RESEARCH ARTICLE

Understanding the socioeconomic dimensions of antibiotic resistance: a critical marketing perspective of healthcare stakeholders

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Abstract

Objective: To explore the socioeconomic dimensions of antimicrobial resistance, emphasising the risks associated with imprudent use of antibiotics and the consequent emergence of drug-resistant "superbugs."

Method: The study employed constructivist grounded theory to investigate the perspectives of stakeholders, including physicians, patients, pharmacists, sales managers, and Drug Regulatory Authority of Pakistan (DRAP) employees. In-depth interviews were conducted with these stakeholders at their workplaces in 2022 and 2023, and transcripts were meticulously transcribed for analysis. The process of data analysis consists of open coding, then axial coding, and finally, selective coding to integrate categories into theories while the constant comparison of data was exercised to develop a cohesive theory.

Results: Data analysis revealed a dominant theme: "Navigating the Socioeconomic Terrain of Antimicrobial Resistance." Subsequently, several categories emerged, such as pharmaceutical marketting transgression, materialism among physicians and marketers, imprudent antibiotic usage, self-medication practices, lack of awareness among patients and the general public, and malpractice by unqualified and illicit practitioners.

Conclusion: The results of the study demonstrated that critical marketting could mitigate the socioeconomic repercussions of AMR by encouraging ethical practices among the healthcare stakeholders, and hence benefit the entire society.

Keywords: Pharmaceutical Marketing, Ethical Marketing, Critical Theory, Critical Marketing.

(JPMA 74: 11 S-11 (Supple-12); 2024) **DOI: https://doi.org/10.47391/JPMA.AKU-EPP-04**

Introduction

Human insights are crucial to addressing today's global concerns, including increasing public health issues and economic downturns. Natural sciences will offer a restricted remedy to epidemics. Humanities and social sciences have the ability to give insight into contemporary issues and propose possible solutions.[1] Global health cannot be significantly improved by focusing just on medical issues.[1] Epidemics are both social and biological in nature. Malissa Leach played a key part in changing African citizens' present practices to prevent the spread of Ebola virus.[3] Moreover, interdisciplinary collaboration, as exemplified during the COVID-19 pandemic, underscores the importance of integrating social scientists, medical experts, and human factor specialists in addressing real-time challenges and informing policy decisions for positive outcomes.[4,5] Nevertheless, a multidisciplinary approach that takes into account the consent of all stakeholders involved in the healthcare system is necessary to properly address the present global problem of antibiotic resistance.

Critically analyzing important players and their actions is critical to developing best practices in healthcare systems. For example, by evaluating pharmaceutical marketting techniques, it is feasible to influence physicians' clinical judgments and encourage responsible medication use. Nonetheless, the multidisciplinary approach of critical marketting, which evaluates social repercussions and argues for legislative actions, provides a platform for addressing the larger implications of commercial marketting on public health and sustainability.[6] Furthermore, in confronting issues like antimicrobial resistance (AMR), where overuse and misuse of antibiotics threaten global health, a critical dimension is imperative. The looming threat of a post-antibiotic era underscores the urgent need for ethical practices and stakeholder accountability to safeguard public health.[7]

Critical theory and marketting discourse

The emergence of critical theory in marketting scholarship during the 1970s addressed concerns regarding questionable practices within the discipline, challenging the notion of marketting's societal value within capitalist societies.[8] Critical marketting, an branch

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of critical theory, emphasizes introspective evaluation and ethical considerations in marketting practices, driving discourse beyond negative connotations.[9,10] This approach facilitates in-depth insights and normative guidelines for ethical marketting practices, aligning with an interpretive approach that investigates human behaviors within specific contexts.[11] Through critique, critical theory illuminates practical implications for communities, encourages historical and cultural analyses for future improvement, fosters continuous refinement of concepts, and underscores the importance of ethical engagement with stakeholders, particularly within the healthcare system where questionable behaviours by key stakeholders can adversely affect patients.[12,2] Upholding Kantian principles, organizations are urged to prioritize rationality over exploitation, ensuring that patients' vulnerability is not exploited for commercial gain.

