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**TITLE: Attitudes and Reported Practice of Paediatricians and Child Psychiatrists
Regarding the Assessment and Treatment of ADHD in Ireland**

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Objectives: This mixed-method national survey has obtained original data on attention deficit hyperactivity disorder (ADHD) attitudes, assessment and treatment regimes reported by paediatricians and child psychiatrists; and has compared their clinics. It has examined the extent of involvement of Irish paediatricians in the management of ADHD.

Methods: A questionnaire was designed, based on a review of literature and ADHD guidelines, and piloted by expert clinicians. Universal recruitment was conducted among Child and Adolescent Mental Health Services (CAMHS) consultants (n = 71) and community/general paediatric consultants (n = 72). Quantitative and qualitative data was collected and analysed.

Results: There was an overall response rate of 43%. A dedicated ADHD clinic is offered in 79% of CAMHS services, but only in one paediatric service. Participants reported that the assessment of ADHD involves multidisciplinary work and this was only established in CAMHS clinics. Medication is initiated by 82% of child psychiatrists and only 22% of paediatricians.

Conclusions: This first national study of ADHD attitudes and practices presents comprehensive data regarding the management of children with ADHD in CAMHS and paediatric settings in Ireland. Paediatricians reported a minor role in managing ADHD. Study limitations are related to subjective reporting rather than case note audit, and a moderate response rate for the paediatricians' participants.

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Key words: Attention deficit disorder with hyperactivity, attitudes, child psychiatry, paediatrics, therapeutics.

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most prevalent childhood disorders, occurring in up to 5% of children worldwide (Polanczyk et al, 2007; World Health Organization. WHO, 2003). In Ireland, ADHD is the most frequent primary presentation (31.6 %) in Child and Adolescent Mental Health Services (CAMHS), as outlined in the Health Service Executive – HSE (2014) Fifth Annual Report of CAMHS. Although the annual CAMHS report published by the HSE (2014) collected numbers of ADHD attendees and the percentage of CAMHS with a dedicated ADHD clinic, with 80% of teams employing such, there are still no national data on the typical management of ADHD, other than team-specific qualitative data in its appendix.

Elsewhere (e.g., USA, UK, Australia), ADHD is more frequently managed within family practice and community paediatrics. Given the prevalence of ADHD and the long waiting lists of up to 6 months in 58% of CAMHS teams (HSE, 2014), it may not be surprising that in Ireland, some children with ADHD are being referred, assessed and managed within paediatric settings. In a survey of Irish paediatricians (O’Keeffe & McNicholas, 2011), over half were directly involved in assessing ADHD and 76% thought they should be involved in treatment.

The UK NICE ADHD Guideline (2008; last update 2016) argues for more integration of paediatrics and CAMHS services. Furthermore, it suggests multi-modal treatment with medication as a first-line treatment for moderate to severe ADHD and parenting interventions for mild to moderate cases, which may also include psychological support. ADHD Clinical guidelines for paediatricians, for example the ADHD Guideline of the American Academy of Pediatrics (2011), typically advocate a primary role for medication.

In countries where paediatricians have an established role in the management of ADHD, studies have found some difference in treatment approaches. A survey of ADHD practice among consultant child and adolescent psychiatrists, compared with consultant hospital and

community paediatricians in UK (Salmon & Kemp, 2002), showed that both groups recommend medication when necessary; however child psychiatrists have more access to multidisciplinary mental health services than paediatricians, and thus can offer more parental support. Still regarding possible differences between child psychiatrists and paediatricians towards ADHD, Venter et al. (2004) found both groups considered contact with school staff an important aspect of treatment, although paediatricians placed more emphasis on this than psychiatrists. Paediatricians reported a relative lack of interdisciplinary practice in their ADHD management, and were more likely to refer to educational and occupational therapists, physiotherapists and speech therapists. However, more psychiatrists considered psychotherapy important for treating ADHD, especially behaviour modification therapy, than paediatricians (Venter et al, 2004).

This present study was a national survey of attitudes and reported practice towards children with ADHD by consultant community/general paediatricians and consultant child psychiatrists working in CAMHS in Ireland. It aimed to examine the extent of the involvement of Irish paediatricians in the assessment and treatment of ADHD, along with analysing differences and similarities between the two groups in terms of attitudes and management.

Methods

The study population included all paediatricians working in general/community areas identified on a public list updated by the Chair of the Community Child Health Subgroup of the Faculty of Paediatrics of the Royal College of Physicians of Ireland. A total of N=72 community/general paediatric consultants in General Hospitals in Ireland were invited. Similarly, all N=71 consultant child and adolescent psychiatrists employed in public CAMHS were identified were identified from a HSE listing of all psychiatrists (2014) and invited to participate in the study. Universal recruitment was conducted because the overall numbers were small.

A study-specific questionnaire on assessment, treatment, monitoring, referral, prognosis, transition and attitudinal aspects to ADHD was designed based on (a) a systematic review of the literature, (b) review of worldwide ADHD Clinical Guidelines and (c) pretesting and piloting.

