Students’ and Pharmacists’ Perspectives on the Issue of ADHD Prescription Medication Abuse at the University of Mississippi

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ABSTRACT

Prescription stimulant abuse has been on the rise for college students in the United States. Thus far, research exploring the issue of ADHD medication abuse by college students has left out the opinions of pharmacists, who serve as the medication experts in the health professional team. Pharmacists around Oxford, Mississippi, as well as students at the University of Mississippi, were interviewed in order to gain insight into the issue of prescription stimulant abuse by local college students and to determine potential solutions to help reduce its prevalence. Although it may be difficult for pharmacists to identify true cases of stimulant abuse due to its subtlety, the evaluation of their perspectives may help bring about new policies and programs that can help remove some of the motivations for misusing ADHD medications, as well as help improve the communication between health professionals. The addition of this crucial viewpoint can help unite the health professionals and the community in combatting prescription stimulant abuse by college students.
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INTRODUCTION

In the United States, the line between the appropriate and inappropriate use of prescription drugs is becoming increasingly blurred, especially in college towns where the pressure to succeed in increasing academic rigor or find ways to decompress is in the forefront of students’ minds. For some college students, lack of focus and restlessness is simply an unfortunate side effect of trying to accomplish tasks in the frequently distracting 21st century. For others, it is a medical condition known as attention deficit hyperactivity disorder (ADHD). ADHD is characterized by inattentiveness, hyperactivity, and impulsive behavior, and is most commonly treated with a class of prescription drugs known as stimulants (“Facts about ADHD”). The use of prescription stimulants on college campuses has increased substantially in recent history, and the incidents often involve students without a diagnosis of ADHD (Varga). In order to explore what constitutes appropriate use of these drugs, it is important to first understand ADHD and how it is diagnosed, the drugs used to treat ADHD and their effects, and the prevalence of their use.

The following statistics from recent years are important in illustrating the prevalence of ADHD and the medications used to treat the disorder. According to the Centers for Disease Control and Prevention (CDC), as of 2011, around 11% of children in the United States between the ages of four and seventeen have been diagnosed with ADHD, and the rate of diagnosis has been increasing every year (“Data and Statistics”). In Mississippi, a CDC survey showed that 10.9% of children were reported to have ADHD by parents. While the number of adults with ADHD is reported to a lesser extent, it is estimated that around 60% of children diagnosed with ADHD will continue to have
symptoms into adulthood, meaning the prevalence of ADHD in college-age individuals is likely to be slightly less than the average for children (Bhandari). In 2011, 6.1% of the children diagnosed with ADHD were receiving medication for their disorder. The percentage for Mississippi fell slightly higher at 7.5% (“Data and Statistics”). Again, the medical use of prescription stimulants is expected to be slightly lower for college-aged students. However, multiple studies in the past decade have reported that 4.1% to 10.8% of college students admitted to the nonmedical use of prescription stimulants (Center on Young Adult Health and Development). A study published in 2012 reported that 31% of students had used prescription stimulants at least once within their four years of college, showing that at times, the non-medical use of common ADHD medications surpasses the medical use (Garnier-Dykstra et al.).

With a better understanding of ADHD in general, common medications used for treatment, and the prevalence of both the disorder and the use of the prescriptions associated with it, the grey area of appropriate and inappropriate use of the ADHD medications can begin to be explored.
PURPOSE

Significance

Pharmacists attend school for six to eight years in order to master pharmacotherapy. Yet, when the problem of prescription drug abuse became a topic worth discussing, the majority of the opinions collected belonged to doctors and parents. The importance of this thesis is to explore the views pharmacists have on the role of stimulant abuse in college life. Examining the perspective of the professionals who are trained to work closely with prescription drugs, as well as patients taking them, may lead to interesting insights on how to combat the issue of misuse. The significance of the college students’ perspectives on stimulant abuse is to compare how much the health professionals can see from their position behind the counter with the prevalence and attitudes of college students who are surrounded by it.

Objectives:

The purpose of this study is to describe Oxford pharmacists’ and college students’ perceptions of University of Mississippi student use of prescription attention deficit hyperactivity disorder (ADHD) medications.

The specific objectives of this study as it relates to pharmacists’ perceptions are to:

1. Determine what pharmacists believe constitutes appropriate and inappropriate use of ADHD medications by college students;
2. Determine the trends in volume of ADHD prescriptions filled at pharmacies in Oxford and the factors that affect these trends;
3. Determine whether pharmacists believe they can detect signs of inappropriate ADHD prescription medication use; and
4. Describe pharmacists’ perceptions on current policies regarding ADHD prescription use and suggestions for future policies.

The specific objectives of this study as it relates to college students’ perceptions are to:

1. Determine what college students believe constitutes appropriate and inappropriate use of ADHD medications by college students;
2. Determine the prevalence of prescription ADHD medication use on campus;
3. Determine what college students think are the primary modes of diversion and access to ADHD medication by college students; and
4. Describe what college students believe are the motivations behind using ADHD medications.


BACKGROUND

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder in which brain maturation is delayed or abnormal, particularly in portions of the brain responsible for inhibitory control and memory processing. The delay in brain development attributes to the higher levels of inattention and hyperactivity commonly found in ADHD. The disorder is typically prominent throughout childhood, but symptoms extend into adulthood in about 60% of cases (Vaidya). The current criteria for diagnosing ADHD, as set by the American Psychiatric Association's Diagnostic and Statistical Manual, Fifth edition (DSM-5), requires that children under 17 must show signs of at least six symptoms under the category of inattention and/or hyperactivity and impulsiveness, and those over 17 must show five of the symptoms. The onset of symptoms should occur before the age of twelve and must not be limited to moments of other psychotic or mental disorders (“DSM-5 Attention Deficit/Hyperactivity Disorder Fact Sheet”). Though many doctors use the DSM criteria as guidelines, they also use their own professional judgment, which may lead to differing diagnostic standards, leading to some more mild forms of ADHD, or simple inattentiveness, to be clinically diagnosed. Consequently, some professionals feel that not all patients who are diagnosed with ADHD fully have the condition.

