated measure for knowledge of ADHD or ADHD-associated stigma, and as such future research should consider the use of a validated scale, aimed at clinicians. Finally, we focused on attitudes to psychosocial interventions because previous work has focused on medication in ADHD. We did not ask respondents about attitudes to pharmacological treatments as well, which limits the conclusions drawn. Despite these limitations, the current work provides an important first step in understanding geographical and cultural variations in psychosocial interventions in ADHD, which is an under-researched area that could have implications of equity of health care. Future studies should examine the worldwide

prevalence of psychosocial treatments for ADHD and look more closely at the decision-making processes from the practitioner perspective.

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Author Contribution Conceptualisation and methodology (all authors); investigation, formal analysis and supervision, writing—original draft preparation (EJD), writing—reviewing and editing (all authors).

Data Availability Data will be made available on reasonable request from the corresponding author.

Declarations

Ethical Approval The study was approved by the Research Ethics Committee of King's College London (MRA-20/21–22701).

Consent to Participate Data was collected from practitioners only (not patients) after they had provided informed consent.

Conflict of Interest The authors declare no competing interests.

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