(a) Systematic Review of attitudes and practices of professionals towards ADHD

A Systematic Review was carried out in order to identify relevant studies in the literature and published questionnaires that could inform the specific survey instrument. The aim of this Systematic Review was to search for studies that investigated the knowledge, attitude and practice regarding the assessment and treatment of attention deficit and hyperactivity disorder (ADHD) by a variety of medical clinicians. ADHD assessment and treatment was limited to the age-groups of pre-school children, school-age children and adolescents. Studies since 1994 were included, when ADHD diagnosis first appeared. All languages were included. And only peer reviewed journals and reviews were considered. Cochrane methodology for systematic reviews (Higgins & Green, 2011) was adapted and an initial search of 4 databases (PubMed, PsycINFO, Embase, CINAHL) resulted in 9,725 articles, screened by titles and then by abstracts resulting in 26 relevant studies. Of these, 20 met the necessary criteria and 68 items were extracted from these articles to include in the questionnaire.

(b) Review of eight ADHD Guidelines

Eight Clinical Practice Guidelines published in English were reviewed: European Guidelines ESCAP (Taylor et al, 2004), UK NICE Guidelines (2008, last update 2016), Scottish Guidelines SIGN (2009), American Academy of Child and Adolescent Psychiatry Guidelines (AACAP, 2007) and American Academy of Pediatrics Guidelines (AAP, 2011), Australian NHMRC Guideline (2012), Canadian CADDRA Guidelines (2011) and New Zealand Ministry of Health Guidelines (2001). All Guidelines had recommendations for the assessment and treatment of ADHD which were cross-referenced with items extracted from

studies on ADHD published in the literature described in (a). Overlapped items already extracted from the literature review were thus included in the final questionnaire. This completed content validation process informed the final questions in this survey.

(c) Pretesting and Piloting the survey questionnaire: Expert and clinical consultation

Following the questionnaire design process, 5 revisions were performed by ADHD experts and piloted with 7 clinicians. The final version was a cross-sectional and mixed-method questionnaire. It consisted of a mix of multiple-choice questions, short closed-ended questions, 5 point-Likert scales with most questions with a box comment space. (*survey questionnaire available upon request from the first author*).

To optimize response rates: 1) questionnaire length was limited to 2 X A4 pages; 2) reminders were sent two weeks later; 3) postal and electronic questionnaires were used; 4) personalised postal packs were prepared; 5) anonymity was guaranteed.

The questionnaires were coded numerically and data was manually entered in Excel spreadsheets and later imported to SPSS (version 20) for analysis. Median calculations of responses were conducted in order to obtain the middle of the distribution that shows what the ‘average’ respondent might have chosen. Due to the small sample size and the low response rate of paediatricians for some items, the 5-point Likert-scale questions (*never, rarely, sometimes, usually and always*) were transformed into summarised categorical data. Reported practices rated as “at least sometimes” were grouped as a “yes” category and practices rated as “never” or “rarely” were considered as a “no” category and Chi-squared analysis was conducted. Statistically significant results were considered for $p < 0.05$. When one or more of the cells had an expected frequency of five or less, Fishers’ Exact test was used instead of Chi-squared as recommended by statistical Guidelines (Pallant, 2011).

Participants' comments were analysed using the Thematic Analysis approach, following the Guideline for Qualitative Research of Clarke & Braun (2013). Conducting an iterative Consensual Qualitative Research (CQR) process (Hill et al, 2005), two authors (FHN and MTG) first inductively coded responses and then grouped these into themes with the objective of supplementing the survey's quantitative responses (deductive coding). This mixed method of qualitative and quantitative questions was used in order to clarify results and reasons for potential contradictions, in a complementary and pragmatic approach (Hall, 2013).

Results

The overall response rate was 43%, with 62 responses in total. The child and adolescent psychiatrists' response rate was 48% (n=34) and the paediatricians' response rate was 39% (n=28). Response rates of paediatricians to the different questionnaire sections varied, with a lower response rate of 17% for some items in the sections about Assessment and Treatment.

Demographics

Most respondents were female (68% of child psychiatrists, 61% of paediatricians) and aged > 45 (64% of paediatricians, 59% of child psychiatrists) with an average of over 11 years in practice (82% of paediatricians, 56% of child psychiatrists) which is representative of the population (Medical Council, 2014).

There is a difference in the age-range of patients they manage, with paediatricians seeing younger children (*statistical significance* $p = <0.001$). 100% of paediatricians see toddlers and pre-school children, but only 23% of child psychiatrists (n=8) see toddlers and 50% (n=17) see pre-schoolers.

Section 1- ADHD Overall: ADHD special clinic, the validity of diagnosis and ADHD related-causes

Seventy-nine percent (n=23) of child psychiatrists said they have a dedicated ADHD clinic in their service, while only three percent of paediatricians (n=1) did. Child psychiatrists reported higher caseloads ($M= 103$, $SD=87.14$) with a confirmed ADHD diagnosis currently attending their CAMHS clinics, compared to paediatric ADHD caseloads ($M=15$, $SD=12.87$).

Similar proportions of children with ADHD present with comorbidities - 68% of the caseload in paediatrics and 58% in CAMHS clinics. However, the nature of the comorbidities in each clinic was not enquired about in our survey, i.e. whether common types of psychiatric disorders such as conduct disorders, anxiety disorders; or developmental disorders such as learning disorders; versus cerebral comorbidities.

A total of 96% paediatricians (n=27) and 88% of child psychiatrists (n=30) agreed that ADHD is a valid diagnosis. All respondents consider ADHD as a neurological/biological/genetic aetiology and similar percentage of 32% paediatricians (n=9) and 29% child psychiatrist (n=10) also cited poor parenting as a cause.

