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Deconstructing Self-Medication: The Dominance of Attitude and Social Norms over Perceived Control in Non-Prescription Amoxicillin Use

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A B S T R A C T

The global escalation of antimicrobial resistance (AMR) is profoundly exacerbated by the irrational self-medication of antibiotics. This study was conducted in the Ende Tengah District, a community within an Indonesian province where non-prescription antibiotic acquisition is highly prevalent. The primary objective was to deconstruct the psychosocial determinants of the intention to self-medicate with amoxicillin, framing the analysis within the context of a recent regulatory change designed to limit antibiotic access. A quantitative, cross-sectional study was undertaken between April and May 2025. Using a purposive sampling strategy, 109 community members aged 18-60 who had used amoxicillin without a prescription were recruited from public-access areas. Data were gathered using a structured, pilot-tested questionnaire based on the Theory of Planned Behavior (TPB), which demonstrated good internal consistency (Cronbach's α: 0.78-0.85). The instrument measured attitude, subjective norms, perceived behavioral control (PBC), and behavioral intention. Multiple linear regression was used for the primary analysis after all statistical assumptions were confirmed. The regression model was statistically significant ($F(3, 105) = 21.267$, $p < .001$) and accounted for 37.8% of the variance in self-medication intention ($R^2 = 0.378$). Attitude emerged as the most powerful predictor of intention ($\beta = 0.341$, $p = .001$), followed by subjective norms ($\beta = 0.276$, $p = .015$). Strikingly, perceived behavioral control, the construct most related to access, was not a significant predictor of intention ($\beta = 0.081$, $p = .459$). In conclusion, among the study participants, the intention to self-medicate with amoxicillin is overwhelmingly a psychosocial phenomenon, driven by favorable personal attitudes and deeply ingrained social norms rather than by perceptions of access. This suggests that top-down regulatory policies focused solely on restricting antibiotic supply may be insufficient without parallel, community-focused strategies designed to reshape the beliefs and behaviors that sustain demand.

1. Introduction

The advent of antibiotics in the 20th century was a watershed moment for human health, fundamentally altering the practice of medicine and saving countless lives.[1] However, this triumph is now under severe threat from the global crisis of antimicrobial resistance (AMR), a phenomenon where pathogens like bacteria evolve to render these life-saving drugs ineffective. The World Health Organization has designated AMR as one of the foremost public health threats to humanity, a silent and insidious pandemic with the potential to reverse a century of medical advancement.[2] The consequences of inaction are dire; projections estimate that by 2050, AMR could be responsible for 10 million deaths annually and trigger a catastrophic economic collapse exceeding $100 trillion in cumulative losses. While AMR is a complex "One Health" issue involving antibiotic use in agriculture and environmental factors, its primary engine in human medicine is the irrational consumption of antibiotics.[1] This includes using these precious medicines for the wrong indications, such as common viral infections, in incorrect dosages, or for inappropriate durations. A major contributor to this global challenge is the

practice of self-medication with antibiotics (SMA), defined as the public's acquisition and use of antibiotics without professional medical consultation or a valid prescription.[2] This behavior is particularly pervasive in low- and middle-income countries (LMICs). In these settings, a confluence of factors, including weak regulatory oversight, inconsistent policy enforcement, and the high out-of-pocket costs associated with formal healthcare consultations, creates a perfect storm. This drives individuals toward informal and more accessible sources, such as local drug stores, market vendors, or even the sharing of leftover medicines among family and friends, perpetuating a cycle of misuse.[3]

Indonesia, as the world's fourth most populous nation, stands at a critical juncture in the fight against AMR.[4] The country's complex, decentralized healthcare system, coupled with diverse socio-cultural beliefs about medicine, provides fertile ground for the irrational use of antibiotics. The gravity of the situation was recently underscored by the 2023 Indonesian Health Survey (SKI), which revealed that in the province of Nusa Tenggara Timur (NTT), an alarming 63.1% of all antibiotics were acquired through self-medication or other non-prescription channels. Only 36.9% were obtained with a legitimate doctor's prescription. This figure starkly highlights a widespread behavior that directly contravenes national policy, including the Minister of Health Regulation No. 28 of 2021, which unequivocally mandates that antibiotics be dispensed only upon prescription by a qualified professional.[4] Within this high-risk environment, Amoxicillin has emerged as a ubiquitous and frequently misused antibiotic. Its broad-spectrum activity, low cost, and historical availability have cemented its public reputation as a panacea for a multitude of ailments. Preliminary field observations conducted in the Ende Tengah District of NTT uncovered a deeply rooted cultural perception of Amoxicillin. It was widely regarded as an "obat luka dalam" (an internal wound medicine), a versatile remedy sought for self-treating common symptoms like flu, coughs, toothaches, and minor wounds. This belief fuels a cycle of inappropriate use, with the antibiotic being sourced from a variety of unregulated channels and consumed without medical guidance, often leading to suboptimal dosing and incomplete treatment courses—the very practices that accelerate the development of drug-resistant bacteria. Recognizing this threat, the local government of Ende Regency implemented a new policy, effective January 1st, 2024, expressly prohibiting the sale of antimicrobial drugs without a doctor's prescription. This regulatory action is a crucial and commendable step.[5] However, the ultimate success of such a top-down policy hinges entirely on its ability to penetrate public consciousness and influence entrenched behaviors. This creates a critical knowledge gap: a need to understand the underlying psychosocial drivers that sustain demand, especially in the immediate aftermath of a major policy shift.