Once the diagnosis of ADHD has been made, the next important step is deciding how to treat the disorder. Medications are prescribed based on the severity of the patients’ symptoms and usually take into account the type of medicine needed, the appropriate dosage for the diagnosis, and the schedule that is most effective for the
patient. However, differences in doctor opinions may lead to higher dosages or stronger medications being prescribed for less severe cases. The most common class of drugs used to treat ADHD is stimulants, which work well to treat a variety of ADHD symptoms and can be given to various age groups (Derrer). Some of the more common drugs available are methylphenidates, including prescriptions like Ritalin and Concerta, Dextroamphetamine, which is commonly known as Dexedrine, a Dextroamphetamine-amphetamine mix, known as Adderall, and other medications, such as Vyvanse (Lakhan and Kirchgessner). These stimulants typically work by increasing the amount of dopamine in the brain, which helps decrease hyperactivity, increase focus on individual tasks, and produce a feeling of euphoria, especially for nonprescription users. Common side effects associated with ADHD medications include loss of appetite, nausea, trouble sleeping, dry mouth, headaches, irritability, and dizziness (Derrer). For people who do not have ADHD, these effects can be more severe and can also include serious health issues such as psychosis, seizures, and multiple cardiac problems after extended use (Lakhan and Kirchgessner). Despite the potential risks, studies have shown the more positive side-effects that motivate the nonmedical use of prescription stimulants include an increase in concentration to aid in studying, a feeling of euphoria, and a loss of appetite to aid in weight loss (Teter et al.).

While there are many people who have a legitimate diagnosis of ADHD, as well as an appropriate prescription, the significance of this disorder arises in the understanding that stimulant abuse has been and is continuing to be a social issue worth addressing. Two common ways to abuse prescription stimulants include overusing one’s own valid prescription and taking medication that is not prescribed to the person using it. A four-
year study of college students, published in 2012, explains that the most common source of prescription stimulants for nonmedical use was a friend’s prescription. However, the study also found that the misuse of personal prescriptions rose during the four years as well (Garnier-Dykstra et al.). Because the most common way to obtain prescription stimulants without having a legitimate prescription includes the diversion of someone else’s prescription, it may be important to evaluate reasons why people are able to give away medication that medical professionals have determined to be necessary for that patient’s health and well-being. As previously mentioned, some possible sources of extra pills may come from over-diagnosing a patient with a more mild form of ADHD due to varying diagnosis standards or writing a prescription that is a higher strength or volume than necessary. In these situations, a pharmacist’s perspective may add insight into how the problem of surplus pills can be remedied.
METHODS

Participants

Fifteen interviews were conducted for this study. Ten of the interviews included students at the University of Mississippi. The students were 18 years of age or older and currently enrolled as undergraduates at the University of Mississippi. The students were chosen at the convenience of the interviewer and were selected to represent a variety of ages, genders, and academic majors. Affiliation with a Greek organization was also taken into consideration. The remaining five interviews included pharmacists around Oxford, Mississippi, who work in community retail environments. The pharmacists were also chosen at the convenience of the interviewer and were selected from various stores around the area.

Procedure

Participants were initially given a consent form including information about the study, their rights as participants, statements regarding the confidentiality of provided information, and information regarding IRB exemption. After verbal consent was obtained, the interviews were conducted face-to-face and in a convenient location for both parties. Responses were audio recorded with the consent of the participant. The student interviews were designed to last approximately ten minutes each, while the pharmacist interviews were designed to last around twenty-five minutes each. The purpose of the interviews was to gain insight into the perceptions of students and pharmacists on the use of ADHD medications around the University of Mississippi campus. Two separate interview guides were created, with one pertaining to the students
and the other pertaining to the pharmacists. The guides were created in an attempt to evaluate the specific objectives of the study. A sample of the interview guides can be found in the Appendix.

Data Analysis

Recordings were transcribed by the investigator, and a thematic analysis was conducted separately by two investigators using recommendations from Austin and Sutton. The two analyses compared, and overall themes were extrapolated in order to gain insight into the viewpoints of both students and pharmacists on the use and misuse of ADHD medications by local college students and the possible sources and solutions to the issue. Disagreements on themes by the two investigators were resolved by reaching consensus. Quotes from the interviews were used as supporting evidence for the thematic analysis.
RESULTS

Participant Demographics

Table 1 shows the demographic information of the students interviewed for this study. The students were all enrolled as undergraduates at the University of Mississippi and represented a variety of majors and ages. Gender, race, and Greek organization membership information was also gathered but did not vary considerably between the participants.

