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# Exploring Non-Health Sciences Students' Perceptions Toward Antibiotics and its Implications on Antibiotic Resistance Insurgency

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***Abstract*—***With the insurgency of antibiotic resistant bacterial strains, public health faces a critical challenge that poses threat to the effectiveness of modern medicine and jeopardizes global treatment standards. This study examines the perception and behaviors of non-health sciences students towards antibiotic use and antibiotic resistance. Through the utilization of phenomenological qualitative research design, the lived experiences and encounters of students without formal health training are explored. The data were acquired through a semi-structured interview format, with the responses of purposively sampled participants subjected to thematic analysis. Findings showed that there has been notable prescription compliance, but judgement reliant on self-diagnosis, past experiences, and advice from relatives and informal sources remain persistent. Furthermore, misconceptions regarding the function of antibiotics were present, mistakenly attributing antibiotic treatment on inflammatory and viral ailments. Minimal and inaccurate comprehension of antibiotic resistance was also prevalent, demonstrating the knowledge gap as they deemed antibiotic resistance as a bodily adaptation rather than a bacterial phenomenon. Ultimately, the study emphasizes how past experiences, informal sources, economic constraints, and unregulated antibiotic access influence one's behavior towards antibiotic use. This necessitates the need for public health interventions that promotes proper use of antibiotics and extends awareness regarding the emergence of antibiotic resistant bacterial strains.*

***Keywords*—** *Antibiotic resistance; antibiotic use; non-health sciences students; phenomenological; knowledge gap.*

## I. INTRODUCTION

The world of pharmacology has been producing countless medications to battle illnesses and diseases more than ever, as technology evolves. Hence, medicines have been more accessible to the people, with or without a prescription. However, this causes a growing concern with antibiotics these days — the issue of antibiotic resistance, thus lessening the effectiveness of treatments.

Antibiotic resistance is when the bacteria has developed resistance against the antibiotics [1]. Its existence threatens our health because they make bacterial infections more difficult to resolve. Antibiotic resistance has effects on public health because this implies more serious illnesses, disabilities, and even deaths. Additionally, aside from the clinical effects, there are also financial effects [2][3], implying the surgency of increased cost of care because of prolonged hospital stay, targeted infection control programmes, and diagnostic tests and imaging. Not only does antibiotic resistance have adverse effects on our health, but also causes a significant financial burden.

Antibiotic resistance is caused by multiple factors, one of them is acquired resistance that arose from inadequate use of antibiotics — taking antibiotics wrongly, or not completing a full course. Hence, the bacteria that were previously vulnerable can resist the effects of the activity of antimicrobial agents through time. To explore deeper, doctors may rely on unreliable or inaccurate information and prescribe antibiotics as a precaution against uncertainty [4]. Resistance may develop that could worsen selective pressure and antibiotic resistance. The weaker bacteria are killed but the resistant bacteria survive because of selective pressure. Then, they continue to grow and spread, consequently outnumbering the susceptible bacteria.

In 2022, 75% in low- and middle-income countries use antibiotics without prescriptions [1]. The widespread use of unprescribed antibiotics is a growing concern, especially in the Philippines, where the usage of antibiotics is 5.3 DDDs per 1,000 people, less than half take unprescribed antibiotics (43.8%) [5][6]. Therefore, the perceptions of non-health sciences students on this matter are important because they are vulnerable for having limited awareness, less responsible practices, and weaker attitudes toward rational use due to lack of formal education [7].

The main objective of this study is to investigate the non-health sciences students' perceptions and behaviors regarding antibiotic use and decision-making. In addition, the implications of their perceived misconceptions will be evaluated to better understand what shapes their notions of antibiotics. Therefore, this research can aid to determine if the misconceptions are the underlying factors of the students' misuse of antibiotics, thus benefiting the institutions to give ideas on interventions and policy recommendations to prevent or lessen the surgency of antibiotic resistance.

