General practitioners' familiarity, attitudes and practices with regard to Attention Deficit Hyperactivity Disorder (ADHD) in children and adults

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Abstract

Background: Attention-Deficit Hyperactivity Disorder (ADHD) is a common disorder, affecting 4% to 5% of South African children. Recent studies reveal that 30% to 70% of children continue to experience problems related to ADHD in adulthood. Adults are becoming increasingly aware of adult ADHD as a result of public awareness campaigns in the media. Their first line of action is to visit their family physician (GP), but the question that arises is whether these practitioners are ready to take on patients with ADHD. The aims of this study were to determine the familiarity, attitudes and practices of general practitioners (GPs) in South Africa with regard to ADHD in both children and adults, and whether there are differences in children and adults with regard to depression and generalised anxiety disorders as comorbid disorders. The study also briefly explored the training models of GPs in South Africa.

Methods: The research questions were addressed by means of a survey approach, using quantitative measures. An e-mail message with a covering letter, explaining the purpose of the research project, provided a link to a web-based questionnaire. It was relayed to 6 704 GPs on the database of the company MEDpages, which managed the distribution. A questionnaire attached to an e-mail message was sent to all departments of Family Health at universities in the country to obtain information with regard to the training models of GPs. The questionnaire was completed by 229 respondents. The data were statistically analysed using Statistica Version 7.0.

Results: The most significant outcome of the study revealed a considerable need among GPs to increase their knowledge base with regard to ADHD (87% with regard to children and 89% with regard to adults). As they were of the opinion that they should be able to diagnose and manage ADHD in both children (90%) and adults (85%) a significant need for a screening tool (83%) was also found. The GPs' knowledge and training with regard to depression and generalised anxiety disorders were significantly more extensive with regard to adults than to children. Training with regard to ADHD in adults was almost non-existent. With regard to children the most important barriers were uninformed parents (70%), limited funds (61%), uninformed teachers (58%), and with regard to adults these barriers were uninformed patients (64%), lack of knowledge on ADHD in adults on the part of the GPs (63%), and consultation time (58%). Although GPs did seem to have an awareness of the important role of the psychologist in the diagnosis and effective management of patients with ADHD, their referral practices generally involved a limited interdisciplinary approach.

Conclusion: It is recommended that the limited knowledge base of GPs with regard to ADHD should be addressed by adapting the curriculum of undergraduate medical students and providing opportunities for continued medical education that focuses on the diagnosis and management of ADHD, in both children and adults. GPs should acknowledge the educational psychologist as an equal partner within a multidisciplinary team.

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Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common psychiatric disorders that cause distress in the lives of both children and adults, as well as the lives of all other role players involved with these children and adults. It is estimated that approximately 3% to 5% of American children experience ADHD.[1,2] This is consistent with studies done in South Africa, which indicate that between 4% and 5% of children present with ADHD.[3,4] In the past, ADHD was considered to be a condition that presents itself only during childhood. However, recent studies suggest that between 30% and 70% of children with ADHD continue to experience problems in adulthood.[5,6,7] According to Mash and Wolfe, ADHD, which is a heritable disorder, is associated with three core features, namely inattention (which includes distractibility), hyperactivity and impulsiveness.[8] Individuals who display these symptoms struggle to control their behaviour, resulting in unwanted and often unacceptable behaviour patterns. During adulthood these symptoms can disappear or manifest differently.[5]

Considerable attention is devoted to this disorder in medical literature, books and the lay media. Because the disorder is so well known, Searight et al. argue that adults in distress, either about themselves or their children, and who learn about this disorder in the media, often turn to their family physician for help.[9] This is confirmed by Steinhausen, who reports that when people are made more aware of the disorder through the "wide popularisation of the concept of ADHD" their first line of action is to visit their family physician.[10] This line of action is explicitly encouraged in an article in the Harvard Women's Health Watch: "A good

place to start is your primary care doctor".[11] According to Bushnell et al, the family physician is geographically and financially the most accessible health care provider.[12]