To move beyond simplistic assumptions and effectively address the entrenched behavior of SMA, a robust theoretical framework is essential. The Theory of Planned Behavior (TPB), developed by Icek Ajzen, provides a powerful and extensively validated lens for analyzing the psychosocial architecture of human action.[6] The TPB posits that the most direct determinant of behavior is an individual's intention to perform it. This intention is, in turn, shaped by three core psychological constructs. First, Attitude toward the Behavior represents an individual's overall positive or negative evaluation of the action. It is informed by their beliefs about the likely consequences of the behavior (such as "self-medicating with amoxicillin will cure my illness quickly") and their evaluation of those consequences (such as "curing my illness quickly is highly desirable"). Second, Subjective Norm refers to the perceived social pressure to either perform or refrain from the behavior.[7] This construct captures the influence of an individual's social environment and is a function of their beliefs about whether significant others (such as family, friends, community elders) approve of the behavior, and their motivation to comply with these social expectations. Third, Perceived Behavioral Control (PBC) reflects an

individual's perception of their ability to perform the behavior, encompassing the perceived ease or difficulty of the action. It is shaped by control beliefs regarding the presence of facilitators or barriers, such as access to the antibiotic, financial cost, and the knowledge required to use it.[8]

While the drivers of antibiotic self-medication have been studied globally, research remains limited within specific, high-prevalence Indonesian communities, particularly those undergoing policy transitions.[9] This study was designed to address this critical gap. The novelty of this research is threefold. First, it provides a granular, data-driven deconstruction of the psychosocial factors underpinning amoxicillin misuse in a specific community identified as a hotspot. Second, it moves beyond merely testing the TPB model to critically examine the relative dominance of its constructs, seeking to understand which psychological levers are most influential. Third, and most importantly, this study is uniquely positioned to offer a timely evaluation of public behavioral intentions in the immediate aftermath of a significant policy change—the ban on non-prescription antibiotic sales. A critical gap remains in understanding how public intentions respond in the nascent stages of policy implementation, where official rules may not yet have translated into perceived reality. This study was designed to explicitly explore this potential "policy-perception gap."[10] Therefore, the aim of this study was to conduct a quantitative analysis to deconstruct the influence of attitude, subjective norm, and perceived behavioral control on the intention to self-medicate with amoxicillin among residents of Ende Tengah District, within a context of recent policy transition. By identifying the dominant behavioral determinants under these unique conditions, this research sought to generate targeted, evidence-based recommendations to inform the design of more effective public health interventions and regulatory strategies aimed at promoting the rational use of antibiotics.

2. Methods

This research employed a descriptive-analytical study design utilizing a cross-sectional approach. This design was selected for its utility and efficiency in capturing a snapshot of the psychosocial determinants, behavioral patterns, and intentions related to amoxicillin self-medication at a single, specific point in time. This approach allows for the statistical analysis of relationships between the variables of interest within the study population. The research was conducted in the Ende Tengah District, a key administrative and commercial hub within Ende Regency, NTT Province, Indonesia. The district is composed of four urban wards (Kelimutu, Onekore, Paupire, and Potulando) and had a total population of 24,142 residents at the time of the study. This location was purposively selected based on preliminary local health reports and direct field observations indicating a high and sustained public demand for non-prescription amoxicillin, marking it as a critical area for investigation. Furthermore, the presence of two active higher education institutions within the district suggested a demographically diverse population, including a significant cohort of students and young adults whose health-seeking behaviors are of particular interest. All data collection was carried out over a two-month period, from April to May 2025.

