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Exploring Antibiotic Self Medication Patterns: A Cross-Sectional Study among Patients in Multiple Hospitals

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Abstract

Purpose: The purpose of this study is to explore the multifaceted impact of self-medication with antibiotics, delving into its implications for public health. The potential repercussions of self-medication extend beyond individual well-being. This study investigates the broader consequences, including the wastage of crucial healthcare resources, the development of antibiotic resistance, adverse reactions, delays in seeking appropriate medical care, and the exacerbation of common illnesses. By understanding the complexities surrounding self-medication, particularly with antibiotics, we aim to contribute valuable insights to inform public health strategies, medical interventions, and educational campaigns.

The research seeks to identify patterns, motivations, and behaviors associated with self-medication, shedding light on the factors that drive individuals to bypass professional medical advice. With a focus on antibiotics, a class of drugs critical for treating bacterial infections, the study aims to highlight the potential risks and challenges posed by unsupervised antibiotic use.

Methodology: This cross-sectional study, conducted from September 13 to September 25, 2022, investigates self-medication with antibiotics among 300 patients from five hospitals. Employing a confidential 20-question questionnaire administered through face-to-face interviews, the research aims to understand prevalence and patterns of self-medication. Quantitative data analysis utilizes parametric Z-tests through SPSS Software (version 21). Ethical considerations include obtaining approval, ensuring informed consent, and maintaining confidentiality. Limitations include potential selection and recall bias associated with convenience sampling and self-reported data, respectively.

Findings: Among the 300 participants, 47% were male, and 53% were female. The majority were adults aged between 20 to 40 years, with 64% from Rawalpindi. Over 50% of participants had matriculation or higher education. Ninety-seven percent of people had used antibiotics at least once in their life, with 63% practicing self-medication. Notably, 49% self-medicated 1-5 times in the past year. The primary reasons for self-medication included convenience (47%), personal experience (34%), and previous doctor's prescriptions (32%). Only 36% completed the prescribed antibiotic course. A significant percentage (71%) never changed the dosage of antibiotics, while 22% sometimes altered the dosage. Switching antibiotics during the course occurred in 21% of cases, primarily because the initial treatment was ineffective. Additionally, 51% of participants believed they could successfully treat common infections with antibiotics. Most participants (63%) stopped taking antibiotics if they experienced side effects during the course. A majority (62%) did not complete the antibiotic course after early symptom relief. Regarding dosage, 74% of participants believed that larger antibiotic doses did not guarantee quicker action. Furthermore, 36% of participants occasionally gave prescribed antibiotics to sick family members, and 10% always did.

Unique Contribution to Theory, Policy and Practice: This research significantly advances our understanding of antibiotic self-medication across theoretical, policy, and practical dimensions. The study intricately explores the prevalence and nuanced patterns characterizing patients' self-medication behaviors with antibiotics, thereby contributing to the refinement of existing theoretical frameworks in healthcare behavior. The comprehensive insights gained from this research provide a foundation for a more sophisticated understanding of the intricate interplay of factors influencing patients' decisions regarding antibiotic use. This understanding enables the formulation of targeted policies aimed at mitigating the potential risks associated with unsupervised antibiotic use, contributing to broader public health initiatives combating antibiotic resistance and ensuring the well-being of communities.

Keywords: *Antibiotic Self-Medication, Healthcare Behavior, Patient Practices, Cross-Sectional Analysis, Prescription Misuse*

Introduction

The escalating global challenge of antibiotic resistance necessitates a thorough examination of antibiotic self-medication practices, a prevalent behavior with far-reaching implications for public health. Studies underscore the widespread nature of self-medication with antibiotics, revealing a complex interplay of factors such as convenience, accessibility, and perceived efficacy that drive individuals to engage in unsupervised antibiotic use. Understanding the dynamics of antibiotic self-medication is crucial for tailoring interventions to address the unique motivations of diverse demographic groups.

In the context of diverse patient populations, this cross-sectional study aims to provide a comprehensive exploration of the prevalence, patterns, and motivations associated with antibiotic self-medication. Drawing inspiration from the work of researchers (1, 2), the research investigates demographic nuances, including age, gender, education, and geographic location, to unravel the multifaceted influences shaping self-medication practices. Such insights are imperative for the development of targeted interventions that consider the specific needs and challenges faced by different patient groups.

Knowledge gaps and attitudes towards antibiotic use, as highlighted by researchers (3), are integral components of this inquiry. Previous research indicates the importance of patient-provider communication in influencing healthcare behaviors (4), emphasizing the need for effective communication strategies to address the root causes of antibiotic self-medication.

As the study employs a comprehensive questionnaire administered through face-to-face interviews, it aspires to bridge existing gaps in literature, providing a nuanced understanding of patient perspectives. The ultimate goal is to inform evidence-based interventions, policy considerations, and educational initiatives that foster responsible antibiotic use, safeguard patient well-being, and contribute meaningfully to the global efforts to combat antibiotic resistance.