### *1.1 Statement of the Problem*

The study aims to analyze the non-health sciences students' perceptions and behaviors regarding antibiotic use and decision-making. Therefore, the study is primarily concerned with addressing the following research questions:

1. *What are the experiences of non-health sciences students with antibiotics?*
2. *How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*



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*2.1. Awareness of antibiotics' usage*
*2.2. Awareness of antibiotics function in treating bacterial versus virus infections*
*2.3. Awareness of antibiotics resistance*

### *1.3 Scope and Delimitations*

This study is centered on the non-health sciences students' perceptions and behaviors regarding antibiotic use and decision-making. Their knowledge, attitudes, and practices of antibiotic use will be assessed, along with its influencing factors of their decision-making. Moreover, their perceived misconceptions will be scrutinized to understand the implications of their notions toward antibiotics. This study's participants are the non-health sciences students of Far Eastern University Manila and Tech campuses.

On the other hand, this study will not cover the compliance of students regarding antibiotic use — such as their compliance to correct dosage and correct duration. The study will rely on the self-reports of participants only, as the clinical effects of the misuse of antibiotics will not be examined.

Overall, the study aims to provide insights into the role of education on spreading awareness to mold the students' perceptions into responsible antibiotic use and decision-making, which may also give ideas to educational institutions on possible interventions and regulations.

### *1.4 Significance of the Study*

The results of this study, primarily the students' perceptions and behaviors regarding antibiotic use, could potentially be of beneficial use to the following beneficiaries:

Educational Institutes (Universities and Colleges). Institutes can gain insights from the study's findings to propose a solid foundation of interventions and policy recommendations to shape the students' perceived knowledge on antibiotics better.

Public Health Organizations and Policymakers. Antibiotic resistance poses a serious problem — thus, learning the perceptions of people, particularly students with no formal education of antibiotics.

Healthcare Professionals. Professionals can draw ideas from the study to better understand how people with limited awareness perceive antibiotics — thus, enhancing educational campaigns (e.g. publication materials, seminars, etc.) to promote awareness on correct antibiotic use.

Non-Health Sciences Students. The study can give importance on the correct antibiotic use to give awareness to non-health sciences students, shedding light on the possible risks of antibiotic misuse and the importance of decision-making toward medications, particularly antibiotics.

Future Researchers. The study can serve as a reference material for antibiotic resistance, influencing factors of antibiotic misuse, decision-making in self-medication — overall, public health education.

## II. METHODOLOGY

### *A. Research Design*

This qualitative study will follow the phenomenological research design, in which 'the lived experiences' and encounters of respondents in association to the notions of interests are analyzed and assessed [8]. This approach attempts to perceive the respondents' point of view in the sought of exploring their respective notions and perceptions toward antibiotic use.

### *B. Respondents*

The respondents that will partake in this study are Far Eastern University students enrolled in non-health sciences degree programs. The sample size will include five (5) participants to be interviewed using a semi-structured format, in accordance with the sample size guidelines for in-depth interviews [9]. Respondents will be selected from various institutes of the university, exclusive of the health sciences and nursing institute. The selection of respondents will be based on the following inclusion criteria: (1) must be a student of Far Eastern University - Manila and Tech campuses, (2) must be currently enrolled in a non-health sciences program, and (3) must have personally used antibiotics once within the last five (5) years. Conversely, the exclusion criteria includes the following characterizations: (1) students who have no encounters with antibiotic use, and (2) students enrolled in health sciences degrees due to them receiving academic training on antibiotics.

### *C. Sampling Method*

The study will employ purposive sampling in selecting five (5) respondents who meet the respective inclusion criteria. The relatively small sample size of five (5), as recommended by Dworkin (2015, as cited in Lu et al., 2022), is deemed sufficient for the objective of the study to identify notions that contribute to the insurgency of antibiotic resistance. Purposive sampling was chosen as the sampling technique of the study as it enables the researchers to conduct judgement-based selection in choosing students who will yield data that are insightful and relevant to the interest of the study. Furthermore, purposive sampling is suitable for in-depth interviews revolving around gathering notions of various individuals, due to its ability to render data that were highly reflective [10]. Given the nature of the study, the integration of purposive samples to a small sample size heightens the internal validity of the results within the defined subpopulation, making purposive sampling adequate for the necessities of the study [11].

### *D. Data Gathering*

In implementing the phenomenological approach, the researchers opt to conduct in-depth interviews as their research instrument. In-depth interviews are effective in drawing out detailed narratives from respondents, making it appropriate for phenomenological studies [12]. The interviews will be conducted in-person and will follow a semi-structured format, guided by defined interview questions that provide room for probing. The in-person interviews are sound recorded for transcription purposes only, and are only done upon being given the informed consent by the respondents. Anonymity and confidentiality of the respondents are upheld, and participants are free to withdraw at any given time with no consequences.