Table 1: Student Interviewee Demographics

<table>
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<tr>
<th>Student</th>
<th>Age</th>
<th>Major</th>
<th>Year</th>
<th>Gender</th>
<th>Race</th>
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Table 2 shows the demographic information of the pharmacists interviewed for this study. The pharmacists were all employed in chain pharmacies around the city of Oxford. They varied in career length and daily prescription volume dispensed. One pharmacist included in the study worked at multiple pharmacies around northeast Mississippi, including a chain in Oxford.
Table 2: Pharmacist Interviewee Demographics

<table>
<thead>
<tr>
<th>Pharmacist</th>
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<th>Oxford Career Length</th>
<th>Daily Prescription Volume</th>
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<td>29-30 years</td>
<td>~ 500-600</td>
</tr>
<tr>
<td>2</td>
<td>Chain</td>
<td>36 years</td>
<td>36 years</td>
<td>~ 450</td>
</tr>
<tr>
<td>3</td>
<td>Chain</td>
<td>3 years</td>
<td>Few months</td>
<td>~ 400-500</td>
</tr>
<tr>
<td>4</td>
<td>Chain</td>
<td>5 years</td>
<td>1 year*</td>
<td>~ 500*</td>
</tr>
<tr>
<td>5</td>
<td>Chain</td>
<td>22 years</td>
<td>13 years</td>
<td>~ 150-200</td>
</tr>
</tbody>
</table>

*works as a floater around northeast Mississippi

STUDENT THEMATIC ANALYSIS

The themes that emerged from the student thematic analysis included 1) appropriate and inappropriate use, 2) prevalence of inappropriate use, 3) risks of inappropriate use, 4) means of access, and 5) motivations for use. A description of these themes is provided below.

Appropriate and Inappropriate Use

Eight out of the ten interviewed students indicated that using an ADHD medication without a prescription is inappropriate. Reasons behind their responses were typically attributed to issues of safety and legality. One of the students indicated doctors would be able to identify patients with a true need for the medication, so individuals who choose to self-medicate themselves are likely using it for the wrong reasons. When asked whether it is appropriate for an individual with a prescription for ADHD medication to take more than their prescribed dose, the students responded with a higher level of uncertainty. Approximately half of the students believed it would be more acceptable to
get the doctor’s opinion before increasing a dose, while the others thought it would be acceptable for the patient to use his or her own discretion.

**Prevalence of Inappropriate Use**

Inappropriate use of ADHD medications was cited as a common occurrence among college students by nine out of ten of the students interviewed. The interviewees estimated the highest numbers for students who have tried it at least once, with decreasing numbers for students who use it more consistently. Most students speculated over 25% of people they knew had used ADHD medications without a prescription, and some stated estimates as high as 60-80%. One student responded the prevalence of ADHD medication use was more common during certain times of the semester, such as finals week. The student whose viewpoint varied from the other interviewees mentioned that while the student knew that abuse occurred around campus, it was not a common incident among the student’s group of acquaintances.

**Risks of Inappropriate Use**

In terms of risk, all of the students agreed that using a prescription medication without doctor supervision is risky. However, a few students were unsure whether ADHD medication was more detrimental to use without a prescription versus with a prescription, stating that they believed the potential side effects could occur regardless of whether it was prescribed or not. A majority believed individuals without a prescription would face potential health risks involved with improper dosing, lack of information, and the absence of monitoring by a health care professional. Some interviewees also acknowledged the addiction potential associated with stimulant use. One student explained the risks were increased in situations without prescriptions because college
students lack the understanding of how chemicals react in their bodies and are choosing to continue use without supervision from a doctor who has been educated on the situation. On the other hand, another student speculated, “I don’t see a lot of risk factors associated with it. I don’t think ADHD medication use has any more health risks than say eating fast food or drinking alcohol… I think the concerning abuse would be more about taking super high doses, rather than just taking one pill to study.”

**Means of Access**

Friends or other students with prescriptions were indicated as the most readily available source of ADHD medications for those without prescriptions by all of the interviewees. Other possible sources mentioned were social media, parents, street markets, and online vendors. Depending on the students’ exposures to individuals who misuse ADHD medications, some students also suggested that people may attempt to mimic symptoms of a patient with true ADHD in order to convince a physician to write the student their own prescription. Five of the ten students said they definitely knew situations where colleagues had faked symptoms in order to obtain a prescription, while three other students said they did not know for sure but would not be surprised if it occurred.

**Motivations for Use**

Academic pressures were listed as the primary motivation for ADHD medication use by all ten students. They offered scenarios such as cramming for tests, finishing papers and projects, maintaining a high GPA for scholarships, and feeling overwhelmed by the work load of college as further examples of academic stresses. Pressure to impress parents or keep up with other students were also mentioned as potential motivators. Half
of the interviewees stated that keeping up with social activities could also lead some individuals to use ADHD medications. With regard to whether or not using ADHD medications gives certain students an extra advantage academically, the responses were mixed. One student claimed that while it does provide an advantage because the medication can allow for increased focus, the risk of focusing on the wrong task is also a possibility. Another student mentioned, “I’m not sure if studying on it when you don’t actually need it makes you more efficient or productive. It also might have some negatives if you aren’t also on it while you take the test because you’re in a different mindset.” Other responses suggested using ADHD medications could provide an advantage in short-term situations but would not likely lead to long-term successes.

PHARMACIST THEMATIC ANALYSIS

The themes that emerged from the pharmacist thematic analysis included 1) appropriate and inappropriate use, 2) prescribing patterns of ADHD medications, 3) prevalence of inappropriate use, 4) suspicions of inappropriate use, 5) pharmacists’ roles in ADHD medication use, and 6) current and future policies for ADHD medication abuse. A description of these themes is provided below.

Appropriate and Inappropriate Use

For the pharmacists interviewed, issues of appropriate use also reduced primarily into questions of safety and legality. Knowing more about the factors that occur in the diagnosing and maintenance of ADHD medications, their ideas of appropriate use additionally took into consideration the true needs of the individual for the medication. All five pharmacists concurred that the use of ADHD medications without a prescription
is illegal, and can lead to problems for the student using the medication, as well as the source from which the student obtained the medication. Four of the five pharmacists added that if a patient is able to divert some of their own prescription, this action would suggest the patient’s need for the medication does not match their current treatment plan, which would also constitute inappropriate use of the prescription. However, the remaining pharmacist presented the case that some individuals with ADHD do not take their full prescriptions because they do not always need the therapeutic action, which makes it harder to determine to actual need of the patient and may establish to a potential source of diversion.