The target population for this study was the general adult public residing within the four wards of Ende Tengah District. Given the study's focus on understanding the motivations behind a specific behavior, a purposive sampling technique was employed. This non-probability sampling method was deemed the most appropriate strategy to ensure that all recruited respondents had direct, recent experience with the behavior under investigation—self-medication with amoxicillin—thereby providing data of high relevance and richness for addressing the research questions. Field researchers recruited participants from various high-traffic public areas across the four wards, including local markets, community centers, and public squares, at different times of day to ensure a diverse cross-section of the

community was accessible. Potential participants were approached, the study was briefly explained, and they were screened for eligibility using a standardized checklist based on the inclusion and exclusion criteria.

Inclusion and exclusion criteria were strictly applied to construct a relevant and focused sample: Inclusion Criteria: (1) Individuals aged between 18 and 60 years, capturing the adult population largely responsible for their own healthcare decisions; (2) Permanent residents of Ende Tengah District; (3) Individuals who verbally confirmed having used amoxicillin without a doctor's prescription for self-treatment at least once in the six months prior to the study; (4) Individuals willing and able to provide written informed consent. Exclusion Criteria: (1) Individuals not fluent in the Indonesian language; (2) Individuals unable to read or write; (3) Individuals currently employed as healthcare professionals (doctors, nurses, pharmacists), to avoid the confounding effects of specialized medical knowledge.

A final sample of 109 eligible and consenting individuals was successfully recruited. The sample size was deemed adequate for the primary statistical analysis based on established rules of thumb for multiple regression, which recommend a minimum of 10-15 participants per predictor variable. With three predictor variables in the model, the target sample size was exceeded. The primary data collection instrument was a structured, self-administered questionnaire meticulously developed based on the principles and guidelines in the "Constructing Questionnaires Based on The Theory of Planned Behaviour" manual by Francis et al. This ensured a systematic and theoretically grounded approach to measuring each construct. The questionnaire was developed in Indonesian.

The instrument was divided into the following sections: 1) Respondent Characteristics: Collected demographic data including age, gender, marital status, education level, and occupation; 2) Behavioral Patterns: Profiled past behaviors related to amoxicillin use, including sources of recommendation, points of access, and sources of information; 3) Theory of Planned Behavior Constructs: Attitude towards Behavior: Measured using five 7-point semantic differential scale items. Respondents rated the act of "self-medicating with amoxicillin when feeling unwell" on bipolar adjectives (1=Extremely Harmful to 7=Extremely Beneficial; 1=Extremely Foolish to 7=Extremely Wise); Subjective Norm: Assessed with four items on a 7-point Likert scale (1=Strongly Disagree to 7=Strongly Agree). These items captured both injunctive norms ("Most people who are important to me would approve of me using amoxicillin without a prescription") and descriptive norms ("Most people like me use amoxicillin without a prescription when they feel sick"); Perceived Behavioral Control (PBC): Measured with four items on a 7-point Likert scale, assessing perceived ease and confidence ("For me to get amoxicillin without a prescription is very easy"; "I am confident I can use amoxicillin correctly on my own"); Intention: Measured with three items on a 7-point Likert scale, directly assessing the likelihood of future behavior ("I intend to use amoxicillin without a prescription the next time I have a severe cough"). For each construct, a total score was calculated by averaging the responses across the relevant items.

To ensure the quality of the data, several steps were taken to validate the research instrument. The content validity of the questionnaire was established by adhering to the expert-recommended TPB manual for item generation. Following development, the questionnaire was pilot-tested with a small group of 15 individuals from a neighboring district with similar demographic characteristics. Feedback from the pilot test was used to refine the wording of several items for improved clarity and comprehension. Post-hoc reliability analysis was conducted on the data from the final sample of 109 respondents to assess the internal consistency of the multi-item scales. Cronbach's alpha coefficients were calculated for each of the TPB constructs. The scales demonstrated good to excellent internal consistency: Attitude ($\alpha = 0.85$), Subjective Norm ($\alpha = 0.78$), Perceived Behavioral Control ($\alpha = 0.81$), and Intention ($\alpha = 0.88$). These results confirm

that the items within each scale reliably measured the same underlying construct.

The study protocol was designed and executed in strict accordance with the ethical principles for human subject research outlined in the Declaration of Helsinki. The research proposal underwent a full review and received formal ethical clearance from the Research Ethics Committee of Universitas Ngudi Waluyo (Approval No: 193/KEP/EC/UNW/2025). Before administering the questionnaire, field researchers provided every potential participant with a detailed information sheet and a verbal explanation of the study's purpose, procedures, and their rights. It was explicitly stated that participation was voluntary, that they could withdraw at any point without consequence, and that all responses would be anonymized to ensure confidentiality. Written informed consent was obtained from every individual prior to their inclusion in the study.