Antimicrobial resistance

The world is on the verge of the post-antibiotic era when the management of infectious diseases is becoming difficult owing to resistance developed to these therapeutic agents.[13,14] Worldwide bodies working in the health sector have necessitated the prudent use of antibiotics to maintain their effectiveness for future generations.[15-17] It has been found that antibiotics are overprescribed, and more than 50% of them are inappropriate.[18] Nevertheless, physicians' adherence to ethical and clinical practice guidelines is weak in developing countries, owing to weak regulatory frameworks.[19] The value chain of antibiotics can only be governed by appropriate legislation and proper enforcement may attenuate this misuse. The healthcare systems in low- and middle-income countries in collaboration with global stakeholders, such as the WHO should enthusiastically work towards stewardship programmes to optimize the use of antibiotics.[20] However, antibiotic stewardship and preservation programmes "vaccines, clean water, hygienic food, and other measures to reduce the chances of infection" will not yield desired results alone if equitable antibiotics access and development of new molecules are denied.

Problem statement

Antibiotic abuse endangers public health by increasing antibiotic resistance, which is compounded by ineffective stewardship programmes and policy implementation. Urgent action is necessary to address this critical issue by changing societal habits, instituting effective stewardship programmes, and enacting legislation that encourage safe antibiotic use. This study seeks to identify the causes of antibiotic misuse, assess current stewardship initiatives, and offer evidence-based policy solutions to prevent antibiotic resistance and preserve public health.

Materials and Methods

Research Design

The researchers employed a qualitative approach to delve into the intricate social dynamics of antimicrobial resistance, recognizing its complexity and the multifaceted perspectives of key stakeholders. This methodological choice allowed for a holistic exploration of the issue within its natural context, facilitating the collection and analysis of data to uncover meaningful insights. Based on constructivist grounded theory, the study adopted relativist ontology and subjectivist epistemology, recognizing the presence of multiple realities and promoting knowledge co-creation through participant-researcher interaction.

Sampling and data collection methods

The selected sample was divided into three groups: physicians, pharmacists, and pharmaceutical marketers, and they were interviewed based on their adequate expertise and willingness for in-depth interviews. The researchers utilized stratified purposive sampling because it is "information rich" and "illuminative" and can yield helpful manifestations of the issue being investigated. They choose twenty participants from the three strata of the sample. Eight physicians, six pharmaceutical sales managers, and six pharmacists have consented to interviews. They were interviewed in their workplaces. Twenty in-depth interviews were performed using an interview guide. Table 1 shows the sample size and other pertinent demographics. (Table 1)

Table-1: Sample Size and Demographic Representation.

Description	Physicians			Pharmacists			Sales Managers			Total M	Total F	Grand Total
Gender	M	F	Total	M	F	Total	M	F	Total			
Respondents	5	3	8	2	4	6	6	0	6	13	7	20

The researchers used semi-structured, in-depth interviews to gather information from the individuals. The major purpose of this technique is to identify and investigate factors associated with the socioeconomic aspects of AMR. In the first instance, five interviews were

conducted, and the results were examined to determine categories. These categories allowed researchers to conduct more focused and suitable theoretical sampling to further explore the phenomenon. As a result, the researchers performed 15 more in-depth interviews to increase the richness of data and reach theoretical saturation, which occurred at interview 20. In qualitative research, the researchers cease data collection once they reach theoretical saturation, which means no new categories or insights emerge. The audio recordings of the interviews were saved on an Android smartphone, and verbatim transcriptions were created in Word documents.

The coding process in grounded theory analysis

The open coding process involves labeling, dissecting, comparing, and theorizing interview transcripts to identify themes like over-marketting, unethical behaviour, and misuse of antibiotics.[21] The second stage, axial coding, reconstructs fragmented data, producing categories[22] like pharmaceutical marketting transgression, materialism, imprudent antibiotic usage, self-medication practices, stakeholder lack of awareness, and quackery malpractice. The final step, merging categories, forms the highest abstraction, "***Navigating the Socioeconomic Terrain of Antimicrobial Resistance,***" representing all seven categories in the second stage of development.

