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PRESCRIPTION ADHERENCE RATES ACROSS MEDICATION CATEGORIES

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Review Article

PRESCRIPTION ADHERENCE RATES ACROSS MEDICATION CATEGORIES

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ABSTRACT: Prescription adherence is a major public health challenge, as non-adherence to medication instructions can lead to poorer health outcomes and higher healthcare costs. Although prescription adherence is crucial for managing patient compliance and health outcomes, adherence rates differ greatly between medication types. The main objectives of this study were to determine prescription adherence rates across six medication types (antibiotic, cardiac, chronic health, pediatric, and psychiatric) and identify sources of variation. We searched PubMed and Web of Science databases for relevant published articles. Previous research data were selected related to prescription adherences and compliance rates were included in our analysis. Results from twenty-three previous studies were included: four to five studies per medication category to limit the influences of geographic location and difference in adherence measurement. The average prescription adherence rate for antibiotics, cardiac, chronic health, pediatrics, and psychiatric medications were 58.3%, 75.6%, 68.8%, 55.2%, and 29.2% respectively. The data found highlights the medications with the highest and lowest average adherence overall. Factors affecting adherence rates include regimen length, parental control, cognitive impairment, polypharmacy, and understanding instructions. Drug counseling has been shown to improve adherence. These findings provide a foundation for future research aimed at enhancing prescription adherence and improving patient health outcomes.

Key Words: Prescription adherence, medication adherence, antibiotic(s), cardiac, chronic health, pediatrics, and psychiatric

INTRODUCTION

Prescription adherence can be defined as "the extent to which a person's behavior—taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider" [1]. Substandard adherence to medication instructions from a provider is often the leading obstacle to efficient pharmacotherapy as non-adherence is associated with increased morbidity and mortality [1-5]. For clarification, morbidity is defined as the "state of being symptomatic or unhealthy for disease or condition;" it is not to be confused as a synonym for mortality, which refers to the number of deaths that have occurred due to a specific illness or condition [6]. Moreover, because non-adherence elevates morbidity and mortality, non-adherence is additionally cost-ineffective for patients and the healthcare system due to the excess hospital visits that would have been unnecessary with proper adherence. Considering these issues, healthcare providers should aspire to optimize adherence among patients [1].

However, the evaluation of adherence can be difficult because in previous years, adherence rates tended to have wide variance between sources due to the differing methods of assessment [2, 7]. In addition to this issue, there has been misuse of the words "adherence" and "compliance" as sources often use them interchangeably [2, 5]. "Adherence" outlines that it is the patient's decision whether or not to follow the prescriber's recommendations and they are not to blame for such, while "compliance" accounts to the degree of which a patient complies to the provider's instructions [5]. "Adherence" overall provides a more positive connotation of a patient's choice in the patient-doctor relationship; it considers the patient's lifestyle and environmental influences of their decision. There are two types of prescription non-adherence: unintentional and intentional. Unintentional non-adherence could be due to issues such as language

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barriers, forgetfulness, access to medication, etc. [5, 8]. Examples of non-adherence include deliberately not taking doses or not following directions (e.g., taking with food) [5, 8]. Furthermore, Vrijens and his colleagues outlined three parts of adherence: initiation, implementation, and discontinuation. Initiation is defined as when the patient takes the first dose of the medication; issues within this step would be a delayed start to the treatment regimen or a complete absence of initiation altogether [2]. Implementation is the period between the first dosage to the last dosage taken and to which extent the patient follows the prescriber's instructions for intake, and discontinuation indicates the end of therapy. Issues within these stages are subpar compliance to instructions and premature termination of treatment [2].

Standardizing the definition and steps of adherence is imperative to limit the previously mentioned dissimilarity of data among different sources due to contrasting methods. However, since the definition of adherence hasn't been standardized, there are a few common variants for how researchers outlined adherence. The Morisky Green test was originally developed to evaluate medication adherence for patients with hypertension, with a sum of scores ≤6 and ≤8 [9]. In this way patients could be categorized as having high, medium, or low adherence. Another definition of adherence was through the utilization of Percent of Days Covered (PDC) ≥80%. This can be explained as the percentage of days the patient takes their medication across the prescription timeframe [10]. If the patient had ≥80%, they were defined with "good" adherence [10]. A similar test to PDC is the Medication Possession Ratio (MPR). MPR can be defined as "the number of days for which the drug has been supplied during the follow-up period divided by the number of days elapsed during the period" [11]. Unlike PDC, MPR considers the amount of medication left over as it tracks the number of pills taken over the treatment time. MPR less than 80% is outlined as non-adherent.