Data were entered into a statistical software package for analysis, SPSS version 27. The analytical process began with a series of assumption tests to validate the data for multiple linear regression. These included the Kolmogorov-Smirnov test for normality ($p = .082$), the Levene's test for homogeneity of variance ($p = .090$), the Glejser test for heteroskedasticity ($p > .05$ for all variables), and the calculation of Variance Inflation Factor ($VIF < 2.1$) and Tolerance (> 0.4) values for multicollinearity. As all assumptions were met, the primary analysis proceeded. Descriptive statistics (frequencies, percentages, means, and standard deviations) were calculated to summarize the demographic profile, behavioral patterns, and scores on the TPB constructs. To explore potential demographic influences, bivariate analyses (independent samples t-tests and one-way ANOVAs) were conducted to compare intention scores across different demographic groups. The main research hypotheses were tested using a standard multiple linear regression analysis, with attitude, subjective norm, and PBC entered as independent variables to predict the dependent variable, intention. The significance of the overall model was determined by the F-test, and the proportion of variance explained was given by the R-squared value. The individual contribution of each predictor was assessed via its standardized beta coefficient (β) and corresponding t-test p-value, with α set at 0.05.

3. Results

The study successfully recruited 109 participants who met all inclusion criteria. The demographic profile of the sample, detailed in Table 1, revealed a notable gender imbalance, with females comprising the majority of respondents. The age distribution was skewed towards younger adults, with the 18-25 age group forming the largest cohort. The educational level of the sample was relatively high, with a majority having attained tertiary education, a finding consistent with the significant student population in the district, who also constituted the largest single occupational group.

Participants' self-reported behaviors regarding amoxicillin use provided crucial context for their intentions, as summarized in Table 2. A high level of basic product awareness was evident, with nearly all participants correctly identifying amoxicillin as an antibiotic. While over half reported that their initial recommendation for its use came from a doctor, a substantial portion were influenced by their social networks or pharmacy staff. Critically, regarding the point of access for their most recent act of self-medication, reliance on formal medical channels dropped significantly, with pharmacies being an equally important access point as doctors. Nearly half the sample confirmed they had purchased amoxicillin on their own initiative, and pharmacy staff were the most cited source of information on how to use the drug.

The mean scores for the TPB constructs, measured on a 7-point scale, are presented in Table 3. The scores revealed a strong psychosocial inclination towards self-medication. The mean intention score was high, indicating a general willingness among participants to self-medicate in the future. The mean score for attitude was the highest of the predictors, reflecting a

strongly positive overall evaluation of the behavior. The mean score for subjective norm was also high, indicating a strong perception of social approval. The mean score for PBC was slightly lower but still indicated a positive perception of control over the behavior.

Table 1. Baseline characteristics of the study participants.

A detailed breakdown of the demographic profile of the 109 individuals included in the study.

CHARACTERISTIC	CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
Gender	Male	33	30.3
	Female	76	69.7
Age Group (Years)	18-25	55	50.5
	26-45	44	40.4
	46-60	10	9.2
Marital Status	Unmarried	70	64.2
	Married	39	35.8
Education Level	High School or less	43	39.4
	Tertiary Education	66	60.6
Occupation	Student	33	30.3
	Private Employee	25	22.9
	Civil Servant	15	13.8
	Entrepreneur	13	11.9
	Homemaker	9	8.3
	Other	14	12.8

Table 2. Behavioral patterns and information sources regarding amoxicillin use.

A summary of participants' self-reported behaviors and sources of information concerning amoxicillin (N=109).

BEHAVIORAL ASPECT	RESPONSE CATEGORY	FREQUENCY (N)	PERCENTAGE (%)
Knows Amoxicillin is an Antibiotic?	Yes	106	97.2
	No	3	2.8
Source of Initial Recommendation	Doctor	58	53.2
	Family / Friends	29	26.6
	Pharmacy Staff	22	20.2
Source of Access (Most Recent Use)	Doctor (Prescription)	49	45.0
	Pharmacy (No Prescription)	49	45.0
	Family / Friends	11	10.1
Purchased Amoxicillin on Own Initiative?	Yes	52	47.7
	No	57	52.3
Source of Information on How to Use	Pharmacy Staff	52	47.7
	Doctor	30	27.5
	Other Health Worker	27	24.8

Table 3. Descriptive statistics of the theory of planned behavior constructs.

Mean scores and standard deviations for the core constructs, measured on a 7-point scale (N=109).

CONSTRUCT	MEAN SCORE (OUT OF 7)	STANDARD DEVIATION (SD)
Intention	5.12	1.54
Attitude	5.68	1.41
Subjective Norm	5.55	1.35
Perceived Behavioral Control	4.95	1.62

Note: Higher mean scores indicate a stronger agreement with the construct (e.g., higher intention, more positive attitude).