### *E. Data Analysis*



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The study will integrate thematic analysis in extracting insights and forming concepts from the acquired data via semi-structured interviews. Thematic analysis aims to construct themes through identifying patterns and group meaningful excerpts from codes, which is needed in the study to identify gaps in the perceptions of students toward antibiotics [13]. Through this, the process of extracting themes from the data are structured, yet the insights to be acquired remain nuanced and multifaceted.

The data are transcribed verbatim from the recorded in-person interviews, with the informed consent of the respondents. The transcribed verbatim is further analyzed to construct initial codes that possess patterns, to be subjected to thematic coding. Thematic coding organizes the initial codes into clusters that reflect the same patterns, which will be the basis for the creation of themes [13]. The interpretation of the themes will primarily focus on the commonalities on perceptions, self-reported behaviors, and information sources as determining factors.

## III. Results and Discussion

TABLE I. Thematic Analysis of Prescribed Antibiotic Dosage and Duration

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant A | I follow doctor's advice. | Following medical prescriptions | Varying Levels of Adherence to Medical Protocols |
| Participant B | I don't disregard it, I follow it. | Following medical prescriptions | |
| Participant C | Usually, (I follow) what's prescribed by the doctors. | Following medical prescriptions | |
| Participant D | I just follow the doctor's prescriptions on what dosage and duration they recommend. | Following medical prescriptions | |
| Participant E | I follow the doctor's prescribed dosage and duration of intake. | Following medical prescriptions | |
| Participant B | Yes, because I already feel well… I stopped taking it. | Premature discontinuation of antibiotics based on subjective perception of recovery | |
| Participant D | I was told that I already feel better so I don't have to finish the medications. | Premature discontinuation of antibiotics based on subjective perception of recovery | |
| Participant A | For common colds, yes. It's based on past experience, you know. | Reliance on past experiences instead of prescriptions | |
| Participant B | Because that's the usual (medicine) prescribed to me… I am confident that it's exactly what will be given to me. | Reliance on past experiences instead of prescriptions | |

The findings revealed the non-negligible inconsistency of students when it comes to adhering the prescribed antibiotic regimen. Even though the majority of them reported that they followed medical professional's advice, few students later on admitted early discontinuation of antibiotics upon feeling better. This denotes behavioral contradiction when it comes to approaching prescribed antibiotic regimens, where clinical instruction is initially abided due to its merits and legitimacy but is consequently overridden by judgement based on subjective perception of recovery. Such occurrence suggests how professional guidance is substantiated transiently, where complying is limited to only the initial stages of illness.

The implication of such behavior is detrimental due to the fact that early discontinuation of antibiotic intake remains as one of the main precursors to the insurgency of antibiotic resistance. This behavior is deemed as a form of partial adherence, a common habit within the general consensus that contributes to the emergence of antibiotic-resistant strains – due to the early cease of intake causing incomplete pathogen inhibition.

Furthermore, the tendency to rely on past experiences instead of prescriptions, including presuming that an antibiotic that was effective in the past would produce the same results on the same illness, reinforces harmful habits of self-diagnosis and unsupervised usage of antibiotics.

TABLE II. Thematic Analysis of Unprescribed Antibiotic Use

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant E | *My mother did, she used previous prescriptions with the same symptoms.* | Use of leftover or previously prescribed with antibiotics | Informal and Experience-Based Antibiotic Access |
| Participant B | *Because I know someone who is a nurse and they're the ones who provide it.* | Acquiring antibiotics from acquaintances in the medical field | |
| Participant A | *Yes, because it's based off of previous experiences.* | Unprescribed use of antibiotics based on symptom similarity | |
| Participant B | *Without prescriptions, yes… I'm confident that it's exactly what will be given to me.* | Unprescribed use of antibiotics based on symptom similarity | |

The theme indicated how informal access to antibiotics become a recurring encounter for the students, where antibiotics are utilized without prescriptions. The cited ways include previously prescribed antibiotics and acquaintance in the medical field. This shows how clinical advice is replaced by judgements based on close relatives that are personally deemed experts in the field as well as previous experiences of similar symptoms – a practice that poses risks to the public health.