In the present study, we reviewed published literature and attempted to determine and compare prescription adherence rates of the following medication types: antibiotic, cardiac, chronic health, pediatric, and psychiatric medications.

MATERIALS AND METHODS

For data collection, online resources such as Google Scholar, PubMed and Web of Science databases were utilized to locate the published literature. Keywords for the search included prescription adherence, compliance, prescription, medication adherence, antibiotic(s), cardiac, chronic health, pediatrics, and psychiatric medications. Twenty-three articles were sorted into either an antibiotic, cardiac, chronic health, pediatric, or psychiatric subgroup based on their content (e.g., literature discussing antibiotics were synthesized together). Once sorted, the sources' results were placed into Microsoft Excel and analyzed.

RESULTS

As shown in **Figure 1**, the average prescription adherence rates were found to be 58.3% 75.6%, 68.8%, 55.2%, and 29.2%, for antibiotics, cardiac, chronic health, pediatrics, and psychiatric medications, respectively. Cardiac and chronic health medications demonstrate the highest adherence rates while psychiatric medication adherence rate is the lowest. Each of these medication types is elaborated in in the following paragraphs (**Figure 2-6**). **Figure 2** shows average adherence rates for antibiotics reported in the five studies. The overall average is 58.3%.

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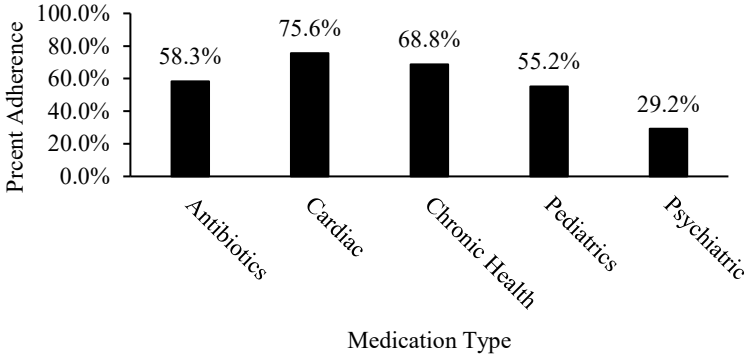

Figure 1. Average prescription adherence rates for six different medication types.

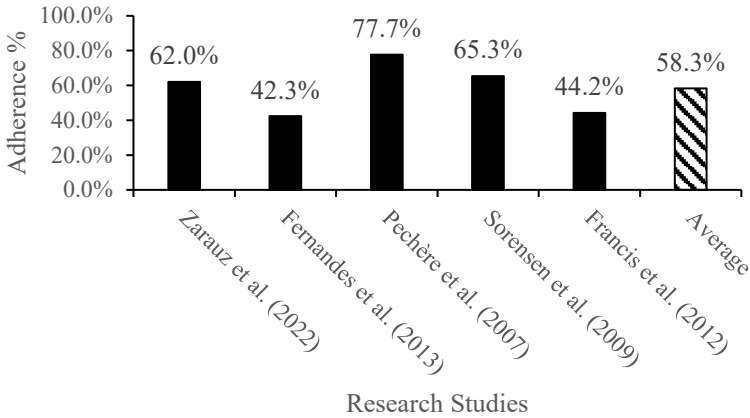

Figure 2. Prescription adherence rates for antibiotics as reported in the five studies [4, 12-15].

The method of reporting adherence varied between sources. Zarauz et al. (2022) and Fernandes et al. (2013) utilized the Morisky-Green Test

[4, 12]. For Pechere et al. (2007), adherence was defined as the participants not knowingly skipping doses and/or not having leftover medication [13]. For Sorensen et al. (2009), "good" adherence was if the participants took ≥80% of their prescribed medication [14]. Francis et al. (2012) defined adherence as consuming the complete prescribed treatment [15]. **Figure 3** shows average adherence rates for cardiac medications reported by five studies. The average, therefore, is 75.6%.