Assess, Diagnose and/or Treat children with ADHD

All responding CAMHS child psychiatrists N=34 (100%) reported that they assess, diagnose and/or treat children with ADHD, while 75% of paediatricians (N=21) assess children with ADHD; 29% diagnose (N=8) and 32% treat children with ADHD (N= 9). Statistically significant differences were found between paediatricians and child psychiatrists, in terms of diagnostic ($p= <0.001$) and treatment practice ($p= <0.001$).

Section 2- ADHD Assessment

Respondents indicated that the typical CAMHS ADHD assessment involves a high number of other disciplines: 71% (n=24) of child psychiatrists have the involvement of clinical psychologists, 56% (n=19) occupational therapists (OT), 52% (n=18) speech and languages therapists (SLT), 41% (n=14) clinical nurses and 6% (n=2) social workers. Paediatricians cited

less multidisciplinary participation with 7% (n=2) OT and 4% SLT (n=1), although half (n=14) have clinical psychologists as part of their ADHD assessment process.

Regarding the assessment tools, such as scales, ADHD check-lists, clinical interviews and physical health checks, there are both similarities and differences among psychiatry and paediatric practice (see **Table 1**). Statistically significant difference ($p = <0.001$) between child psychiatrists and paediatricians were noted for the physical examination in general, such as height and weight, blood pressure, pulse measurement. Children who attend paediatric services have more physical examinations than in CAMHS. However, more child psychiatrists conduct individual interviews with only the child than paediatricians (statistically significant $p = .02$). Again, another statistically significant difference was the emphasis on school collateral information by child psychiatrists, specifically the questionnaires completed by the school (74% child psychiatrist, 14% paediatricians) and school reports (62% child psychiatrists, 4% paediatricians).

Table 1 – Summary table of ADHD assessment (Likert-Scale items):

Responses to 18 Likert-Scale items in questions about the work-up of suspected ADHD, use of rating scales and inputs from the schools. Responses in rank order distribution by median scores (5-1) and p-value calculation for the comparison between child psychiatrists (psychs) and paediatricians (paeds)

Likert Scale Categories	psychs	paeds			
1=never, 2=rarely, 3= sometimes, 4= usually, 5= always	Median	Median	Median overall	P-values (α level 0.05)	Chi-Squared test
Median 3,4,5= YES (at least sometimes)/ Median 1,2= NO					
1. Individual interview with child	5	4	4	0.02	48 (OR= 0.08) (CI= 0.009-0.85)*
2. Child's history from parent	5	5	5	-----	50**
3. Developmental history	5	5	5	-----	50**
4. Family history of ADHD	5	5	5	-----	50**
5. Collateral information from school	5	4	5	0.029	50 (OR=1.2) (CI=0.97-1.55)*
6. Blood pressure	5	4	5	0.74	X^2 (1, 46)= 0.10
7. Use of rating scales	5	4	5	0.39	53 (OR=1.05) (CI=0.95-1.15)*
8. Questionnaire completed by the school	5	4	5	0.052	42 (OR= 1.2) (CI= 0.91-1.70)*
9. School reports	5	3.5	5	-----	43**
10. School observation	4	3	3	0.057	42 (OR= 0.12) (CI= 0.02-0.54)*
11. ECG	3	2	2.5	0.003	X^2 (1, 46)= 8.68
12. Blood tests	3	2	3	0.31	X^2 (1, 48)= 1.01
13. Phone the school	3	3	3	0.02	X^2 (1, 43)= 5.38
14. General physical examination	2	5	4	<0.001	X^2 (1, 49)= 12.62
15. EEG	2	2	2	0.59	46 (OR=0.10) (CI=0.02- 0.54)*
16. Neurology screen	2	3	2	0.37	X^2 (1, 46)= 0.79
17. Neuroimaging	2	2	2	0.31	X^2 (1, 49)= 0.99
18. Food Diary	1.5	2	2	0.31	X^2 (1, 49)= 0.99

*Fishers' Exact Test

* *No measures of association are computed because at least one variable is a constant. These results mean that at *least sometimes* these categories are conducted by all sample of respondents

Section 3- ADHD Treatment

Most child psychiatrists 71% (n=24) feel very confident in treating ADHD, and although 75% of paediatricians assess for ADHD, only 14% (n=4) feel confident in treating these patients. A statistical association was found between high confidence and the doctors who are treating ADHD ($p = <0.001$).

Pharmacological Treatment

Statistically significant difference ($p = <0.001$) was also found between clinicians regarding their pharmacological practice (**Table 2**). The majority of child psychiatrists (71% n=24) initiate medication for children with ADHD *usually* or *always*, and 18% (n=6) *sometimes* and by contrast, 11% (n=3) of paediatricians do it *usually* or *always* and 11% (n=6) *sometimes*. The most common first line medication is methylphenidate for the total sample (56% of child psychiatrists, 21% of paediatricians), followed by atomoxetine (18% of child psychiatrists, 11% of paediatricians). In the clinicians' view, medication for ADHD is prescribed 'about right' by half (n=17) of child psychiatrists and by 29% (n=8) of paediatricians, but 'too little' according to 43% of paediatricians (n=12) and only 16% (n=5) of child psychiatrists. Indeed, medication for ADHD is considered helpful by 65.5% of both professions, but not essential.