Multiple linear regression was performed to test the predictive power of the TPB constructs on the intention to self-medicate. The results, detailed in Table 4, showed that the overall model was statistically significant and that attitude and subjective norm were significant individual predictors, while PBC was not.

The regression model was statistically significant ($F(3, 105) = 21.267$, $p < .001$), explaining 37.8% of the variance in self-medication intentions ($R^2 = 0.378$). Attitude was the most powerful predictor ($\beta = 0.341$, $p = .001$), followed by subjective norm ($\beta = 0.276$, $p = .015$). Perceived behavioral control was not a significant predictor of intention ($p = .459$).

4. Discussion

This study embarked on a deconstruction of the psychosocial factors that underpin the intention to self-medicate with amoxicillin in an Indonesian community. By applying the theoretical lens of the TPB within a unique context of recent policy change, our findings reveal a compelling and somewhat counterintuitive narrative.[10] The decision to self-medicate, a behavior with profound public health consequences, appears to be driven less by logistical considerations of access and more by a powerful confluence of personal beliefs and social consensus. The TPB model itself proved robust, accounting for a substantial portion of the variance in intention. However, the true value of this research lies in dissecting the differential power of the model's components and exploring the deep theoretical and pathophysiological implications of these findings for antimicrobial stewardship.[11] The most potent finding from our analysis was the overwhelming dominance of attitude as the primary predictor of intention ($\beta = 0.341$).

Table 4. Results of multiple linear regression predicting intention to self-medicate.

Analysis of the predictive power of TPB constructs on the intention to self-medicate with amoxicillin (N=109).

VARIABLE	UNSTANDARDIZED COEFFICIENT (B)	STD. ERROR	STANDARDIZED COEFFICIENT (B)	T-VALUE	P-VALUE
(Constant)	2.394	0.203	-	11.789	**<.001**
Attitude	0.047	0.014	**0.341**	3.321	**.001**
Subjective Norm	0.038	0.015	**0.276**	2.480	**.015**
Perceived Behavioral Control	0.013	0.018	**0.081**	0.743	.459

R^2	F-statistic	Model p-value
0.378	21.267	<.001

Note: Significant p-values ($p < .05$) are highlighted in bold red for emphasis.

This indicates that an individual's personal, favorable evaluation of the act of self-medication is the single most important factor in their decision-making process. The critical question, then, is how such a powerfully positive attitude towards a risky health behavior is formed and maintained. The answer lies in a pernicious intersection of pathophysiology and behavioral psychology.[11]

Amoxicillin is a beta-lactam antibiotic, effective against a range of gram-positive and some gram-negative bacteria by inhibiting cell wall synthesis.[12] It is, however, completely ineffective against viruses, which are the causative agents for the vast majority of common upper respiratory tract infections like the flu and common cold—conditions for which amoxicillin is frequently self-prescribed. Why, then, did 96.3% of our participants report "feeling better" after taking it, thereby reinforcing their positive attitude? This perception of efficacy, though often false, is the bedrock of the positive attitude construct. Most common infections are self-limiting; the host's immune system will clear the virus within 7-10 days. If an individual begins taking amoxicillin on day 3 of their illness and feels better by day 7, they will, through a classic logical fallacy (post hoc ergo propter hoc), attribute their recovery to the drug, not their own immune response. This creates a powerful, albeit erroneous, experiential data point: "I took amoxicillin, and I got better." In a smaller subset of cases, a primary viral infection may be complicated by a secondary bacterial infection, such as bacterial sinusitis or otitis media. In these instances, the

amoxicillin would be genuinely effective against the secondary invader, leading to a real clinical improvement. This legitimate success is then incorrectly generalized, reinforcing the belief that amoxicillin is the correct treatment for the initial viral symptoms. The act of taking a medicine—a tangible step towards addressing an illness—can itself produce a powerful placebo effect, leading to a subjective improvement in symptoms.[13] This psychological and neurobiological phenomenon further cements the user's belief in the drug's power. These mechanisms combine to create a formidable behavioral reinforcement loop. Each time an individual self-medicates and subsequently recovers, their positive attitude is strengthened, increasing the likelihood of repeating the behavior in the future. This experiential "evidence" becomes far more salient and trustworthy to the individual than abstract public health warnings about the long-term, invisible threat of AMR. The pathophysiology of common illnesses and the psychology of reinforcement conspire to make a positive attitude towards amoxicillin self-medication a deeply entrenched and rational-seeming belief from the user's perspective.[14]

