

Paediatric psychotropic prescribing practices in Ireland

F. McNicholas^{1,2,*}, N. Orakwue-Ononye³ and S. O'Hanrahan¹

¹ Lucena Clinic, Rathgar, Dublin, Ireland

² Our Lady's Children's Hospital, Crumlin, University College Dublin, Ireland

³ Foothills Medical Center NW, Calgary, Canada

Objectives. This study describes the attitudes, knowledge and prescribing of psychotropic medication in children.

Method. A study-specific questionnaire was mailed to all child psychiatrists, paediatricians and a group of registered general practitioners (GPs) from a selected Child and Adolescent Mental Health Services catchment area.

Results. In the 116 respondents who replied (39% response rate), psychotropic medication was generally valued and used by all groups (70.1%). Respondents believed that the majority (61.9%) of their non-medical colleagues would also value/support the use of medication and this endorsement influenced the respondents' prescribing rates. Initiating medication was viewed as the province of child psychiatry (78.6%). Medication is felt to be justified in a wide variety of mental health disorders, their use being reserved for severe presentations, with psychostimulants and selective serotonin reuptake inhibitors being most used. A significant number of GPs (60.9%) and paediatricians (63.4%) were felt to be lacking in competence in psychotropic prescribing, with a general request for more seminars in this area (61.5%) with almost half (45%) of them believing that they would prescribe more often.

Conclusion. The use of psychotropic medication in children remains a valued and common practice in Ireland. Attitudinal and practice differences across professional groups exist, and although the experience is one of relative safety there was a strong desire for further education leading to a perceived increase in utilisation. The impact of perceived public opinion regarding psychotropic prescribing along with a lack of competence may represent a major barrier to effective prescribing, thus highlighting the importance of ongoing professional development and increased public health initiatives to increase knowledge and understanding in this increasingly important area.

Received 1 March 2013; Revised 28 June 2013; Accepted 9 December 2013; First published online 28 January 2014

Key words: children, psychotropic medication, prescribing practices.

Introduction

Psychotropic medications are valuable tools in the multimodal approach for the treatment of mental health difficulties in children and adults. There is an acknowledgement of a huge increase in the prescribing, consumption and development of medications over the years. Currently, one in five American adults (one in four women) is taking at least one psychotropic medication, reflecting a 22% increase from 2001 to 2010 (Smith, 2012).

The prescription of psychotropic medications to children remains an emotive issue with individuals (professionals and laymen alike) often polarised into two camps, those who agree and those who do not. There have been real concerns regarding increased prescribing. Between 1987 and 1996 in the United States, there was an almost threefold increase in all psychotropic medication

use, which cut across age, race, and gender and across insurance groups (Olson *et al.* 2002). Whereas the increased use was most evident for attention-deficit hyperactivity disorder (ADHD) medications (0.6 to 2.4/100 children and adolescents), in adults there was a significant increase for antidepressants (0.3–1.0/100) with the rates of antipsychotics remaining stable (0.2/100). However, between 1994 and 2005, there has been an increase in rates of antipsychotic prescribing both in the United States and United Kingdom (America's State of Mind, 2011; Rani *et al.* 2008).

It is difficult to know whether such a marked increase constitutes overuse, misuse or more appropriate use of medication. On the one hand, following the development of new effective medications, and perhaps coming from a low prescription base, one would want to witness an increase in their judicious use in individuals meeting diagnostic and impairment criteria for the disorder. However, recent studies suggest a levelling off of prescribing rates or even a decline disputing the perception by the popular media of a 'runaway train' (America's State of Mind, 2011;

* Address for correspondence: F. McNicholas, Consultant Child Psychiatrist and Professor of Child Psychiatry, Lucena Clinic, Rathgar, Dublin 6, Ireland.
(Email: Fiona.mcnicholas@sjog.ie)

Zuvekas *et al.* 2006). The analysis by Medco Health Solutions was among 2.5 million insured Americans and reported a decline in both ADHD and antidepressant medication use in children since 2005 (America's State of Mind, 2011). On the other hand, the public are right to be concerned about risk of 'the medicalization of society' and the establishment of a culture of 'a pill for every ill', and the unknown consequences of the use of psychotropic medication on the developing brains (Timini 2010).

Across the United States, Europe and Australia, treatment of mental health is becoming the province of the primary care physician (Trott *et al.* 1995). A study examining the trends in range and number of psychological problems presenting to general practitioners (GPs) in Australia highlights the increasing involvement by the GP in mental health management (Charles *et al.* 2011). Consequently, psychotropic medications are increasingly being prescribed by both paediatricians and GPs in addition to child psychiatrists (McNicholas, 2001a, 2001b; Rowe *et al.* 2004). The 22% increase in antidepressant use referred to by Smith was primarily attributed to the GP (Smith, 2012). One-third of all prescriptions were written by paediatricians or family medicine physicians (Cooper *et al.* 2006). Irish GPs are also recognised to prescribe the majority of psychotropic medication. Data from the 2006 Health Research Board National Psychological Wellbeing and Distress Survey of over 2700 adults in Ireland identified 14.3% of respondents to have a 'mental, nervous or emotional problem' (Doherty *et al.* 2007). Of these, 36.4% had used psychotropic medication in the previous year, either an antidepressant (27.4%), tranquilliser (6.8%) or some other class (6%). GPs had prescribed in 73% of cases, with only 18% having been prescribed by a psychiatrist and 9% by a different medical specialist. Another Irish study found that of the 6% of the population who had used psychotropic medication in the past year, with 4% in the previous month, 91% had received this from their GP (Department of Health and Children, 2012). Furthermore, in a large European study, the Irish as a nation were the most likely to seek help for mental health issues from their GP (91%) compared with the other nations (70%) (Gallagher & Doherty, 2010). This means that in Ireland the GP is in a central position to identify and manage many mental health difficulties.

Despite the increased use of medication in children, and the increased rate of prescribing by GPs and paediatricians, levels of competence among prescribers are low. Studies have identified concerns by respondents with regard to prescribing and safety information (Bramble, 1997; McNicholas, 2001a, 2001b). There has been very little pharmaco-epidemiological studies carried out in the paediatric population in Ireland and no studies

have considered physicians' attitudes to prescribing and their perceived competence levels. Therefore, the aim of this study was to examine the attitudes, knowledge and prescribing of psychotropic medication in children from clinical practitioners in Ireland.