Family Interventions

A comparison of the availability of family interventions in the child psychiatrist-led services versus paediatrician-led services can be seen in **Figure 1**. The treatments for the family included group parenting courses (76% CAMHS, 4% paediatric services), individual parent advice (93% CAMHS, 25% paediatric services), family-based therapy (71% CAMHS, 11% paediatric services) and links with support groups (85% CAMHS, 25% paediatric services). Each of these services is offered more frequently in CAMHS with a statistically significant difference. However, no statistical difference was found between clinicians for providing links with support groups (**Table 2**).

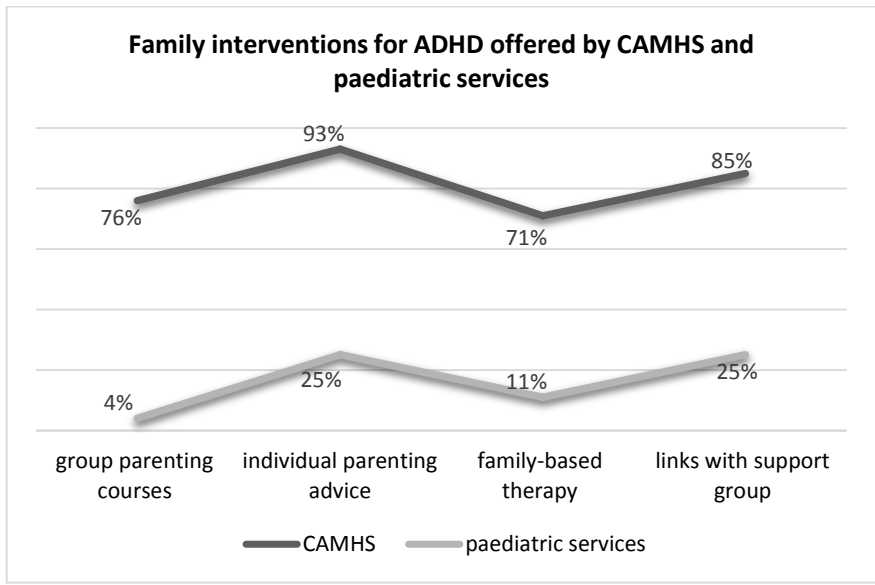


Fig 1. Responses of survey regarding family intervention- 'at least sometimes'

Interaction with the Schools

Regarding advice or support for the school, almost all child psychiatrists *at least sometimes* provide a letter/statement explaining the child's diagnosis (97%), compared to a third of paediatricians. Recommendations to facilitate resources in the schools (95% CAMHS, 14% paediatric services) and classroom strategies (68% CAMHS, 11% paediatric services) have a statistically significant difference (see **Table 2**). Training for teachers is *never or rarely* offered by both clinics (88% CAMHS, 63% of paediatric services) (**Figure 2**).

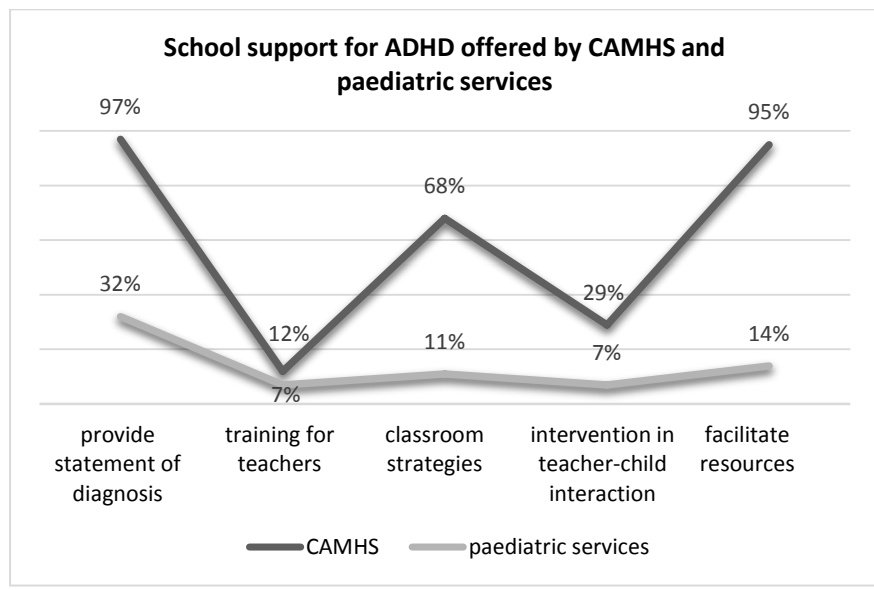


Fig 2. Responses of survey regarding support for schools- ‘at least sometimes’

Multidisciplinary team (MDT) therapies

The availability of other therapies for children with ADHD was compared in paediatricians’ and child psychiatrists’ practice (**Figure 3**). Occupational therapy (OT), speech and language therapy (SLT) and social skills training are offered more in CAMHS with a statistically significant difference (see **Table 2**). Psychotherapies were cited less often than OT and SLT (**Figure 3**), and there was no statistical significant difference between CAMHS and paediatric services (**Table 2**).

