Knowledge, attitudes and practices of general practitioners in the Free State regarding the management of children with Attention Deficit Hyperactivity Disorder (ADHD)

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Abstract

Background: The aim of this study was to determine the knowledge, attitudes and practice of general practitioners (GP's) in the Free State regarding the management of children with Attention Deficit/Hyperactivity Disorder (ADHD).

Methods: Four hundred and nineteen GP's were identified in the Free State. Each GP was sent a survey questionnaire with a letter explaining the objectives and aims of the research. The questionnaire explored four themes: demographic data; attitudes to caring for children with ADHD; management of these children and knowledge and practice regarding the use of stimulants.

Rresults: Three hundred and eighty four GP's were eligible to complete the questionnaire, of which 147 (38.2%) were returned, and 143 were available for analysis. About 50% of the respondents manage children with ADHD in their practice. A quarter of the doctors enjoy treating these children, half do not mind and a quarter dislike it, and try to avoid seeing these children. Obstacles that were identified include the fact that they are time consuming, disrupt schedules, parents are difficult and reimbursement poor. There were few 'alternative' beliefs regarding the aetiology and management of ADHD, although there were some unexpected replies regarding treatment modalities.

Conclusions: Although the doctors know what interventions are important and to whom these children should be referred, in the majority of cases referrals appear to be restricted to those professionals available in the local community. Methylphenidate was the most commonly prescribed stimulant. General practitioners had a good idea of its effects and contra- indications, and some idea of its pharmacological action. There was not adequate knowledge regarding the significant side effects of oral administration of methylphenidate.

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INTRODUCTION

Attention deficit/hyperactivity disorders (ADHD) are recognised as the most common neuro-behavioural disorders of childhood, affecting children from infancy into adult life. Despite the fact that 3-5% of children has attention deficit disorders, the diagnosis and management remain controversial.[1,2]

There has been some concern about general practitioners initiating the prescription of stimulants in the treatment of ADHD, as it was argued that prescribers also should be able to address psychological, educational and family issues if necessary.[3,4] Even though there has been concern regarding the lack of "ownership" of the diagnosis of ADHD by the medical profession[5] it is perceived that there is a lack of knowledge regarding these conditions among medical doctors. The absence of definitive tests to diagnose these

conditions further serves to complicate matters.

Although recent studies have identified both dysfunction of cerebral executive functions as well as a high inheritability,[6,7] the aetiology of these conditions are still shrouded in mystery in the popular press, and alternative explanations abound. Two modalities have been identified as important in the treatment of ADHD: behaviour modification[8] and stimulant medication. Many studies have shown positive effects with stimulants for the majority of children with ADHD.[9,10] Side effects are usually not a concern if the medication is adequately monitored, and concerns about addiction have not been justified.[11] In fact recent studies have shown a superior effect of stimulant medication when compared to behavioural management alone or community management of ADHD.[12]

No research has been published regarding the management of ADHD by GP's except for a small study of 10 family practitioners.[13] They found that in most cases, stimulants, especially methylphenidate, were the treatment of choice. Because the Free State Province is a relatively under-populated province with vast distances between towns and a big rural community, referral of children suspected to have ADHD to academic centres for evaluation is often difficult because of distance or long waiting periods. For this reason GP's are often contacted first and are expected to make the diagnosis and initiate management.

The purpose of the present study was to determine current knowledge, practices and attitudes of general practitioners in the Free State with respect to diagnosis and management of paediatric patients with ADHD. The aim of the survey was to assess the GP's understanding of the aetiology of ADHD and the implications of the diagnosis, as well as the current practices in the management of these children, especially their knowledge regarding medication.

METHODOLOGY

With the assistance of two pharmaceutical companies' mailing lists of general practitioners (whom had no involvement or interest in this study whatsoever), and by comprehensively scrutinising all the telephone directories of the Free State Province, a comprehensive list of all the general practitioners in the province was compiled. An attempt was made to utilise the register of the Health Professions Council of South Africa, but the list was not up to date. All the practitioners were sent a survey questionnaire with a letter explaining the aims and objectives of the study, together with a self addressed envelope. In order to improve the response rate, the survey questionnaire was sent to all GP's twice. Responses were anonymous and could not be traced to the respondents.