As a whole, the pharmacists also stated that it would be inappropriate for individuals to choose to increase the dose of their legitimate prescription without prior authorization from a physician. One pharmacist explained, “I think you’re prescribed the dose that you are on for your safety… there are proper protocols that are science-driven about how we taper up doses, how we lower doses, and there can be issues if you don’t take the proper dose or if you try to self-prescribe yourself therapy.” The pharmacist elucidated on the potential issues by mentioning self-prescribing can alter both the safety and efficacy of a drug. Another pharmacist said, “…for this disease state, I think it’s incredibly important that you are managing it consistently and not overdosing or double-dosing or things like that when you think you need these things for particular focused activities.” Ultimately, the appropriate use of medications is defined by the instructions set forth by the prescribing physician and the counseling established by the dispensing pharmacist, and deviation from these directives without consultation of a health care professional may lead to inappropriate use of the medication.
**Prescribing Patterns of ADHD Medications**

All of the pharmacists noticed a high prevalence of ADHD medication prescribed in Oxford, with more prescriptions coming into the pharmacy during the months when school is in session. However, most pharmacists did not observe a disproportionate increase in stimulant prescriptions when compared to the general number of prescriptions dispensed by the pharmacy. The majority of the interviewees also noted that during school months, their pharmacies received a higher amount of prescriptions from prescribers that were out-of-state, which can add a level of complexity as the pharmacists are less familiar with the prescribers, their credentials, and their prescribing habits. One pharmacist discussed the possibility of overprescribing due to increased pressure on doctors to meet the conditions and needs of their patients combined with a potential lack of training in the area of ADHD prescribing for primary care physicians. Both physician and patient factors contribute to the patterns seen in the dispensing of ADHD medication.

**Prevalence of Inappropriate Use**

Based on responses, ADHD medication abuse is considered a common problem affecting University of Mississippi students. Each of the pharmacists based their perspectives on different observations from their practice. Some of the factors illustrating the prevalence of abuse include emergency room visits with stimulant abuse symptoms, the socioeconomic status of the Oxford campus, interactions with students, and the amount of prescriptions for ADHD medication seen by the pharmacists. However, one pharmacist commented that the prevalence of medication abuse is an interesting statistic because for ADHD medication, it is hard to see clearly. For pharmacists, spotting stimulant abuse adds a level of difficulty because the symptoms are
not as apparent as other drug classes, such as narcotics, and pharmacists do not always have insight about what happens with the prescription after it leaves the pharmacy.

**Suspicions of Inappropriate Use**

Generally, when asked about what factors or actions might cause suspicions of ADHD medication abuse and diversion, the pharmacists discussed the difficulties with pinpointing specific events that would arouse significant suspicion. While some patients may throw up red flags, overall ADHD medications seem to be more of a silent threat. With little noticeable symptoms of abuse and even less information about what happens to prescriptions after they leave the pharmacy, pharmacists must make decisions based more on speculation and professional judgment rather than concrete evidence. However, all of the pharmacists know certain signs and symptoms that may lead them to look further into a patient’s case.

One main concern all of the pharmacists shared was a scenario in which a patient continually asked for early refills. However, one pharmacist explained this event occurs less often in ADHD medication prescriptions because they are Schedule II drugs that require a new prescription from a physician each time they are filled. In cases where it does happen, one pharmacist said the request is usually paired with an excuse suggesting the medication was lost, there were not enough pills dispensed, or the patient’s doctor instructed them to take a higher dose than written on the prescription. Another pharmacist added the continual insistence to pay for prescriptions with cash as a potential warning sign of abuse. In cases of counseling, one pharmacist mentioned, “There have been times where you can tell that maybe some individuals, you can tell they have a speech prepared, and it isn’t necessarily genuine,” which may suggest that the patient
researched what to say in order to obtain the prescription rather than personally experiencing the symptoms. Finally, from a profile standpoint, conflicting medications were also listed as a concerning indicator of potential misuse. One pharmacist stated, “I have one that I’m suspicious of that I don’t think [the patient] really needs it because [the patient] also takes something to aid sleeping. This makes me believe that [the patient] may not really need the medication because it shouldn’t be affecting you that way.” Each of the pharmacists mentioned that when faced with a potential warning sign, they did not necessarily suspect abuse outright and believed that following up with the physician would be the next step in determining the health and mindset of the patient.

Pharmacists’ Roles in ADHD Medication Use

Overall the pharmacists defined their role in medication use with three main categories: professional judgment, interprofessional communication, and patient counseling. Three of the five pharmacists also added the primary line of thinking that drives their practice is the oath of “first do no harm.” With the patient’s health at the forefront of their actions, the pharmacists believed they had a pivotal role to play in combatting prescription medication abuse.

Regarding professional judgment, one interviewee stated, “If there was one individual that would serve as the medication expert on any part of the healthcare team, it should be [pharmacists]. When it comes to abuse, we’re uniquely trained to understand not only the pharmaceutical science and the receptor binding behind these things, but also the physiology as well.” Based on this knowledge base and the increased access to customers, the pharmacists believed professional judgment was one of the key requirements in dealing with ADHD medication abuse. According to the responses,
professional judgment seemed to come strongly into play in scenarios regarding fraudulent prescriptions, unusual dosing or prescription instructions, and profile monitoring. In cases of suspicion, the pharmacists’ professional judgment helped them determine the next course of action for that patient.