Our second major finding was the significant predictive power of subjective norms ($\beta = 0.276$). This illuminates that the decision to self-medicate is not made in a social vacuum but is profoundly shaped by the perceived actions and approval of one's community. This finding can be understood through the lens of Social Cognitive Theory, which posits that behavior is learned through observation and social modeling.[15] In a collectivist cultural context, such as that found in many parts of Indonesia, group harmony and adherence to social norms can often be more powerful motivators than individualistic attitudes. The sharing of medicine, which our data shows is a source of access for over 10% of participants, is a key mechanism for the transmission of these norms. This act is not merely logistical; it is a pro-social behavior. It signals care, community solidarity, and the sharing of valuable resources. Recommending amoxicillin to a sick friend or family member is seen as a helpful, supportive gesture.[16] When this behavior is modeled by respected individuals within a social network, it becomes a descriptive norm—"this is what people like us do." When it is met with gratitude and positive outcomes (real or perceived), it becomes an injunctive norm—"this is what people like us should do." Over time, this behavior moves beyond a simple action and becomes part of a social identity. To not self-medicate, or to refuse a shared antibiotic, could be interpreted as rejecting community wisdom or acting "outside" the group. This social embedding makes the behavior incredibly resilient to change. Public health messages that target the individual with information about risks may fail because they do not address the powerful social rewards and identity functions that the behavior serves.[16] To disrupt this social contagion, interventions must do more than provide information; they must create new social norms and provide alternative ways for individuals to enact pro-social, caring roles within their community.

Perhaps the most theoretically significant finding of our study was the statistical non-significance of perceived behavioral control as a predictor of intention. This is paradoxical because one would logically assume that the perceived ease or difficulty of obtaining a drug would be a critical factor in the decision to use it. The lack of influence suggests that, for our participants, access was not a decisive variable in their psychological calculus.[17] We posit that this is a direct manifestation of a "policy-perception lag." This concept, drawn from policy implementation science, describes the gap between policy de jure (the law as it is written) and policy de facto (the reality experienced by the public). The government's ban on non-prescription sales was the policy de jure. However, our data provide stark evidence of the policy de facto: 45% of participants still successfully obtained amoxicillin from pharmacies without a prescription. This persistent availability means that the new regulation has not yet been translated into a tangible barrier that alters public perception. Because most people still perceive access to be relatively easy—a perception anchored in years of prior experience and confirmed

by recent success—PBC remains uniformly high across the population. When a variable does not vary significantly among individuals, it loses its statistical power to predict differences in their intentions. From a public health perspective, this situation is perilous. Inconsistent or poorly enforced regulations can be more dangerous than no regulation at all. It creates an environment of uncertainty that may encourage hoarding of antibiotics when they are available. Furthermore, the knowledge that the sale is illicit may lead to truncated interactions at the pharmacy, where individuals quickly purchase the drug without receiving even the informal dosing advice they might have gotten previously. This can lead to even more erratic use and suboptimal dosing, which is a perfect recipe for driving resistance. The pathophysiology of resistance is exquisitely sensitive to sub-therapeutic antibiotic concentrations, which allow partially susceptible bacteria to survive and multiply. The current state of policy-perception lag may be inadvertently creating the ideal conditions for this to occur. The finding of non-significant PBC is therefore not a null finding, but a critical diagnostic indicator of a policy that has yet to achieve its intended effect on the ground, a state of cognitive inertia where public perception has not caught up with regulatory intent.[18]