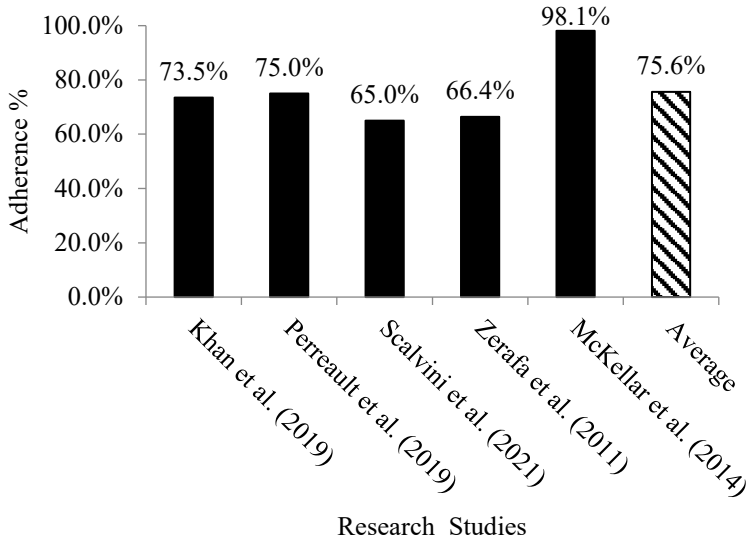

Figure 3. Prescription adherence rates for cardiac medications as reported in the five studies [10, 16-19].

The method of reporting adherence varied between sources. Khan et al. (2019) reported adherence rate as the percentage of initial patients who completed their treatment [16]. Perreault et al. (2019) and Scalvini et al. (2019) defined a patient as adherent if the PDC was ≥80% [10, 17]. Zerafa et al. (2011) defined adherence through a compliance

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questionnaire [18]. McKellar et al. (2014) outlined that if the patients continued to take their medication, they demonstrated adherence [19].

Figure 4 shows average adherence rates for chronic health medications reported by four teams of researchers. Overall, the average is 68.8%.

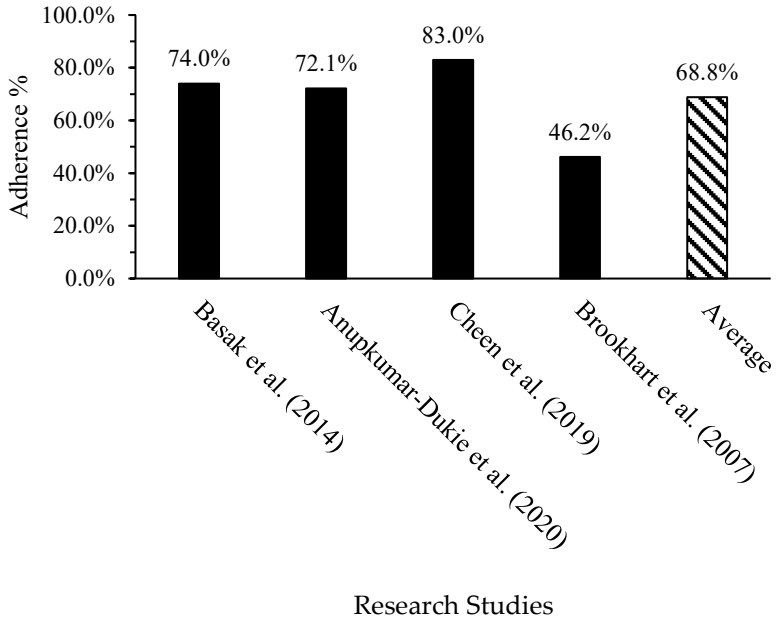

Figure 4. Prescription adherence rates for chronic health medications as reported in the four studies [8, 20-22].

The method of adherence varied between sources. Basak et al. (2014) defined adherence as PDC≥80% [20]. Anoopkumar-Dukie et al. (2020) outlined nonadherence as any deviation from the treatment regimen (one or more missed dose) [8]. Cheen et al. (2019) didn't have a specific definition for adherence because it was a literature review of sources (of which utilized different methods of adherence) [21]. Brookhart et al.