Literature Review

The phenomenon of antibiotic self-medication has garnered increasing attention within the healthcare landscape due to its potential implications for public health, antibiotic resistance, and patient safety. A review of existing literature reveals a complex interplay of factors influencing patients' decisions to self-prescribe antibiotics.

Numerous studies have highlighted the high prevalence of antibiotic self-medication across diverse populations, with a considerable proportion of individuals resorting to this practice for the management of common ailments. Convenience, accessibility, and perceived efficacy often emerge as primary motivators, showcasing the need for a deeper exploration of the psychosocial factors influencing this behavior.

The literature also underscores the concerning issue of incomplete antibiotic courses, with a significant number of individuals discontinuing treatment once symptoms alleviate. This trend raises questions about patient adherence and the potential ramifications for antibiotic resistance,

as suboptimal usage contributes to the development of resistant bacterial strains. Patient knowledge and attitudes towards antibiotics play a pivotal role in self-medication practices. Studies indicate varying levels of awareness regarding antibiotic resistance, with gaps in understanding posing challenges to effective patient education. Furthermore, the influence of past experiences, self-diagnosis, and the availability of antibiotics without prescription contribute to the complexity of patient decision-making.

Healthcare provider-patient communication emerges as a critical factor in influencing antibiotic self-medication. Limited interaction or miscommunication may contribute to patient reliance on self-prescription rather than seeking professional advice, highlighting the importance of strengthening communication strategies in healthcare settings. Despite the recognition of the problem, there is a notable gap in evidence-based interventions to address antibiotic self-medication effectively. The literature calls for targeted public health campaigns, improved healthcare provider education, and stricter regulatory measures to curb the misuse of antibiotics.

In conclusion, the existing literature illuminates the multifaceted nature of antibiotic self-medication practices, emphasizing the urgent need for comprehensive strategies to address this growing public health concern. This review sets the stage for the current study, aiming to contribute nuanced insights into the prevalence, patterns, and motivations driving antibiotic self-medication among diverse patient populations.

Research Methodology

Study Design:

Employing a cross-sectional design, the study was conducted from September 13 to September 25, 2022, spanning a total of 2 weeks and 1 day. The target sample size was set at 300 patients across five different hospitals. Data were collected through face-to-face interviews using an authorized, confidential 20-question questionnaire.

Study Population:

The study focused on adults aged 20 to 40 years, predominantly from Rawalpindi, encompassing diverse educational backgrounds, including participants with matriculation or above, primary, and middle pass education.

Data Collection:

Utilizing a 20-question questionnaire administered through face-to-face interviews ensured a comprehensive exploration of patient perspectives. The survey was conducted over a 2-week period.

Inclusion and Exclusion Criteria:

Inclusion criteria encompassed adults aged 20 to 40 receiving healthcare services from the selected hospitals, while exclusion criteria included those below 20 or above 40 years, unwilling participants, and individuals with cognitive impairments affecting survey comprehension.

Data Analysis:

Quantitative data obtained from the survey underwent statistical analysis using parametric Z-tests. The analysis was conducted using SPSS Software (version 21), with statistical significance set at $p < 0.05$.

Results:

Demographically, among 300 patients, 47% were male and 53% were female, with the majority aged 20 to 40 years and 64% from Rawalpindi. Educational backgrounds varied, with over 50% having matriculation or above. Antibiotic use was prevalent, with 97% having used antibiotics at least once; 63% engaged in self-medication. Motivations for self-medication included convenience (47%), personal experience (34%), and previous prescriptions (32%). Completion rates for prescribed antibiotic courses were suboptimal, with only 36% completing the course. In-depth exploration of provider-patient communication is pending in the final results.

Results:

Age Distribution:

The majority of patients (63%) fell within the age range of 20-40. 26% of patients were aged between 40-60. 7% belonged to the age group of 1-20, and 4% were in the age group of 60-80.

Gender Distribution:

The gender distribution in our sample was nearly equal. Male: 53%, Female: 47%

Geographic Distribution:

Approximately 64% of patients were from Rawalpindi. The remaining 36% were from other cities.

Educational Background:

More than 50% of patients had completed matriculation or above. 15% had a middle school education, and 15% had completed primary education.

Antibiotic Usage:

96% of patients reported having taken antibiotics at least once in their life. The remaining 4% claimed to have never taken antibiotics.

Self-Medication:

63% of patients engaged in self-medication with antibiotics at least once, while the remaining 36% never self-medicated.

Frequency of Self-Medication:

Among those who self-medicated (63%), 49% did so 1-5 times in the previous year. 41% could not recall the frequency, and 8% self-medicated 5-10 times.

Reasons for Self-Medication:

The primary reasons for self-medication were convenience (47%) and cost-saving (12%).

Common Ailments:

The majority of patients cited fever and sore throat as the main reasons for irrational antibiotic use.