Interprofessional communication was another important aspect of the pharmacists’ role in ADHD medication use and misuse. One interviewee claimed one of the most important aspects of a pharmacist’s job is “establishing a relationship with [the doctors and prescribers] around the area is very important to understand who they are and what they may or may not be doing.” In doing so, a pharmacist is better equipped to notice changes in prescribing patterns and catch questionable prescriptions. They are also more comfortable with calling prescribers to ask about a patient’s behavior or medication habits and discussing the reasoning behind certain instructions given by the physician. Another interviewee mentioned pharmacists can make more informed decisions about whether or not to fill a prescription after discussing with a physician and having a better understanding of that prescriber’s judgment and reasoning. If a patient says one thing and the doctor says another, the pharmacist may be able to sort out the details and determine if there is a potential for the misuse of the medication.

The final role of the pharmacist mentioned by the interviewees was effective patient counseling. One pharmacist stated the biggest impact a pharmacist can have is an efficacious dialogue with the patient about education and counseling. Conversations with pharmacists are free for the patient and can increase the patient’s understand of the risk associated with any therapy, particularly stimulants in the case of ADHD medication.
Current and Future Policies for ADHD Medication Abuse

All of the pharmacists interviewed were employed in chain pharmacies, which often have defined procedures for medication dispensing, especially in cases of Schedule II medications. However, some of the pharmacists felt the policies were directed more towards pain and anti-anxiety medications. None of the pharmacies have policies that related specifically to the prescription stimulants. One pharmacist described the general protocol when abuse is suspected, starting with looking at the refill history for that patient, evaluating any obvious signs of misuse, and talking with the prescriber about the concerns. After that point, the pharmacist stated he or she would feel comfortable filling the prescription if the prescriber did not have any additional reservations for that patient. Refusing to fill a prescription is another option in situations where the pharmacist believes the prescription is not being used as intended by the prescriber. The other pharmacists discussed similar procedures in place in their companies.

With regard to potential future policies or programs that may help combat ADHD medication abuse, the pharmacists found it difficult to determine the root of the problem and how pharmacists in their current positions could adequately recognize and limit abuse past the current policies already in place. One pharmacist suggested counseling about the potential and risk of abuse for the first fills of ADHD medications. By adding an additional education effort at the beginning of the medication use, patients may be more informed about what they are putting into their bodies. Another possible solution mentioned was the addition of a program teaching incoming college students about how to study in order to help reduce one of the largest driving factors for ADHD medication abuse. Lastly, the creation of an “ask a pharmacist” event for college towns was
presented as a way to help reduce the misuse of medication by dispelling some common myths, providing a platform where students can safely ask questions, and allowing for a place to properly dispose of unused medications.
DISCUSSION

Student Responses

One of the primary reasons for including the students’ perspectives in this project was to gauge the ADHD prescription drug environment on the Oxford campus of the University of Mississippi through the eyes of those who are immersed in it on a daily basis. In doing so, it can be concluded that the University of Mississippi follows many of the trends that have been researched on other college campuses. Similar to the literature, the students cited academics as the primary motivation for use and friends with prescriptions as the predominant source for ADHD medications. Also coinciding with the literature, the interviewees described ADHD medication abuse as a fairly common occurrence among university students.

However, not many published studies have researched the perceptions behind the abuse statistics. By evaluating the personal insight behind the data, a more complete picture of prescription stimulant abuse on college campuses can begin to take shape. One issue that arose throughout the interviews was trying to determine a concrete definition for abuse in the eyes of the students. While the majority could agree that it would be inappropriate to use ADHD medication without a prescription from the doctor, the students were split about whether or not it was necessary for individuals to follow their doctors’ orders on valid prescriptions. This scenario illustrates how “abuse” can become a shade of gray for some students, which may account for some of the prevalence.

Another area that has been touched on by other researchers but not often evaluated is the students’ perceptions of risks associated with stimulant abuse. Some
studies have found that college student often perceive prescription drugs as safer to use than illicit drugs, while others have suggested that viewpoint has shifted to increasing awareness of prescription drug safety issues. While the students in this study tended to agree with the latter statement, some also revealed a level of uncertainty in regards to whether or not those risks increased in individuals who were not prescribed the therapy over those who were prescribed it. The belief that one could experience the potential negative consequences regardless of prescription status may also contribute to some students’ willingness to try ADHD medications without doctor supervision.

One area of questioning that provoked unexpected results was whether or not students believed using ADHD medications gave people an extra advantage academically. Since all of the students claimed academic stresses were the primary motivating factor for ADHD medication use, it would seem logical to assume students would perceive an advantage for those using stimulants. However, many of the students felt either the positive effects were only beneficial short-term or the medication did not provide any added benefits that would surpass the normal student’s capacity for success. This new information is significant to the issue of ADHD medication abuse on college campuses because it illustrates a disconnect between the motivation for use and the efficacy of the drug for that purpose. The dichotomy between academic motivation and actual perceived benefit provides a new avenue for potential solutions to decrease the prevalence of abuse, which will be discussed in a later section.

Pharmacist Responses

The pharmacist interviews were conducted for this study in order to add the knowledge and expertise from the medication specialists of the health professional team.
Current literature regarding the issue of ADHD drug abuse has failed to incorporate the role of pharmacists, who are uniquely poised to serve as the gatekeeper between the patient and the medication. The addition of the viewpoints of pharmacists may allow for a better understanding of the underlying issue, as well as possible new avenues to consider in the struggle against drug abuse.