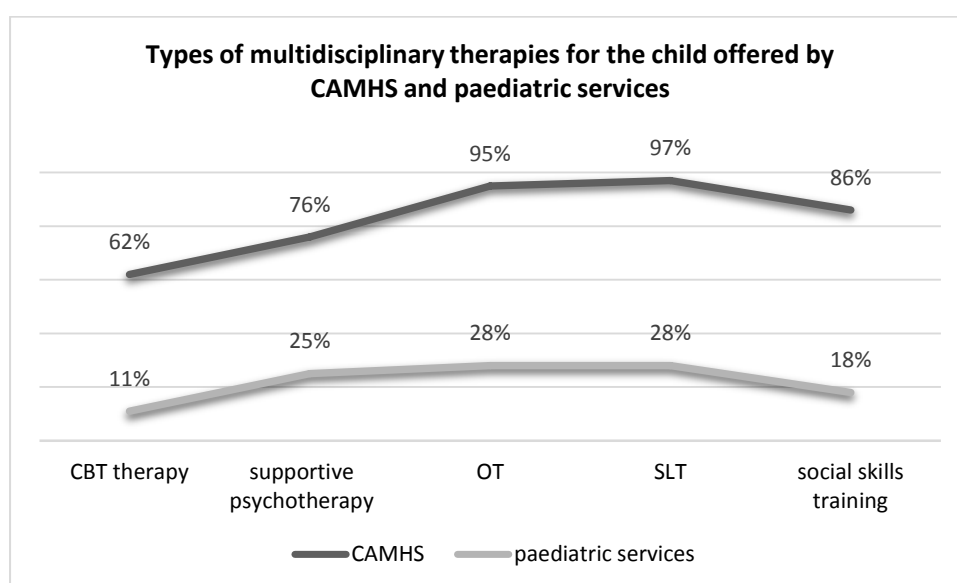


Fig 3. Responses of survey regarding multidisciplinary therapies- at least sometimes

Table 2 – Summary table of ADHD treatments (Likert-Scale items):

Responses to 15 Likert-Scale items in questions about initiating medication, family intervention, supports for schools and types of MDT therapy. Responses in rank order distribution by median scores and p-value calculation for the comparison between child psychiatrists (psychs) and paediatricians (paeds)

Likert Scale Categories	psychs	paeds			
1=never, 2=rarely, 3= sometimes, 4= usually, 5= always	Median	Median	Median overall	P-values (α level 0.05)	Chi-Squared test
Median 3,4,5= YES (at least sometimes)/ Median 1,2= NO					
1. Providing statement of diagnosis for the school	4.5	4	4	0.14	45 (OR=0.13) (CI=0.01-1.68)*
2. Initiate medication	4	1.5	4	<0.001	X ² (1, 52)= 31.51
3. Individual parent advice	4	3	4	0.025	45 (OR=0.1) (CI=0.01-0.72)*
4. Links with support group	4	3	4	0.11	X ² (1, 45)= 2.43
5. Facilitating resources in the school	4	2	4	<0.001	X ² (1, 44)= 15.21
6. Group parenting courses	3.5	1	3	<0.001	X ² (1, 45)= 15.72
7. Family-based therapy	3	2	3	0.007	X ² (1, 44)= 7.19
8. Provide classroom strategies	3	2	3	0.018	X ² (1, 45)= 5.55

9. Cognitive behavioural therapy for the child	3	2	3	0.055	$X^2(1, 44) = 3.67$
10. Supportive psychotherapy for the child	3	3	3	0.4	$X^2(1, 45) = 0.70$
11. Occupational therapy for the child	3	3	3	0.014	45 (OR=0.06) (CI=0.006-0.61)*
12. Speech & language therapy for the child	3	3	3	0.013	46 (OR=0.006) (CI=0.006-0.6)*
13. Social skills training for the child	3	2	3	0.001	$X^2(1, 44) = 11.91$
14. Training for teachers	2	1	2	0.62	45 (OR= 1.6) (CI 0.26 - 10.63)*
15. Intervention in teacher-child interaction	2	1.5	2	0.55	$X^2(1, 44) = 0.34$

* Fishers' Exact Test

Treatment barriers

Respondents were asked to identify possible treatment barriers. The most rated was difficulty of access to CAMHS services by 68% of paediatricians (n=19) and 71% of child psychiatrists (n=24). Factors related to negative views about ADHD/treatment by school, parents or the child were items less often rated. These factors were considered as only 'sometimes' influencing best treatment by around 60% of clinicians (n=42).

Section 4- ADHD Monitoring and Referral Patterns

The frequency of monitoring visits reported was 3-6 monthly (32% in total) in both paediatric and CAMHS settings. In terms of referral to other services, CAMHS typically said they advise children with ADHD to access NEPS (21%, n=7), while paediatricians usually refer to CAMHS (25%, n=7).

Section 5- ADHD Prognosis and Transition to Adult Services

In relation to prognosis, both groups of clinicians endorsed similar views. Respondents were asked about the trajectory of ADHD over time. The majority believed that symptoms of ADHD change as the child grows (86% of paediatricians, 97% of child psychiatrists) and that a child with ADHD could function well as adult, despite continuation of ADHD symptoms (78% of paediatricians, 94% of child psychiatrists).

Regarding the transition of children who reach the CAMHS or paediatric age cutoff, referrals to Adult Mental Health service are made by 77% of child psychiatrists and 29% of paediatricians; referrals to GPs by 83% of child psychiatrists and 15% of paediatricians.