Method

Study-specific questionnaires were sent to all consultant and senior registrars in child psychiatry, Consultant Paediatricians and GPs who operate in the Lucena Clinic Catchment area (South County Dublin and East Wicklow) (total $n = 300$). The study-specific questionnaire was one that had been created by the first author, used previously in similar studies carried out in the United Kingdom and is attached as an appendix (McNicholas, 2001a, 2011b). It asked about prescribing the practice of psychotropic medication in children and adolescents. Doctors were asked the frequency of prescription, medications commonly prescribed and use of combination therapy. They were also asked about their attitude towards medication effectiveness along with the attitudes of their medical and non-medical colleagues, and the impact this had on their own practice. Questions about actual clinical practice included the age range prescribed for and the use of medication for the various disorders was considered justified. Questions were also asked in relation to doctor's perceived competence levels and interest in psychopharmacology seminars. Chi squared analysis was carried out for categorical data, Student's *t*-test for group comparisons of continuous parametric data and Mann-Whitney *U*-test for group comparisons of ordinal (non-parametric) data.

Results

Of the 300 questionnaires, 116 were returned yielding an overall response rate of 39%. Of the people who indicated their profession ($n = 111$), 41 (36.9%) were child psychiatrists, 46 (41.4%) paediatricians and 24 (24%) were GPs. The majority were at the consultant level (81.3%) with 15 senior registrars. The mean age of respondents was 45.12 years (s.d. = 9.46, age range 30–65), with 57% women and 43% men. Nine people did not indicate their sex.

Prescribing practices

Although half of the total sample (51.3%) had made a recent prescription, they prescribed at a low frequency (less than monthly 60.4%). They had initiated medication both for children over 12 (52.3%) and under 12 years of age (43.1%). The vast majority of child psychiatrists had been prescribed in the last 6 months (39, 95.1%), initiated both for young (95.1%) and older (97.6%) children,

Table 1. Prescribing practices

Variables	Child psychiatrist	Paediatrician	General practitioner	All professionals
Recent prescription psychotropic medication (n = 110)	n = 41 95.1% (39) Yes 4.9% (2) No	n = 46 10.9% (5) Yes 89.1% (41) No	n = 23 52.2% (12) Yes 47.8% (11) No	n = 115 51.3% (59) Yes 48.7% (56) No (5 professional group missing)
Frequency of prescription monthly/less frequently (n = 108)	n = 40 87.5% (35) Monthly 12.5% (5) Infrequent	n = 46 6.5% (3) Monthly 93.5% (43) Infrequent	n = 22 22.7% (5) Monthly 77.3% (17) Infrequent	n = 111 60.4% (67) Monthly 39.6% (44) Infrequent (3 professional group missing)
Have you prescribed psychotropic medication in the last 6 months? (n = 110)	n = 41 95.1% (39) Yes 4.9% (2) No	n = 46 10.9% (5) Yes 89.1% (41) No	n = 23 52.2% (12) Yes 47.8% (11) No	n = 115 51.3% (59) Yes 48.7% (56) No (5 professional group missing)
Poly-pharmacy (n = 101)	n = 39 87.2% (34) Yes 12.8% (5) No	n = 42 4.8% (2) Yes 54.8% (23) No 40.5% (17) na	n = 20 10% (2) Yes 90% (18) No	n = 104 38.5% (40) Yes 45.2% (47) No 16.3% (17) na (3 professional group missing)
Child had experienced adverse side effects (n = 102)	n = 38 55.3% (21) Yes 44.7% (17) No	n = 44 4.5% (2) Yes 54.5% (24) No 40.9% (18) na	n = 20 95% (19) No 5% (1) na	n = 106 21.7% (23) Yes 60.4% (64) No 17.9% (19) na (4 professional group missing)
Inform GP of side effects (n = 79)	n = 39 61.5% (24) Yes 38.5% (15) No	n = 40 25% (10) Yes 30% (12) No 45% (18) na	na	n = 89 38.2% (34) Yes 33.7% (30) No 28.1% (25) na (4 professional group missing)
Inform family of side effects (n = 98)	n = 41 100% (41) Yes	n = 35 54.4% (19) yes 2.9% (1) No 42.9% (15) na	n = 22 81.8% (18) Yes 13.6% (3) No 4.5% (1) na	n = 102 79.4% (81) Yes 4.9% (5) No 15.7% (16) na (4 professional group missing)
Inform family of licenced indications (n = 101)	n = 40 95% (38) Yes 5% (2) No	n = 42 42.9% (18) Yes 7.1% (3) No 50% (21) na	n = 19 47.4% (9) Yes 15.8% (3) No 36.8% (7) na	n = 105 61.9% (65) Yes 10.5% (11) No 27.6% (29) na (4 professional group missing)
Have you ever initiated psychotropic medication in a child 12–18? (n = 106)	n = 41 97.6% (40) Yes 2.4% (1) No	n = 43 11.6% (5) Yes 88.4% (38) No	n = 22 45.5% (10) Yes 54.5% (12) No	n = 111 52.3% (58) Yes 47.7% (53) No (5 professional group missing)
Have you ever initiated psychotropic medication in a child under 12? (n = 111)	n = 41 95.1% (39) Yes 4.9% (2) No	n = 46 17.4% (8) Yes 82.6% (38) No	n = 24 8.3% (2) Yes 91.7% (22) No	n = 116 43.1% (50) Yes 56.9% (66) No (5 professional group missing)

prescribed weekly (57.5%) and in combination (87.2%) (Table 1). Most of the respondents informed the family regarding side effects (79.4%) and the licensed indications (61.9%) a practice most commonly seen in the child psychiatry group (Table 1). Whereas more than half of the child psychiatrists (55.3%) had experienced adverse side effects with children on psychotropic medication,

only 4.5% of the paediatricians and none of the GPs had this experience.