Moreover, this practice substantiates the need for a robust regulatory system towards accessing antibiotics. Due to the fact that antibiotics are easily accessible, assumptions conceived from previous experiences without professional oversight heightens the risk of antibiotic misuse that contributes to



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bacteria developing resistant properties. The ease of access also enables self-prescribed medications, a speculative and treacherous way of addressing illnesses due to the practice being prone to unsuitable medication choices and inappropriate dosing – exacerbating the concurrent insurgence of antimicrobial resistance.

TABLE III. Thematic Analysis of Sources of Clinical Information

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant A | *Google* | Use of online resources | Mixed and Informal Sources of Health Information |
| Participant B | *From people we know that are in the medical field.* | Consulting medically inclined family or acquaintances | |
| Participant C | *From the doctor.* | Reliance on doctors when accessible | |
| Participant D | *The doctor* | Reliance on doctors when accessible | |
| Participant E | *It's based on what the doctors tell us.* | Reliance on doctors when accessible | |

The findings showed the mixed and informal sources from which participants receive information they need to ensure that the medication they're taking is suitable for their sickness. The answers of two participants sparked concern and alarm because neither of them is assured to always contain verified information from credible sources. Online sources, such as Google, do not prioritize credibility when results are shown, thus, it requires media literacy for people to receive accurate information. However, this is not the only problem with web-based sources. People relying on those sources can not be guaranteed an in-depth analysis of their sickness and needed medications. Additionally, it is undeniable that the nurse plays a vital role in the medical field. However, they are not qualified to prescribe medications, unlike doctors, because they did not go through specialized training, particularly in diagnosing. Thus, too much reliance on informal sources is a dangerous habit that does not ensure full expertise of what information they hold.

This theme explores how individuals rely on both personal assessment and external cues on determining when to start taking antibiotics. Many assess the duration or worsening of their symptoms by using three days as a starting measurement to opt for antibiotics. Aside from duration or worsening of symptoms, individuals also depend on external cues, particularly from doctors and their prescriptions, to call for the usage of antibiotics. Furthermore, when over-the-counter medications are found inefficient to relieve sickness, they perceive urgency to shift to antibiotics.

Waiting beyond three days can be a problem. Waiting longer may result in worsened conditions that require more medications other than antibiotics, if it is indeed bacterial infection. Moreover, a rigid timeline cannot also fully guarantee that the sickness experienced is bacterial infection. It also takes away the focus from the cause of antibiotics, where duration and inefficiency of OTC medications are thought to be more important and reliable as a rule of thumb. Thus, it leads to a false reinforcement of what considerations call for the usage of antibiotics.

TABLE IV. Thematic Analysis of Perceived Necessity for Initiating Antibiotic Use

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant A | *If it usually lasts longer than the expected recovery.* | Perceived duration or worsening symptoms | Self-Evaluation and External Cues for Taking Antibiotics |
| Participant D | *When I feel sick for more than three days.* | Perceived duration or worsening symptoms | |
| Participant E | *If the sickness doesn't go from three days to one week, and if it gets worse.* | Perceived duration or worsening symptoms | |
| Participant C | *When the doctor tells me or advises me* | Reliance on doctor prescriptions | |
| Participant D | *Only when the doctor tells me* | Reliance on doctor prescriptions | |
| Participant D | *When usual over-the-counter medications are not enough* | Using antibiotics when OTC medicine is insufficient | |

Overall, it reflects factors that are influential to the timing and perceived necessity which can heavily affect the antibiotics consumption behaviors of individuals.

TABLE V. Thematic Analysis of Personal Considerations Affecting Antibiotic Use

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant A | *First, 'cause I'm poor, I can't afford expensive medicine.* | Medicine affordability | Socioeconomic Constraints in Health Behavior |
| Participant A | *If it worked, then it will work again* | Reusing antibiotics from past prescriptions | |

This theme emphasizes external factors, particularly financial limitations, that can be influential to the consumption behavior of individuals in taking antibiotics — making them more vulnerable to antibiotic resistance due to improper consumption. Due to financial issues, individuals may skip a visit to the doctor, thus may lead to inappropriate use of consumption (e.g. intake of leftover antibiotics from their family members) for their circumstances, such as affordability.

Thus, it reflects a bigger issue in health security. It shows how individuals compromise their long-term health to alleviate their immediate symptoms due to financial issues — resulting in their perceived importance of correct usage of antibiotics is minimized.