The diagram displays the coding steps that the researchers carried out during the analytic phase. (Figure)

Results

After a thorough analysis of data, a single theme emerged which is navigating socioeconomic terrain of antimicrobial resistance, with categories including pharmaceutical marketting transgression, materialism among healthcare providers, imprudent antibiotic usage, patient self-medication, stakeholder unawareness, and unethical practices of quackery. Pharmaceutical marketting targets prescribers to increase pharmaceuticals patronizations, with some multinational corporations advocating ethical practices but bribery remaining prevalent. This marketting influences prescribing habits, leading to increased drug abuse and iatrogenic diseases, especially in regions with active pharmaceutical marketting.[3-5]

Theme: navigating the socioeconomic terrain of antimicrobial resistance

The study demonstrated that socioeconomic factors like

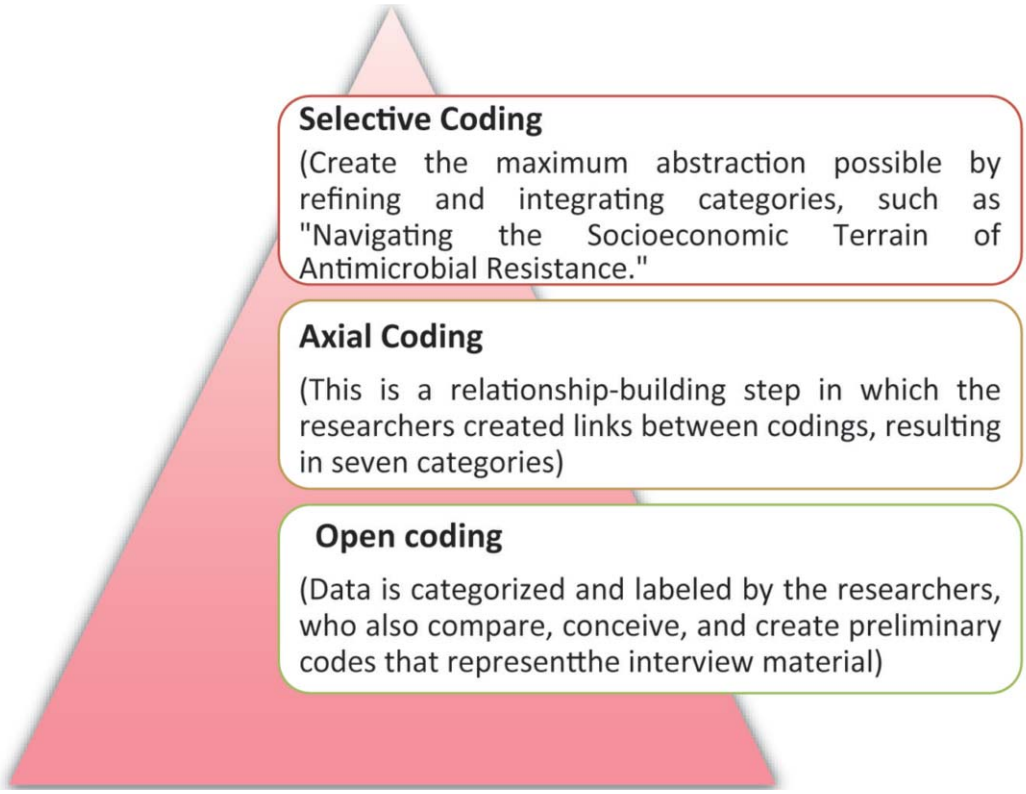

Figure: Coding steps during the analytic phase.

aggressive pharmaceutical marketting, and personalized services to physicians, motivated by materialism compound the phenomenon of antimicrobial resistance. Similarly, imprudent use of antibiotics both by patients and physicians and self-medications due to limited access to the healthcare system and lack of stringent laws further exacerbate the problem. The unawareness of key stakeholders like patients and the community due to illiteracy and rising poverty, and most importantly the unqualified and unlicensed quacks significantly contributed to the spread of antibiotic resistance.