(2007) defined adherence if a patient refilled their prescription within 90 days of their treatment completion [22]. **Figure 5** shows prescription adherence rates for three different categories focused in pediatric populations—chronic disease medication, ADHD medication, and antibiotics medication. The average of the three categories is 55.2%.

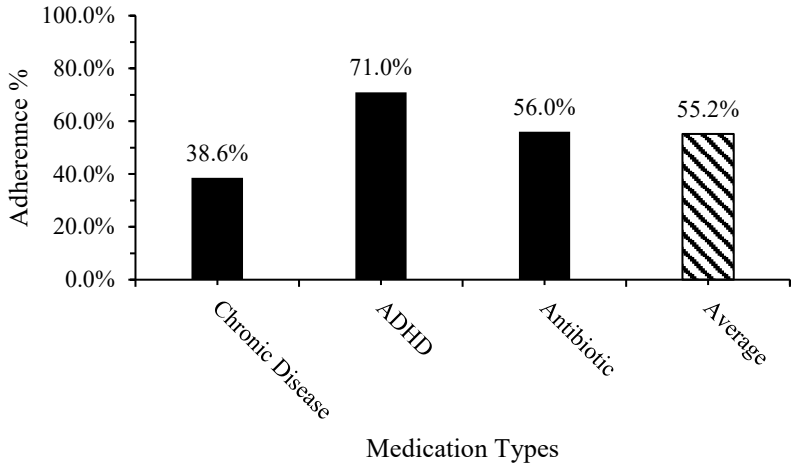

Figure 5. Prescription adherence rates for pediatric medication.

Pediatric medication is visualized by types of medication rather than by individual studies as reported above. The data points were obtained from multiple studios: El-Rachidi et al. (2017), Matsui et al. (2000), Nayak et al. (2019), and McGrady & Hommel (2000). **Figure 6** shows the average adherence rates across five different studies. The overall average is 29.2%.

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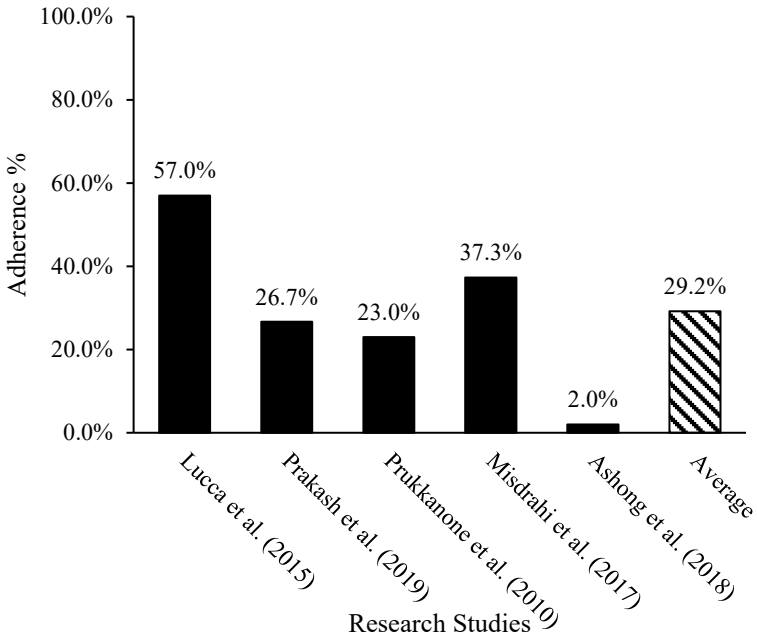

Figure 6. Prescription adherence rates for psychiatric medication reported in the five studies [11, 25-28].

The method varied among sources. Lucca et al. (2015) utilized the Medication Adherence Rating Scale (MARS), a nonadherence questionnaire [23]. Prakash et al. (2019) used the Morisky-Green test [24]. Prukkanone et al. (2010) used Medication Possession Ratio (MPR) [11]. Misdrahi et al. (2017) outlined adherence as whether they properly implemented treatment (e.g., following dosages per day) and did not discontinue treatment [25]. Ashong et al. (2018) utilized an adherence questionnaire [26]

Table 1. A summary of the 23 studies included to compare the prescription adherence rates in the present study.

