



Prevalence of Self-prescribing Propranolol Among Medical and Dental Students in Riyadh, Saudi Arabia: A Cross-sectional Study

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Received 25 July 2016; received in revised form 12 October 2016; accepted 18 October 2016

Abstract

Purpose: The life of students is full of stressors that might have an impact on their mood and academic performance. These stressors are exaggerated among medical and dental students, as they have to worry more about financial, social, and academic issues. The study aimed to estimate the prevalence and predictors of inappropriate self-prescribing of propranolol (Inderal[®]) among medical and dental students at King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) Riyadh, Saudi Arabia. **Methods:** A cross-sectional study using consecutive sampling was carried out among Saudi medical and dental students, who were enrolled in KSAU-HS during the study period. A validated newly developed English questionnaire was sent via E-mail to all eligible participants with response rate of 86.9%. Chi-square test was used to compare between groups, whereas multivariate logistic regression analysis was carried out, where the variables that were included in the model were the ones that showed statistical significance at the bivariate level.

Results: Around 30% of the sample used propranolol (Inderal[®]) during their college years. Propranolol use predictors showed that females from both specialties were less likely to use propranolol (OR=0.11, 95% CI=0.06–0.24, *P*-value < .001), whereas medical students were more likely to be propranolol users (OR= 12.38, 95% CI=4.89–31.35, *P*-value < .001). Notably, junior students were less likely to use the drug (OR=0.08, 95% CI=0.01–0.49, *P*-value= .006).

Conclusions: The overall results showed a slightly high rate of propranolol misuse among medical and dental students. The majority of users are aware of the risks and potential side effects of self-prescribing medications, however; the anxiety relieving effect of propranolol increased its use prior to oral exams and presentations. Educational activity targeting students must be implemented. © 2016 King Saud bin AbdulAziz University for Health Sciences. Production and Hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Keywords: Propranolol; Beta blockers; Self-prescription; Medical students; Dental students

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Peer review under responsibility of AMEEMR: the Association for Medical Education in the Eastern Mediterranean Region

<http://dx.doi.org/10.1016/j.hpe.2016.10.001>

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1. Introduction

The life of students is full of stressors that might have an impact on their mood and academic performance. These stressors are exaggerated among medical and dental students as they have to worry more about financial, social, and academic issues. Therefore, these students tend to seek different stress relieving techniques. The most commonly used technique is the use of drugs, such as beta-blockers, to overcome performance anxiety.¹ Generally, medical students use these medications in order to improve the concentration, focus, and alertness or to help study harder before tests. Students may get these medications either by a physician's prescription, from friends, or the Internet, and use it in different routes; crushing the pills then sniffing them or inhaling the powder, or injecting the drug. Students keep intravenously looking for more efficient and intense ways of using the drugs.

In 1958, Propranolol (Inderal[®]), a beta-adrenergic blocking drug, was developed by James Black.² It helps minimizing the effects of excessive adrenaline release by slowing the heart rate even in healthy individuals.³ Propranolol is used to control symptoms of heart and circulatory conditions such as angina, tremors, hypertension, heart rhythm disorders.^{4,5} However, its uses nowadays clinically are mainly restricted to thyroid patients, and a prophylaxis in migraine headaches.⁶ It was also shown in well controlled double-blinded trials that propranolol has a favorable effect in anxiety management.^{7,8}

Schutsky et al. findings, however, were likely pertinent to situations in which stress worsen human cognition.⁹ Tasks that are based on the recall of recently learned or studied information such as exams and public speaking are more sensitive to the negative effects of stress, therefore an anticipatory arousal and stress can disrupt the performance. Interestingly, propranolol is described to improve intellectual tractability and exam performance.^{10–12} However, it is crucial to evaluate patients medically before prescribing a beta-blocker. In addition, tolerability testing before the actual performance is of great value in inspecting side effects.^{13,14} Propranolol, 10 mg about 1 h before the performance, is most often prescribed.¹⁵

A nationwide, non-random online poll for the non-medical uses of prescription drugs by *Nature*, reported that prescription drugs were used in 20% of participants to enhance their concentration for a particular task.¹⁶ Among those 20% participants, 15% said they had taken beta blockers such as propranolol.

A study that was performed among Dutch university students showed that 2.4% of respondents reported the

use of prescription drugs for several times for a non-medical purpose. Out of those, 61.1% students reported the use of beta-blockers.¹⁷ The use of beta-blockers for the purpose of improving ones' study results was reported by 38.9% students, out of those users 19.4% used the medications without prescription.

In another cross-sectional study¹⁸ among students of several universities in Switzerland, with responses reached 6275 students who completed the survey, methylphenidate was reported at the top of the most frequently used drugs reaching 4.1%, followed by sedatives (2.7%), then beta-blockers (1.2%). Another cross-sectional study included 1260 Iranian university students, showed that 60 (4.7%) participants had used propranolol.¹⁹ Of those, 50 participants were female. Regarding marital status, 54 participants were single while 56 were living in university's dorm.

Medical knowledge among the students and the easy access to propranolol in pharmacies increase the potential for self-treatment. Considering the side effects of propranolol, it is essential to understand medicinal self-prescription behavior among the students, so that prevention strategies can be developed and implemented.^{13,14} Since there is a lack of studies in the region that is conducted for the identification of prevalence and predictors of self-prescribing propranolol among students, the present study would help to establish a baseline data in regard to the self-medication prescriptions among medical and dental students. Keeping in mind the drug safety concerns among the Saudi medical and dental students, the study aimed to estimate the prevalence and predictors of inappropriate self-prescribing of propranolol among medical and dental students in one of the universities in Riyadh, Saudi Arabia.

2. Subjects and methods

This cross-sectional study was carried out in King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) which is located in the capital city of Riyadh, Saudi Arabia.

Saudi medical and dental students, both males and females who were enrolled in the colleges of medicine and dentistry at KSAU-HS during the study period were included. A consecutive sample was used since the questionnaire was sent via E-mail to all medical and dental students who were studying at one of the two mentioned schools during the study period. The response rate reached 86.9%.

Due to the paucity of studies in this topic, a new English questionnaire was developed by the research

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