Medications prescribed frequently

Clinicians were asked to list the medications they most frequently prescribe. As a group, antidepressants

Table 2. Medication commonly prescribed

	Total Group (<i>n</i> = 63)	Child psychiatrist (<i>n</i> = 39)	Paediatricians (<i>n</i> = 7)	General practitioners (<i>n</i> = 14)	No professional group given (<i>n</i> = 3)
ADHD Meds (any)	36.5% (40)	71.8% (28)	71.4% (5)	35.7% (5)	66.7% (2)
Methylphenidate	61.9% (39)	69.2% (27)	71.4% (5)	35.7% (5)	66.7% (2)
Atomoxetine	27% (17)	41% (16)	14.3% (1)		
Fluoxetine	44.4% (28)	61.5% (24)		21.4% (3)	33.3% (1)
Atypical Antipsychotic	57.1% (36)	76.9% (30)	28.6% (2)	14.3% (2)	66.7% (2)

(58.7%), antipsychotics (57.1%) and ADHD medication (36.5%) were the most commonly cited (Table 2). There were differences in choice of medication used across disciplines (Table 2). Nearly all child psychiatrists listed the medications they used (39/41, 95%). Atypical antipsychotics (76.9%), methylphenidate (69.2%) and fluoxetine (61.5%) were the most commonly cited medications. When other selective serotonin reuptake inhibitors (SSRIs) were listed, this was almost always (66.7%) in those clinicians also using fluoxetine. Other ADHD medications commonly used by child psychiatrists included atomoxetine (listed by 41%), with just one clinician commonly using either clonidine or dextedrine. Very few paediatricians responded to this question (*n* = 7) and they generally restricted their prescribing to ADHD medication, almost exclusively methylphenidate. Fourteen of the 24 GPs responded (58%). Methylphenidate was the only ADHD medication commonly used by GPs (35.7%). Although antidepressants were 'commonly' used (64.3%), GPs were more likely to cite another SSRI (42.9%) more often than fluoxetine (21.4%). Typical antipsychotics (haloperidol, *n* = 1) and tricyclic antidepressants (amitriptyline, *n* = 1) were reported to be 'commonly used' but only within the GP group. Benzodiazepines were listed by two GPs and one child psychiatrist.

Knowledge and attitudes

Respondents were asked whether there was a lower age, below which they would not consider psychotropic medication as justified. Of the respondents, 48.5% agreed with a lower age limit, with this being advocated more by child psychiatrists (76.3%) than the other two groups (34.2% paediatricians and GPs, 20%). The lower age limit differed between specialists, with GPs citing a mean lower limit of 9.8 years, paediatricians 7.9 and child psychiatrists 4.3 (age range 1–13) (Table 3).

All respondents were asked about their overall level of competence in prescribing medication and their specific knowledge regarding adverse side effects.

Child psychiatrists were fully informed of side effects, either rating their knowledge as good (51.2%) or adequate (48.8%). GPs and paediatricians were less confident. Twelve paediatricians (26.7%) rated it as poor, and a further 12 (26.7%) requested more information. Respective numbers for GPs were two (8.7%) and eight (34.8%) (Table 4). Respondents were asked whether they were aware of the 'black box' warnings on various psychotropic medication and all child psychiatrists who responded were (100%) compared with four (19%) paediatricians and three GPs (30%). Respondents were equally divided into those who believed that the warnings reduced the use of psychotropic medication (46.6%) and those who did not (43.8%) (Table 4).

Most respondents lacked in competence regarding their psychotropic prescribing practices (56%). From the three groups, eight paediatricians (19.5%) felt least competent, with almost half (46.5%) requesting regular seminars. Only nine GPs (39.1%) reported feeling competent, yet few indicated any interest in psychopharmacology seminars (28.6%). The majority of child psychiatrists felt competent (53.7%), but nearly all requested regular psychopharmacology seminars (92.7%). Respondents from all three groups believed that if better informed they would use psychotropic medication more often (45%) (Table 4).

All the child psychiatry responders (100%) and most GPs (84.2%) valued the use of psychotropic medication in their practice but only a third of paediatricians (32.6%) (Table 3). There was a general consensus (78.6%) that child psychiatrists should initiate psychotropic medication, but 14 (13%) felt that this could be started by either a paediatrician or child psychiatrist. Where applicable, respondents reported that their medical colleagues regularly prescribe (45.7%) and their *non-medical* colleagues (other non-medical professional groups working in their service) support this practice (61.9%). When this was considered by professional groups, GPs (27.8%) were most likely to believe that their non-medical colleagues would not value psychotropic medication (Table 3). A significant

Table 3. Attitudes to prescribing medication

Variable	Child psychiatrist (CP)	Paediatrician (P)	General Practitioner (GP)	All professionals
Do you value the role of psychotropic in <i>your</i> clinical practice? (<i>n</i> = 103)	<i>n</i> = 41 100% (41) Yes	<i>n</i> = 43 32.6% (14) Yes 27.9% (12) No 38.5% (17) na	<i>n</i> = 19 84.2% (16) Yes 15.8% (3) No	<i>n</i> = 107 70.1% (75) Yes 14.0% (15) No 15.9% (17) na (4 professional group missing)
Do others in your department regularly prescribe psychotropic medications? (<i>n</i> = 101)	<i>n</i> = 39 92.3% (36) Yes 7.7% (3) No	<i>n</i> = 42 19% (8) Yes 61.9% (26) No 19% (8) na	<i>n</i> = 20 15% (3) Yes 70% (14) No 15% (3) na	<i>n</i> = 105 45.7% (48) Yes 42.9% (45) No 11.4% (12) na (4 professional group missing)
Do your <i>non-medical</i> colleagues value the role of psychotropic medications? (<i>n</i> = 94)	<i>n</i> = 40 92.5% (37) Yes 5% (2) No 2.5% (1) na or don't know	<i>n</i> = 37 40.5% (13) Yes 16.2% (6) No 43.2% (14) na or don't know	<i>n</i> = 18 38.9% (7) Yes 27.8% (5) No 33.3% (6) na or don't know	<i>n</i> = 97 61.9% (60) Yes 14.4% (14) No 23.7% (23) na or don't know (3 professional group missing)
Does this influence your practice? (<i>n</i> = 91)	<i>n</i> = 39 43.6% (17) Yes 56.4% (22) No	<i>n</i> = 36 19.4% (7) Yes 63.9% (23) No 16.7% (6) na	<i>n</i> = 16 25% (4) Yes 62.5% (10) No 12.5% (2) na	<i>n</i> = 93 31.2% (29) Yes 60.2% (56) No 8.6% (8) na (2 professional group missing)
'Minimum age' below which you would not prescribe (<i>n</i> = 96)	<i>n</i> = 38 76.3% (29) Yes 23.7% (9) No	<i>n</i> = 38 34.2% (13) Yes 50% (19) No 15.8% (6) na or don't know	<i>n</i> = 20 20% (4) Yes 70% (14) No 10% (2) don't know	<i>n</i> = 97 48.5% (47) Yes 43.3% (42) No 8.2% (8) na or don't know (1 professional group missing)
If yes, what is the minimum age? (<i>n</i> = 36)	<i>n</i> = 21 Mean = 4.285 (1-10)	<i>n</i> = 11 Mean = 7.909 (3-12)	<i>n</i> = 4 Mean = 9.750 (6-13)	<i>n</i> = 37 Mean = 6.1622 (1-13)
Who should initiate psychotropic medication in a child? (<i>n</i> = 104)	<i>n</i> = 41 70.7% (29) CP 22% (9) either CP or P 7.3% (3) All 3	<i>n</i> = 40 85% (34) CP 5% (2) either CP or P 2.5% (1) GP 5% (2) P 2.5% (1) All 3	<i>n</i> = 23 82.6% (19) CP 13% (3) either or P 4.3% (1) All 3	<i>n</i> = 108 78.6% (86) CP 13% (14) CP&P 1.9% (2) P 4.6% (5) All 3 1.9% (1) GP (4 professional group missing)