Research Team, Year, Location	**Major Findings**
Anoopkumar-Dukie et al., 2020, Australia [8]	In an Australian study of 1,217 patients, correlations were discovered between adherence and the number of chronic health conditions, polypharmacy, and patient age. Findings suggested people living with chronic conditions and taking multiple non-prescription medications were more likely to demonstrate worse adherence to prescription medications.
Ashong et al., 2018, Ghana [26]	In schizophrenic patients, adherence to medication was a major problem. In a cross-sectional study of 259 patients, 98.1% poorly adhered to their medication for schizophrenia. The reasons behind non-adherence were economic challenges, forgetfulness, and the feeling of wellness.
Basak et al., 2014, United States [20]	In an analysis of 6,043 patients with differing methods of recording adherence, an adherence of 74.0% was found for chronic conditions in general. Additionally, many patients were subjected to the inconsistent adherence measurement, making consistent interpretation difficult; this could be aversive for patient care decision making.
Brookhart et al., 2019, British Columbia [22]	Of 239,911 patients, 53.8% demonstrated non-adherence (46.2% adherence) to their statin medication. They advised physicians to be aware a significant number of patients have long periods of non-adherence, but a follow-up visit would reinstate the medication and improve adherence.
Cheen et al., 2019, USA, Canada, Sweden, France, Denmark, The Netherlands, and Iceland [21]	In a meta-analysis of 33 articles—consisting of 539,156 participants—non-adherence of chronic health conditions was discovered to be 17%, meaning a recorded 83% of adherence in patients. Reasons for non-adherence included younger age, number of concurrent medications, specialty of practitioner, and high co-payments. Differences found between studies resulted from variance in age, study setting, and adherence definition.

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Research Team, Year, Location	Major Findings
El-Rachidi et al., 2017, USA [1]	Factors associated with nonadherence in children included culture/socioeconomic status, stress/family conflict, scheduling, taste, and lack of understanding. For different age ranges, different counseling requirements should be met. For adolescents, prescription counseling should address them as adults. For those younger, direct parents towards responsibility, but still explain the processes behind medication. For pediatric patients with ADHD, a recorded 20% stop after the first prescription. For chronic pediatric patients, adherence was as low as 56% by the 10th day of treatment.
Fernandes et al., 2013, Portugal [4]	For antibiotics, non-adherence was recorded at a rate of 57.7%. Factors driving the non-adherence included increasing age, difficulty in buying the antibiotic, the duration of treatment, ingestion difficulties, and level of satisfaction with information from physician. In general, non-adherence to antibiotics was common.
Francis et al., 2012, UK [15]	Of 1290 patients, only 44.2% adhered to their entire antibiotic treatment plan. Influences on adherence included prior duration of symptoms, length of antibiotic treatment, choice of antibiotic, and primary care network.
Khan et al., 2019, Europe [16]	A comparison of antiplatelet treatment compliance rates between six months and twelve months. 73.5% was the calculated average adherence rate—described as the percentage of subjects prescribed at the baseline divided by the discharge. The compliance gap was calculated from the difference in adherence rates between study groups.
Lucca et al., 2015, India [23]	Non-adherence was a frequent phenomenon in psychiatric patients. In a cross-sectional study, 43% of 400 patients were non-adherent to their prescriptions because of either drug-related or disease-related factors.
Matsui et al., 2000, Canada [27]	In a study of 1014 children, 92.7% filled their prescriptions after their discharge from the hospital. An estimated 30% of pediatric patients with a chronic condition did not have their prescriptions refilled. Parents' reasons for not refilling the prescription included deeming the medication unnecessary (27%), financial issues (6.8%), and being too busy (6.8%). Unsatisfactory explanation of the medical issue,