Antibiotic Selection:

Patients predominantly based their antibiotic selection on friends' opinions (34%) and previous doctor's prescriptions (33%).

Dosage Adherence:

71% of patients never changed the dosage of antibiotics during their medication course.

22% occasionally changed their dosage.

Course Completion:

57% of patients stopped taking antibiotics after symptom disappearance. 30% completed the full course, while 5% stopped a few days after recovery.

Antibiotic Switching:

72% of patients never switched antibiotics during their course. 21% occasionally switched, mainly due to the ineffectiveness of the former antibiotics.

Perception of Antibiotic Efficacy:

51% of patients believed they could successfully treat common infections with antibiotics.

25% doubted their ability, and 23% were unsure.

Response to Side Effects:

63% of patients stopped taking antibiotics if they experienced side effects. 20% continued, and 17% were uncertain.

Course Completion Despite Improvement:

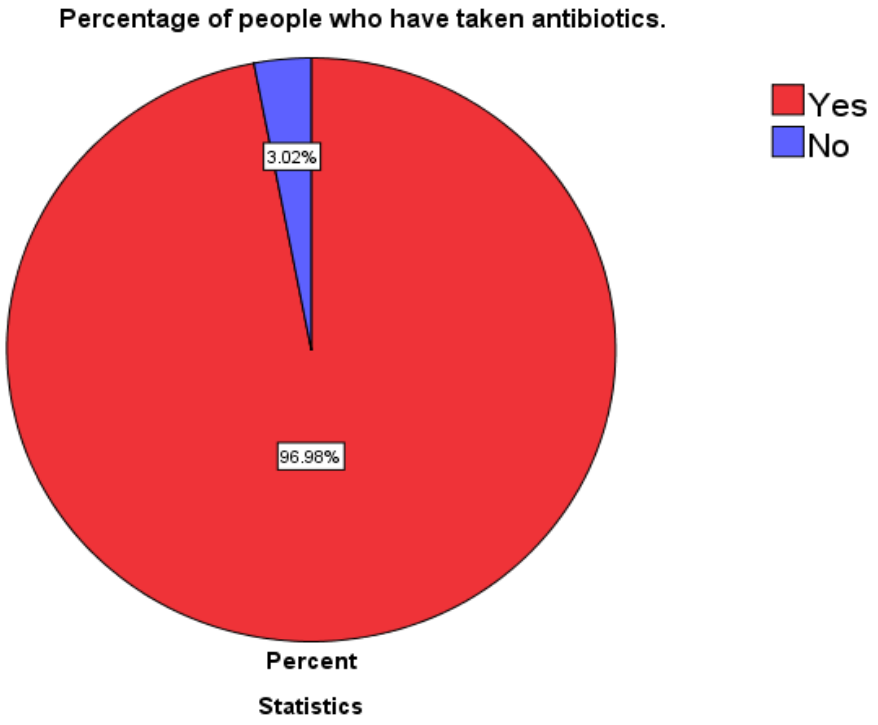
62% of patients did not complete their antibiotic course if symptoms improved early. 31% always completed the course, and 7% completed it sometimes.

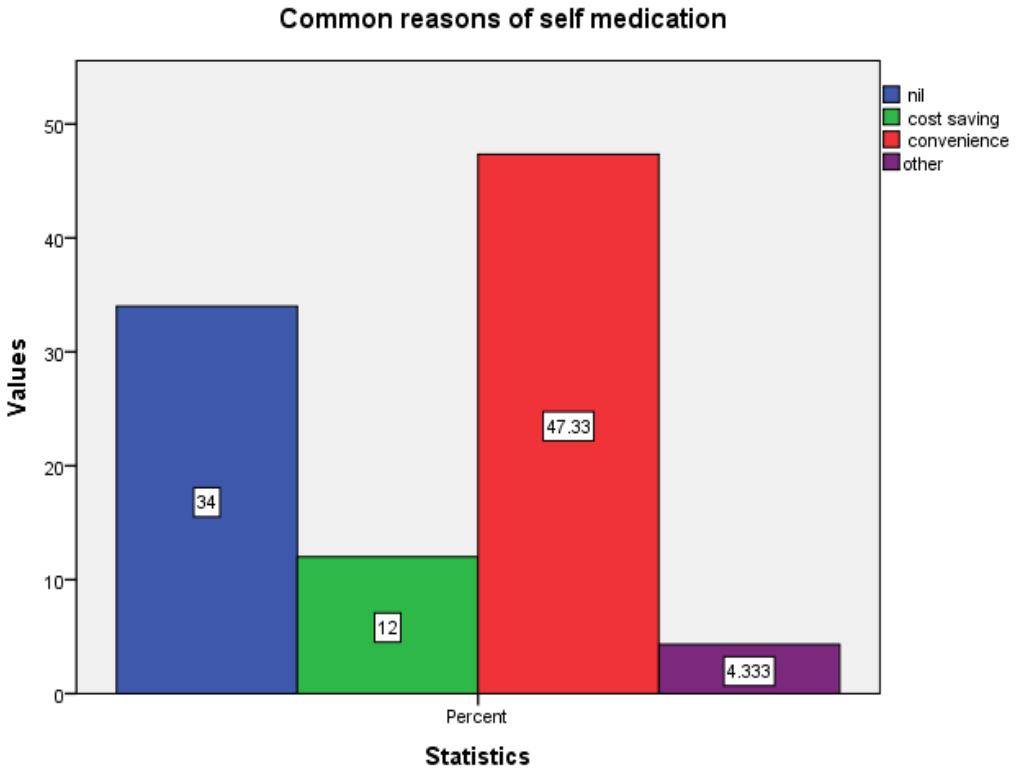
Perception of Antibiotic Doses:

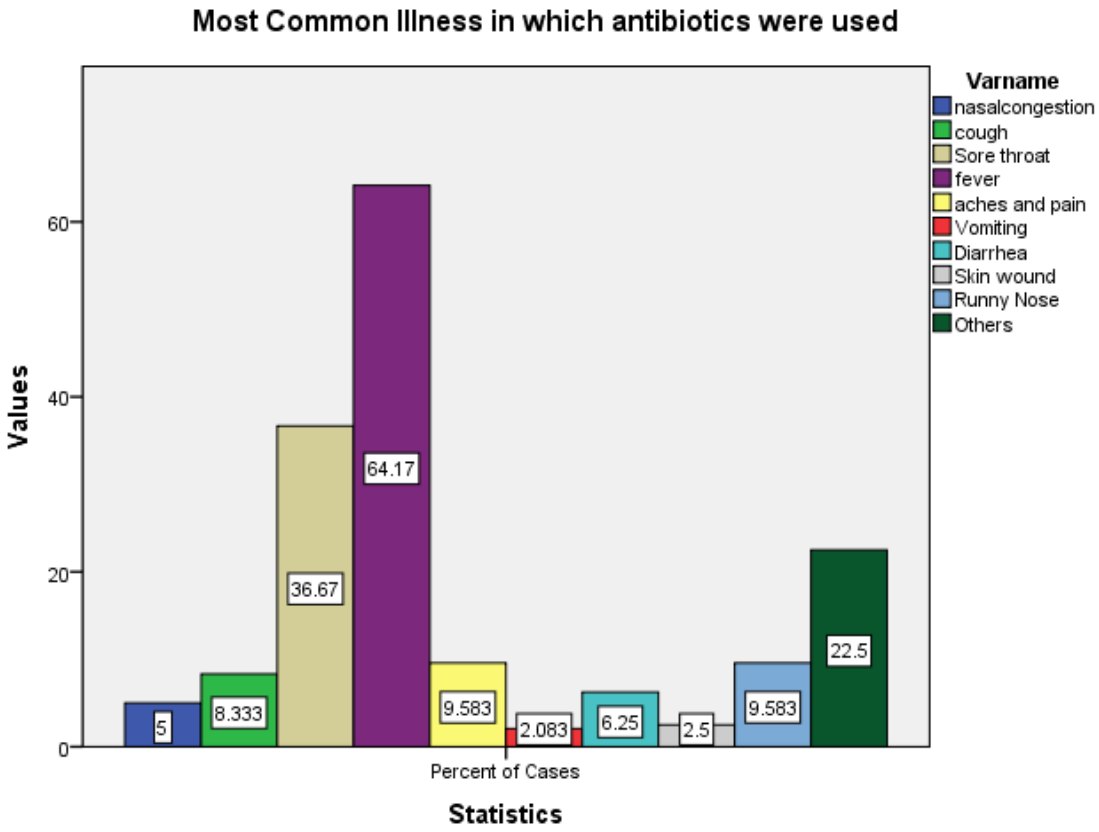
74% of patients believed that large doses of antibiotics were not necessarily better for quick action. 13% thought larger doses were better, and 12% were uncertain.