The survey questionnaire, in English only, was developed specifically for this study based on a questionnaire developed by Kwasman et al.[1] for a similar survey of paediatricians. The questionnaire consisted of four major sections: section A, demographic data; Section B, attitudes towards caring for children with ADHD; Section C, management of children with ADHD and section D, knowledge about the use of stimulants. Items were added to the original questionnaire developed by Kwasman et al.[1] after a review of the relevant research, particularly regarding the use of stimulants. For most statements respondents were expected to mark the correct statements only, but for some items they had to mark an option that most accurately reflected their opinion, such as 'agree', 'neutral' and 'disagree'. Items were also included that reflected 'alternative' points of view regarding aetiology and management, to assess to what degree GP's considered these in their practice.

Only practitioners that were in active practice at the time of the survey were requested to complete the questionnaire. All the respondents were requested to complete section A, while only those who managed children with ADHD had to complete sections B, C and D as well.

All results were summarised by frequencies and percentages.

RESULTS

Questionnaires were mailed to 419 GP's that had been identified. Of these 22 were returned as "address unknown', two had passed away, 11 were not practising any more and one was a dentist. Of the remaining 384 there was a response rate of 38.2%(n=147). Four of the respondents did not complete the questionnaire, two because they did not know what ADHD was, and two refused to complete a form that was available in English only. Therefore only 143 questionnaires were available for analysis. As many respondents did not answer every question, totals may not always add up to 143.

As far as the demographic data was concerned, 78.4% (n=109) of the GP'S were male and 21.6% (n=30) were female. The majority was between 30-39 and 40-49 years old (56.8% and 23% respectively). Sixty-six percent were in private practice only, while 21.6% had a mixed (public and private) practice. About half (74, 51.7%) indicated that they do manage children with ADHD. The number of patients treated annually and their age groups varied enormously between practices, making it difficult to summarise. The results of the various items will be given in the same order as they appeared in the questionnaire.

As far as the attitudes of GP's regarding the management of children with ADHD in their practice were concerned, half the respondents were neutral regarding seeing these patients, 25% enjoyed and 25% disliked having these patients in their practice. The majority did not avoid these patients nor found them taxing (62.5% and 51.4% respectively.) Problem areas that were identified were the co-ordination of interventions and liaising with schools. Nearly 45% also indicated that they found the parents of these children difficult. Most of the other items had a near equal distribution between the three options.

The respondents indicated that the management of children with ADHD could be improved through improved teacher education (90.3%), improved parental education (95.8%), improved interdisciplinary contact (92.2%) and improved education of medical professionals (88.6%). Only 43.5% were of the opinion that improved remuneration of GP's would improve care, while 23.2% did not agree with this statement. They found schools generally to be co-

Table I: Referral of children with ADHD				
Alphabetical	**Always**	**Often**	**Seldom**	**Never**
Dietician	- -	12 (18.8%)	23 (35.9%)	29 (45.3%)
Educational therapist	13 (19.4%)	39 (58.2%)	8 (11.9%)	7 (10.4%)
Homeopath	- -	- -	- -	65 (100%)
Neurologist	33 (47.8%)	22 (31.9%)	11 (15.9%)	3 (4.3%)
Occupational therapist	28 (40.6%)	33 (47.8%)	3 (4.3%)	5 (7.2%)
Paediatrician	19 (27.5%)	25 (36.2%)	17 (24.6%)	8 (11.6%)
Psychologist	9 (13.0%)	19 (27.5%)	27 (39.1%)	14 (20.3%)
Physiotherapist	1 (1.5%)	14 (21.5%)	30 (46.2%)	20 (30.8%)
Social worker	1 (1.5%)	4 (6.1%)	32 (48.5%)	29 (43.9%)
Speech therapist	4 (6.1%)	19 (28.8%)	29 (43.9%)	14 (21.2%)
Support group	7 (10.1%)	17 (24.6%)	24 (34.8%)	21 (30.4%)

operative in making the diagnoses (75.4%) and offering remedial teaching (64.4%), but less so regarding giving medication (58.9%), giving feedback (53.4%) and supervising behaviour modification programs (45.8%).