The theme extrapolates on the prevalent misconceptions regarding the applicability of antibiotics to certain illnesses, often attributing antibiotic use against viral infections – when in fact, it is primarily used against bacterial strains. Furthermore, the confusion on which medication type does



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certain medicine fall into was uncovered, where interchange on analgesics and antibiotics was deemed evident on the students' perception. In addition, the widespread usage of antibiotics for general inflammatory and viral illnesses denotes the common mistakes and inability of individuals outside health sciences disciplines to distinguish appropriate antibiotic use. The lack of knowledge on which ailments are inherently bacterial might lead to inappropriate use of antibiotics, which could provide more harm rather than cure as it diverts these individuals from receiving appropriate treatments.

TABLE VI. Thematic Analysis of Perceived Definitions of Antibiotics

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant A | *To remove remaining virus, you know.* | Belief that antibiotics kill viruses | Misunderstandings About the Role of Antibiotics |
| Participant B | *Am I right, is Biogesic an antibiotic?* | Confusion between analgesics and antibiotics | |
| Participant B | *I take antibiotics for throat pain… when my palate starts to itch.* | Usage of antibiotics for general inflammation or pain | |
| Participant B | *I also see it used on tone nails, when ingrown nails lead to wounds* | Usage of antibiotics for general inflammation or pain | |
| Participant E | *Respiratory illnesses, like coughs and colds.* | Associating antibiotics with non-bacterial illnesses | |

TABLE VII. Thematic Analysis of Understanding of Antibiotic Resistance

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant A | *Yes, the virus can develop resistance through antibiotics.* | Misbelief that viruses develop resistance | Misconceptions and Knowledge Gaps in Understanding Resistance |
| Participant A | *If you took 100 grams next time you get sick it won't be effective as much.* | Thinking resistance means requiring higher doses | |
| Participant E | *Is it when your body becomes accustomed to the medicine?* | Perceiving resistance as the body's adjustment | |

The findings showed the inaccuracy of the students' perception towards resistance, indicating a critical knowledge gap on the global health threat that is antibiotic resistance. Such inaccuracies include attributing resistance to viruses and mistaking resistance as a bodily adaptation rather than an evolution of bacterial strains. Furthermore, wrong attribution of resistance to dosage could lead to misuse of antibiotics, as thinking that resistance requires higher doses might prompt individuals to overdose in thinking that it cures their ailments. These knowledge gaps stress the reason why individuals fail to place importance on following and completing prescribed regimens – as not having an accurate grasp on how these medications work hinders them from seeing the cruciality of regimen compliance.

TABLE VIII. Thematic Analysis of Unawareness of Antibiotic Resistance

| | Significant Statements | Initial Theme Coding | Core Theme |
|---|---|---|---|
| Participant B | *No, I haven't heard of it.* | No awareness or recognition of the term | Lack of Exposure to the Concept of Antibiotic Resistance |

This finding points out to the existence of a critical gap on basic public health awareness, suggesting that the lack of exposure to the notion of antibiotic resistance while having tertiary education is concerning. This highlights the need for integration of public health issues in general education courses, as knowledge on the implications of antibiotic misuse does not only concern health sciences students and should extend way beyond vast disciplinary boundaries. In addition, education about public health does not only aid in raising awareness, but it also targets to overhaul risky practices and behaviors that often go unnoticed and lack oversight – a very much needed foundation in achieving greater public health outcomes.

## IV. Conclusion

The study analyzed the different perceptions and consumption behaviors of non-health science students toward antibiotic use that can compromise their health by making them more vulnerable for the emergence of antibiotic resistance.

Students follow the doctors' prescriptions, however, fail to complete the duration prescribed due to their personal perception of their symptoms. Their perceptions of improved symptoms can easily influence how many follow their doctors' orders. Moreover, it also identified the sources of their antibiotics, particularly unprescribed from their family members, acquaintances, and leftover prescriptions. Aside from where they obtain their unprescribed antibiotics, many also receive information from mixed and informal sources other than their doctors, such as online platforms (e.g. Google) and medically inclined acquaintances who are not qualified to prescribe antibiotics. Many also depend on their self-determined measurement of three days or ineffective OTC medications to establish when they should take antibiotics for their sickness. Delayed proper treatment can worsen their conditions that would require more than antibiotics. Students also struggle with socioeconomic constraints where it could compromise their health by alleviating immediate symptoms as a band-aid solution through taking antibiotics without a visit to the doctor or using their previously prescribed antibiotics.