Thematic Analysis of Comments Provided by Respondents

Thematic Analysis was conducted to analyse free text responses provided as comments for some open-ended questions. This process generated 7 main themes: **1. ‘ADHD is secondary in paediatrics’; 2. ‘ADHD and the effects of coexisting conditions’; 3. ‘Importance of biological aetiology of ADHD’; 4. ‘Interactionist perspective of ADHD’; 5. ‘Role of attachment issues’; 6. ‘MDT involvement seen as complementary’, 7. ‘Restrictions on transition to AMHS’**

Although themes tend not to be quantified in Thematic Analysis, in keeping with the mixed methods nature of this study, the frequencies are presented for visualization (**Table 3**). The analysis of comments was divided per question and by group of clinicians (child psychiatrists and paediatricians) (**Table 4**). The themes **‘ADHD is secondary in paediatrics’, ‘ADHD and the effects of coexisting conditions’, ‘role of attachment issues’ and ‘importance of biological aetiology of ADHD’** were repeated in more than one question/section of the survey and/or by more than one group of clinicians as illustrated in **Table 4**.

Qualitative analysis of paediatricians’ comments (see **Table 3 and 4**) frequently coded for **‘ADHD is secondary in paediatrics’** (*theme 1*), i.e., ADHD is within the scope of paediatrics, albeit a minor role. Paediatricians consider ADHD assessment to be more the responsibility of CAMHS and community psychology services, especially when seeking information from the school. This pattern was also presented in paediatricians’ notes for the treatment options regarding offering support for families and schools.

Qualitative analysis of child psychiatrists' comments (see **Table 3 and 4**) found that child psychiatrists consider that ADHD is more concerning when associated with coexisting conditions/comorbidities, coded as '**ADHD and the effects of coexisting conditions**' (*theme 2*). The perception was that it causes difficulties with the assessment, diagnosis and especially the treatment of a child with ADHD, as pharmacological treatment in addition to other multidisciplinary inputs is necessary. Child psychiatrists will only recommend other therapies, such as OT and SLT, if ADHD is associated with coexisting condition/comorbidities. This links with '**MDT involvement seen as complementary**' (*theme 6*) to the psychiatrists' role, apparently for assessing and treating complex cases in the presence of comorbidities.

The analysis of comments given by both groups showed a large number of free texts suggesting the causes of ADHD, in which clinicians highlight the '**importance of biological aetiology of ADHD**' (N=12) (*theme 3*). However, both groups of doctors also take an '**interactionist perspective**' (N=11) (*theme 4*) stating that external factors, such as poor parenting, interact with the biological aetiology of ADHD. Additional comments (N=8) were proposed for the '**role of attachment issues**' (*theme 5*) as a cause of ADHD or misdiagnosis of it.

The last *theme 7* '**restrictions on transition to AMHS**' reflected clinicians' views of limitations of AMHS (Adult Mental Health Services) in accepting CAMHS referrals. The identified barriers included age limit, the presence of comorbidities, the lack of formal arrangements, expertise or adequate AMHS inputs.

Table 3- Qualitative Analysis of Comments: general table of 7 themes generated from a number of comments per group of clinicians: paediatricians (paeds) and child psychiatrists (psychs).

N.	THEMES	N. of comments (clinician)
1	ADHD is secondary in paediatrics	N= 15 15 (paeds) 0 (psychs)
2	ADHD and the effects of coexisting conditions	N= 13 4 (paeds) 9 (psychs)
3	Importance of biological aetiology of ADHD	N= 12 5 (paeds)

		7 (psychs)
4	Interactionist perspective	N= 11 7 (paeds) 4 (psychs)
5	Role of attachment issues	N= 8 1 (paeds) 7 (psychs)
6	MDT involvement seen as complementary	N= 7 0 (paeds) 7 (psychs)
7	Restrictions on transition to AMHS	N= 6 0 (paeds) 6 (psychs)

Table 4- Qualitative Analysis of Comments: table of themes by question into the survey's sections with examples of quotes per group of clinicians: paediatricians (paeds) and child psychiatrists (psychs)