In addition to the increased awareness of ADHD created by the media, parents and adult patients generally establish a relationship of confidentiality and trust with their general practitioners (GPs) over years and they may hence feel more confident about discussing their feelings and problems with them. In their assessment, it is important that the GPs differentiate between psychiatric conditions, bearing in mind that some psychiatric disorders accompany ADHD – major depression, generalised anxiety disorders (GAD) and substance abuse, in particular. This inevitably demands a thorough knowledge of disorders and other conditions (in both adults and children) that mimic ADHD when the practitioner has to make a differential diagnosis. Only then can he or she decide on the most effective management of the problem. An overlap of characteristics with other psychopathological conditions often leads to underdiagnosis, neglect or non-treatment. However, it is important that the correct diagnosis be made, because it aids the individual in understanding the disorder, which is a significant step in its effective management. Misdiagnosis or non-diagnosis can have devastating results for the individual.[13]

This study aims to contribute to a better understanding of the current role of the GP in South Africa (with regard to children and adults with ADHD) as a member of a multidisciplinary team, and also to highlight possible limitations that need to be addressed.[14] The objectives of this study were to investigate how familiar GPs in South Africa are with respect to ADHD in both children and adults, and what their attitudes and current practices are; to explore whether there are any differences between children and adults in the GPs' familiarity, attitudes and practices with regard to ADHD, depression and GAD; and to investigate the training of GPs with regard to ADHD, depression and GAD in children and adults.

Studies exploring GPs' knowledge of ADHD are limited, internationally as well as locally. Venter et al conducted a study amongst GPs in the Free State Province of South Africa.[15] Their survey aimed to determine the knowledge, attitudes and practices of GPs regarding the medical management of children with ADHD. The same questionnaire that they used was later used in a study amongst psychiatrists and paediatricians throughout South Africa. The aim of this study was to determine the knowledge, attitudes and current practices of psychiatrists and paediatricians, and then make comparisons between the two groups. It was found that the services of psychiatrists and paediatricians are not commonly available in South Africa, especially in the rural areas. This implies that the GP, who is more available in rural areas, is probably the first to be consulted by individuals who present with ADHD. In view of this the researchers recommended that the curricula of GPs be revisited in order to ensure that the GPs are adequately equipped to manage children with ADHD.[16] A national survey conducted by Adler in the USA in 2003, which focused only on adults, set out to determine how comfortable primary care physicians are in diagnosing ADHD in adults.[17] No studies could be located, nationally or internationally, that compared the GPs' familiarity, attitudes and practices with regard to ADHD in childhood to ADHD in adulthood.

* Permission only granted to use press release on Adler's study.

Method

Three survey methods were employed to collect data: (i) a web-based survey in the form of a self-administered questionnaire via an e-mail message, (ii) an e-mail message with an attached questionnaire, and (iii) a structured telephone interview. The survey was conducted to obtain quantitative data from GPs on a national level. The company MEDpages, that broadcast the survey, has a comprehensive database of GPs that is actively managed, expanded and maintained. At the time when this survey was conducted they had the e-mail addresses of 6 704 registered GPs nationally. McMillan and Schumacher view this kind of sampling as "convenience sampling" and caution that, although useful, it limits the generalisation of the results of the study.[18]

The web-based questionnaire was partially constructed from questionnaires of previous, more or less similar, studies, carried out both locally and internationally. The questionnaire was compiled by merging selected questions from a questionnaire developed by Venter et al (six items) and selected questions employed from a press release on a survey undertaken by researchers from the New York Medical Center and School of Medicine (seven items).[15,17] Permission was obtained from both parties. The current researchers added additional items. The questionnaire ultimately consisted of 22 items, excluding the section on demographic data. The participant had to respond to the same question twice, i.e. once with regard to children and once with regard to adults. Each item was phrased in a question format, with a maximum of four options to choose from. Although these options varied from question to question most of the responses had to be indicated on a Likert scale. With the exception of item 4, where more than one option could be marked, only one option could be selected. The majority of questions were closed-ended. The questionnaire commenced with a section on demographic data, requesting the number of years in practice, age, gender, location and nature of practice, university where the practitioner was trained and the number of patients treated for ADHD (adults and children). The survey differentiated between the variables of familiarity (items 1 to 9), attitudes (items 10 to 17) and practices (items 18 to 22). These variables were not identified on the questionnaire. With regard to knowledge (item 1), confidence (item 2), training (item 3) and referral (item 19), a distinction was made between ADHD, and depression and GAD, as the latter two conditions are common comorbid disorders of ADHD in both children and adults.[6,17] This distinction was made to obtain differentiated responses with regard to the familiarity and comfort with which the practitioner diagnoses and manages these conditions, and is derived from the study conducted by Adler.[17]