number of responders felt that the belief of their colleagues would influence their practice, with the child psychiatrists being most influenced (43.6%).

Medication use justification in child mental health disorders

Clinicians were asked to indicate in which child psychiatry disorders medication use was justified and to indicate whether it applied for mild, moderate or severe cases (Table 5). Nearly all clinicians felt medication was justified and had an important role to play in the treatment of most child psychiatry disorders, although in general reserving use for more 'severe' presentations. This was particularly true for substance use disorder (70% responded medication use was justified in severe

cases only), eating disorder (63.5%), sleep (62.5%) and conduct disorder (61.7%).

When restricted to those disorders where even mild presentations may warrant psychotropic medication use, only psychoses (59.4%), depression (20.8%) and ADHD (16.3%) were viewed by a significant proportion of the group. However, there were significant differences of opinion considering medication justification by professional group. Child psychiatrists were most likely to consider prescribing in mild psychosis (73.2%) compared with paediatricians (53.3%) and GPs (38.1%). Paediatricians and GPs were more likely to consider medication in 'mild' cases of depression (25.8% for paediatricians, 28.6% for GPs and 14.6% for child psychiatrists) and sleep (40% for GPs, 7.7% for paediatricians and 0% for child psychiatrists). GPs were the only group

Table 4.

Variable	Child psychiatrist	Paediatrician	General practitioner	All professionals
Like regular seminars? (<i>n</i> = 105)	<i>n</i> = 41 92.7% (38) Yes 7.3% (3) No	<i>n</i> = 43 46.5% (20) Yes 44.2% (19) No 9.3% (4) na	<i>n</i> = 21 28.6% (6) Yes 71.4% (15) No	<i>n</i> = 109 61.5% (67) Yes 34.9% (38) No 3.7% (4) na (4 professional group missing)
Do you feel as competent as you would like with regards to medication? (<i>n</i> = 105)	<i>n</i> = 41 53.7% (22) Yes 46.3% (19) No	<i>n</i> = 41 19.5% (8) Yes 63.4% (26) No 17.1% (7) na	<i>n</i> = 23 39.1% (9) Yes 60.9% (14) No	<i>n</i> = 109 37.6% (41) Yes 56% (61) No 6.4% (7) na (4 professional group missing)
Would you use medication more readily if better informed? (<i>n</i> = 97)	<i>n</i> = 37 54.1% (20) Yes 45.9% (17) No	<i>n</i> = 40 40% (16) Yes 52.5% (21) No 7.5% (3) na	<i>n</i> = 20 45% (9) Yes 50% (10) No 5% (1) na	<i>n</i> = 100 45% (45) Yes 51% (51) No 4% (4) No (3 professional group missing)
What is your level of knowledge re Side effects of psychotropic medication? (<i>n</i> = 109)	<i>n</i> = 41 48.8% (20) Adequate 51.2% (21) Good	<i>n</i> = 45 26.7% (12) Poor 26.7% (12) Want more info 35.6% (16) Adequate 11.1% (5) Good	<i>n</i> = 23 8.7% (2) Poor 34.8% (8) Want more info 52.2% (12) Adequate 4.3% (1) Good	<i>n</i> = 112 13.4% (15) Poor 18.8% (21) Want more info 43.8% (49) Adequate 24.1% (27) Good (3 professional group missing)
Do you know of any Black box warnings? (<i>n</i> = 65)	<i>n</i> = 34 100% (34) Yes	<i>n</i> = 21 19% (4) Yes 61.9% (13) No 19% (4) na	<i>n</i> = 10 30% (3) Yes 70% (7) No	<i>n</i> = 66 63.6% (42) Yes 30.3% (20) No 6.1% (4) na (1 professional group missing)
Have the black box warnings reduced use of that medication? (<i>n</i> = 71)	<i>n</i> = 40 65% (26) Yes 35% (14) No	<i>n</i> = 22 18.2% (4) Yes 54.5% (12) No 27.3% (6) na	<i>n</i> = 9 33.3% (3) Yes 55.6% (5) No 11.1% (1) na	<i>n</i> = 73 46.6% (34) Yes 43.8% (32) No 9.6% (7) na (2 professional group missing)
Are you aware of the License of medication you prescribe? (<i>n</i> = 102)	<i>n</i> = 41 100% Yes	<i>n</i> = 40 45% (18) Yes 22.5% (9) No 32.5% (13) na	<i>n</i> = 21 76.2% (16) Yes 23.8% (5) No	<i>n</i> = 106 73.6% (78) Yes 14.2% (15) No 12.3% (13) na (4 professional group missing)

who would consider medication use in 'mild' cases of attachment disorders (50%), Tics/Tourette's (37.5%), autism (33.3%) and conduct disorder (25%). Five child psychiatrists specifically mentioned the role of medication in anxiety, and Post Traumatic Stress Disorder (PTSD) and one paediatrician in neuropathic pain.