Research Team, Year, Location	Major Findings
	instructions for treatment, and instructions for follow-up treatment led to non-compliance. Additionally, the rate of prescription non-filing for pediatric patients was at least 7%. However, that number was lower than adults in a similar setting.
McGrady & Hommel, 2000, USA [28]	In a systematic review of ten studies, 90% demonstrated a relationship between non-adherence and increased health care use; when children do not adhere to their chronic health prescriptions, they were more likely to have to return to the hospital or other place of health care. Data additionally found 50% to 88% of children and adolescents are non-adherent to their prescribed regimens for chronic conditions.
McKellar et al., 2014, Australia [19]	The study aimed to determine the lipid-lowering medication compliance of coronary heart disease patients. After a year, adherence to medication reported 98.1%. The percentage was considered significantly higher than other chronic disease populations, which had an adherence rate of about 50%. The most important factor contributing to the 98.1% was the positive influence of the National Heart Foundation of Australia guidelines.
Misdrahi et al., 2017, France [25]	Of 68 patients with schizophrenia, only 37.3% adhered to their treatment in the first six months. 87.8% of adherent patients had consistent implementation if taking their medication as prescribed. This study utilized Medication Event Monitoring System (MEMS) to keep track of when the medications were being taken.
Nayak et al., 2019, India [7]	62% of children with ADHD had good adherence to their medication. Adherence was better in children with less severe symptoms, an absence of side effects, and a stimulant prescription. Overall, adherence to medication in preadolescent children with ADHD was sufficient; although, the sample consisted of upper and lower middle-class children which could contribute to the high adherence.
Pechere et al., 2007, Brazil, China, Italy,	Of 4,088 adults (ages 18-99 years), 22.3% admitted to non-adherence. Variables influencing non-adherence consisted of country, daily dosage regimen, age, and attitudes to doctors and antibiotics. In ten of the eleven

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Research Team, Year, Location	Major Findings
Japan, Mexico, The Netherlands, The Philippines, Russia, South Africa, Turkey, and the USA [13]	countries, there was a poor understanding of how non-adherence would increase antibiotic resistance development.
Perreault et al., 2019 Canada [17]	In a study of 33,311 patients, 75% of oral anticoagulant users were considered adherent with a PDC≥80%. Older age, female sex, higher risk of atrial fibrillation, prior stroke, and treatment with chronic cardiovascular disease drugs all were associated with higher adherence levels.
Prakash et al., 2019, India [24]	Non-adherence to medication was prevalent in depressive illnesses. Non-adherence would increase the risk of relapse, morbidity, burden of care, and avoidable health cost. Nonadherence was found to be 73.33%, making adherence a mere 26.67%. Characteristics of the depressive disorder, disease treatment, beliefs, and social and economic support influenced adherence.
Prukkanone et al., 2010, Thailand [11]	In a study of 1,058 patients, the overall adherence in those attending the studied facility was initially 41%, but those who did not return for a second visit could be assumed to be non-adherent; thus, adherence could be considered as low as 23%. 39% of patients received more than one drug during one visit to the facility or switched medications. Adherence to depression medication in Thailand was low compared to other regions.
Scalvini et al., 2021, Italy [10]	Of 100,422 heart failure patients, 65% of patients adhered to the medication they received. Of those patients, re-hospitalizations and mortality were significantly reduced. Additionally, polypharmacy increased the rate of non-adherence in heart failure patience.

Research Team, Year, Location	**Major Findings**
Sorensen et al., 2009, Spain, Italy, and the USA [14]	In a systematic review, 25 articles were considered. However, only one reported treatment success in adherence for antibiotics for acute exacerbations of chronic bronchitis. A reported 65.3% adherence was demonstrated. The review found non-adherence to antibiotics to have a chance of impact on increased costs of health care.
Zarauz et al., 2022, Spain [12]	In a study of 333 patients, 38% did not have full adherence to their antibiotic regimen. The reasons associated with non-adherence include forgetfulness, adverse effects, improved symptoms, and issues with following a schedule. Of the patients, 57% had leftover treatments at home, but only 11% recycled it.
Zerafa et al., 2011, Republic of Malta [18]	Patient non-adherence had a negative impact on a patient's quality of life post-heart surgery. Those who received drug counseling had a higher adherence rate (88%) than those who did not receive counseling (66%). Thus, having a sufficient understanding of the post-operative instructions and dangers increased adherence.