Appropriate and Inappropriate Use

Unsurprisingly, all of the pharmacists agreed on the parameters of appropriate and inappropriate use. Like the majority of the students, the pharmacists believed that use of a prescription medication without having the prescription for it is inappropriate, both legally and for one’s health. The pharmacists also all agreed that using one’s prescription in a way that differed from the doctor’s orders, like increasing your own dose, was considered inappropriate use. In this scenario, the student responses wavered more, and some considered it to be up to the patient’s discretion. A possible reason for the consistency of the pharmacists on this matter is access to more knowledge and the ability to recognize the potential consequences of varying from the prescription’s instructions. While some students had mentioned they were not fully aware of the risks, the pharmacists were well-versed in the risks and benefits associated with stimulants, suggesting that the more knowledge one has about a medication, the more likely they are to advocate against its misuse and carry a more strict definition about what could be considered misuse.

One interesting consideration that arose in response to one of the pharmacist’s statements was how to categorize situations in which a patient has a legitimate prescription for a diagnosed case of ADHD but does not feel the need to use their full
prescription. In these scenarios, is it considered inappropriate use to not follow the prescription’s instructions each day? While many prescribers would probably say it was alright for a patient to skip days when he or she does not require the therapeutic effect, this situation would lead to the accumulation of extra pills in the month’s bottle. In this case, appropriate use could quickly turn into inappropriate use if the patient chose to divert the excess medication.

**Prescribing Patterns of ADHD Medications**

In terms of patterns of ADHD medication prescribing, pharmacists did not see much of a cyclical pattern of increase or decrease. As expected, the number of prescriptions coming into the Oxford pharmacies increased when school started as a result of the students returning to campus; however, the pharmacists did not see the amount of ADHD prescription increasing disproportionately. While the influx of the ADHD prescriptions themselves did not elicit concern, the arrival of prescriptions from unfamiliar doctors did present as an issue for some of the pharmacists. A few of the interviewees felt their professional judgment was hampered when they were faced with prescriptions from doctors in other areas of the state or other states entirely because they were not familiar with the doctor’s prescribing habits or practice setting. With less information about the prescribing physician, it may be more difficult for pharmacists to determine when a doctor should be consulted regarding concerns about a patient or a patient’s medication. If professional judgment and communication is hindered, some illicit situations may slip through the cracks.
Prevalence of Inappropriate Use

While there were various measures each pharmacist used on which they based their estimation of the prevalence of ADHD medication abuse, a concrete method for determining the frequency seemed to be difficult to attain. Overall, signs and symptoms of ADHD medication abuse and diversion remain camouflaged, especially when compared to other drug classes, such as narcotics. Primarily, the pharmacists used their data concerning the number of stimulant prescriptions filled, as well as their interactions with the community to gauge how often the prescriptions are misused after leaving the pharmacy, but in the end, the majority of the pharmacists felt their detection of ADHD prescription abuse was inadequate from their vantage point behind the counter. Regardless, all of the interviewees stated that ADHD prescription abuse was something that commonly occurred throughout the college community.

Suspicions of Inappropriate Use

Throughout the interviews, the pharmacists gave several examples of scenarios in which suspicions of medication abuse would arise. The first of these situations was a continual request for early refills. In the world of pharmacy, early refills are requested for honest reasons, such as leaving for a vacation or increasing their dose at the doctor’s honest recommendation without providing a new prescription to the pharmacy at that time. However, patients should only face these dilemmas temporarily, and the constant request for early refills on a monthly basis can cause concern for the pharmacist. Because ADHD medications fall under Schedule II drugs, they are not refillable and therefore require a new prescription to be brought into the pharmacy each time. However, even with the new prescription, pharmacists cannot fill the medication until the
required amount of time has passed since the last fill. Patients who insist they receive the medication before the allotted time are targets of suspicion because according to their records, they should not be out of their medication at that time, and if they are, it is likely that the patient is not using the medication correctly or may be diverting it to others.

Another situation in which a pharmacist might question a patient’s intentions is the insistence in paying with cash. Paying with cash may be another sign of early refills because some fill dates are set based on how often the insurance is willing to pay for that prescription each month. If a patient is trying to get the medication earlier and it falls outside the insurance window, they may attempt to pay with cash in order to circumvent the deadline set by the insurance. Another reason paying cash may add to suspicions is it bypasses some of the checks put in place to catch abuse because it avoids the creation of a record that can be cross-checked if necessary. However, potentially questionable behavior is sometimes hard to grasp because it is hard to distinguish which events are harmless and which events are pointing to illicit activities.

One pharmacist mentioned cookie-cutter speeches as a factor that may suggest abuse as well. Conversations with patients who sound as though they copied their discussion off of WebMD may suggest that they have tried to research and feign symptoms in order to obtain a prescription for ADHD medication rather than having the genuine disorder. However, this situation is another in which it is hard to determine the people who have a true need for the medication versus those patients who are pretending or exaggerating their attributes in order to fool a health professional, which has been cited as a potential source of ADHD prescriptions.
The final warning sign that was presented throughout the interviews was the presence of conflicting medications on a patient’s profile. While there are often medical reasons for seemingly counterintuitive medications prescribed to a patient, it is the job of the pharmacists to double-check in cases where those details are not clear. For example, while insomnia is a potential side effect of taking prescription stimulants, like those given to patients with ADHD, it is not typically a common symptom, especially when the medication is tailored to the patient’s needs. However, when someone takes more than prescribed or takes the medication without having the chemical imbalance seen in ADHD patients, trouble sleeping because a much more common issue that a doctor may attempt to fix with another medication. Therefore, when a pharmacist sees a patient on both a stimulant and a sleeping aid, he or she may feel the need to double-check with the prescriber to get some clarification on the patient’s situation and determine if the patient’s medication is being prescribed in a way that best benefits the patient’s health outcomes.