A pilot study, which involved sending the questionnaire to two GPs for comment, was carried out. The questionnaire was then modified to accommodate their suggestions. A covering letter introducing the survey was then sent by MEDpages, in an e-mail message, to each GP on their database, in either Afrikaans or English, depending on the preferred language of communication as listed on their database. The covering letter explained the purposes of the project, addressed ethical issues, provided a link to the website as well as a username and password, and also provided an e-mail link to the researchers. The participant could indicate his/her responses to questions in the questionnaire by clicking the check boxes and could alter his/her responses if necessary. A second broadcast was done approximately three weeks after the first to enhance the response rate, using the same database. The results of this study confirmed the suggestion made by Kittleson, namely that one

follow-up broadcast could double the response rate.[20] The data was transferred to a server where it was stored in Excel format without the respondent's e-mail details, hence complying with ethical issues such as anonymity, privacy and confidentiality.[21] The only disclosure of e-mail addresses could occur when individual recipients chose to correspond with the researcher via e-mail.

A short questionnaire with closed-ended questions was sent as an e-mail attachment to all the departments of Family Health Sciences at universities in South Africa to obtain information on the training of GPs in psychopathology, specifically ADHD. They were requested to return their completed questionnaires to the researchers as an e-mail attachment. A structured telephone interview was held with those who did not respond. This questionnaire was designed to obtain information on the training of GPs at an undergraduate level with regard to ADHD, depression and GAD, distinguishing between children and adults. Apart from this distinction, the numbers of hours spent on lectures, self-study, practical work and any other activities (e.g. assignments) were recorded as far as possible. The year level within which these activities generally take place was also recorded when such information was available.

The statistical analysis was performed using the Statistica Version 7.1 software. Percentages were calculated for each question with regard to children as well as with regard to adults. Comparisons were drawn between children and adults. The McNemar test was used for two-level responses, e.g. yes/no responses, to test for equal proportions between adults and children. For responses on more than two levels the Stewart-Maxwell test was used. A 5% significance level was used as guideline for determining significant differences.

Results

The questionnaire was completed by 229 GPs. Approximately the same number of recipients replied by e-mail messages that they would not be participating in the research project for one or more of the following reasons: they were not registered GPs, they practised abroad, they were not in practice, they did not see patients with ADHD, they did not have the time/were not interested, they were unable to access the website/questionnaire, they did not have the password or username. The number of respondents almost doubled with the second broadcast, to yield the total number of 229 respondents. The participants did not always respond to all the questions, resulting in varying n-values.

With regard to the demographic details the majority of the respondents were between the ages of 30 and 50 (65%; n = 150), while 68% (n = 155) were males and 32% (n = 74) were females. Most of the respondents (22%; n = 50) had been in practice for between 10 and 15 years and 75% (n = 169) were mainly functioning in private practices. Twenty-five per cent reported that they were in mixed, academic, hospital-based and part-time private practices. Sixty-four per cent (n = 145) of the respondents practised in cities, while 36% (n = 83) practised in rural areas.

