



Students' perception of the perceived availability and diversion of methylphenidate in a South African tertiary academic institution



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Sources of support: The study was funded by the North-West University Masters' bursary.

Conflict of interest declaration: None.

Jessica Dreyer is the winner of the 2015 Boehringer Ingelheim Young Scientist award (Pharmaceutical Practice category)

Abstract

Aims: To determine where residence students from a South African tertiary institution get methylphenidate for both appropriate and non-medical use, where they think they could get it and how easy they think it is to acquire.

Design: A quantitative cross-sectional study that made use of a structured questionnaire.

Setting: A South African tertiary institution.

Participants: Residence students from ten randomly selected residences (N=328; response rate=13.7%).

Measurements: Self-reports of experience and perceptions relating to sources of methylphenidate.

Findings: The mean age of the participants was 20.1 years and 56.4% of the sample was female. Although all the appropriate users have obtained methylphenidate legally at least once, they have also obtained it illegally from their friends (30.8%) and family (7.7%). The most common source for non-medical users was their friends (77.3%). Non-medical users also acquired methylphenidate using fabricated prescriptions (10.7%) and by buying it from pharmacies without a prescription (14.3%). Users and non-users had similar perceptions of where they thought they could get methylphenidate, except that users were more likely to think they can get it from friends (67.1% vs. 46.7%).

Conclusions: The current study presents novel evidence for methylphenidate diversion by university students in South Africa. Considering the abuse potential of methylphenidate, the diversion should be further explored and programmes developed to improve the legal control of methylphenidate.

Keywords: methylphenidate, diversion, student, South Africa, perceived availability, questionnaire

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S Afr Pharm J 2016;83(2):55-59

Introduction

Despite strict control over methylphenidate, it seems to be readily available for non-medical use^[1-4]. Between 50% and 85% of students regard it as quite easy to obtain prescription stimulants such as methylphenidate^[5-6]. Methylphenidate diversion (defined as transference of methylphenidate from lawful control into unlawful hands)^[7] therefore seems to be commonplace. Diverting methylphenidate has several implications, such as patients

not benefitting from their therapy^[8] and requiring additional medical care due to complications from untreated ADHD^[9]. Diversion also has cost implications. Aldridge and co-workers^[9] estimated that private insurers annually lose USD (\$) 83 million to methylphenidate diversion in the United States of America alone. In addition, non-medical users may incur health risks in terms of side effects and potential drug interactions^[8].

Diversion research pertaining to methylphenidate is scarce in South Africa. This study provides one of the first insights into the

sources used to obtain methylphenidate by students from a South African tertiary academic institution.

Methods

This quantitative cross-sectional study gathered data using a structured questionnaire. Ethical approval for the study was obtained from the Health Research Ethics Committee of the North-West University (ethics number NWU-00146-14-A1).

Data were collected during May 2015. Ten residences (five sororities and five fraternities) from a tertiary academic institution were randomly selected to partake in the study. The researcher attended weekly residence meetings at each of the residences to explain the study and ask for voluntary participation, after which the questionnaires and informed consent forms were distributed. All together the ten residences accommodated approximately 2400 students; however, it is unknown how many of these students attended the residence meetings at the time of data collection. The response rate was estimated to be 13.7%. The students were not given any incentives for participation. Students could return the questionnaires and signed informed consent forms to sealed boxes left in the possession of the residence matron for four days.

The questionnaire

The questionnaire had 23 items that related to demographic characteristics, methylphenidate use behaviours and perceptions, and knowledge of methylphenidate. The questionnaire was originally adapted from the previously validated Behaviours, Expectancies, Attitudes and College Health Questionnaire^[4].

Data analysis

The data from the 328 participants were captured using Microsoft Excel® and analysed using IBM SPSS Statistics 22. Descriptive statistics included frequencies and percentages. The Pearson's chi-square test (χ^2) was performed to determine the association between categorical variables. Statistical significance was considered at a two-sided α level of 0.05 or less. Any missing values were excluded from the analysis.