Comparisons were made using χ^2 -test between those who prescribed at least monthly (39.6%) and those who seldom or never prescribed (60.4%). Clinicians who prescribed more often were more likely to be a child psychiatrist [χ^2 (1, *n* = 108) = 61.916, *n* = 0.000], more likely to value the use of psychotropic medication [χ^2 (1, *n* = 86) = 13.647, *p* = 0.000] and to have non-medical colleagues who value medication [χ^2 (1, *n* = 71) = 11.779, *n* = 0.001]. They were better

informed than less frequent prescribers with regard to medication side effects [χ^2 (1, *n* = 107) = 22.046, *p* = 0.000], black box warnings [χ^2 (1, *n* = 60) = 20.706, *p* = 0.000] but were also more likely to request additional information and psychopharmacological seminars [χ^2 (1, *n* = 100) = 13.895, *p* = 0.000]. Junior doctors are more likely to prescribe more often than senior colleagues [χ^2 (1, *n* = 79) = 4.133, *p* = 0.042] but do not necessarily feel more competent [χ^2 (1, *n* = 69) = 0.295, *p* = 0.587]. Clinicians were more likely to prescribe whether others in their department regularly prescribe [χ^2 (1, *n* = 88) = 5.881, *p* = 0.015]. There was an association with professional group and perceived competence, with significantly more child psychiatrists feeling competent [χ^2 (2, *n* = 91) = 7.048, *p* = 0.029].

Table 5. Medication Justified

Disorder type	Medication justified	Medication justified in mild cases		
		Child psychiatrist	Paediatrician	General practitioner
Psychoses	94 (98%)	30 (73.2%)	16 (53.3%)	8 (38.1%)
MDD	94 (98%)	6 (14.6%)	8 (25.8%)	6 (28.6%)
ADHD	84 (97.7%)	6 (15%)	3 (13%)	4 (19%)
Conduct disorder	44 (93.6%)	–	–	1 (25%)
Enuresis	39 (95.1%)	–	1 (10%)	–
OCD	80 (97.6%)	1 (2.6%)	1 (4.3%)	1 (5.9%)
Eating disorder	60 (95.3%)	–	–	1 (7.1%)
Tics/Tourette's	58 (93.5%)	–	–	3 (37.5%)
Autism	56 (94.9%)	–	–	3 (33.3%)
Sleeping problems	45 (93.8%)	–	1 (7.7%)	2 (40%)
Learning difficulties	23 (88.5%)	1 (6.3%)	–	1 (33.3%)
Attachment disorder	14 (82.3%)	–	–	1 (50%)
Substance misuse	27 (90%)	1 (5.6%)	1 (14.3%)	–

MDD, major depressive disorder; ADHD, attention deficit hyperactivity disorder; OCD, obsessive-compulsive disorder.

Discussion

This survey suggests that psychotropic medication are generally well regarded and judiciously prescribed among the respondents. They are considered for a range of mental health conditions in children, most notably psychoses, depression and ADHD, with other indications being generally reserved for those with severe presentations. Three main drug classes stand out as being most commonly prescribed antipsychotics, antidepressants and ADHD medication corresponding with the disorder groups listed most frequently. This corresponds with the literature where the increased rates of medication use was most evident for ADHD medications, followed by a significant increase in antidepressant prescription, thus followed by an increased use of antipsychotics (Olfson *et al.* 2002; America's State of Mind, 2011).

There are interesting differences in both medication choice and indication between professional groups and seniority level. As a group, junior doctors were more likely to prescribe more often; however, once the professional group was controlled for, this was no longer significant. Within the child psychiatry group, their frequent prescribing might reflect the role the junior has on the team, perhaps being primarily involved in ADHD/medication clinics; however, it could also be that, given their more recent training, they have been more exposed to, and mindful of, recent new developments in medication, along with the increased effectiveness data and a cultural shift to increased acceptance in psychotropic medication use.

Child psychiatrists were more likely than the other groups to feel medication was justified in mild cases of

psychosis (73.2%) perhaps being more aware of the need to identify prodromal stages of psychosis, to keep the period of untreated psychosis to a minimum and institute medication at the earliest phase of the illness. They were less likely than the other groups (14.6%) to feel medication was indicated in mild depression, this being consistent with the NICE guidelines that advocate Cognitive behavioral Therapy as first line treatment in such cases [National Institute for Health and Clinical Excellence (NICE), 2005]. The paediatricians who responded in general were least likely to prescribe and when they did, it was primarily restricted to methylphenidate use in ADHD. In Europe, Australia and the United States, paediatricians play a leading role in providing primary/secondary level intervention to children with psychiatry problems, and ADHD in particular (Trott *et al.* 1995; McNicholas, 2001a; Rowe *et al.* 2004). Although paediatricians in Ireland have expressed a wish to be more involved in the diagnosis and management of both ADHD and autism, from those responding it would seem that this is not, as yet, the case (O'Keeffe & McNicholas, 2011). One paediatrician reported common use of both carbamazepine and gabapentin. Although the invitation letter expressly asked for psychotropic medication use in conditions other than epilepsy, it is not possible to infer whether these antiepileptic medications have been used as mood stabilisers or for other indications.

The medication class most frequently used by GPs were antidepressants with 9/14 reporting they commonly use them. Three GPs used fluoxetine most commonly, but six GPs preferred to use a different SSRI. Of these, one GP was aware of a black box warning (reporting epilepsy/febrile convulsions), one

was not aware and the other seven did not respond. Three of these respondents felt that the black box warning would not reduce their prescribing practice; the other six left the question unanswered. Recent concerns regarding an increase in suicidal thinking in young children when prescribed SSRIs led to a number of regulatory warnings. The FDA placed a black box warning on all SSRIs in 2004 and the UK committee on Safety and Medicines approved fluoxetine as the only SSRI in adolescents with major depressive disorder, recommending its prescription to be by a specialist in child mental health (US Food and Drug Administration, 2004; Medicines and Health Care Products Review Agency, 2004). The Irish Medicine Board reminded clinicians that there is no licensed SSRI for use in adolescent depression in Ireland (Irish Medicines Board, 2003). It is also recommended that the family is informed of this suicidal risk, and although all responded that they verbally alert the family to side effects, given the lack of knowledge of black box warnings, the data do not instil confidence that the specific suicidal risk is being communicated. The use of typical antipsychotics and tricyclic antidepressants in child psychiatry have generally been replaced by newer developments based on enhanced efficacy and side effect profile (Rani *et al.* 2008). Both classes were listed by two GP respondents as being medications they frequently used. Benzodiazepines were also listed by two GPs and one child psychiatrist, although it is now acknowledged that their usefulness is severely limited by risk of dependence and reserved for use in acute agitation, psychosis or for short-term use in severe anxiety (College of Psychiatry in Ireland, 2012). GPs were more likely to consider medication use in 'mild' cases of attachment disorders (50%), Tics/Tourette's (37.5%), autism (33.3%) and conduct disorder (25%).