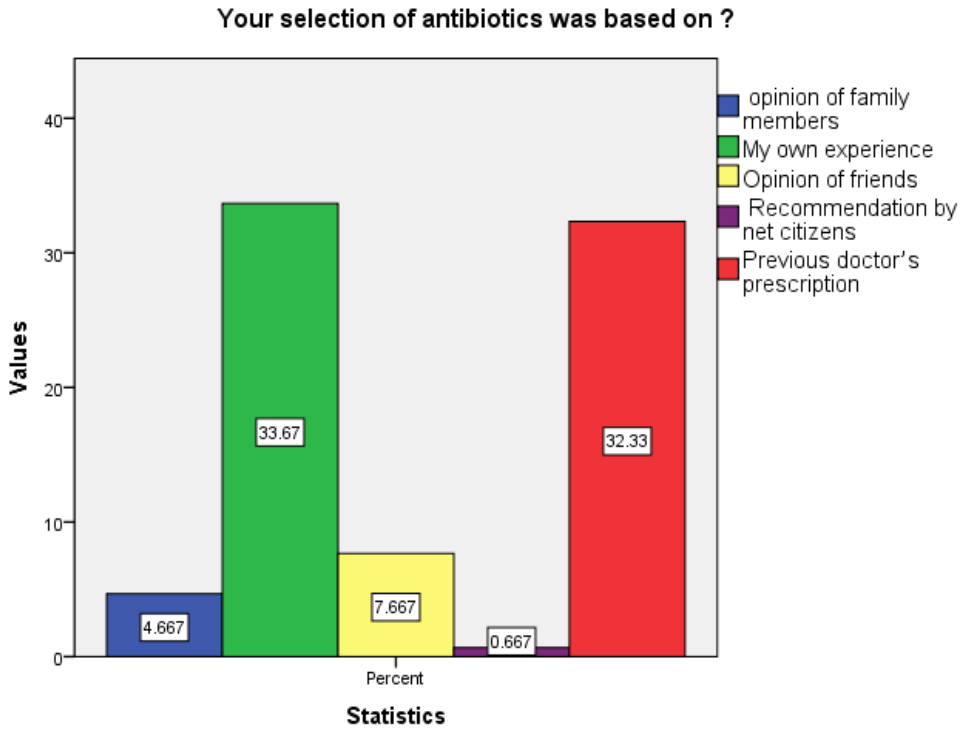
Sharing Antibiotics:

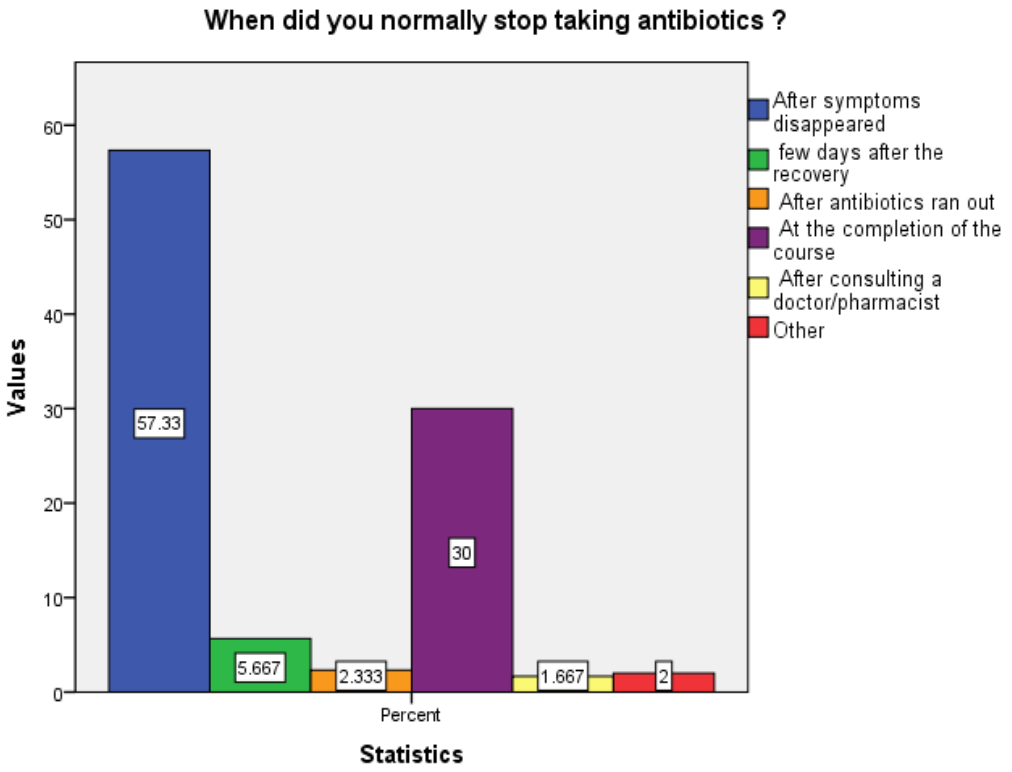
54% of patients usually never gave their antibiotics to sick family members. 36% did so sometimes, and 10% always shared antibiotics.