Results

The 328 participants were between the ages of 18 and 26 (mean 20.1 years; SD 1.2 years). Females accounted for 56.4% of the population. Most of the participants were in their first year of study (47%). The rest were in second (25.3%), third (14.9%), fourth (6.7%) and fifth year (2.7%); and eight students did not specify their year of study. Of all the students, 25.5% studied under the faculty of economic and management sciences and 21.8% under the faculty of health sciences. The remaining students (52.6%) were from other faculties.

Of the 328 respondents, 84 (25.6%) had used methylphenidate at least once in their lifetime (one respondent did not specify whether or not they had used methylphenidate before). Twenty-four users were considered to be appropriate users (students who have a prescription for methylphenidate and have only used it as prescribed) and 55 students were non-medical users (those who have used it without a prescription or have misused prescribed methylphenidate). Due to nonresponse, five methylphenidate users could not be placed into one of these two categories. Of the non-medical users, 31 were non-prescription holders and 24 were medical misusers (i.e. these students either used their prescribed methylphenidate in excess or for non-medical reasons). The division of these groups is displayed in Figure 1. The 84 users had obtained methylphenidate from a pharmacy with a valid prescription (70%), friends (58.8%), family (16.7%), a pharmacy using a fabricated prescription (8.0%), a pharmacy without a prescription (8.0%) and from the internet (4.1%). Only two students gave additional sources: one admitted to obtaining methylphenidate from an acquaintance and the other from a Facebook advert. All of the appropriate users indicated obtaining their methylphenidate using a valid prescription at a pharmacy (100%); however, some of them also admitted to obtaining methylphenidate from their friends (30.8%) and family (7.7%). Among non-medical users, the most commonly reported source of methylphenidate was friends (77.3%), a pharmacy with a prescription (54.5%) and family (22.6%). A small proportion of the non-medical users also got methylphenidate from a pharmacy without a prescription (14.3%), with a fake prescription (10.7%) and from the internet (3.7%). The only two statistically significant differences between the manner in which appropriate and non-