Accepting the small sample size, these differences might suggest differences by professional group based on knowledge (or lack of), patient type presenting to their service or may reflect idiosyncratic practice. It is well known that individual variation contributes to significant difficulty establishing accurate pharmaco-epidemiological data. It highlights the importance of ensuring that those clinicians, who are prescribing, even if at a low frequency rate, are well informed of efficacy and safety data.

Most of the respondents reported feeling reasonably confident in their knowledge of side effects and in their level of competent prescribing. Despite this, the majority requested ongoing psychotropic medication seminars and believed that more knowledge would lead to increased prescribing. This links with previous research studies, which have shown that self-assessed levels of competence in prescription practice among prescribers is low, with many feeling that they have

inadequate information in relation to drug safety (Bramble, 1997; McNicholas, 2001a, 2001b). A study carried out in the United Kingdom assessing child psychiatrists' competency levels in psychotropic prescribing found that only 25% of the sample ($n = 107$) felt competent (McNicholas, 2001a, 2001b). Similarly, a study on paediatricians revealed that, despite more than half the group believing that they should have a leading role in such prescribing, only 21.2% felt sufficiently competent and two-thirds requested additional information (McNicholas, 2001a).

It was noteworthy that GPs were least likely to request additional seminars (28.6%), even when they valued psychotropic medication in their own clinical practice (84.2%), rated their competence level as low (60.9%) and recognised that increased knowledge would lead them to prescribe more often (45%). There was an overwhelming belief that such medication prescribing should be initiated by a child psychiatrist (82.6%). This suggests perhaps that GPs do not perceive themselves as having a lead role in regular prescribing for mental health disorders.

The reality, however, is different as increasing mental health needs outstrip available child psychiatry services and by default or design, community services and GPs play a lead role. Irish GPs do in fact prescribe psychotropic medication regularly to both adults and older adolescents and there is an acceptance by the population of that role, with the Irish patients more likely than other European nations to seek psychological help and treatment from their GP (Doherty *et al.* 2007; Gallagher & Doherty, 2010). This need for GPs to take on this role requires that GPs are adequately trained and follow guidelines particularly when they are prescribing in the paediatric population (Rowe *et al.* 2004). The finding in this study that GPs frequently use an SSRI other than fluoxetine in the paediatric population, and that 70% were unaware of any black box warnings, suggests a lack of knowledge regarding established clinical guidelines and regulatory advice. The recommendation to restrict SSRI use in depression to fluoxetine has been specifically included in clinical guidelines for GPs, which make the responses of this study alarming (Rowe *et al.* 2004).

The overwhelming majority of non-medical colleagues were supportive of the role of medication (61.9%). It is regrettable that the study questionnaire did not elicit what non-medical staff worked in each setting. Typically, Child and Adolescent Mental Health Services (CAMHS) are multidisciplinary, with clinicians from psychology, social work, nursing, occupational therapy, and speech and language therapy. Paediatricians who work in a hospital setting may have non-medical colleagues from physiotherapy, dieticians, as might GPs. Non-medical colleague support was understandably

most pronounced in child psychiatry settings (92.5%), where staff may well have been familiar with the evidence-based literature regarding medication effectiveness, and where they may be exposed to real-life scenarios of beneficial response. However, a significant number of non-medical staff were perceived to be unsupportive of psychotropic medication use (5%), within child psychiatry settings (16.2%), paediatric and (27.8%) in general practice. Nearly one-third of respondents (31.2%) reported being influenced by the beliefs of their non-medical colleagues with regard to medication use, the highest in the child psychiatry group (43.6%). This emphasises the need to provide appropriate psycho-education in medication use to non-medical colleagues, parents and society at large.

There continues to be significant controversy regarding the overuse of medication in child mental health disorders (Sparks & Duncan, 2004). There has been some qualitative work carried out between 2009 and 2011 in Ireland, which highlights parental concern regarding over-reliance on medication in ADHD (Edwards & Howlett, 2013). Parents' desire to expand the therapeutic options in ADHD beyond medication was met with the commissioning of research. Another qualitative study highlighted parental concern ($n = 486$) and guilt over the use of psychotropic medication in children, in this case, children with autism (Mackintosh & Goin-Kochel, 2013). Parents expressed concern about giving their children medication, even when they believed these were effective. There was a sense that 'it was inherently wrong to give medication to children'.

Sensational reporting adds to the illusion that clinicians, egged on by pharmaceutical companies, are overprescribing dangerous medication for children with diagnoses that better reflect social constructs rather than true neurobiological disorders (Timini, 2010). While public concern and close vigilance is essential to ensure the most appropriate and unbiased practice, such polarised views are not helpful, and may deny children in need of medication an improved quality of life. In fact, a recent American study on over 10 000 adolescents aged 13–18 found that in adolescents with mental health disorders only a minority (14.2%) had received any psychotropic medication in the previous year, with treatment for ADHD being most common (31% of cases) followed by mood disorders (19.7%), suggesting neither overuse nor misuse (Merikangas *et al.* 2013).

Rates of medication use are not well established in Ireland especially among the paediatric population. Within the general adult population, 6% had used psychotropic medication in the past year, 4% in the previous month [National Advisory Committee on Drugs (NACD) & Drug and Alcohol Information and Research Unit (DAIRU), 2007]. This rate is similar to the

European average of 7% and significantly lower than American rates of 20% (Gallagher & Doherty, 2010; Smith, 2012). The only available data in Irish paediatric groups refer to children prescribed an antidepressant between the years 2001 and 2004 (Bennett *et al.* 2005). Using the General Medical Service (GMS) claims database, Bennett *et al.* estimate a rate of antidepressant use in 0.43% of the eligible population (under 16) compared with rates of 16.9% of the adult (>16) population. The rate of prescribing was highest in the 12–15 year age group with a rate of 8.7/1000. It must be noted that the GMS database is a means-tested scheme, providing free medication and other services, and only about 28% of children fall into this category. There was no significant increased use of SSRIs during this period. The willingness to accept psychotropic medication as an accepted part of a multimodal treatment for children are probably multifactorial, including factors such as accepted practice, cultural beliefs, availability of other treatments, previous personal or family experience, to name a few.