1.The Transgression of Pharmaceutical Marketting

The pharmaceutical industry's current marketting practices have raised concerns, as they often prioritize promoting the benefits of drugs while concealing potential side effects, leading to the risk of iatrogenic diseases. This selective emphasis on drug features over patient-related aspects has been noted as betraying primary stakeholders and influencing prescribing behaviors. Stakeholders perceive these misleading efforts as hazardous, contributing to negative perceptions of the industry. Sales pressures are employed to maximize outputs from sales forces, further exacerbating the focus on questionable marketting practices Medical representatives influence drug prescriptions by instilling conviction and confidence through communication. Improving the integrity of marketting practices by ensuring all relevant information is conveyed to physicians could enhance therapeutic outcomes and bolster stakeholder confidence (R3, R5, R9, R11, R13).

"***Pakistan's Drug Regulatory Authority (DRAP) manages pharmaceutical activities, while Pakistan Medical and Dental Counsel (PM&DC) regulates physicians' conduct, following the Drug Act 2012's guidelines for drug marketting and sales" (R20, l.26)"***

2.Personal Obligations

Personal inducements for drugs, prohibited by industry ethics codes worldwide, are employed by pharmaceutical marketting to incentivize prescriptions from physicians, potentially leading to irrational prescriptions and adverse patient effects. This commercial focus undermines the healthcare system's core purpose of serving patient interests (R2, R5). Many physicians easily switch to other brands in exchange for personalized services, indicating a pervasive influence of inducements on prescribing behaviors. The non-implementation of ethical codes by national companies, coupled with lenient punishments, perpetuates the prevalence of such practices. Respondents suggest stricter penalties, such as license cancellation, to deter unethical inducements and ensure adherence to ethical standards (R1, R4, R3). The industry must prioritize self-regulation and adhere to ethics codes to maintain integrity and prevent personal biases in pharmaceutical marketting.

"Marketting quality is low due to lack of supporting evidence on drug promotion, but offers gifts, freebies, per pack incentives, overseas excursions, and entertainment" R3, l.64)."

3. Materialism

Physicians' pursuit of commercial gains often leads to unnecessary prescriptions and prioritization of financial interests over patient care, perpetuating inappropriate antibiotic selection and exacerbating healthcare costs (R1, R3, R4, R7, R6, R10). The literature validates that weak institutional oversights in low- and middle-income nations, particularly in the healthcare sector, permit unchecked procurement and misuse of antibiotics, contributing to antimicrobial resistance.[6] The respondents suggested that physicians should avoid polypharmacy and over-prescriptions of antibiotics to circumvent the problem of AMR. ***"Doctors often prioritize their interests over patient care, engaging in polypharmacy and other malpractices that adversely affect already vulnerable patients; addressing these issues could improve the healthcare system"(R11, l.39).***

4.Imprudent Use of Antibiotics

Physicians are highly qualified stakeholders of the healthcare system and the same behaviour is expected from them while treating patients. The imprudent use of antibiotics refers to the misuse, indiscriminate, inappropriate, or sometimes unnecessary administration of antibiotics by physicians (R1, R2, R5, R6, R11). Patients require a narrow spectrum of antibiotics and if they get a broad spectrum; it will result in resistance to antibiotics. Pharmaceutical companies invest in healthcare professionals to increase their business. Physicians are prescribing dual antibiotic therapy, wherein one antibiotic is unnecessary, while the other is intended for treating the actual disease (R4, R8, R10). Hence, antibiotic prescriptions deviate from international treatment norms.

"***Antibiotic misuse leads to AMR, ineffectiveness, and resistance, prompting pharmacists to warn of untreatable superbugs and infections, urging healthcare to rationally use antibiotics" (R11, l.50).***

5.Self-Medication

Obtaining antibiotics from drugstores without authentic prescriptions is a significant contributor to antibiotic resistance, as emphasized by the majority of respondents (R2, R9, R10, R15). Self-medication practices, prevalent in countries like Pakistan, pose serious risks, ranging from

minor complications to life-threatening consequences (R3, R4, R7, R8, R11, R14, R15, R20). This irresponsible use of antibiotics has fuelled a global pandemic of antibiotic resistance, leading to increased morbidity and mortality. To mitigate this issue, strict regulations and enforcement of authentic prescription requirements for antibiotics, narcotic analgesics, and tranquilizers are recommended to ensure safe and appropriate usage.