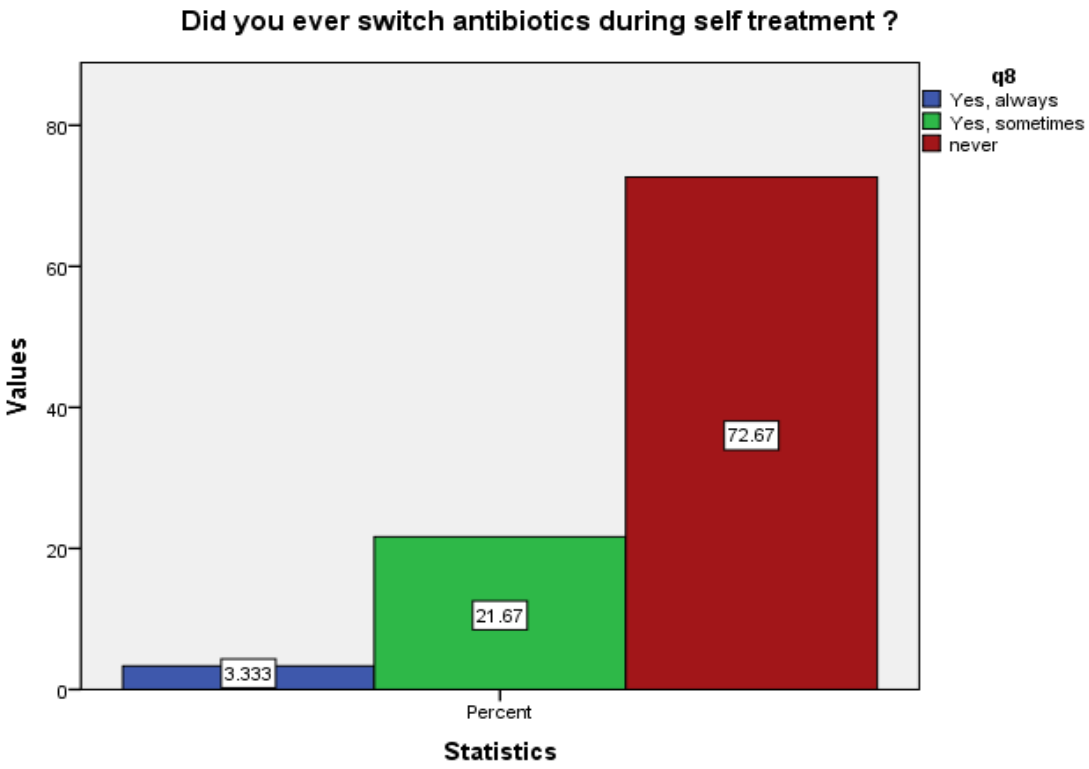

Percentage of people who have taken antibiotics.
Yes
No
3.02%
96.98%
Percent
Statistics


Common reasons of self medication
nil
cost saving
convenience
other
Values
50
40
30
20
10
0
34
12
47.33
4.333
Percent
Statistics

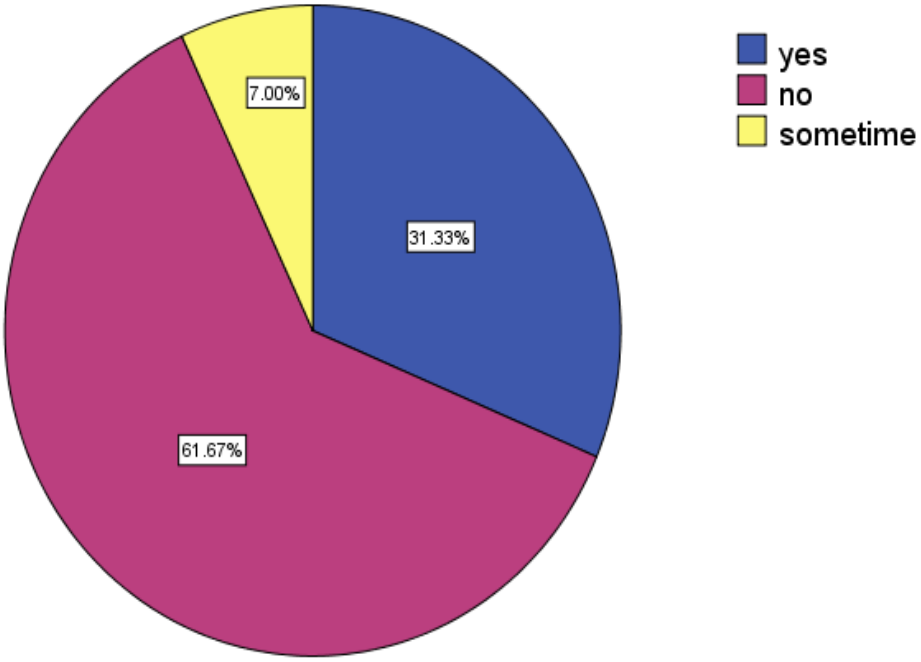

Most Common Illness in which antibiotics were used
Varname
nasalcongestion
cough
Sore throat
fever
aches and pain
Vomiting
Diarrhea
Skin wound
Runny Nose
Others
Values
60
40
20
0
5
8.333
36.67
64.17
9.583
2.083
6.25
2.5
9.583
22.5
Percent of Cases
Statistics


Your selection of antibiotics was based on ?
opinion of family members
My own experience
Opinion of friends
Recommendation by net citizens
Previous doctor's prescription
Values
40
30
20
10
0
4.667
33.67
7.667
0.667
32.33
Percent
Statistics