**Pharmacists’ Role in ADHD Medication Use**

The three key factors of the pharmacists’ role in medication abuse and general practice are sound professional judgment, efficient interpersonal communication, and comprehensive patient counseling. In terms of professional judgment, pharmacists go through education and training to not only dispense drugs, but also to know the physiology and chemistry behind the drugs and how to interact with patients. With this knowledge, pharmacists are able to catch fraudulent prescriptions, evaluate patient profiles for safety and efficacy, and instruct patients on how to safely use their
medications, as well as provide other supportive health services. Professional judgment is the backbone to efficient pharmacy practice.

Another important factor in combatting prescription drug abuse is interprofessional communication. Communication between doctors and pharmacists, as well as between pharmacists in different stores, is necessary in developing the full picture of a patient’s health status. In cases of suspected prescription drug abuse, pharmacists should be able to call the prescribing physician and address concerns about a patient’s health and decision-making. By incorporating the views of both health professionals, doctors and pharmacists can tackle the issue of a patient’s abuse together or clear up situations in which abuse was suspected but there is a medical explanation that can dispel the worry. Because patients often share different aspects of their health-related issues to each of their various providers, interprofessional communication is the only way to ensure each health professional has the most complete health profile possible.

Finally, effective patient counseling is another primary role of pharmacists in advocating for the proper use of prescription therapies. While communication between health professionals is invaluable, an open line of communication between pharmacists and patients is also necessary in the fight against prescription drug abuse. In the case of stimulants, letting patients know about the risks involved is important because many patients have a false sense of security regarding the safety of ADHD medications due to the belief that prescription drugs are safer and the fact that the potential effects of abusing prescription stimulants are not as apparent as other commonly misused drug classes. Communication with the patient is also important so the patient can feel comfortable discussing their health issues with the pharmacist. With a pharmacist’s main priority
being patient care, it is important for patients to feel as though pharmacists are approachable and nonjudgmental, especially if patients want to discuss struggles with drug addiction or consequences of misusing medication.

**Current and Future Policies for ADHD Medication Abuse**

With regard to prescription drug abuse, the main concern in recent years has been centered on narcotics. As such, the majority of the current policies put in place by the government agencies and the pharmacy administrations have been focused on ending the abuse of narcotic medications, such as opioids. Based on the pharmacists’ responses, there are no current policies that relate specifically to ADHD medications, and because the risks associated with narcotic abuse are more prevalent and detrimental, ADHD medications are often put on the backburner. However, given the level of concern shown by the pharmacists about the issue of ADHD medication abuse on the campus of the University of Mississippi, pharmacists would like to see more potential policies to help lower the prevalence of stimulant abuse.

The problem that arises when trying to develop policies for ADHD medications is that there is a lack of concrete evidence that can pinpoint ADHD medication abuse. Due to the smoke and mirrors surrounding stimulant abuse, policies have to work to around the issue, rather than being able to influence it directly. One possible suggestion does not directly involve the medical community but could serve to take away one of the major motivating factors for using ADHD therapies without a prescription. The students named academic pressures as the primary reason most students choose to take ADHD medications, but many also suggested that using stimulants to help boost academic performance may not lead to as many benefits as initially thought. With this in mind, one
pharmacist recommended a course or program to teach incoming college students how to study. With proper time management and tools for effective study habits, students may be able to reach the same benefits or more without having to turn to prescription medications.

Another potential policy that could be implemented could be to require more comprehensive patient counseling when a patient first fills a new stimulant prescription. Because most individuals with ADHD are diagnosed at an early age, they are probably already well-versed in how the medication works. However, with patients who are diagnosed later in life, their true need for the medication may come into question. Therefore, when someone comes into the pharmacy with a new prescription for an ADHD medication which they had not been previously prescribed, counseling that patient on what to expect with the medication, as well as the potential risks associated with abuse and diversion, patients can obtain a better understanding of the risks and benefits of their prescribed therapy. They may also feel more comfortable discussing future problems that arise with pharmacists after the initial communication has been opened.

Lastly, in line with the idea of increasing knowledge and awareness, the establishment of an “ask a pharmacist” program in college towns was presented as a possible solution. By communicating with health professionals in a less professional setting, patients may be more open to listening and discussing health issues that commonly affect college students. The pharmacists would be able to dispel common myths of prescription abuse, as well as allow students to ask questions without fear of
being reprimanded. Programs like this would also provide a good opportunity for a prescription drug disposal event, which may help limit the sources of diversion.

**Limitations**

A few potential limitations arose while conducting this study that could possibly have impacted the interpretation of the results. One limitation was the convenience sample selected for the interviews. While this was incorporated into the study design, the convenience sample may not be the most appropriate representation of the University’s population, as some academic majors were not included and the racial diversity of the sample was low. Although it is difficult to determine whether or not this would affect the results, the study may have benefitted from a larger, more representative sample of students. Another limitation is the potential for response biases in both the student and pharmacist populations. The students may have withheld information regarding their knowledge or viewpoint of medication abuse because of the legality issues and social stigmas associated with illicit drug use. For the pharmacists, their responses may have been swayed or limited by the policies that govern their place of employment, which may have led to more company-related answers rather than the pharmacists’ true opinions.

**Implications**

The results of this study may give rise to prospective implications for the practice of pharmacy. Going forward, an emphasis on patient-centered care and an open, professional dialogue between members of health care teams could provide for a better foundation on which to combat prescription drug abuse. An increased focus on patient
counseling, especially on medications with a higher potential to be misused, could also give patients the knowledge necessary to make better health decisions.

For the rest of the community, additional changes could be made in order to decrease the risk of more students turning to prescription stimulants. The addition of a program or course that teaches students how to manage their time, how to study effectively, and how to handle stress when feeling overwhelmed could be monumental in taking away the need for misusing ADHD medications. Implementing prescription retrieval programs in high risk towns would also help decrease the diversion of prescription medications by providing a safe avenue for medication disposal.