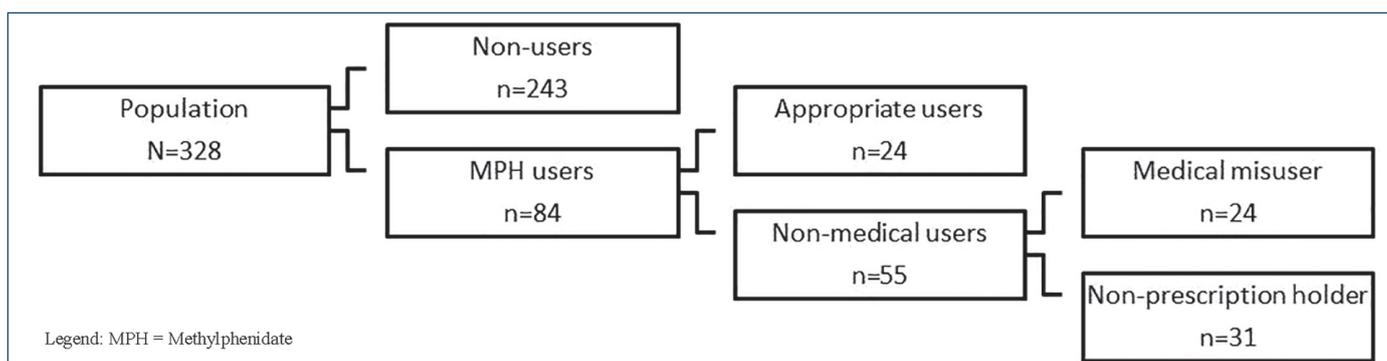


Figure 1: Subgroup distribution

Table 1: Perceived available sources for methylphenidate

Source	Population				p	Users				p	Non-medical users				
	Users		Non-users			Appropriate users		Non-medical users			Non-prescription holders		Appropriate misusers		
	N	n (%)	N	n (%)		N	n (%)	N	n (%)		N	n (%)	N	n (%)	
Pharmacy with a prescription	81	65 (80.2)	217	182 (83.9)	0.460	24	24 (100.0)	52	36 (69.2)	0.002	28	15 (53.6)	24	21 (87.5)	0.008
Pharmacy with a fabricated prescription	70	13 (18.6)	199	36 (18.1)	0.929	20	2 (10.0)	47	9 (19.1)	0.355	26	5 (19.2)	21	4 (19.0)	0.987
Pharmacy without a prescription	70	7 (10.0)	199	17 (8.5)	0.713	20	1 (5.0)	47	5 (10.6)	0.460	26	2 (7.7)	21	3 (14.3)	0.466
Friends	76	51 (67.1)	212	99 (46.7)	0.002	22	12 (54.5)	51	37 (72.5)	0.133	29	23 (79.3)	22	14 (63.6)	0.214
Family	71	29 (40.8)	205	57 (27.7)	0.041	20	6 (30.0)	48	22 (45.8)	0.227	26	11 (42.3)	22	11 (50.0)	0.594
Internet	70	14 (20.0)	199	60 (30.2)	0.102	20	1 (5.0)	48	13 (27.1)	0.040	28	10 (35.7)	20	3 (15.0)	0.111

Table 2: Perceived ease of acquisition

	N	Disagree/ strongly disagree n (%)	I do not know n (%)	Agree/ strongly agree n (%)
"It is very easy to get hold of methylphenidate"				
Population				
Users	83	24 (28.9)	7 (8.4)	52 (62.7)
Non-users	236	38 (16.1)	110 (46.6)	88 (37.3)
Users				
Appropriate users	24	13 (54.2)	3 (12.5)	8 (33.3)
Non-medical users	54	10 (18.5)	3 (5.6)	41 (75.9)
"It is easy to find a prescriber (e.g. doctor) to write a prescription for methylphenidate, even if a student does not really have ADD/ADHD"				
Population				
Users	82	32 (39.0)	28 (34.1)	22 (26.8)
Non-users	236	59 (25.0)	128 (54.2)	49 (20.8)
Users				
Appropriate users	24	12 (50.0)	8 (33.3)	4 (16.7)
Non-medical users	53	19 (35.8)	17 (32.1)	17 (32.1)

medical users obtained methylphenidate were that appropriate users were more likely to have obtained the drug legally, *i.e.* from a pharmacy with a valid prescription (100% vs. 54.5%; $p=0.03$) and less likely to have obtained it from friends (30.8% vs. 77.3%; $p=0.01$). Likewise, when comparing the two types of non-medical users, medical misusers were statistically less likely to have received it from friends than the non-prescription holders (47.1% vs. 96.3%; $p<0.0001$).

All respondents were asked where they thought they could get methylphenidate if they wanted to. The results are shown in Table 1. The only difference in perception between users and non-users was that it was more common for a methylphenidate user to think that they could get methylphenidate from friends ($p<0.01$) or family ($p=0.04$). Non-medical users more often thought that they could get methylphenidate from the internet ($p=0.04$) and less often from a pharmacy with a valid prescription ($p<0.01$) than

appropriate users. Significantly fewer ($p < 0.01$) non-prescription holders believed they could get methylphenidate from a pharmacy with a valid prescription than the medical misusers. As shown in Table 2, 75.9% of the non-medical users agreed or strongly agreed that methylphenidate is easy to get hold of while only 33.3% of the appropriate users thought so. When asked the same question, almost half (46.6%) of the non-users replied they did not know and 37.3% of them either agreed or strongly agreed with the statement. The participants were also asked if they think it is easy to find a prescriber to write a prescription for a student, even if the student does not have ADHD, with which 50% of the appropriate users either disagreed or strongly disagreed. The answer to this question was evenly spread between the non-medical users, with 35.8% disagreeing or strongly disagreeing, 32.1% not knowing and 32.1% agreeing or strongly agreeing. The students who have never used methylphenidate mostly replied that they do not know (54.2%), with only 20.8% agreeing or strongly agreeing with the statement. Of note, one student added that "it depends; I study pharmacy: some of the doctors help you if you ask for it". Most users (73.8%) knew that it is illegal to use methylphenidate without a prescription, while only 63.0% of the non-users knew this ($p = 0.26$). This knowledge was more common among appropriate users (79.2%) than non-medical users (70.9%; $p = 0.83$). Further analysis showed that 80.8% of the students who have had methylphenidate prescribed knew use without a prescription is illegal while only 61.3% of the non-prescription holders knew it ($p = 0.16$). Unfortunately, due to the limited sample size, it could not be determined whether any of these comparisons reached statistical significance.