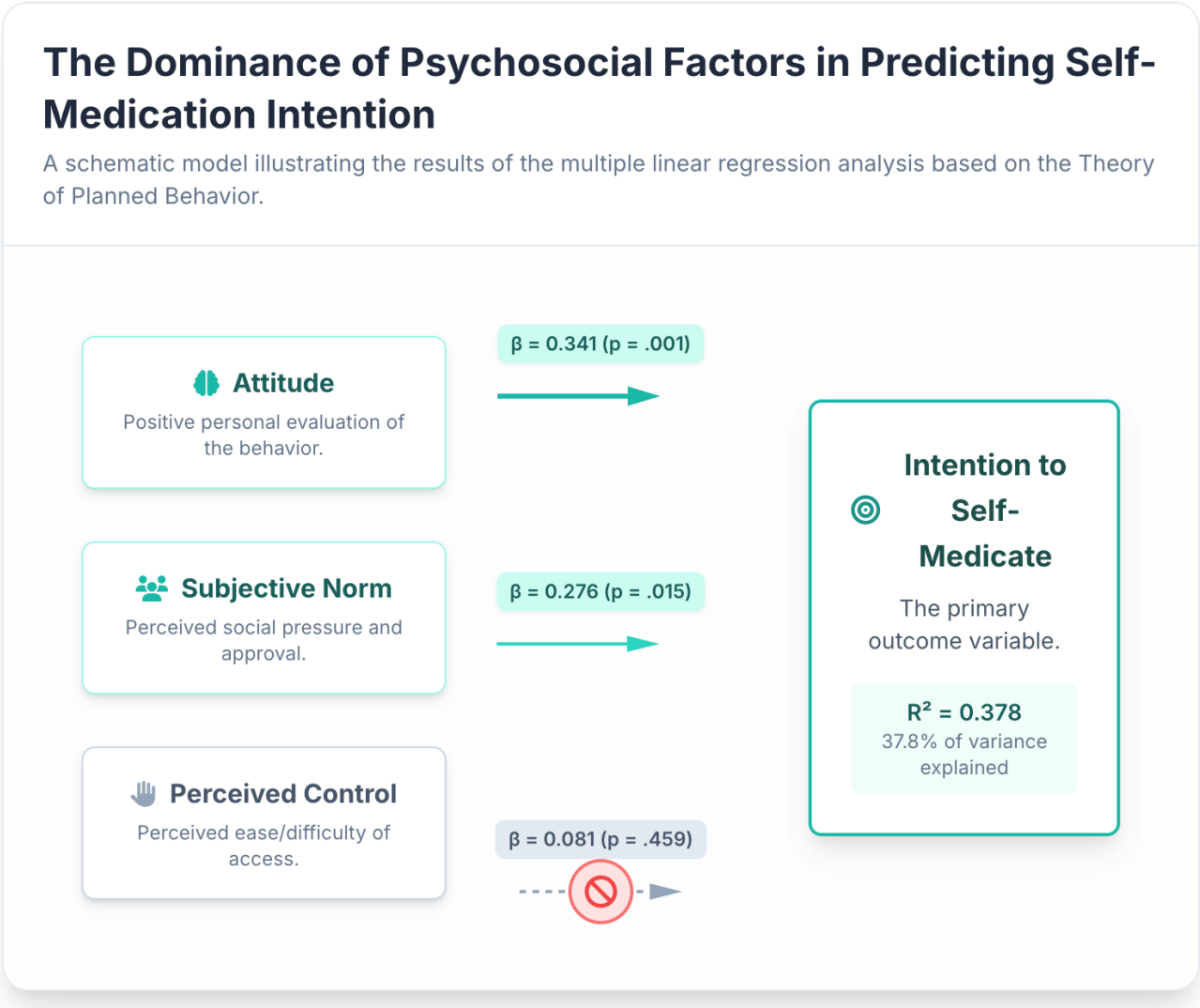

Figure 1. The dominance of psychosocial factors in predicting self-medication intention.

Figure 1 showed a powerful visual narrative of the psychosocial dynamics driving the intention to self-medicate with amoxicillin within the studied community. This schematic model, based on the results of the multiple linear regression analysis, elegantly deconstructs the complex decision-making process into its constituent parts, revealing a clear hierarchy of influence among the core constructs of the Theory of Planned Behavior. The diagram does more than simply present statistical outputs; it tells a story about human behavior, social influence, and the often-perplexing gap between public policy and public perception. At its core, the figure illustrates a fundamental tension: the battle between deeply ingrained personal and social drivers and the newly imposed external constraints. The results, as visualized, argue compellingly that the decision to self-medicate is, at this moment, being won decisively by the former.

The most visually striking element of the model is the thick, solid arrow originating from the “Attitude” construct and pointing directly to the “Intention to Self-Medicate” outcome. This arrow, labeled with the largest standardized beta coefficient of point three four one and a highly significant p-value of point zero zero one, represents the most powerful predictive pathway in the model. It signifies that an individual's personal evaluation of the behavior—their belief in its benefits, wisdom, and efficacy—is the single most important factor shaping their intention to act. This is not merely a statistical correlation; it is a window into the user's lived experience. The strength of this pathway suggests that for the individuals in this study, the decision to self-medicate is primarily an internal, cognitive one, rooted in a set of strongly held positive beliefs.[18] These beliefs are forged and reinforced through a cycle of perceived efficacy. When an individual takes amoxicillin for a cough or flu and subsequently recovers, they create a powerful, personal data point that validates the behavior, regardless of the actual pathophysiological mechanism. This perceived success, often a result of the self-limiting nature of viral illnesses or a placebo effect, builds a formidable positive attitude that is highly resistant to external public health messaging. The figure visually confirms that this internal conviction is the primary engine driving the entire behavioral process.