Regarding the concept of antibiotics, students showed a lack of understanding on which illnesses antibiotics treat, confused between viruses or non-bacterial illnesses and bacterial infections. These misconceptions can worsen their antibiotics consumption behavior that can exacerbate the surgency of antibiotic resistance in the population. In the topic of antibiotic resistance, some showed lack of awareness of the term, mistaking it as the body's adjustment or viruses developing resistance.



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Therefore, due to the gathered findings of the study, the researchers recommend implementing community-based antibiotic education programs to educate the general public, especially those who are not in the health sciences field. The program should tackle the basic concepts of antibiotics, including proper consumption behaviors like following dosage and duration, not taking unprescribed antibiotics, and discourage using delayed treatment or OTC failure as self-assessed cues to begin antibiotic use. To ensure the efficiency and effectiveness of the programs, educational institutions should collaborate with healthcare providers to address proper antibiotic use among non-health science students, while also hindering the spread of antibiotic resistance. Moreover, there should be low-cost healthcare for those with financial limitations, to avoid socioeconomic constraints that may compromise the individuals' health driven by their circumstances. Future researchers may explore the effectiveness of educational campaigns of antibiotic use, and the effects of low-cost healthcare on the consumption behaviors. These could empower individuals to have more control of their health as they make informed decisions with the right education and ease of access to healthcare.

Therefore, the study's findings provide valuable insight into the underlying factors of antibiotic misuse and established misconceptions of antibiotic resistance, leaving room for opportunities for targeting interventions in educational and policy settings. Addressing these health issues at the university level not only protects the health security of the students, but also advocates for the larger effort of combating antimicrobial resistance worldwide.

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## APPENDIX

### Appendix A

The questionnaire aims to assess the non-health sciences students' perceptions and behaviors regarding antibiotic resistance, and antibiotic use and decision-making. The interview process follows a semi-structured format, thus, these structured questions are open to elaboration and follow-ups.

1. *How do non-health sciences students recall their encounters with antibiotics?*
   - *When prescribed with antibiotics, how do you approach the recommended dosage and duration of intake?*
   - *Have you ever stopped taking antibiotics before the prescribed course? If so, why?*
   - *Have you ever taken antibiotics when you feel sick? What influenced your decision?*
   - *Have you considered taking antibiotics without prescriptions? If so, what influenced your decision?*
   - *Where do you get information to ensure that your medication is aligned with what you're feeling?*

2. *How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*

*2.1. Awareness of antibiotics' usage*

- *How do you determine if your sickness requires antibiotics?*
- *Based on your knowledge, what considerations call for the usage of antibiotics?*

*2.2 Awareness of antibiotics' function in treating bacterial infections*

- *Based on your understanding, what illnesses are antibiotics used for?*

*2.3 Awareness of antibiotic resistance*

- *Have you heard of antibiotics resistance? If so, what is your understanding of it? And what contributes to that occurrence?*

*Appendix B*

*Participant A*

1. *How do non-health sciences students recall their encounters with antibiotics?*

- *When prescribed with antibiotics, how do you approach the recommended dosage and duration of intake?*
  *"I follow doctor's advice."*
- *Have you ever stopped taking antibiotics before the prescribed course? If so, why?*
  *"Nope"*
- *Have you ever taken antibiotics when you feel sick? What influenced your decision?*
  *"For common colds, yes. It's based on past experience, you know."*
- *Have you considered taking antibiotics without prescriptions? If so, what influenced your decision? Yeah, because it's based off of previous experience. If it worked, then it will work again.*
  - *Where do you acquire the unprescribed antibiotics?*
    *"I don't exactly know if it's antibiotics, but I get it over the counter at a drugstore."*
- *Where do you get information to ensure that your medication is aligned with what you're feeling?*
  *"Google"*

*2. How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*

1. *Awareness of antibiotics' usage*

- *How do you determine if your sickness requires antibiotics?*
  *"If it usually lasts longer than the expected recovery."*
  - *It depends on the sickness? But for instance, if you have a cold for like one week, that's something, that's kind of sign that… you know.*
- *Based on your knowledge, what considerations call for the usage of antibiotics?*
  *"Cost, effectivity"*
    - *Can you explain further?*
      *"First, 'cause I'm poor, I can't afford expensive medicine."*