Discussion

The study revealed that methylphenidate users make use of both legal and illegal sources to obtain methylphenidate. As can be expected, all of the appropriate users report having obtained methylphenidate from a pharmacy using a valid prescription; however, some of the students who use methylphenidate as prescribed have also obtained it illegally from friends and family members. According to a study by Checton and Greene^[10] 18% of prescription holders gave their medication to a person whose own medication had run out. It is therefore possible that appropriate users in the current study got medication from their friends or family because their own medication had run out.

In accordance with international studies^[1, 3] the majority of the non-medical users ($n = 34$) reported getting methylphenidate from a friend and approximately one in five of these students got it from a relative. It is possible that these friends or relatives had prescriptions for methylphenidate since researchers have reported that students with ADHD are approached and asked to sell or give their medication away^[11-12]. Gallucci and co-workers found that as many as 76.8% of students reported being asked to give away or sell their medication in their lifetime and that 58.9% of the students with prescriptions had done so^[13].

The second most common source for the non-medical users was from a pharmacy with a valid prescription, although the rates measured in this study were nearly double of what were found in a previous study^[11]. Similar to another study^[14], very few students used the internet as a source. A small but significant proportion of non-medical methylphenidate users also acquired methylphenidate from a pharmacy with a fake prescription or even acquired it from a pharmacy without a prescription.

The strong similarity between where users think they may get methylphenidate and where non-users think they could get it is notable. It indicates that if the non-users would want to start using methylphenidate, they would likely look for it in the correct places. Interestingly, the only point on which users and non-users differed in their perceptions of perceived availability was regarding friends as a source. Peer engagement in non-medical prescription stimulant use has been identified as a risk factor for non-medical use^[15]. Therefore it is likely that more users would think they can get methylphenidate from friends if more of their friends engaged in this activity as well. On the other hand, fewer non-medical users may believe they could get methylphenidate from their friends because fewer of their friends might be using methylphenidate. It is also notable that 83.9% of the non-users thought they could get a prescription for methylphenidate, but only 20.8% agreed or strongly agreed that it is easy to find a prescriber who would prescribe methylphenidate to a student without ADHD. It is possible that the students who thought they could get a prescription may believe they have ADHD; however, more research is needed to explain these conflicting perceptions.

Most non-medical methylphenidate users thought it is easy to get a hold of methylphenidate while most non-users did not know. This result may be very significant since one study found that the sole reason why interest in prescription stimulant use for cognitive enhancement did not convert into actual use is due to limited availability^[2]. In other words, students who have easy access to methylphenidate may be more tempted by non-medical use compared to students who do not know whether they could get it.

A relatively large proportion of students who have used methylphenidate but have never had it prescribed, and a large proportion of those who have never used methylphenidate did not know it is illegal to use methylphenidate without a prescription. This finding poses a potential area for intervention. Educating non-prescription holders about the illegality of their methylphenidate use may aid the effort to reduce this practice. Educating non-users may be just as important to prevent any interest in non-medical methylphenidate use from converting to actual use.

This study has several limitations that should be noted. First of all, although the exact response rate is impossible to determine, the estimated rate is low, which presents the possibility of reporting bias. Furthermore, the results are subject to the limitations associated with using self-reported reports. Thirdly, the study was conducted at a single tertiary academic institution in South Africa

and only included residence students. This fact combined with the small sample size means that the results are not generalisable to the particular tertiary institution, all residence students or all South African university students. Despite these limitations, the study is one of the first to report on methylphenidate diversion in South Africa and it managed to detect several meaningful results.

To conclude, there is evidence of methylphenidate diversion by students in the present study population. Students, both with prescriptions for methylphenidate and those without, should be educated about the dangers and illegality of non-medical methylphenidate use and diversion. Furthermore, more research is required to investigate methylphenidate diversion in South Africa so that programmes may be developed to improve its legal control.

Acknowledgements

Thank you to the North-West University for providing the funding for this study and to Elzet Blaauw for the linguistic editing.

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