GPs in city areas see more children with ADHD (an average of 50 children per annum) than their colleagues practising in the rural areas (an average of 18 children per annum). They see an average of 12 adults in city areas and 4 adults in the rural areas. As Venter et al also found, the reported numbers of patients seen per annum in the present study varied significantly between practices.[15]

With regard to their *familiarity* with ADHD, the majority of GPs who participated in this study reported an *average* (57%) to *good* (21%) knowledge of ADHD in children. Their reported knowledge base of ADHD, depression and GAD in children was more or less the same for the three conditions. However, the same could not be said with regard to ADHD in adults. In their opinion, GPs knew significantly ($p < 0.01$) more about depression (72%) and GAD (60%) in adults than about ADHD (10%) in adults. It was also clear that GPs were significantly ($p < 0.01$) *more knowledgeable* about ADHD in children (20%) than in adults (9%). The reverse was however true for depression and GAD. More than half felt *very knowledgeable* regarding depression (64%) and GAD (54%) in adults as opposed to depression (17%) and GAD (14%) in children. The same tendencies as reflected in the responses with regard to knowledge about ADHD, depression and GAD were identified in the responses regarding the GPs confidence levels pertaining to diagnosing ADHD in both children and adults. This coincides with the GPs report in which only 7% felt that they were adequately trained in ADHD in children and a mere 1% with regard to adults. Their training seems to equip them significantly better regarding depression and GAD in adults (see Table I).

Table I: Training with regard to ADHD, depression and GAD (C = Children; A = Adults)

		Adequate		Average		None	
		n	%	n	%	n	%
ADHD	**C**	**14**	**7**	**90**	**40**	**120**	**54**
	A	*3*	*1*	*48*	*22*	*164*	*76*
Depression	**C**	**23**	**10**	**102**	**46**	**97**	**44**
	A	*95*	*43*	*108*	*49*	*16*	*7*
GAD	**C**	**13**	**6**	**95**	**43**	**114**	**51**
	A	*67*	*31*	*123*	*56*	*29*	*13*

GPs reported that they expand their knowledge on ADHD, depression and GAD with regard to both children (73%, 70% and 65% respectively) and adults (63%, 74% and 71% respectively) predominantly by means of self study, and secondly by attending lectures and consulting with others. They were less likely to attend workshops. The majority of GPs indicated that they have a need to know more about ADHD in both children (81%) and adults (89%). This need probably coincides with the significant need for a screening tool to diagnose ADHD in both children and adults (83% and 84%, respectively).

Concerning the *attitudes* towards ADHD, the majority of the GPs enjoyed treating children with ADHD (37%) but found treating adults with ADHD (18%) significantly ($p < 0.01$) less enjoyable, although they did indicate that they do not mind treating adults (64%). More than 85% of the GPs indicated that they consider it important to be able to diagnose ADHD in both children and adults. In contrast to their overwhelming response to their ability to diagnose ADHD, GPs seemed to be more cautious about the initiation of medical treatment after a diagnosis is made. More than 50% indicated that they should initiate medical treatment of children (59%) and adults (54%). Those GPs who indicated that they should not initiate medical treatment (both children and adults 32%) would prefer a psychiatrist (36%) or a paediatrician (36%) to initiate medical treatment of children and a psychiatrist to do this for adults (68%). Approximately half of the GPs would consider medication as the most effective treatment option for children (54%) and significantly ($p < 0.01$) less so for adults (35%). Almost two-thirds (63%) of the respondents indicated that educational opportunities regarding children with ADHD are insufficient, and significantly ($p < 0.01$) more so (78%) with regard to

Figure 1: Barriers to effective management of ADHD (children)