*2. Awareness of antibiotics' function in treating bacterial infections*

- *Based on your understanding, what illnesses are antibiotics used for?*
  *"To remove remaining virus, you know.*

3. *Awareness of antibiotic resistance*

- *Have you heard of antibiotics resistance? If so, what is your understanding of it? And what contributes to that occurrence?*
  *"Yes, the virus can develop resistance through antibiotics. So, for example, you took like 100 grams of antibiotics. So if you took like 100 grams next time you get sick it won't be effective as much."*
    - *What contributes to its occurrence?*
      *"Evolution."*

*Participant B*

1. *How do non-health sciences students recall their encounters with antibiotics?*

- *When prescribed with antibiotics, how do you approach the recommended dosage and duration of intake."*
  *"I follow it, of course. Since, it's important… the reason why they gave you a prescription is for you to manage the way you take the medicine and know the time interval between taking the medicine. So, I don't disregard it, I follow it."*
- *Have you ever stopped taking antibiotics before the prescribed course? If so, why?*
  *"Yes. Because I already feel well. I wasn't able to follow the duration of two weeks because when I thought I was already feeling better, I stopped taking it anymore.*
- *Have you ever taken antibiotics when you feel sick? What influenced your decision?*
  *"Yes. Without prescription, yes. Because that's the usual (medicine) prescribed to me, so when I start to feel something, I am confident that it's exactly what will be given to me."*
    - *Where do you acquire the unprescribed antibiotics?*
      *"Because I know someone who is a nurse and they're the one who provides it – but if it's not allowed, they won't give any."*
- *Where do you get information to ensure that your medication is aligned with what you're feeling?*
  *"There, from doctors. From people we know that are in the medical field. Because, we have relatives that are in the medical field."*

*2. How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*

1. *Awareness of antibiotics' usage*

- *How do you determine if your sickness requires antibiotics?*
  *"I guess once it's severe. I guess, I feel like I'm bedridden and my body can't function anymore. When it interferes."*
- *Based on your knowledge, what considerations call for the usage of antibiotics?*
  *"I guess we need to consider the milligrams of medicine, depending on the weight and age of a person – because once we overdose, it's possible that the effects for the body won't be good as well. So that's*



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*one thing that we need to consider as well as if the medicine is appropriate for what we are currently feeling – and if taking it is really necessary.*

*2. Awareness of antibiotics' function in treating bacterial infections*

- *Based on your understanding, what illnesses are antibiotics used for?*
  *"Actually I am taking something for my throat as I often experience palate inflammation. That's one of the antibiotics that I don't need to ask for a doctor's prescription, it's an antibiotic… I forgot the name but it is pink in color. So once I feel that my throat starts to swell, my palate starts to experience pain and itchiness – I drink antibiotics. Am I right, is biogesic an antibiotic? It's not. But I take amoxicillin for certain pains, but seldomly not oftentimes. I also see it used on tone nails, when ingrown nails lead to wounds – they apply amoxicillin on it. I'm not quite sure if it's proper usage or not but they say that it works. My mom always tells me that the clinic near our home offers free treatment for that (ingrown nails) .*

*3. Awareness of antibiotic resistance*

- *Have you heard of antibiotics resistance? If so, what is your understanding of it? And what contributes to that occurrence?*
- *"No, I haven't heard of it."*

*Participant C*

*1. How do non-health sciences students recall their encounters with antibiotics?*

- *When prescribed with antibiotics, how do you approach the recommended dosage and duration of intake?*
  *"Usually, (I follow) what's prescribed by the doctors because usually you'll take antibiotics when it's necessary and needed by the situation and sickness."*
- *Have you ever stopped taking antibiotics before the prescribed course? If so, why?*
  *"Nope."*
- *Have you ever taken antibiotics when you feel sick? What influenced your decision?*
  *"Sick like a normal fever? No."*
- *Have you considered taking antibiotics without prescriptions? If so, what influenced your decision?*
  *"No."*
- *Where do you get information to ensure that your medication is aligned with what you're feeling?*
  *"From the doctor."*