Professionals view is also important. This study reports that more than a quarter of GPs (27.8%) believe their non-medical colleagues do not support the use of such medications. The study also reports that for a significant number of responders, particularly child psychiatrists (43.6%), their prescribing practice is influenced by the belief of their non-medical colleagues. More recently, in Ireland, prescriptive authority for nurses has come into force since 2007, and despite significant legislative and clinical barriers, it has generally been welcomed by the clinical nurse specialists and perceived positively by patients, including parents of paediatric patients (Lockwood & Fealy, 2008; Drennan *et al.* 2011). Future research in medication attitudes and knowledge will need to include this professional group.

Limitations

This study is limited by the relatively low response rate (39%) with the possibility of response bias. There was also a very low number of GPs compared with national numbers, although the GPs were all selected from one CAMHS area limiting the generalizability of the results within this professional group to that specific CAMHS area. However, it includes a more representative number of both child psychiatrists and paediatricians. It offers subjective views of practice rather than any objective measure, and the possibility of poor recall or socially desirable responses cannot be ruled out. Given the paucity of data on psychotropic medication use in children in Ireland, despite the limitations cited, it offers initial and important insights into clinician practice and attitudinal beliefs.

Conclusions

There is an increasing evidence base of the effectiveness of medication in the management of many childhood mental health disorders. This study suggests that Irish child psychiatrists are prescribing on a regular basis in a wide range of disorders and together with their colleagues value the role of medication in their *own* practice. If we believe that in certain conditions medication is warranted, and maybe even be the treatment of choice, as recommended by various clinical guidelines, then the barrier of insufficient knowledge having an impact on prescribing rates is of concern. The study also suggests an increasing role for paediatricians and GPs in this area, but with an acknowledgement of lack of perceived competency in this area. While nearly all child psychiatrists expressed a wish for regular seminars in this area, fewer of the other groups did. Despite the lack of enthusiasm for regular seminars, particularly among the GPs responders, ongoing knowledge in this area should be encouraged and is essential to good clinical practice, particularly as there is a recognised increasing reliance on primary care services to respond to mental health problems. This study adds to the research gap in the use of psychotropic medication by different professionals in Ireland by examining the attitudes, knowledge and prescribing practices from clinical practitioners. It highlights attitudinal and practice differences across professional groups, including educational requests and knowledge deficits. By monitoring trends of psychotropic medication use and type, within paediatric and CAMH services, and comparing individual clinics with national averages, along with reference to international data, this should ensure appropriate and evidenced base medication use. A nationwide database relating to the prescription of psychotropic drugs would help in this regard and should be established. By including the service users' perspective on treatment offered, including access to 'a comprehensive range of interventions in primary care' as set out by *A Vision for Change* (2006), this will ensure that biomedical–scientific therapeutic advances are linked with holistic and effective care and rooted in good clinical practice (Department of Health and Children, 2006).

This study has highlighted certain deficits in knowledge from practitioners and the need for ongoing professional development.

References

- America's State of Mind** (2011). A report by Medco Health Solutions, Inc. www.toxicpsychiatry.com/
- Bennett K, Teeling M, Feely J** (2005). Overprescribing antidepressants to children: pharmacoepidemiological study in primary care. *British Medical Journal* **331**, 1451–1452.

- Bramble D** (1997). Psychostimulants and British child psychiatrists. *Child Psychology and Psychiatry Review* **2**, 159–162.
- Charles J, Harrison CM, Britt H** (2011). Management of children's psychological problems in general practice 1970–1971, 1990–1991 and 2008–2009. *Australian and New Zealand Journal of Psychiatry* **45**, 976–984.
- College of Psychiatry in Ireland** (2012). A consensus statement on the use of Benzodiazepines in specialist mental health services. http://www.irishpsychiatry.ie/Libraries/External_Events_Documents/CPsychI_position_paper_on_benzodiazepines_June_2012.sflb.ashx. Accessed 19 February 2013.
- Cooper WO, Arbogast PG, Ding H, Hickson GB, Fuchs C, Ray WA** (2006). Trends in prescribing of antipsychotic medications for US children. *Ambulatory Pediatrics* **6**, 79–83.
- Department of Health and Children** (2006). *A Vision for Change: Report of the Expert Group on Mental Health Policy*. Government Publications Office: Dublin, Ireland.
- Doherty D, Moran R, Kartalova-O'Doherty Y, Walsh D. HRB** (2007). *National Psychological Wellbeing and Distress Survey: Baseline Results*. Health Research Board: Dublin, Ireland.
- Drennan J, Naughton C, Allen D, Hyde A, O'Boyle K, Felle P, Treacy MP, Butler M** (2011). Patients' level of satisfaction and self-reports of intention to comply following consultation with nurses and midwives with prescriptive authority: a cross-sectional survey. *International Journal Of Nursing Studies* **48**, 808–817.
- Edwards C, Howlett E** (2013). Putting knowledge to trial: 'ADHD parents' and the evaluation of alternative therapeutic regimes. *Social Science & Medicine* **81**, 34–41.
- Gallagher S, Doherty S, Tedstone D** (2010). A comparative analysis of users and non-users of prescribed psychotropic medication among individuals who reported mental health problems. *The Internet Journal of Mental Health* **6**, 1–22.
- Irish Medicines Board** (2003). *Notice Information; Human Medicines – Warning. Selective Serotonin Reuptake Inhibitors (SSRIs) Usage in Children*. Irish Medicines Board. <http://Quality/Advisory-Warning-Recall-Notices/Human-Medicines/Selective-Serotonin-Reuptake-Inhibitors-SSRIs.aspx>. Accessed 12 February 2013.
- Lockwood E, Fealy G** (2008). Nurse prescribing as an aspect of future role expansion: the views of Irish clinical nurse specialists. *Journal of Nursing Management* **16**, 813–820.
- Mackintosh V, Goin-Kochel R, Myers B** (2012). "What Do You Like/Dislike About the Treatments You're Currently Using?": a qualitative study of parents of children with autism spectrum disorders. *Focus On Autism & Other Developmental Disabilities* **27**, 51–60.
- McNicholas F** (2001a). Psychotropic prescribing practices of paediatricians in the UK. *Child: Care, Health and Development* **27**, 497–508.
- McNicholas F** (2001b). Prescribing practices of child psychiatrists in the UK. *Child Psychology & Psychiatry Review* **6**, 166–171.
- Medicines and Health Care Products Review Agency** (2004). *Questions and Answers; Advice on SSRIs in Children from the Committee on Safety of Medicines*. Medicines and Health Care Products Review Agency. <http://www.mhra.gov.uk/home/groups/pl.../drugsafetymessage/con019472.pdf>. Accessed 12 February 2013.