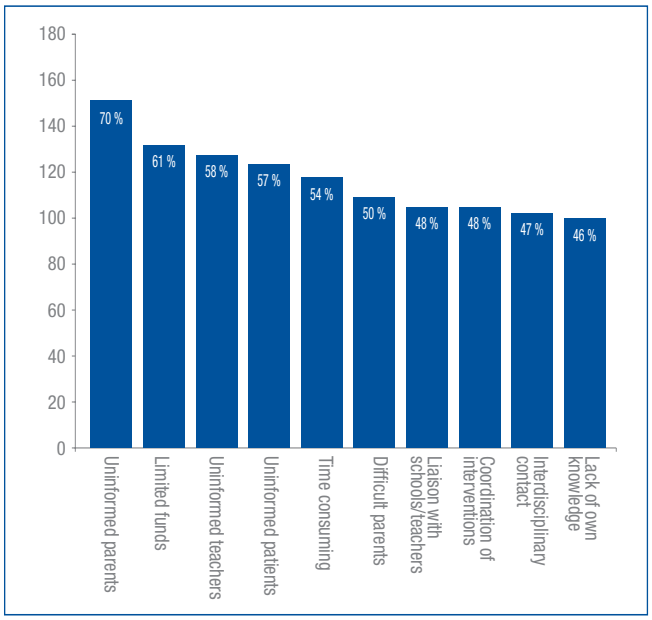
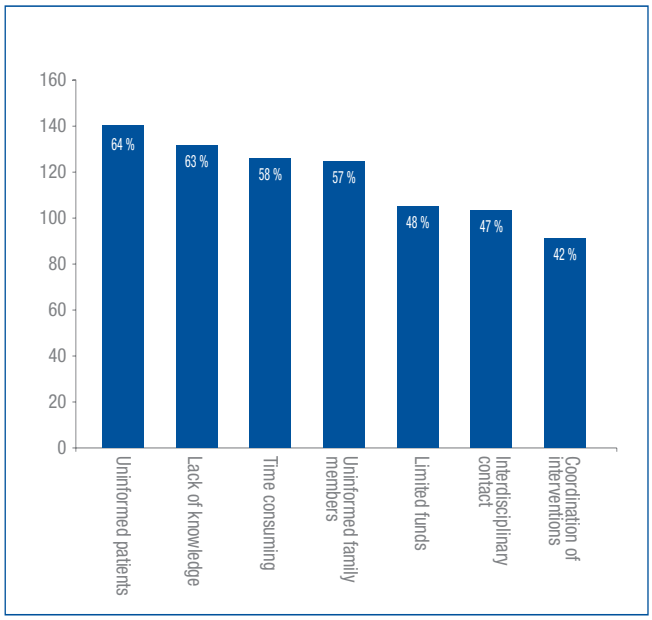


Figure 2: Barriers to effective management of ADHD (adults)



adults with ADHD. The GPs considered the main barriers in the effective management of children with ADHD to be uninformed parents (70%), limited funds (61%), uninformed teachers (58%), uninformed patients (57%) and difficult parents (50%). Uninformed patients (64%) and lack of own knowledge (63%) are the most challenging issues regarding treatment of adults (see Figures 1 and 2).

As far as the *practices* of the GPs were concerned, 74% of the respondents indicated that they *always/frequently* referred a child with suspected ADHD for a psycho-educational assessment before commencing treatment, which is advisable within a collaborative approach. However, this tendency was significantly ($p < 0.01$) lower in the case of adults (53%). Almost two-thirds of the GPs always/often referred children with ADHD to a psychologist, while significantly fewer referred adults to a psychologist (49%). While GPs are more inclined to refer adults to a psychiatrist (44%), 74% of the GPs *seldom/never* refer a child to a psychiatrist (see Table II for a comparison).

Table II: Comparison of referrals of patients by GPs to psychologists and psychiatrists

Professionals	Always/Often responses (%)					
	ADHD		Depression		GAD	
	Children	Adults	Children	Adults	Children	Adults
Psychologist	61	49	71	73	73	75
Psychiatrist	27	44	56	48	50	49

Since research findings show that 30% to 60% of children with ADHD present with speech and language impairments it is of particular interest to note that only 26% of the GPs in this study reported that they *always/often* refer children with ADHD to a speech therapist.[6] GPs are less inclined to refer both children and adults to dieticians (5% and 3%, respectively), homeopaths (1% each) and support groups (8% and 6%, respectively). As expected, parents are the main referral sources of children with ADHD to GPs (77%), whilst 60% of the GPs reported that

Table III: Referral of children/adults with ADHD to a GP (C = Children; A = Adults)

