RELATIONSHIP BETWEEN SELF-DIAGNOSED MALARIA-TYPHOID TRENDS AND ANTIBIOTICS MISUSE AMONG TRADERS AT USELU MARKET, BENIN CITY.

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR DEGREE IN NURSING SCIENCES

FEBRUARY, 2025

DECLARATION

This is to declare that this research project titled **"RELATIONSHIP BETWEEN SELF-DIAGNOSED MALARIA-TYPHOID TRENDS AND ANTIBIOTICS MISUSE AMONG TRADERS AT USELU MARKET, BENIN CITY"** was carried out by **OSHIOGWEMO SYNTHCHE** is solely the result of my work except where acknowledge as being derived from other person(s) or resources.

MATRICULATION NUMBER: _____

SIGNATURE: _____

DATE: _____

CERTIFICATION/APPROVAL

This is to certify that this research project by OSHIIOGWEMO SYNTHCHE with matriculation number _____has been examined and approved for the award of Bachelor of Nursing sciences in department of Nursing sciences, School of basic medical sciences, Benin city.

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CHIEF EXAMINER Sign & date

ABSTRACT

Self-diagnosis, a pervasive practice in resource-limited settings, poses significant public health concerns. There is a concept of resorting to self-diagnosis and self-medication to manage perceived malaria and typhoid symptoms. This study investigates the link between self-diagnosed malaria-typhoid trends and antibiotic misuse among traders in Uselu Market, Benin City, Nigeria. The research aims to examine how frequent self-diagnosis contributes to inappropriate antibiotic use, thereby escalating antibiotic resistance. A correlational design was applied, sampling 322 traders through a stratified random method, using a structured questionnaire for data collection. Data analysis utilized chi-square statistics to test the associations between self-diagnosis, socioeconomic factors, and antibiotic misuse. Findings revealed a high prevalence of self-diagnosed malaria-typhoid (78.3%) and a significant level of antibiotic misuse (69.2%) among respondents. A notable association exists between self-diagnosis and misuse of antibiotics ($p<0.001$), with socioeconomic status influencing self-diagnosis but not antibiotic misuse. This study emphasizes the critical need for targeted public health education on accurate diagnosis and responsible antibiotic use to curb resistance. Recommendations include enhancing healthcare accessibility and implementing awareness campaigns to inform traders of the risks associated with self-diagnosis and improper antibiotic consumption. Further research studies should investigate self-diagnosis and antibiotics misuse in different regions for a better understanding.

Keywords: self-diagnosis, malaria-typhoid, antibiotic misuse, traders, Uselu Market, socioeconomic factors.

DEDICATION

This research project is humbly dedicated to God Almighty, who has graciously bestowed upon me the wisdom, strength, and protection necessary to complete this research work. I also extend my heartfelt gratitude and dedication to my loving parents, Mr. and Mrs. Oshiogwemo, whose unwavering support, encouragement, and love have been a constant source of inspiration throughout this research journey.

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INTRODUCTION

1.1 Background to the Study

The issue of the misuse of antibiotics for illnesses has been a source of concern as it increases the risk of antibiotic resistance. The practice of self-medication is a global phenomenon (Sachdev et al., 2022), over the world, individuals irrespective of their level of education engage in the act of managing their health without consulting qualified health personnel (Mallah et al., 2022). While this is largely indisputable the incidence of self-medication may be higher in the developing countries due to lack of access to quality medical care. Nigeria for instance, stands out among the countries of the world where medications are freely displayed for sale in unauthorized places such as markets, shops, roadside stalls, motor parks and other public places by individuals who are not duly licensed (Richard, 2023).

The strong association between bacterial resistance and antibiotic misuse is well documented and considered as a serious public health concern (Mancuso et al., 2021). According to Shaikh et al. (2023), from the year 2000–2010, the use of antibiotics increased by 36 % globally and it is believed that if the resistance is not controlled, it can lead to about 10 million deaths per year by the year 2050. The control of enteric fever has worsened due to antimicrobial resistance, which is partly driven by the high use and misuse of antibiotics in regions where malaria and typhoid fever are common (Bhandari et al., 2024).