- Merikangas KR, Jian-ping H, Rapoport J, Vitiello B, Olfson M** (2013). Medication use in US youth with mental disorders. *JAMA Pediatrics* **167**, 141–148.
- National Advisory Committee on Drugs (NACD) & Drug and Alcohol Information and Research Unit (DAIRU)** (2007). *Drug Use in Ireland and Northern Ireland: 2002/2003 Drug Prevalence Survey: Sedatives, Tranquillisers or Anti-Depressants Results: Bulletin 6*. NACD and DAIRU: Dublin, Ireland.
- National Institute for Health and Clinical Excellence (NICE)** (2005). *Depression in Children and Young People: Identification and Management in Primary, Community and Secondary Care*. NICE. <http://publications.nice.org.uk/depression-in-children-and-young-people-cg28>
- O’Keeffe N, McNicholas F** (2011). Paediatricians’ views on their role in the assessment and management of ADHD and autism. *Irish Medical Journal* **104**, 282–284.
- Olfson M, Marcus SC, Weissman MM, Jenson P** (2002). National trends in the use of psychotropic medications by children. *Journal of the American Academy of Child and Adolescent Psychiatry* **41**, 514–521.
- Rani F, Murray ML, Byrne PJ, Wong IC** (2008). Epidemiologic features of antipsychotic prescribing to children and adolescents in primary care in the United Kingdom. *Pediatrics* **121**, 1002–1009.
- Rowe L, Tonge M, Melvin G** (2004). When should GPs prescribe SSRIs for adolescent depression. *Australian Family Physician* **33**, 1005–1008.
- Smith B** (2012). Inappropriate prescribing. *Monitor on Psychology* **43**, 36.
- Sparks JA, Duncan BL** (2004). The ethics and science of medicating children. *Ethical Human Psychology and Psychiatry* **6**, 25–39.
- Timini S** (2010). The McDonaldization of childhood: children’s mental health in neo-liberal market cultures. *Transcultural Psychiatry* **47**, 686–706.
- Trott GE, Badura F, Wirth S, Friese HJ, Hollman-Wehren B, Warnke A** (1995). Selbsteinschätzung des verordnungsverhaltens bei psychopharmaka an inderm und jugendlichen. Ergebnisse einer Befragung von neederleassenen Ärzten. *Psychiatric Praxis* **22**, 235–239.
- US Food and Drug Administration** (2004). *FDA issues public health advisory entitled: reports of suicidality in pediatric patients being treated with antidepressant medications for major depressive disorder (MDD)*. US Food and Drug Administration Department of Health and Human Services: Rockville, MD. <http://www.fda.gov/cder/drug/antidepressants/AntidepressantPHA.htm>. Accessed 22 March 2004.
- Zuvekas S, Vitiello B, Norquist G** (2006). Recent trends in stimulant medication use among U.S. children. *American Journal of Psychiatry* **163**, 579–585.

Appendix

The use of Psychotropics in Children and Adolescents for behaviour or psychological problems, excluding epilepsy

i. Your Age _____	ii. Sex: Male/Female
iii. Profession: Child Psychiatrist/ Paediatrician/ General Practitioner	iv. Grade: SHO/ Reg./S.R./ Consultant/Professor
v. Special area of interest : _____	

1. Have you initiated a prescription for psychotropic medication for
 - (i) Children under the age of 12?
Yes/No
 - (ii) Children aged 12 to 18 years?
Yes/No

2. In the last six months have you prescribed such medication for children/adolescents?
Yes/No

3. How frequently do you prescribe psychotropic medication for children?
Never/weekly/monthly/6month

4. Please list the psychotropic drugs you most commonly prescribe and the maximum dose used:

5. Is there an age below which you feel psychotropic medication is **not** justified in child psychiatry?
Yes/No

6. Which best describes your knowledge of medication side effects
poor / would like additional information / adequate / good

7. Do you routinely verbally inform the family about side effects or give them written information.
Verbally inform/ written information/nothing

8. If you are not the GP, do you alert the GP to possible side effects?
Yes/No

9. Have you experienced any serious or unusual adverse effects while prescribing psychotropics drugs to children? (List)
Yes/No

10. What routine baseline investigations do you usually do before starting medication:
e.g. height, weight, HR, BP, ECG, FBC, LFT, other, etc.
-
11. Are you aware of the **licence** of the products you prescribe
(in particular what age group they are licensed for)
Yes/No
12. If you prescribe a drug outside of the licence
do you inform the family?
Yes/No
13. Have you ever prescribed more than one medication at a time?
If so, what combination? _____
Yes/No
14. Do you value the use of psychotropic medication
in your clinical practice?
Yes/No
15. Do others in your department regularly prescribe
Yes/No
16. Would your non-medical colleagues support the
use of psychotropic drugs in children?
Yes/No
17. Does this influence your practice?
Yes/No
18. Would you like regular information/seminars
on psycho-pharmacology?
Yes/No
19. Do you feel as competent as you would like with
regard to using medication?
Yes/No
20. Would you use medication more readily if better
informed of its use?
Yes/No
21. Do you know of any **black box** warnings for any psychotropic medications? (List)
-
22. Have the black box warnings reduced your use of that medication?
Yes/No

23. Who should usually initiate a prescription and monitor such psychotropic medication
- (i) Child Psychiatrist
 - (ii) Paediatrician
 - (iii) G.P.

24. In which of the following conditions do you think psychotropic medication use is justified?

Disorder	Mild	Moderate	Severe
Psychoses			
Major Depressive Disorder			
ADHD			
Emotional			
Conduct			
Enuresis			
Obsessive Compulsive			
Eating Disorders			
Tics/Tourettes			
Autism			
Sleep Problems			
Learning Disability			
Attachment Difficulties			
Substance Misuse			
Other:			

Thank you for your co-operation.

Professor Fiona McNicholas
Consultant Child Psychiatrist

Dr Nneka Orakwue
Registrar in Child Psychiatry