Finally, this study may present research ideas or questions for future investigation into aspects of ADHD medications. One suggestion for future studies is to evaluate the long-term health risks associated with prescription stimulant abuse. Currently, the abuse of ADHD medications is becoming more and more prevalent but has not yet been studied long enough to determine if long-term changes occur from using the medications without a prescription. A future study on this matter may shed some light on new health risks that are not currently known. Another study could assess the perspectives of a larger group of students to gauge whether or not the opinion that ADHD medications do not lead to long-term benefits is shared among a larger sample. This idea could represent a changing mindset about the use of prescription stimulants as information about scientific studies and other educational data becomes more easily accessible.

Ultimately, there seems to be a dichotomy that exists between the high prevalence of ADHD medication abuse perceived by the community and the risk versus benefits comparison people associate with misusing stimulants. With the mindsets of many
people leaning more towards the side of the benefits failing to outweigh the risks, it is perplexing to see the prevalence as high as it currently is among college students at the University of Mississippi. However, this realization is promising because it illustrates that increased information and beneficial lifestyle changes have the potential to push the general population away from the use of prescription stimulants and into a healthier future.
APPENDIX

Interview Guides:

Student Interviews

Thank you so much for taking the time to speak with me today. My name is Meghan Wagner, and I am a first-year pharmacy student and Honors College student. I am conducting a study to describe the use of ADHD medications by local college students. I am doing this study to fulfill research requirements for the pharmacy school and Honors College, but this is also a topic I am very passionate about. Thank you again for assisting me with this project!

The goal of this interview is to get your perspective about ADHD medication use by local college students. Specifically, I want to examine 1) appropriate (and inappropriate) use of these medications, 2) how students access ADHD medications, 3) prevalence of prescription ADHD medication use on campus, and 4) reasons for using ADHD medications.

At this time, we will go over the consent form before you decide whether or not you would like to participate in this study.

Demographics:

1. How old are you?

2. What is your current major?
3. What is your current year classification?

4. What gender do you identify as?

5. What race do you identify as?

6. Are you a member of a Greek sorority/fraternity?

Questions:

1. Is it acceptable to use ADHD medications without a prescription? Why?

2. How should someone without a prescription decide what dose of ADHD medication they should take?

3. Is it more risky to take ADHD medications without a prescription versus with a prescription? Why?

4. Is it acceptable for someone with a prescription to take more than the prescribed dosage? Why?

5. How do students without a prescription obtain ADHD medications?

6. Have you heard of students trying to “beat the system” in order to obtain ADHD medications?

7. How common do you think it is for students to take ADHD medication without a prescription during their college career? Why?

8. How big of an issue is ADHD medication abuse on the Oxford campus?

9. What are students’ motivations behind using ADHD medications? Are the reasons academic, athletic, social, etc.?

10. Does using ADHD medications give some students an extra advantage academically, athletically, or socially? Why?

11. What pressures may cause a student to consider using ADHD medications?
Pharmacist Interviews

Thank you so much for taking the time to speak with me today. My name is Meghan Wagner, and I am a first-year pharmacy student and Honors College student. I am conducting a study to describe the use of ADHD medications by local college students. I am doing this study to fulfill research requirements for the pharmacy school and Honors College, but this is also a topic I am very passionate about. Thank you again for assisting me with this project!

The goal of this interview is to get your perspective about ADHD medication use by local college students. Specifically, I want to examine 1) appropriate (and inappropriate) use of these medications, 2) trends in the volume of ADHD medications filled in Oxford, 3) how you can detect signs of inappropriate ADHD medication use, and 4) your thoughts on policies about ADHD medication use.

At this time, we will go over the consent form before you decide whether or not you would like to participate in this study.

Demographics:

1. Do you work in a chain or independent pharmacy?
2. How long have you worked as a pharmacist?
3. How long have you worked as a pharmacist in Oxford?
4. What is your pharmacy’s general daily prescription volume?
1. To what extent are ADHD medications overprescribed for local college students, if at all? If you think ADHD medications are overprescribed for local college students, to what would you attribute that to? What physician factors? What patient factors?

2. Is there a pattern of increased or decreased ADHD medications dispensed to local college students? If so, when? What do usage patterns for local college student look like over the course of a year?

3. If a college student is able to “share” some of their ADHD medication with others or sell their medication to others, what does this suggest about their actual need for the medication? Is there something else going on? What might that be?

4. How acceptable is it for college students without a prescription to take ADHD medications? Are there any situations in which it might be considered acceptable to take an ADHD medication without a prescription?

5. Is it acceptable for college students to take a higher dose of ADHD medication than prescribed? If so, when?

6. Is there an increased risk of potential health issues when college students take ADHD medications without a prescription? What might those be?

7. Have you ever had suspicions that a college student is overusing or diverting their ADHD medication? If you do, what signs suggest overuse or diversion?

8. Have you ever heard “talk” or “rumors” about ADHD medication abuse among local college students? Has this affected any decisions that you have made at work? If so, how?

9. How prevalent is ADHD medication abuse by college students? Why do you think the abuse is at this prevalence rate?
10. Does your pharmacy have any current policies about prescription dispensing when abuse is suspected? Do any relate specifically to ADHD medications?

11. Do you feel there is anything you can do to stop potential abuse when you suspect a patient of diverting or overusing their ADHD medication?

12. Do you feel there is anything you can do if you feel as though a patient may be overprescribed an ADHD medication?

13. Do you have any ideas for possible policies that could help pharmacists combat ADHD drug abuse?

14. Do you feel that pharmacists can/should have a role in recognizing and contesting prescription drug abuse? What might that be?
BIBLIOGRAPHY