Malaria is an important disease of public health concern caused by Plasmodium parasites belonging to the Apicomplexans. It is spread when an infected female Anopheles mosquito

feeds on human blood. It majorly infests people in the world's tropical and subtropical countries, particularly in sub-Saharan Africa. In Nigeria, malaria is transmitted throughout the year, with more than 194 million people predisposed to contracting malaria infection. Nigeria reported the highest malaria prevalence among the world's countries in 2007 (Awosolu et al., 2021).

Typhoid fever is a dangerous bacterial infection which primarily affects people in Africa and Asia. Typhoid fever is a febrile illness caused by infection with the gram-negative bacterium (Marks et al., 2024). Typhoid fever causes substantial morbidity and mortality in low-income and middle-income countries (LMICs) like Nigeria with limited access to clean water, sanitation facilities, and hygiene. Between 12.5 million and 16.3 million cases of typhoid occur annually, resulting in approximately 140,000 deaths. Malaria and typhoid fever collectively represent a significant cause of febrile illness, accounting for 619,000 and 216,000 global deaths per year respectively (Nakisuyi et al., 2023). These deaths tend to double when there is dual infection. Current reports showed increasing global trends of malaria during 2022, and the disease burden is highest amongst low-income countries. The burden of malaria can be compounded with typhoid-salmonella co-infection at the interface of dry and wet seasons linking the two disease entities (Nakisuyi et al., 2023). Non-medical practitioners like the traders may misinterpret certain symptoms such as back pain as a result of standing and lifting heavy loads, respiratory problems from exposure to dust, smoke, and other pollutants, skin problems from contact with chemicals and other hazardous substances, mental health issues from stress and long working hours due to the nature of their work to malaria or typhoid due to ignorance about health issues, due to overlapping symptoms and inadequate diagnostic facilities (Akinola 2024).

In Nigeria, malaria and typhoid fever are public health issues exacerbated by various social determinants. These include malnutrition, poverty, and inadequate sanitation. The prevalence of these diseases is closely linked to the socio-economic status of the individual and the lack of access to basic healthcare services. The burden of malaria and typhoid fever disproportionately affects communities with limited resources and infrastructure, this emphasizes the urgent need for comprehensive public health interventions addressing these interconnected social factors to effectively combat these diseases and improve overall health outcomes. These conditions are shaped by the distribution of money, power, and resources at global, national, and local level (Bayode & Siegmund 2022; Kim et al., 2022).

In resource-constrained settings, clinicians often face difficulties in accurately diagnosing co-infections due to overlapping clinical features leading to diagnostic challenges that prompt them to treat without laboratory confirmation, thus risking drug resistance (Zawahir et al., 2022). This practice increases the misuse of antibiotics contributing to the emergence of multidrug-resistant bacteria which poses a public health risk (Cheysson et al., 2021). Delays in appropriate treatment due to diagnostic ambiguities can lead to severe complications such as bowel perforation in cases of typhoid fever (Kim et al., 2022). Diagnosing febrile conditions can be a difficult task for healthcare workers as they often present comparable symptoms, making it challenging to distinguish between them (Asuquo et al., 2024). The burgeoning practice of purchasing antibiotics and antimalarial drugs without a prescription has become a trend among the general population, leading to overuse and misuse of these non-prescribed antibiotics to over-the-counter medications. In communities where these drugs are readily available the ease with which they can be obtained without a doctor's prescription further exacerbates the issue, contributing to the rise of drug resistance. It is imperative to be aware

that communities are at risk of typhoid fever, and there's a need to have access to quality healthcare services. Antimicrobial Resistance (AMR) occurs when microorganisms including bacteria, viruses, fungi, and parasites become able to adapt and grow in the presence of medications that once impacted them, AMR is considered a significant threat to the public health systems not just in developing countries but throughout the world.