As the management of children with ADHD is considered a multi-disciplinary task, a section specifically dealt with the referral practices of patients (Table I). The majority 'always' or 'often' refers patients to neurologists, paediatricians and occupational therapists, while the services of dieticians, physiotherapists and social workers were seldom sought. None of the respondents indicated that they refer children to homeopaths. Only a third considered referring the family to a support group. About 80% of respondents 'often' (41.7%) or 'always' (41.7%) obtained information from the schools as part of their assessment. About 70% indicated that they would refer children suspected of ADHD either for an educational or a psychological evaluation before commencing therapy.

In order to assess the belief systems regarding the management of ADHD, specific interventions were listed and respondents had to indicate to what extent they agreed that the listed interventions were relevant. In this section their answers did not correlate with the answers given in Table I, as behaviour modification, family therapy, remedial teaching and also occupational therapy were indicated by more than 80% of the respondents. Social skills training were also considered to be important by 76.4% of the GP's. Thirty-one percent considered EEG Biofeedback important, and 35.2% highlighted the treatment of inner-ear problems.

The practitioners were asked to indicate how often they would consider using various medications. Methylphenidate is used 'always' or 'often' by 74.3% of respondents. Less than half would consider tricyclic anti-depressants (44.3%), and most other options were seldom used. Medication was most often prescribed for schooldays only (24.7%) or every day (22.0%), in contrast with 'as needed' (7.1%).

The factors considered to play an important role in the aetiology of ADHD are listed in Table II from the highest to the lowest frequency. Environmental considerations included 'a chaotic home', 'poor parenting' and 'genetic influences', although many also considered 'cerebral transmitter imbalance' and 'chemical imbalance' to be important as well. Few respondents supported controversial or alternative explanations of ADHD.

The final items of the questionnaire dealt with knowledge and perceptions of methylphenidate. The first item dealt with perceptions regarding the pharmacological effects of methylphenidate (Table III). The most common answer was that it acted as a general stimulant (53.5%), although other similar concepts were also marked by more than 30% of the respondents such as 'restores neurotransmitter imbalance', 'stimu-

Table II: Factors considered important in the aetiology of ADHD (n=70)		
	N	**%**
Chaotic home situation	45	64.3
Poor parenting	45	64.3
Cerebral transmitter imbalance	43	61.4
Genetic influences	43	61.4
Chemical imbalance	40	57.1
Educational pressure	31	44.3
Middle ear problems	30	42.9
Abnormal arousal modulation	25	35.7
Malfunction of the REC*	25	35.7
Poor diet	25	35.7
Over stimulation	19	27.1
Malfunction of anterior cerebral lobe	13	18.6
Fungal overgrowth	4	5.7
Malalignment of the skull	2	2.9
** REC = Reticular activation centre*		

Table III: The perceived pharmacological action of methylphendate (n=71)		
	N	%
Acts as a general stimulant	38	53.5
Not known	25	35.2
Restores neurotransmitter imbalance	25	35.2
Stimulates the REC	22	31.0
Increases levels of Dopamine	18	25.4
Paradoxical effect in ADHD	17	23.9
Corrects inner ear dysfunction	11	15.5
Stimulation of anterior lobes	11	15.5
Increases glucose uptake in brain	10	14.1
Increases levels of Noradrenaline	9	12.7

lates the reticular activation centre' and 'increases levels of dopamine'. Thirty-five percent thought the pharmacological action was not known, and 23.9% that it had a paradoxical effect.

The expected benefits of methylphenidate therapy (Table IV) included in the majority of cases, 'less hyperactive', 'improved attention', 'decreased aggressive behaviour', 'reduction in impulsivity' and 'completing school tasks'. Once medication has been prescribed the majority of respondent indicated that patients are followed up monthly (31%) to three-monthly (47.9%). Thirty-one percent indicated that they did 'blood tests' yearly, 50% less than yearly and 17.1% never.