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Discussion

As seen in Figures 1 and 2, the average adherence rate for antibiotic medications was 58.3%. These results varied by study, with the highest antibiotic adherence rate being 77.7% and the lowest being 44.2% (Figure 1). This is likely due to the varying definitions of "adherent" and "non-adherent" seen between studies. However, the average in this study was calculated using a total of five different studies, and therefore the data should represent the actual percentage quite accurately over different countries and data collection methods. An average above 50% provided a surprising revelation; we expected the results for antibiotics to be considered lower because of a typical seven-to-fourteen-day treatment plan [29]. As stated by Arlinghaus & Johnson, "forming a routine can take a long time and is highly variable between individuals" [30], therefore, we hypothesized that the antibiotic treatment adherence would be significantly lower than what was found because a routine of taking medication cannot be established in such a short duration of time.

However, the adherence rate is not as high as it could be. If not adherent to their medication, patients may be responsible for bacterial resistance [12]. When pathogens develop resistance against antibiotics, treatment becomes more difficult as it leaves the body to be more vulnerable to diseases [31]. Due to the large implications surrounding antibiotic adherence, providers should monitor their patients more closely to increase the adherence rate and limit antibiotic resistance development. In addition, we recommend prescribers to utilize a short treatment regimen. For urinary tract infections (UTIs) in women and community-acquired pneumonia, a three-to-five-day treatment plan was proven to be "at least as effective as" the seven-to-fourteen-day regimen [29, 32]. By decreasing the days of treatment, patients could be more likely to adhere to their prescriptions as 1) the treatment duration appears more achievable, and 2) it decreases the time to forget about the medication.

As seen in Figures 1 and 3, the average adherence rate for cardiac medications was 75.6%. These results varied by study, with the highest adherence rate being 98.1% and the lowest being 65.0% (Figure 3). The variations are likely due to definitions of "adherence" and "non-adherence" varying within the studies analyzed. However, over the five studies used in the cardiac medication analysis, all had a relatively high rate of adherence (Figure 3). This could be due to the older age demographic of patients who took cardiac medication. Elderly populations are likely to have multiple prescriptions. As Pechere and their colleagues found in their study of antibiotics, respondents who "reported taking regular or daily non-antibiotic medication" demonstrated better adherence to acute therapy than those who were not used to taking daily medication [13]. While cardiac treatment is not acute, the principle still applies that routine behavior with medication improves adherence—furthering the notion antibiotic prescriptions can be difficult to adhere to as treatment is too short to develop routine, but too long to consistently remember to take medication. However, Anoopkumar-Dukie and their colleagues discovered if patients were consuming *non-prescribed* medications in addition to their prescriptions, they would be less likely to adhere [8]. Thus, outside medications that are not routinely taken (non-prescribed) can disrupt the routine of adherence rather than assist it. As antibiotics often do not assist with immediate pain and symptoms, patients may take over-the-counter medications, thus potentially disrupting their capability of developing routine and decreasing adherence. Regardless, in this study, cardiac medications (lipid lowering, blood medications, etc.) as a whole were found to be the medications with the highest adherence rate overall.

As seen in Figures 1 and 4, the average adherence rate for chronic health medication overall was 68.8%. Over the four studies analyzed, the definition of adherence varied—resulting in a range of adherence rates (83.0% - 46.2%) (Figure 3). This large range outlines why it's important for researchers to have a standardized adherence definition otherwise the

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data can be skewed and nonrepresentative of actual adherence rates. Comprehensively, chronic health medications still had the second highest average adherence rate (Figure 1). This could be due to the patient's perception of their illness. Chronic conditions are long-lasting and detrimental to patients' health. The perceived intensity of a patient's condition may result in them identifying medication of high importance—thus increasing adherence.

Conversationally, heart disease is considered a chronic condition. Cardiac medication has a higher percentage of adherence rate than the generalized category of chronic health medication in our results—therefore amplifying the importance of specificity. While chronic health in general considers patients of all age ranges and diseases, cardiovascular illness is typical for older populations and thus demonstrates different results. Due to the time constraints of our study and the large number of chronic illnesses, the generalization of conditions is necessary. To better analyze how providers should monitor those with chronic conditions, we believe future research should place significance on certain conditions. By looking at specific chronic conditions, providers would have a better judgement of how closely they should monitor their patients as each condition requires different treatment.

