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# Use of phosphodiesterase-5 inhibitors by college students

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## ABSTRACT

The objective of this study was to identify the use of phosphodiesterase type 5 inhibitors among university students from the city of Sao Paulo (SP) in Brazil. Male students (n=350) replied to a questionnaire about diagnosis of erectile dysfunction, the frequency and reason for the use of phosphodiesterase type 5 inhibitors, the specific medication used, whether their use was accompanied by a medical prescription and any reported side-effects. The results shows that a total of 53 (14.7%) students had already used this kind of medication without a prescription or medical diagnosis for erectile dysfunction, of which 53% reported using sildenafil, 37% tadalafil and 10% vardenafil. The main adverse side-effects reported were headache (23%) and flushing (10%) and the main reasons for using the inhibitor were curiosity (70%) and erectile improvement (12%).

**DESCRIPTORS: Students. Self Medication. Erectile Dysfunction. Phosphodiesterase Inhibitors, administration & dosage. Questionnaires, utilization.**

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## INTRODUCTION

Erectile dysfunction, which is also known as male sexual impotence, is defined as the consistent inability to obtain and/or maintain a penile erection that is firm enough to perform sexual intercourse.<sup>2</sup> For treating erectile dysfunction, a clinical consultation is required in order to investigate its underlying causes, and thus choose the form of treatment that is most appropriate for each patient.<sup>3</sup>

Among the various forms of treatment that have become available over the years, oral therapy with phosphodiesterase type 5 (PDE 5) has proved to have the most therapeutic success.<sup>2</sup> These inhibitors are sold in Brazil under the names of sildenafil, vardenafil and tadalafil. The mechanisms by which these medicines act are similar, with the main difference relating to the strength of the enzyme inhibitor and their pharmacokinetic properties, including rate of absorption, plasma half-life and duration of effect.<sup>1</sup>

This class of medication is well tolerated by most patients, with temporary side effects including headache, nasal congestion, dyspepsy, and distorted vision of colours.<sup>5</sup> Although the use of these medicines is limited to individuals who have been diagnosed with erectile dysfunction, studies have shown that young men who do not suffer from dysfunction purchase the drugs in pharmacies or through the internet without a medical prescription.<sup>5</sup>

The objective of the present study was to identify the use of medicines intended for treating erectile dysfunction by young male university students.

## METHODS

This is an exploratory, descriptive study using a convenience sample. 360 male university students, aged between 18 and 30, replied to the questionnaire. Between July and December 2006, the students were drawn from a total of 18

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randomly selected classes in eight different campuses of private higher education institutions in the city of São Paulo (Southeastern Brazil), with an average number of 15,000 students.

The research tool was first validated on a pilot sample made up of 70 students from one of the institutions involved in the study. For the application of the questionnaire, authorization was requested from the institution and the teacher responsible who was present in the room.

The students who agreed to participate voluntarily in the study completed an anonymous questionnaire made up of 10 questions, both closed and open, to measure dependent variables (the use of medication) and independent variables (sex, age and reason for using the medication). The questions covered whether there had been a medical diagnosis for erectile dysfunction, knowledge of the existence of and methods for usage of phosphodiesterase-5, the frequency and reasons for using these medicines, the medication used, the existence of a medical prescription and reports of any adverse effects resulting from their use.

All participants signed terms of clear and free consent and the project was approved by the Research Ethics Committee at the Universidade Nove de Julho.

## RESULTS

The sample represented approximately 5% of all male students from the institutions that were visited. None of those interviewed reported erectile dysfunction or difficulty in obtaining or maintaining erection. However, of the 360 students interviewed, 53 (14.7%) confirmed that they had previously used PDE-5 inhibitors, explaining that they were obtained without a medical prescription and without any diagnosis for erectile dysfunction.

The drugs that the respondents reported using were sildenafil (53%), tadalafil and (37%) and vardenafil (10%). Of these users, 66% did not report any adverse side-effects and of those who did, the principal complaints were headache (23%) and flushing (10%).

Among the reasons given for the use of PDE-5 inhibitors, most users who were interviewed reported that they did so out of curiosity (70%), to improve their erection (12%), to avoid premature ejaculation (12%) and for increased pleasure (6%).

With regard to the number of times that the interviewee used one of these medications, 83.5% reported occasional use, and the remainder used them at least once a month.

## DISCUSSION

In Brazil, PDE-5 inhibitors are ethical medicines but there are no special jurisdictions or requirements for a medical prescription for dispensing them. Thus, as is the case in other countries, individuals who do not suffer from erectile dysfunction are able to purchase such medication.<sup>4</sup>

This is confirmed by this study, in which approximately 15% of the 360 students interviewed reported that they had previously used some kind of PDE-5 inhibitor, although all were young – aged between 18 and 30 – and reported that they did not suffer from any kind of erectile dysfunction.

There is a lack of studies in the literature about the profiles of users of these drugs. Musacchio et al<sup>4</sup> (2006) report the use of PDE 5 inhibitors, obtained on prescription, to be approximately 6% of a sample of 234 university students aged between 18 and 25 in the city of Chicago, USA,<sup>4</sup> a lower rate than the one found in the present study. This difference could be due to the different forms of control and dispensation of drugs that are practiced in this country.<sup>5</sup>

The adverse side effects reported are consistent with the principal complaints and adverse reactions reported in the literature and observed clinically. The adverse effects are relatively mild and temporary for most patients and diminish with the continued use of or interruption in the use of the drugs.<sup>3</sup>

More serious adverse side effects would primarily relate to cardiac functioning, such as any previous record of coronary diseases or the concomitant use of nitrates, which may increase the risk of potentially fatal cardiovascular complications.<sup>5</sup> However none of these effects were observed in the present study, which may be on account of the age range of the individuals involved.

One result that is somewhat worrying was the fact that 100% of the users obtained the drugs without a medical prescription, indicating that there was no priori diagnosis for the consumption of these medications. In addition, the fact that curiosity was the principal reason reported for the use of PDE 5 inhibitors reinforces the idea of self-medication for recreational or abusive use, without any guidance relating to the possible adverse side effects or toxicity of these pharmaceuticals.

On the basis of the results observed here, it is possible to understand some of the means by which substances related to male well-being are consumed, and which should involve a medical diagnosis, but that have been used inconsequently and in contradiction to the principles for the rational use of medicines.

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