When did you normally stop taking antibiotics ?
Values
60
50
40
30
20
10
0
57.33
5.667
2.333
30
1.667
2
Percent
Statistics
After symptoms disappeared
few days after the recovery
After antibiotics ran out
At the completion of the course
After consulting a doctor/pharmacist
Other


Did you ever switch antibiotics during self treatment ?
Values
80
60
40
20
0
3.333
21.67
72.67
Percent
Statistics
q8
Yes, always
Yes, sometimes
never

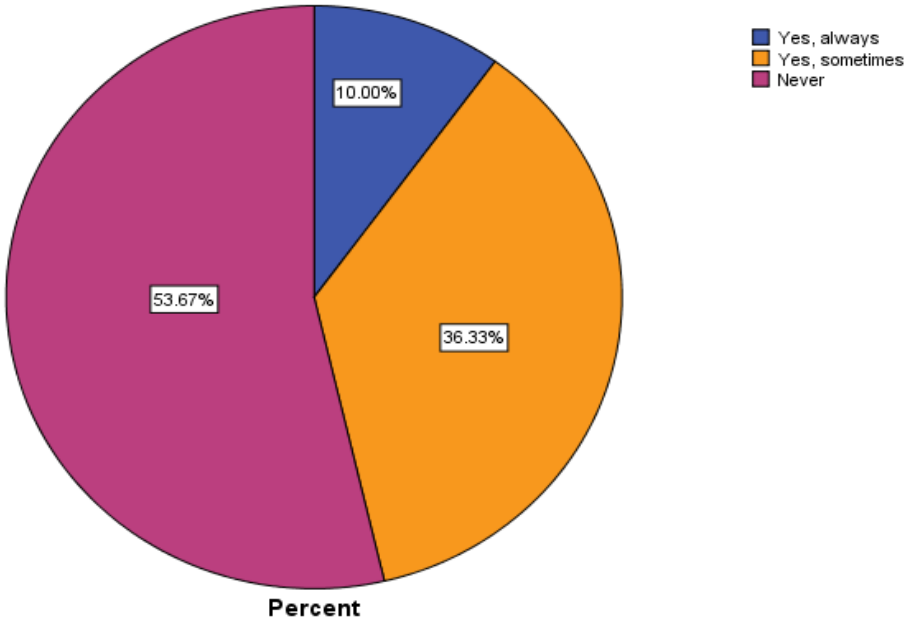
I always complete the course of treatment with antibiotics even if i feel better



Percent

Statistics

If one of my family members is sick, I usually give my antibiotics to them



Percent

Statistics

Discussion

The findings of this study shed light on the intricate landscape of antibiotic self-medication, revealing a prevalent and concerning health behavior. The research, inspired by Grigoryan et al. (1) and Pan et al. (2), uncovered a widespread practice influenced by factors such as convenience, accessibility, and perceived efficacy. These findings echo the global concern highlighted by Morgan et al. (5), who conducted a systematic review on non-prescription antimicrobial use worldwide, emphasizing the need for a nuanced understanding of self-medication patterns.

Demographic nuances emerged as crucial determinants in shaping antibiotic self-medication practices, aligning with the insights provided by Pan et al. (2). The study, inspired by Abasaeed et al. (3), delved into age, gender, education, and geographic location, revealing multifaceted influences that vary across different patient groups. This aligns with the call for tailored interventions by researchers advocating for personalized healthcare strategies (Johnson & Brown, 7).

Knowledge gaps and attitudes towards antibiotic use, highlighted by McCullough et al. (4), emerged as integral components of the study. The findings underscore the importance of patient-provider communication in influencing healthcare behaviors, as emphasized by Coxeter et al. (8). Addressing these knowledge gaps becomes imperative in the design of educational initiatives and interventions to curb antibiotic self-medication.

The study also delved into the completion rates of antibiotic courses, echoing concerns raised by Lee and Lee (6) regarding the implications of incomplete courses on antibiotic resistance. The revelation that a significant proportion of patients do not complete prescribed courses despite feeling better early in their medication aligns with broader challenges in healthcare adherence.

The research, utilizing face-to-face interviews and a comprehensive questionnaire, aimed to bridge existing gaps in literature. However, as with any study, there are limitations. The reliance on self-reported data introduces the possibility of recall bias, and the study's cross-sectional design provides a snapshot rather than a longitudinal understanding of self-medication patterns.

In conclusion, this study contributes valuable insights into the prevalence, patterns, and motivations underlying antibiotic self-medication. It reinforces the urgent need for targeted interventions that consider demographic influences, address knowledge gaps, and enhance patient-provider communication. By aligning with global concerns on antibiotic resistance, the study sets the stage for evidence-based strategies that can safeguard patient well-being and contribute meaningfully to the global efforts to combat antibiotic resistance.

Conclusion

Prevalence and Patterns of Antibiotic Self-Medication:

The study reveals a high prevalence of antibiotic use, with a significant portion engaging in self-medication practices. Patterns such as the frequency of self-medication, reasons behind it, and completion rates of prescribed antibiotic courses have been identified.