A) ADHD OVERALL		
Questions	THEMES	Examples of quotes illustrating themes
Do you assess, diagnose or treat children with ADHD?	1) ADHD is secondary in paediatrics*	<i>"I assess children medically who may have ADHD. I do not assess for ADHD" (paed 18)</i>
	2) ADHD and the effects of coexisting conditions*	<i>"Anxiety, low mood + attachment problems can all present ADHD-like symptoms + can also co-exist with ADHD" (psych 9)</i>
	3) Role of attachment issues*	<i>"often attachment disorder is mistaken for ADHD" (psych 33)</i>
ADHD is a valid diagnosis?	4) Importance of biological aetiology of ADHD*	<i>"Others choose to negate ADHD, that is akin to not believing in Alzheimer's" (psych 15)</i>
The factors which may cause ADHD	4) Importance of biological aetiology of ADHD*	<i>"Neurological/biological/ genetic- One of these or two combined." (psych 14)</i>
	3) Role of attachment issues*	<i>"Attachment disorders + anxiety: may simulate ADHD" (psych 9)</i>
	5) Interactionist perspective (external factors interact with biological aetiology of ADHD)	<i>"I believe ADHD has a biological basis but that at times inconsistent parenting styles can have a negative impact on a child's functioning" (paed 18)</i>
B) ADHD ASSESSMENT		
Who usually carries out the assessment of ADHD?	1) ADHD is secondary in paediatrics*	<i>"Note Department of Education no longer recognizes Paediatrician's diagnosis" (paed 19)</i>
	6) MDT involvement seen as complementary	<i>"Although medical personnel usually make final diagnosis, we use all of MDT observations to make diagnosis" (psych 29)</i>
	1) ADHD is secondary in paediatrics*	<i>"Our local CAMHS team does school observations but I am not part of the team" (paed 20)</i>
C) ADHD TREATMENT		
Offer support for the schools?	1) ADHD is secondary in paediatrics*	<i>"Dept of Education will not accept diagnosis from Paeds" (paed 2)</i>
Types of MDT therapies?	2) ADHD and the effects of coexisting conditions*	<i>"Therapy usually for co-morbidity, not for ADHD itself" (psych 20)</i>
D) ADHD PROGNOSIS AND TRANSITION TO ADULT SERVICES		
What is the prognosis?	2) ADHD and the effects of coexisting conditions*	<i>"Prognosis depends on ADHD and presence of co-morbidity + quality of parenting" (psych 9)</i>
Transition	7) Restrictions on transition to AMHS	<i>"Our adult AMHS don't accept referrals unless there are other co-existing mental health conditions" (psych 18)</i>

*Themes repeated in more than one question/section of the survey.

Discussion

This first national study of ADHD attitudes and practices produced updated and more completed information regarding the management of children with ADHD in CAMHS and community/general paediatric settings in Ireland. This survey identified considerable differences between the practice of both groups, especially in relation to the treatment provided for children with ADHD. The study found that although the majority of

paediatricians (75%) carry out assessments for ADHD, fewer engage in either diagnosing (29%) or treating (32%). However, based on numbers reported by paediatricians in Ireland a few years ago (O’Keeffe & McNicholas, 2011), in a very similar population, it suggests an increase in the number of paediatricians directly involved in ADHD assessment (beforehand, 54% were directly involved) and a suggestion that they have in fact taken on more of this role.

Child psychiatrists and paediatricians follow aspects of the ADHD guidelines for ADHD assessment regarding conducting clinical interviews and using rating scales. Paediatricians endorse the regular use of rating scales to supplement their clinical assessment and fewer rely of collaborative reports or observations from school, as compared to assessment in child psychiatry. Indeed, the paediatricians had a low response rate to some assessment items on the survey, with the exception of the use of rating scales, which had a high response rate of 75%. Considering the reported high use of scales yet relatively low involvement in the diagnosis (29%) of ADHD, it may be that paediatricians perceive their role to be one of screening for ADHD rather than providing a final diagnosis or treatment (32%).

Clinicians also differed in the rate of performance of physical examinations as part of their assessment. ESCAP Guideline (2004) states that a physical examination should always be performed to exclude any underlying physical illness, hearing or sight problems and epilepsy. Paediatricians endorsed carrying out significantly more physical examinations than did child psychiatrists, probably because of the more physical nature of their practice and their focus on other developmental conditions, such as autistic spectrum disorder (ASD). If that is the case, it is suggested that child psychiatrists undertake more general physical examinations as part of the assessment of children with suspected ADHD or request appropriate investigation by family general practitioners, as recommended by the Royal College of Psychiatrists in UK (2015).

The assessment of ADHD is carried out by more disciplines together with the doctor in child psychiatrist-led services than in paediatrician-led services. This difference is most likely to be related to the workplaces and different team formation in paediatric settings versus CAMHS, with many paediatricians based in the community but also in the hospital, with difficulty to access multi-disciplinary teams for ADHD cases. In comparison most child and adolescent psychiatrists are based in community child and adolescent mental health services and supported by a multi-disciplinary team. According to NICE Guidelines (2008, last update 2016), the involvement of other disciplines in the assessment of complex cases helps to exclude other physical or psychosocial problems that might overlap with ADHD or mimic its symptoms. ADHD Guidelines such as CADDRA (2011) and ESCAP (2004) have dedicated chapters to the importance of a differential diagnosis for ADHD, including specific and general learning difficulties, and have emphasised the importance of the use of psychological testing, for example. Surveyed paediatricians highlighted in their free text responses the importance of having psychology input for the assessment of ADHD, with 50% of paediatrician respondents referring on to psychology services. Community-based team services with multidisciplinary approach could support paediatricians' diagnostic practice and give them reassurance that other issues are not missed.

Limited access to other disciplines may also limit the capacity of paediatric services to provide a range of multidisciplinary therapies to treat ADHD. Our study has shown (**Figure 3**) that CAMHS services frequently offer a number of different therapies for treatment of ADHD, especially occupational therapy (95%) and speech and language therapy (97%), while these therapies are not so readily available in paediatric clinics. The same result was also found in the UK survey, carried out by Salmon & Kemp (2002). Multidisciplinary teams are known to have an important role in treating multi-systemic issues related to ADHD (academic, social, family impact), aiming to improve long-term outcome, as urged by some

ADHD reviews (Turgay, 2007; Storebø et al., 2015) and Clinical Guidelines (CADDRA, 2011).