		Always		Often		Sometimes		Never	
		n	%	n	%	n	%	n	%
Self	C	27	13	82	38	39	18	65	31
	A	*31*	*15*	*76*	*36*	*47*	*22*	*55*	*26*
Psychologist	C	5	2	78	37	66	31	64	30
	A	*10*	*5*	*55*	*26*	*55*	*26*	*93*	*44*
Parents (Children) Family Members (Adults)	C	31	14	136	63	42	19	8	4
	A	*7*	*3*	*78*	*37*	*68*	*32*	*59*	*28*
Teacher	C	16	7	114	53	63	29	23	11
Occupational therapist	C	1	0	37	18	61	29	112	53
Physiotherapist	C	1	0	7	3	30	14	171	82
Speech therapist	C	2	1	13	6	43	21	151	72
Dietician	C	1	0	7	3	19	9	180	87
	A	*0*	*0*	*2*	*1*	*22*	*11*	*183*	*88*
Social worker	C	6	3	22	10	68	32	114	54
	A	*5*	*2*	*10*	*5*	*42*	*20*	*150*	*72*
Other	C	0	0	12	1	11	10	84	79
	A	*0*	*0*	*7*	*4*	*22*	*13*	*137*	*83*

teachers *always/often* refer children to them. The indication by 51% of the GPs that the child referred himself/herself *always/often* to the doctor is unexpected and cannot be explained (see Table III).

The results from the departments of Family Health and Psychiatry at the relevant universities in the country are given in Table IV. Data were obtained from five universities. The results obtained are summarised as in Table IV.

The results in Table IV highlight how limited the training of undergraduate medical students is with regard to ADHD, depression and anxiety disorders in children. In general, significantly more attention is dedicated

Table IV: Undergraduate training programmes in ADHD, depression and GAD (Note: Training offered varies between the third and final years) (C = Children; A = Adults)

UNIVERSITY	C A	CONDITION and NUMBER OF HOURS OF TRAINING (h)			REMARKS
		ADHD	Depression	GAD	
University A	C A	¾ Only mentioned	½ 5	½ 5	Exposure to patients during practical work Discussion groups
University B	C A	1 0	1 2	½ 1	Exposure to patients (children) in 2 weeks practical Exposure to patients (adults) in 8 weeks practical Self-study by own choice
University C	C A	1½ Only mentioned	1 4	1 4	Minimal training in psychiatry before 2003 Training currently research and seminar based, with much more focus on ADHD as well as core psychological problems Since 2003 trained in recognition and aetiology of symptoms, and management Apart from lectures on depression and GAD in adults, students have one extensive seminar as well as case presentations on these conditions in adults
University D	C A	6 weeks lectures + 1 tutorial + 1 case per week	6 weeks lectures + 1 tutorial + 1 case per week	6 weeks lectures + 1 tutorial + 1 case per week	Limited training in psychiatry before 1996; knowledge limited to self study In the past few years considerable attention given to ADHD and core knowledge about psychiatric conditions of both children and adults
University E	C A	2¾ 0	2¾ 15	1½ 15	Students are expected to carry out self study (± 6 hours for ADHD and depression and 1½ hours for GAD, in children) Students are engaged in practical work for 2 weeks, in which they see children and adolescents with a variety of psychiatric conditions, including ADHD, depression and GAD Students are also exposed to adult psychiatric conditions during their practical work

to training in depression and anxiety disorders in respect of adults. Very little attention, if any, is paid to adult ADHD. This confirms the reported need among GPs to be better equipped to diagnose and manage both children and adults with ADHD. However, it does seem as though there is an increasing awareness at two universities (these universities were not strongly represented in this study) of the need to train GPs in psychiatric conditions, with specific reference to ADHD. The majority of the GPs who participated in this study were trained at the universities where there seems to be limited awareness of this need.

Discussion

The limitations of this study need to be taken into consideration when interpreting the results. The response rate in this study was low, restricting the extrapolation of results. This study was performed on a convenience sample obtained by means of respondents who participated in the web-based survey. Only people who had access to a computer and were computer literate could participate. This could limit the generalisation of results as representative of GPs in South Africa. However, the survey yielded some significant values, which can be indicative of clear tendencies.