As seen in Figures 1 and 5, the average adherence rate for pediatric medication overall was 55.2%. As stated in the results section above, because pediatrics is a broad demographic, it was recorded in terms of separate medication. As shown, ADHD medication demonstrates the highest adherence out of the three groups and chronic health medication the lowest (Figure 5). Parents are the ones usually giving the medication to their children. A study done by Marsh and their colleagues in rural Australia found a child's symptom relief (or lack thereof) influences a parent's decision to prematurely terminate treatment [33]. Thus, pediatric medication adherence is often based on the parent's perception

of illness rather than the child's actual state of illness. Therefore, ADHD medication could be demonstrating the highest adherence in pediatrics as it is the parent's perception that the medication is effective and necessary.

An interesting development within our study is the change in adherence rates across the general and pediatric populations for chronic health medication and antibiotics. In Figure 5, pediatric chronic health medication adherence is a low 38.6%, but in Figure 4, chronic health medication demonstrates a high 68.8%; there is a 30.2% difference in adherence across the general population versus pediatric population. For antibiotics, there is a smaller difference of 4.9% (58.3%—56.0%). While previously hypothesized cardiac and chronic health medication have the highest adherence rates due to longevity and persistence of medication, the comparison of pediatrics medication appears to undermine that premise. The data found for antibiotic and chronic health medication adherence advances the preceding notion that parents' interpretation of their children's illness influences their likelihood to adhere to their child's prescription.

As seen in Figures 1 and 6, the average adherence rate for psychiatric medication overall was 29.2%. We hypothesize the low adherence rate is due to the nature of the category itself. Psychiatric patients are often influenced by their cognitive impairment and psychosocial profile, therefore, lowering the adherence [11]. However, it is imperative to reference the potential skew in the data as the study from Ashong and their colleagues found only a 2% adherence [26]. This study was from Ghana while the others were from India, Thailand, and France. The differences through method of recording adherence and geographic location can play an influential role in the documented percentage (and subsequently the overall average). However, the data is still critical to our results as it demonstrates global differences. Ghana's low percentage in comparison to other countries may signify an issue within the country

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itself; although, the internal situation of Ghana will not be discussed in this paper as it falls outside the scope of our study. Regardless, we recommend that the providers in Ghana to monitor adherence closer than those in other countries. However, as psychiatric adherence is the lowest overall, and as this pattern is also seen in the other studies analyzed, providers globally should monitor their psychiatric patients' adherence significantly more than other medical categories.

To improve adherence rates for all categories, we recommend drug counseling for all patients. Patients may be better informed about the importance of adherence with drug counseling beforehand; interventions such as drug counseling have resulted in improved adherence [18]. According to a 2011 study done by Zerafa and their colleagues in the Republic of Malta, patients who receive drug counseling showed a 21.8% increase in adherence compared to those who did not [18]. The intervention in this case consists of verbal, written, and pictographic instruction given by an undergraduate pharmacist [18]. In this way, medical instructions can be understood by patients regardless of education level, literacy, etc. [18]. Drug counseling as a field and profession is ever advancing and expanding; the importance of and need for this practice is highlighted by our study of adherence.

Conclusion

Average prescription adherence rates vary for antibiotics, cardiac, chronic health, pediatric and psychiatric medications. However, cardiac and chronic health medications demonstrate the highest adherence rates (Figure 1). As those medications are due to persisting conditions, they may have higher adherence due to establishing routine over a longer prescription schedule. Conversely, antibiotics could potentially present a lower adherence than cardiac and chronic health medications because they often treat short-term illness that is unprojected and thus can be harder to develop a routine for. Psychiatric prescriptions are likely the

least adherent due to the nature of the issues they treat, and the fact that they must be taken consistently to be effective. Additionally, pediatric adherence rates tend to deviate from the expected results in other categories, as seen in Figures 1 and 5; this is likely due to parental perceptions of illness.

These findings are paramount because they highlight the importance of a standardized definition of adherence, demonstrate the overall need for an increase in prescription adherence, and call attention to medication categories that need the most monitoring. Providers can use the results found in this study to motivate them to oversee their patients' prescription adherence (particularly in the low percentage categories). If this study were to continue, we would work towards identifying more factors that influence medication adherence, further analyze specific conditions' adherence rates, and determine further steps healthcare workers can take to increase adherence rates.

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