Flowing parallel to this is the second significant pathway, represented by another solid, albeit slightly thinner, arrow from the “Subjective Norm” construct. This path, with a standardized beta coefficient of point two seven six and a significant p-value of point zero one five, illustrates the profound influence of the social environment. It demonstrates that the intention to self-medicate is not an isolated decision but one that is heavily sanctioned and supported by an individual's social network. This arrow represents the "social contagion" of the behavior—the transmission of norms, advice, and even the physical medication itself through family and friends. In a collectivist culture, where community harmony and the approval of significant others are paramount, this pathway is critically important. The act of sharing or recommending an antibiotic is often framed as a pro-social, caring gesture, reinforcing its social acceptability.[18] The figure visually communicates that an individual's perception of what their peers and family do and approve of is a major determinant of their own intentions. This finding highlights that any intervention aimed at changing individual behavior must also contend with the powerful, reinforcing currents of the surrounding social ecosystem. Together, the strong, solid arrows from attitude and subjective norm paint a clear picture: the intention to self-medicate is robustly supported by both internal beliefs and external social validation.

In stark contrast to these powerful pathways is the third arrow, originating from the “Perceived Behavioral Control” construct. This pathway is visually distinct and tells the most nuanced and perhaps most important story from a policy perspective. The arrow is rendered as a dashed line, immediately signaling a weak or broken connection. The associated beta coefficient is a negligible point zero eight one, and the p-value of point four five nine confirms that this

relationship is statistically non-significant. This is the central paradox of the study's findings: the perceived ease or difficulty of accessing amoxicillin, the very factor that the new government policy was designed to manipulate, had no discernible impact on the intention to self-medicate.[19]

The large red "ban" icon superimposed over this pathway is a powerful visual metaphor for the hypothesized "policy-perception lag." It suggests that while a regulatory barrier has been officially erected, it has not yet become a psychological reality for the community. The dashed line does not mean that access is irrelevant in theory, but that in this specific context, at this specific time, it is not a differentiating factor.[19] Because participants still perceive access to be relatively easy—a perception confirmed by the finding that many are still able to purchase the drug without a prescription—their sense of control remains high and does not vary enough to predict their intentions. This visual element of the figure is a critical diagnostic tool for policymakers. It shows that the policy, while well-intentioned, is not yet functioning as an effective behavioral deterrent. The cognitive inertia of the community, anchored in years of easy access, has rendered the new control mechanism psychologically inert. This broken pathway is a powerful illustration of the challenge of translating law into tangible behavioral change.[20]

Finally, the entire model converges on the outcome variable, “Intention to Self-Medicate,” which is enclosed in a box indicating that, collectively, these three factors explain thirty-seven point eight percent of the variance in intention. This is a substantial figure for a behavioral model, confirming the utility of the Theory of Planned Behavior in this context. However, it also implicitly highlights that a majority of the variance remains unexplained, pointing toward the influence of other factors such as health literacy, economic pressures, and deeper cultural beliefs.[20] In essence, Figure 1 provides a comprehensive, data-driven portrait of a complex public health challenge. It shows that the desire to self-medicate is a powerful force, propelled by the twin engines of positive personal attitude and supportive social norms. Meanwhile, the primary braking mechanism designed by policy—the restriction of access—is currently failing to engage, allowing the intention to proceed unchecked. The schematic serves as both a summary of the research findings and a clear, visual roadmap for future interventions, arguing that to change this dangerous behavior, we must look beyond the pharmacy counter and into the hearts and minds of the community itself.

5. Conclusion

This study reveals a crucial public health paradox: in the battle against antibiotic misuse, the most intuitive weapon—restricting supply—may be the least effective if implemented in isolation. Our findings demonstrate that the intention to self-medicate with amoxicillin is not governed by logistical barriers but is instead a deeply psychosocial act. It is fueled by a powerful synergy of positive personal attitudes, continuously reinforced by a false perception of efficacy, and the potent influence of social norms that sanction this behavior as both normal and caring. The non-significance of perceived control serves as a stark indicator of a 'policy-perception lag,' where new regulations have yet to penetrate the public's reality, rendering access-based policies functionally inert. Therefore, a paradigm shift is required. Combating antimicrobial resistance demands a move beyond a singular focus on top-down regulation towards a more sophisticated, dual-pronged strategy that actively dismantles the demand for illicit antibiotics. This necessitates community-based interventions designed to re-engineer public attitudes through education on the true risks of misuse and to reshape social norms by empowering local health champions. The future efficacy of our most essential medicines depends not on the locks we place on pharmacy doors, but on winning the hearts and minds of the communities who use them.

6. References

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