*2. How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*

*1. Awareness of antibiotics' usage*

- *How do you determine if your sickness requires antibiotics?*
  *"When the doctor tells me or advises me to take antibiotics."*
  - *When do you consult a doctor?*
    *"Normally, every year, annually. But for instance, you're not feeling well and you're having a fever lasting for 4 days."*
- *Based on your knowledge, what considerations call for the usage of antibiotics?*
  *"When the doctors tell me to do so."*

*2. Awareness of antibiotics' function in treating bacterial infections*

- *Based on your understanding, what illnesses are antibiotics used for?*
  *"I don't know. I only remember using antibiotics upon having tooth extraction."*

*3. Awareness of antibiotic resistance*

- *Have you heard of antibiotics resistance? If so, what is your understanding of it? And what contributes to that occurrence?*
  *"Based on what I have heard or witnessed, too much antibiotic use or continuous use leads to our body resisting its effects or rejection."*

*Participant D*

*1. How do non-health sciences students recall their encounters with antibiotics?*

- *When prescribed with antibiotics, how do you approach the recommended dosage and duration of intake?*
  *"I just follow the doctor's prescriptions on what dosage and duration they recommend."*
- *Have you ever stopped taking antibiotics before the prescribed course? If so, why?*
  *" Not really."*
- *Have you ever taken antibiotics when you feel sick? What influenced your decision?*
  *"Sometimes… I go to the doctor when I suspect that something is wrong when I feel sick for more than 3 days. That's where I think that my sickness really requires antibiotics."*
- *Have you considered taking antibiotics without prescriptions? If so, what influenced your decision?*
  *"Not really."*
- *Where do you get information to ensure that your medication is aligned with what you're feeling?*
  *"The doctor, based on their prescriptions whenever we attend appointments."*

*2. How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*

*1. Awareness of antibiotics' usage*

- *How do you determine if your sickness requires antibiotics?*
  *"The doctor, based on their prescriptions whenever we attend appointments."*
- *Based on your knowledge, what considerations call for the usage of antibiotics?*
  *"When usual over-the-counter medications are not enough."*

*2. Awareness of antibiotics' function in treating bacterial infections*



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- *Based on your understanding, what illnesses are antibiotics used for?*
  *"Serious illnesses, like those that last longer than 3 days to 1 week. "*

3. *Awareness of antibiotic resistance*
   - *Have you heard of antibiotics resistance? If so, what is your understanding of it? And what contributes to that occurrence?*
     *"Yes, it's when there is a build up of resistance to antibiotics in our bodies.*
     - *And what contributes to that occurrence"*

*"Improper use of antibiotics."*

*Participant E*

1. *How do non-health sciences students recall their encounters with antibiotics?*

- *When prescribed with antibiotics, how do you approach the recommended dosage and duration of intake?*
  *"I take it how the doctor would tell me to. If they tell me to take one in the morning, afternoon, and evening, then I'd just follow that."*
- *Have you ever stopped taking antibiotics before the prescribed course? If so, why?*
  *"I think I did back then, I was told that I already feel better so I don't have to finish the medications."*
- *Have you ever taken antibiotics when you feel sick? What influenced your decision?*
  *"Sickness that lasts long, it requires check-up."*
- *Have you considered taking antibiotics without prescriptions? If so, what influenced your decision?*
  *"My mother did, she used previous prescriptions with the same symptoms."*
- *Where do you get information to ensure that your medication is aligned with what you're feeling?*
  *"I'm familiar… it's based on what the doctors tell us."*

2. *How do non-health sciences students' perceive antibiotics and their capacity to treat illnesses in terms of the following parameters:*

   1. *Awareness of antibiotics' usage*

- *How do you determine if your sickness requires antibiotics?*
  *"If the sickness doesn't go from three days to one week, and if it gets worse."*
- *Based on your knowledge, what considerations call for the usage of antibiotics?*
  *"If the sickness persists for three days till one week, and pains or sickness become severe.*

2. *Awareness of antibiotics' function in treating bacterial infections*
   - *Based on your understanding, what illnesses are antibiotics used for?*
     *"Respiratory illnesses, like coughs and colds."*
3. *Awareness of antibiotic resistance*
   - *Have you heard of antibiotics resistance? If so, what is your understanding of it? And what contributes to that occurrence?*
     *"Is it when taking too many antibiotics leads to your body becoming accustomed to the medicine? It occurs because your body adapts to antibiotics due to frequent intake.*



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