"***Despite the Drug Act of 1976 including clear clauses to prevent self-medication and side effects by prohibiting chemists from selling over-the-counter (OTC) drugs and narcotic analgesics without a pharmacist present, its poor market implementation and widespread violations—especially the open sale of OTC and potent antibiotics—have rendered it ineffective for stakeholders and exacerbated issues such as antimicrobial resistance fueled by self-medication practices" (R11, l.181).***

6.Unawareness of Stakeholders

Healthcare workers play a crucial role in the appropriate use of antibiotics, yet there is often a lack of awareness regarding drug side effects and warnings among patients and the public. This deficit in awareness is compounded by factors such as time constraints in physician-patient interactions and limited patient knowledge about medications (R5, R9, R14). Poverty and illiteracy further hinder patient awareness regarding antibiotic resistance and proper medication usage (R15, R16, R19). To address these challenges, there is a growing recognition of the importance of promoting health-related awareness and engaging key stakeholders at individual, community, and governmental levels to foster behavioral change. Efforts to enhance patient education and strengthen physician-patient relationships are essential for promoting prudent antibiotic use and mitigating the spread of antibiotic resistance.

"Informing patients about the negative effects of antibiotics is crucial, especially in a country where illiteracy and poverty are prevalent issues; the media can significantly help raise awareness among patients about these potential risks" (R11, l.173).

7.Malpractices of Quackery

Weak regulatory institutions in countries like Pakistan allow unqualified healthcare practitioners, known as quacks, to operate freely, contributing to issues such as unnecessary antibiotic prescriptions and antibiotic resistance (R1, R3, R4, R5). Patients, particularly those affected by poverty and illiteracy, are attracted to quacks despite their limited understanding of proper medication usage (R3, R7). The respondents conspicuously argued that ***"reforms are needed to create a service-oriented healthcare system, with stringent laws enforced by institutions like the Drug Regulatory Authority of Pakistan (DRAP) to ban illegal practitioners and protect public health".***

"The healthcare system is fragile, and it's the responsibility of DRAP to create legislation to prevent quacks and protect health-conscious individuals from being exploited" (R8, l.131).

Discussion

Based on a small sample, this study has been confirmed by other research on Pakistani public health initiatives, pharmaceutical use, and current healthcare procedures, providing comparison data to enhance generalizability and external validity by comparing the findings to prior knowledge.[7,8] However, the study successfully established that antimicrobial resistance is an emerging global issue and is threatening the very foundations of public health worldwide, particularly in developing countries. The phenomenon is exacerbated by a lack of stewardship behaviours, regulatory discrepancies, and abuse of the drug. A multidisciplinary approach is needed to overcome the issue. Pharmaceutical marketting overstates the benefits and understates the side effects, which encourages physicians to prescribe imprudently.[9] Nonetheless, providing physicians with complete information on drugs and their use can enhance therapeutic outcomes and restore corporate confidence.

Pharmaceutical companies' ethical guidelines encourage them to maximize patient benefits while avoiding personal services to physicians, but physicians discourage such acts and require medical representatives to provide personalized services, which they will reciprocate with product patronization. These services undermine physicians' ethics and result in unwarranted antibiotic prescriptions, exacerbating antibiotic resistance. Ethical guidelines from organizations such as the World Health Organization (WHO) and the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) advocate for responsible marketting practices[10,11] emphasizing the importance of maximizing patient benefits without offering personal inducements to physicians.

The respondents were of the view that antibiotics are overprescribed and even abuse drugs. The physicians are required to strictly adhere to international treatment guidelines in different indications, and patients are advised to improve their sagacious use and follow the instructions of their physicians. Self-medication with antibiotics and antipsychotic drugs is prohibited, and the

Table 2: Description of theme, categories, and quotes.