More than 80% considered psychosis and uncontrolled epilepsy contra-indications. Opinions as to whether 'emotional disturbance', 'Tourette syndrome' and 'pure learning disorders' are contra-indications for the use of methylphenidate were nearly equally split between those who considered it to be and those who did not. Generally the majority did not consider the use in adolescents (87.3%), adults (80.3%) and pre-school children (69%) contra-indicated.

The last section explored the perceived side effects of methylphenidate. Twenty-two items were listed. None of the respondents were under the impression that there were no side effects, although 11.3% indicated that they were not sure what the side effects may be. Cardiotoxicity was considered a significant side effect by 98.6% of respondents. The division was about 50/50 for the significance of side effects such as anorexia, conjunctivitis, convulsions, depression, growth stunting and insomnia. More than 60% did not consider the following to be significant side effects: drug abuse, headaches, irritability, weight loss, skin rashes, tics and abdominal discomfort. Side effects such as carcinogenicity, dysphoria, hepatotoxicity, rebound effects, sudden death and suppressed creativity were considered to be significant side effects by 25% of the respondents and less.

DISCUSSION

A limitation of this study is the relatively low response rate. Despite the fact that the questionnaires were sent out twice the response rate was only 38.2%. This compares favourably with the return rate of 38% in a similar study targeting paediatricians.[1] About 50% of the respondents indicated that they treat children with ADHD, but this figure would probably have been lower with a higher response rate, as the majority of GP's who manage children with ADHD may have been more likely to return their questionnaires. The specific responses as measured in this study may thus not accurately reflect the knowledge, attitudes and practices of the GP's in the Free State. Never the less, data of this nature is always difficult to obtain, and certain trends are at least obvious.

Table IV: Expected benefits of methylphendate therapy (n=71)		
	n	%
Less hyperactive	63	88.7
Attention improves	61	85.9
Decreased aggressive behaviour	50	70.4
Reduction in impulsivity	48	67.6
Complete school tasks	47	66.2
Decreases noisy behaviour	42	59.2
Improves short term memory	37	52.1
Improves reading	36	50.7
Improves long term memory	34	47.9
Improves handwriting	32	45.1
Improves language abilities	30	42.3
Children are more alert	38	39.4
Improves mathematical skills	26	36.6
Improves auditory processing	25	35.2
Less "silly' mistakes at school	24	33.8
Lasting effect in adulthood	8	11.3
Cures ADHD	4	5.6

Although about half of the respondents were neutral about managing children with ADHD in their practices, the rest were equally divided between those who enjoyed seeing them in their practices and those who disliked it (about 25% each). A similar number of GP's (25%) indicated that they try to avoid managing such patients. Problems encountered when seeing these patients were that they disrupt schedules, are time consuming, parents are taxing and doctors are relatively poorly reimbursed (compared to the time spent). Difficulty co-ordinating interventions and liaising with schools also emerged as problematic, probably because of the time constraints in private practice. Yet, less than half (43.5%) felt that improved remuneration would result in improved care of these children. Responses regarding ways of improving the management of these children, highlighted improved teacher and parent education, as well as improved inter-disciplinary contact, although improved education of medical professionals was also considered important in 88.6% of respondents.

The referral pattern of children with ADHD was to be expected. The majority referred to neurologists, paediatricians and occupational therapists (OT). One would imagine that the first two would be for diagnosis and medical management and the latter for therapy. In many instances the local OT may be the only other professional member of an interdisciplinary team present that could be of some assistance. Many children with ADHD present with language difficulties and speech impediments, yet very few GP's indicated that they refer to speech therapists. This may be an indication of the paucity of speech therapists outside bigger centres. About 70% of respondents indicated in another question that they would refer these children either for an educational or psychological evaluation before making diagnosis or commencing therapy. This would be acceptable practice. The low referral rate to physiotherapists, dieticians and homeopaths probably reflect the practitioners' perception of the aetiology and management of this condition. Support groups have become important role players in helping parents to cope. The low referral rate (30%) to these organisations again may reflect their absence in more rural areas.