Although the GPs who participated in this study indicated that they generally enjoy treating patients with ADHD and that they should be able to diagnose ADHD, the main result emerging from the findings is that the GPs' reported knowledge was limited. They reported a strong need to know more about ADHD with regard to children, and to a much greater extent with regard to adults. This finding, which correlates with the findings of studies carried out abroad,[17] seems to be related to the respondents' limited undergraduate training in core psychiatric conditions, especially ADHD. There are important differences between the level of familiarity, attitudes and practices with regard to ADHD in children as opposed to adults at various levels. Apart from the finding that the respondents feel notably less knowledgeable about and confident of being able to diagnose adult ADHD, there is a great need for educational opportunities that offer training in and obtaining more insight into adult ADHD. Although they feel equally strongly about being able to diagnose both children and adults with ADHD, they are considerably more inclined to lean on a psychiatrist for the diagnosis and initiation of medical treatment in the case of adults than children.

The respondents' familiarity and practices with regard to depression and generalised anxiety disorders, as opposed to ADHD, revealed that they are significantly more knowledgeable about and confident of being able to diagnose and manage these conditions, especially in adults. It would be ideal if the same levels of confidence could be reached with regard to ADHD. This probably also reflects the greater emphasis placed on these conditions in their training and possibly the fact that they see a higher number of patients for depression and anxiety disorders. This was also reflected in the referral patterns; GPs are considerably less inclined to refer patients, especially adults, with depression and anxiety disorders to other professionals. However, one could question whether the results of this study concerning adult ADHD always reflected reality truthfully. Seeing that the respondents confessed to inadequate knowledge of adult ADHD, their ability to recognise the condition in their consulting rooms and reporting on it in the questionnaire is questionable. The possibility thus exists that a higher number of adults with ADHD consult their GPs, without being correctly diagnosed, and hence ADHD in adults might be significantly underdiagnosed.

Despite their reported need to gain more knowledge enabling them to diagnose and manage individuals with ADHD more effectively, GPs generally demonstrated a positive attitude towards treating patients with ADHD, particularly children. They did, however, identify barriers that compromise effective management. The identification of these barriers highlights the importance of not only increasing the GPs' knowledge, as well as that of parents, teachers, patients and family members, of ADHD, but also of enhancing the collaborative processes in order to

promote effective management of ADHD. This study revealed that there was limited interaction with other role players. While GPs valued the role of psychologists/educational psychologists and referred patients for a psychological/psycho-educational assessment (more so with regard to children), there was a low referral rate to support groups with regard to both children and adults. This again emphasises the need to promote a collaborative approach in the effective management of individuals with ADHD. Members of a collaborative team can inform one another with regard to issues such as the client's performance, progress, functional behaviour, medication, problematic issues, support required, etc, so enhancing effective management. The role of the psychologist and, in particular, the role of the educational psychologist needs further consideration. It is of particular interest that the majority (61%) of the GPs indicated that they frequently refer children with ADHD to a psychologist. This also emphasises the important role of particularly the educational psychologist in the collaborative intervention of children with ADHD. The educational psychologist is not only trained and thus equipped to deal with children with ADHD in order to enhance their functional behaviour, but they can also play a facilitating role in the collaboration process. For this reason one would prefer to see an even higher referral rate to psychologists/educational psychologists. The factors that play a role in enhancing a successful collaborative relationship between the psychologist/educational psychologist and the GP should be further investigated.

Conclusion

The results of this study clearly revealed the gap in the training of GPs to improve the effectiveness of the diagnosis and management of ADHD in children and especially in adults. The results of the survey that explored the training curricula of GPs at an undergraduate level revealed a slight increase in an awareness of the need to train GPs in respect of psychiatric conditions with specific reference to ADHD, but it still requires considerable attention. The acquisition of sound baseline knowledge of ADHD with regard to children and adults can lead to fruitful interventions.

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