Theme	Categories	Respondents Quotes
Navigating the Socioeconomic Terrain of Antimicrobial Resistance	The Transgression of Marketting; A means to an end	Over-promotion leads to inappropriate prescriptions (R2, L#158)
		Sales pressure results in overstated statements (R11, L#207)
	Personal Obligation	Personal obligation boosts sales but lacks ethical boundaries (R1, L#143)
		Products dispensed based on personal services lead to misuse and adverse effects (R5, L#86)
	Materialism	Commercial interests override patient health (R1, L#49)
		Commercial values replace social ones, leading to declining professionalism (R6, L#33)
	Imprudent use of Antibiotics	Patients receive inappropriate antibiotics, disrupting microbiome (R3, L#130)
		Prescribing antibiotics based on patient insistence leads to misuse (R8, L#88)
	Self-Medication	The absence of regulation over the sale of controlled drugs results in self-medication (R2, L#104)
		Self-medication common in developing countries, contributing to antibiotics resistance (R19, L#169)
	Unawareness of Stakeholders	Patients lack awareness due to illiteracy and poverty (R2, L#59)
		Media can educate patients on antimicrobial resistance (R13, L#208)
	Malpractices of Quackery	Quacks prescribe antibiotics without proper knowledge (R1, L#56,115)
		Loopholes in the healthcare system enable quack practices (R8, L#128)

sale of such drugs over-the-counter is not allowed under all important ethical guidelines.[12] However, in Pakistan, it is contrary to the rest of the world. Responsible use is only possible if the physician-patient interactions are improved and patients are educated about the usage of antibiotics. In nations with lax regulatory environments, quacks—unqualified medical professionals—contribute to inappropriate antibiotic usage and resistance. The respondents of this study uninmously asserted that to end unlawful activities and safeguard the public's health, authorities like the Drug Regulatory Authority of Pakistan must enact urgent regulatory changes and enforce them strictly.

Addressing antimicrobial resistance (AMR) necessitates a holistic, multidisciplinary approach. This involves strengthening regulatory frameworks to ensure strict adherence to ethical guidelines for antibiotic use and marketting practices, as well as increasing public and healthcare provider awareness about the risks of antibiotic misuse and the importance of following prescribed treatments. It also requires integrating global efforts to promote equitable access to antibiotics, fostering innovation, and developing sustainable practices for antibiotic use . Engaging all stakeholders, including healthcare providers, patients, pharmaceutical companies, and regulatory bodies, is crucial in promoting responsible antibiotic use and combating resistance. By focussing on these areas, we can mitigate the threat of AMR and safeguard global public health. The role of social sciences is particularly significant in understanding and influencing human behaviour and socio-economic factors, which are essential in developing effective strategies to address this complex issue. The table 2 shows a brief description of main theme, categories, and the relevant quotes from respondents.(Table 2)

Limitations and Future Research

The study suggests avenues for further research and acknowledges its limitations. Firstly, it highlights the potential bias due to the lack of data analysis tools, recommending the use of software for more comprehensive graphical representation. Secondly, it proposes exploring the impact of antibiotic stewardship on physicians' prescription patterns longitudinally, contrasting with the cross-sectional approach used in the study. Lastly, it acknowledges the small sample size's limitation and suggests future studies to expand to multiple nations for broader insights into antibiotic stewardship on a global scale.

Conclusion

The study concluded that AMR is exacerbated by pharmaceutical marketting in the form of aggressive tactics and strategies to increase product patronage in patients, materialism in which commercial objectives trump societal larger interests, inappropriate use of antibiotics such as in viral infections, a lack of awareness on the part of patients and communities due to ignorance, illiteracy and absence of appropriate awareness campaigns, self-medication due to a lenient regulatory framework, and quacks' malpractices. Pharmaceutical marketting assists healthcare

professionals in making informed prescription decisions by alerting them to innovative medicines such as antibiotics through physician detailing. This educational technique encourages ethical antibiotic usage, which benefits both patient outcomes and public health.

Disclaimer: None.

Conflict of Interest: All authors participating in this study confirm that they have no financial or non-financial interest in this paper.

Funding disclosure: It is stated that neither any personnel nor any institution provided funding for this research

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