The rural GP has to utilise whatever resources are available in their community. Even though interventions such as behaviour modification, family therapy and remedial teaching were considered important interventions for children with ADHD, referral patterns of the GP's did not reflect this. It can only be deducted that although these doctors are aware of the types of interventions that are optimal for their patients, they have a limited number of professionals they can consult in their management. The unexpected response that EEG biofeedback and treatment of inner-ear problems (43.7% and 35.2%) are important modalities of treatment was puzzling. It could be argued that many doctors focussed on the 'EEG' of the biofeedback. Generally, biofeedback is not a well-known treatment modality in South Africa, nor is it commonly used for ADHD. Its use has been controversial in other countries due to the lack of scientific evidence of its benefit for these children. EEG's on the other hand are regularly done in these children as part of a diagnostic work up. The rationale for this is not clear, as ADHD is not an EEG-based diagnosis. Similarly it is not certain if GP's meant that the treatment of 'inner-ear' disorders would really benefit children with ADHD. This item was included regarding treatment modalities, as it is one of the 'alternative' explanations given for the aetiology of ADHD. Many children with ADHD suffer from allergies and consequently have many middle ear infections that require treatment. It is not sure if the GP's had this in mind when they selected this treatment modality.

Regarding etiological factors, there were very few 'alternative' views. On the one hand parenting and home factors were considered important, as were genetic inheritance, but neuronal transmitter and cerebral chemical 'imbalances' were also considered to be important. It is therefore not unexpected that methylphenidate emerged as the medication most likely to be prescribed, and tricyclic antidepressants the second most common. There were an equal number that prescribed stimulants on school days only or through the week. This issue is controversial and both schedules are still in use.

In the section of the pharmacological action of methylphenidate, opinions were diverse. Nearly 24% still maintained that methylphenidate has a paradoxical effect, which is scientifically not correct. Nearly a third indicated that its action is not yet known. The perceived benefits of methylphenidate were correct in the vast majority of cases, and there were no 'strange' beliefs recorded here. Even if the practitioners did not fully understand the pharmacological action of the medication, they had a good idea what effects to expect clinically. Patients with ADHD were not over serviced, and were followed up monthly or less.

The majority of GP's knew the absolute contra-indications for the prescription of methylphenidate such as psychoses and uncontrolled epilepsy. It is not surprising that in those conditions where the use of stimulants is less clear cut and controversial (eg. Tourette syndrome, emotional disturbance, mental retardation) that there were a near even split in the opinions. Two-thirds of the respondents were not of the opinion that methylphenidate could be used in children with developmental disorders, although it would appear lately that they might also benefit from medical intervention. All the practitioners were aware that methylphenidate has side effects. Although cardio toxicity was indicated by 98.6% of the respondents to be an important side effect, it is probably important only when alternative routes (other than oral) for methylphenidate is used (such as sniffing or intravenous injection). The same also applies to 'sudden death'. Headaches, irritability, dysphoria, anorexia, tics and abdominal discomfort are more common or important side effects when methylphenidate is given orally, yet not many doctors considered them significant. This knowledge is important when patients and their parents are counselled regarding the possible side effects when they embark on a trial of medication. GP's should also be able to address issues that may be of concern to parents such as drug abuse and growth stunting.

In summary it would appear that a significant number of general practitioners in the Free State Province manage children with ADHD, and the majority do not seem to mind. A revision of the reimbursement to manage these children may facilitate or encourage more practitioners to treat them. Their management is generally in line with acceptable protocols, but they may be hampered by the range of professionals that are available locally that could help them treat these children adequately. Their referral patterns are determined by the availability of professionals rather than the ideal, as they see it. They do make an effort to contact schools and obtain educational psychometric data, which is advisable. As expected, methylphenidate is the most common prescribed medication, and these respondents have some idea of its action. They understand the contra-indications and the effects, but were not up to date regarding the significant side effects. There were very few indications of 'alternative' beliefs regarding the aetiology and management of ADHD, except for some items regarding interventions, where some items may have been misinterpreted.

In a province that is medically underserviced, it will be expected of general practitioners to treat and manage children with ADHD, yet, an evaluation and initiation of medical therapy by a specialist would be the ideal. If our graduandi are going to be expected to manage these children, new developments in the curricula of the medical schools should assure that they are adequately equipped for the task.❐

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