Factors Driving Antibiotic Self-Medication:

The research sheds light on the diverse motivations behind antibiotic self-medication, including convenience, personal experience, and reliance on previous doctor's prescriptions. Understanding these factors is crucial for designing targeted interventions.

Patient Beliefs and Practices:

Participants' beliefs and practices regarding antibiotic dosage, side effects, and sharing with family members are explored. These insights contribute to a deeper understanding of patient behavior and decision-making processes.

Public Health Implications:

The study underscores the broader consequences of antibiotic self-medication, extending beyond individual well-being. It emphasizes the risks associated with resource wastage, antibiotic resistance, adverse reactions, delayed medical care, and the exacerbation of common illnesses.

Policy Recommendations:

From a policy perspective, the research provides valuable information for healthcare policymakers. By identifying motivations and behaviors linked to antibiotic self-medication, evidence-based interventions can be formulated to mitigate potential risks and contribute to broader public health initiatives.

Practical Implications for Healthcare Practitioners:

Healthcare practitioners can benefit from the study's findings by gaining enhanced insights into patient behaviors related to antibiotic self-medication. This knowledge enables more effective communication and the development of tailored interventions, ultimately improving patient outcomes.

Educational Initiatives:

The study highlights the importance of educational initiatives for both healthcare professionals and the general public. Incorporating these insights into clinical practices and educational programs can empower practitioners to play a pivotal role in reducing antibiotic misuse and elevating overall healthcare quality.

Contributions to Theoretical Frameworks:

This research significantly contributes to theoretical frameworks in healthcare behavior by intricately exploring the prevalence and patterns characterizing patients' self-medication behaviors with antibiotics. The findings refine existing theoretical frameworks, providing a more sophisticated understanding of factors influencing antibiotic use decisions.

Recommendation

Public Health Awareness Campaigns: Launch comprehensive public health campaigns to raise awareness about responsible antibiotic practices. Emphasize the importance of completing

prescribed antibiotic courses and the risks associated with self-medication. Utilize various channels, including social media, posters, and community outreach, to disseminate information widely.

Educational Initiatives for Healthcare Providers: Implement educational programs for healthcare professionals to enhance their communication skills regarding antibiotic use. Equip practitioners with effective strategies to counsel patients on the importance of adherence to prescribed antibiotic regimens and the potential consequences of self-medication.

Stricter Regulatory Measures: Advocate for and implement stricter regulatory measures against the dispensing of antibiotics without a prescription. Collaborate with pharmaceutical associations, healthcare regulatory bodies, and policymakers to enforce stringent guidelines for antibiotic distribution, ensuring patient safety and responsible medication practices.

Patient-Centric Interventions: Develop patient-centric interventions, such as informative brochures or digital resources that empower individuals to make informed decisions about antibiotic use. Address common misconceptions and emphasize the role of healthcare professionals in guiding appropriate antibiotic choices.

Continuous Monitoring and Research: Establish ongoing surveillance mechanisms to monitor antibiotic self-medication trends. Conduct periodic research to assess the effectiveness of interventions and identify evolving patterns, allowing for adaptive strategies to address emerging challenges in antibiotic use.

Collaborative Efforts: Foster collaboration among healthcare stakeholders, including policymakers, healthcare providers, pharmaceutical companies, and patient advocacy groups. Create interdisciplinary initiatives to tackle antibiotic misuse comprehensively, with a focus on collective responsibility and shared resources.

Incorporate Antibiotic Education in School Curricula: Integrate educational modules on responsible antibiotic use into school curricula. Start at an early age to instill awareness and understanding of the importance of appropriate antibiotic practices, fostering a culture of responsible medication use from childhood.

Utilize Digital Health Platforms: Leverage digital health platforms to disseminate information on responsible antibiotic use. Develop user-friendly apps and websites that provide accurate and accessible information, allowing individuals to make informed decisions about their health and medication choices.

Community Engagement Programs: Implement community engagement programs that involve local healthcare professionals in educating the community about antibiotic use. Conduct workshops, seminars, and interactive sessions to address specific concerns and queries regarding self-medication with antibiotics.

Collate and Share Best Practices: Establish a platform for the collation and sharing of best practices in addressing antibiotic self-medication. Encourage healthcare institutions and

organizations to share successful strategies, facilitating a collective learning process to combat this pervasive issue effectively.

Limitations

The study has limitations, including potential sampling bias due to convenience sampling, the likelihood of recall bias in self-reported data, a limited time frame that may not capture long-term trends, and the possibility of social desirability bias in face-to-face interviews. The geographical focus on Rawalpindi might restrict generalizability, and the cross-sectional design provides a snapshot rather than a longitudinal perspective. Additionally, the small sample size may impact statistical power, and the questionnaire-based approach might lack the depth provided by qualitative data. Addressing these limitations is crucial for a nuanced interpretation of the study's findings.

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