Although similar numbers of paediatricians and child psychiatrists reported seeing children with ADHD who also had comorbid conditions (68% and 58% respectively), the study did not specify the nature of the comorbidities and any potential difference in same between the two groups was not discernible from the data. ADHD international guidelines note that co-existing conditions are very common: 50-90% of children with ADHD have at least one comorbid condition (CADDRA, 2011). Also, the presence of comorbidities is likely to be a deciding factor for referral to therapies offered by multidisciplinary professionals (psychologists, SLT, OT, etc), as shown in the analysis of child psychiatrist comments. Many Irish paediatricians seem to be primarily assessing children for physical illness and may come across and screen for ADHD within this context, seeing ADHD as ‘secondary’ to or in the presence of other conditions.

With regard to the age profile of children, paediatricians see younger children than child psychiatrists which is likely to lead to different practices as different guidelines exist. All paediatricians surveyed treat pre-schoolers whereas only half of child psychiatrists do so. Because of restrictions to offer ADHD medication for pre-school children, parenting programmes should be offered as first-line treatment, as per NICE Guidelines (2008, last update 2016), and paediatric Guidelines such as the AAP (2011). However, group parenting courses were available in only one paediatric practice according to our study, and there was a marked difference between the family interventions for ADHD available in paediatric clinics in comparison to child and adolescent psychiatric clinics (**Figure 1**).

The response rate of paediatricians was low for most of the items in the treatment section of the survey, with just a representative response rate to the question regarding the initiation of medication. A small number of paediatricians (22%) reported that they offer pharmacological treatment, even though ADHD guidelines for Paediatrics (i.e. AAP 2011)

support the use of medication. 86% of paediatricians reported little confidence in treating children with ADHD, which may be the reason for their low prescription practice, noting that we found a significant association between high confidence in treating ADHD and the doctors who reported that they treat ADHD. This has practical implication for treatment. Other studies have also found a low level of confidence amongst paediatricians in the use of psychotropic medication. One study, collecting information from child psychiatrists, paediatricians and general practitioners (GPs) found an association between perceived confidence, request for training and prescribing rates, with 61% of GPs and 63% of paediatricians reporting low competence, a general request for more seminars (61.5%) with almost half (45%) believing they would then prescribe more often if better informed (McNicholas et al, 2014).

It is well established that clinicians value the supports given in the school for children with ADHD (Dreyer et al., 2012). In this study, while almost all child psychiatrists provide information about the diagnosis which facilitates extra resources (95%) in school, paediatricians surveyed face limitation in interacting with schools. Some paediatricians surveyed reported that the Department of Education does not currently accept a paediatrician's diagnosis of ADHD for allocation of resources. This implies that children diagnosed with ADHD by paediatricians are currently not able to access the resources to which they are entitled, since the current model of support for pupils with Special Educational Needs (Department of Education, Act 2004) is based on the availability of a diagnosis. A recent Pilot project of the Department of Education (Pilot project to support the development of a new model for allocating additional teaching resources to schools for pupils with special educational needs, 15 September, 2015) recommended a revised model of allocation of resources to pupils, considering their learning needs rather than a formal disability diagnosis. This may remove the need for a diagnosis by specific disciplines such as

psychiatry thereby preventing any inequity in support provision for children with ADHD arising from diagnosis source.

Strengths and Limitations

While the overall response rate may be in keeping with the response rate of other clinician surveys (Cunningham et al, 2015), the response rate of paediatricians limits how this study can be generalized to the larger paediatrician population, especially as the response rate to certain questions relating to assessment and treatment dropped to 17%. There is an additional limitation regarding generalization to other paediatric settings, such as neuro-paediatricians who were not included in the sample.

The study design, ascertaining the views and perceptions of clinicians whilst informative may suffer from recall bias, would have been strengthened by the addition of case note audits of actual practice. This would allow the reader to distinguish between what the clinicians say they do and what they actually do. However, theoretical generalization can be drawn from these findings due to the mixed-method design. The analysis of qualitative information supplemented the interpretation of quantitative responses. Theoretical concepts and hypotheses derived from the qualitative oriented study can be tested with bigger samples for generalisability in further studies.

Conclusions

This survey suggests that there is a shared belief as to the validity of ADHD as a diagnosis, but a difference in approach to assessment and treatment by professional group. MDT assessment and treatment appear to be standard in CAMHS settings while this is the exception in a paediatric setting. Both groups believe in the role of medication in the treatment of ADHD, most commonly methylphenidate but with paediatricians expressing

concern about low levels of competence. Both groups identified difficulties with access to CAMHS and AMHS as significant barriers to effective management. Paediatricians may be involved, in greater numbers than before, in assessment; and less so, but still to a reasonable degree in diagnosing and treating. However, their concerns regarding competency and adequate access to MDT inputs and CAMHS when requested should be responded to. Collaborative and shared care protocols and training across professional groups seem necessary and mutually beneficial. This means that the HSE should be collecting data to identify the need of the services and to further assess how to support paediatricians in providing an ADHD clinic.

This questionnaire study was the first component of a broader research programme which will look at the qualitative aspects of clinicians' practice in the management of ADHD, and service users' experience and satisfaction with the assessment and treatment received.

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Conflict of interest

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Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008. UCD Human Research Ethics Committee confirmed exempt status on 7th May 2015.

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