Infection with antimicrobial-resistant bacteria leads to serious illnesses and prolonged hospital admissions, increases in healthcare costs, higher costs of second-line drugs, and treatment failures. Different surveys across the globe indicate that many patients firmly believe antibacterial agents would help with viral diseases like the common cold or flu (Zawahir et al., 2022; Cheysson et al., 2021). Despite the recommendations and evidence that antibiotics neither shorten the course of acute viral illness nor prevent secondary bacterial infections, it is still being used to treat viral respiratory infections, and this is dangerous to human health.

1.2 Statement of the Problem

Antibiotics misuse is a silent killer and can cause serious adverse effects on not just the individuals but the community at large. Antibiotics misuse leads to development of resistant bacteria if this is not properly checked and the continuous misuse is harmful to the health. Bacteria’s adapt and survive in the presence of these antimicrobial drugs when the wrong antibiotics is taken for the wrong invading bacteria due to inappropriate culture and sensitivity tests and failure to follow treatment correctly or acquiring over the counter antibiotics as the ones previously prescribed for perceived similar symptoms. Antibiotics misuse driven by self-diagnosis and self-medication may lead to several public health issues. It may increase the risk of developing multi drug-resistant bacteria which are harder and more expensive to treat

(Cheysson et al., 2021). It can also undermine the effectiveness of antibiotics making them less effective for future treatments.

Despite awareness campaigns, it has been observed that some people still lack sufficient knowledge about the dangers of antibiotic misuse (Zawahir et al., 2022). The misuse of antibiotics may not only endanger the individual's health, but may also pose a public health risk. Although there have been numerous studies on antibiotics misuse globally, there is a notable lack of research specifically focusing on the self-diagnosis of malaria-typhoid and its impact on antibiotics misuse among traders in local markets, particularly in Nigeria, and more specifically in Edo State. Therefore, it becomes imperative to assess the relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market, Benin City.

1.3 General Objectives:

The main objective of this study is to examine the association between self-diagnosis of malaria typhoid trends and the subsequent misuse of antibiotics among traders at Uselu Market Benin City.

Specific Objectives:

This study seeks to:

1. Determine the extent of self-diagnoses of malaria-typhoid among traders at Uselu Market, Benin City.
2. Assess the extent of antibiotic misuse related to malaria-typhoid self-diagnoses among traders at Uselu Market, Benin City.

3. Ascertain the relationship between self-diagnosed malaria-typhoid and the misuse of antibiotics among traders at Uselu Market, Benin City.
4. Assess the moderating effect of socio-economic status in the relationship between self-diagnosed malaria-typhoid and antibiotics misuse among traders at Uselu market, Benin.

1.4 Research Questions

1. What is the extent of self-diagnosed malaria-typhoid among traders at Uselu Market, Benin City?
2. What is the extent of antibiotic misuse related to malaria-typhoid among traders at Uselu Market, Benin City?
3. What is the relationship between self-diagnosed malaria-typhoid and the misuse of antibiotics among traders at Uselu Market, Benin City?
4. What is the moderating effect of socio-economic status in the relationship between self-diagnosed malaria-typhoid and antibiotics misuse among traders at Uselu market, Benin City?

1.5 Research Hypotheses:

HO1: There is a significant relationship between self-diagnosed malaria-typhoid and the misuse of antibiotics among traders at Uselu Market, Benin City.

HO2: There is a significant impact of socio-economic status in the relationship between self-diagnosed malaria-typhoid and antibiotics misuse among traders at Uselu market, Benin City.

1.6 Significance of the Study.

The findings of the study will help public health nurses and student nurses during community level awareness to buttress certain aspects such as, importance of a good medical check-up, effects of indiscriminate use of any drug. It will also contribute to the development of targeted interventions aimed at promoting responsible antibiotic use and enhancing healthcare services in our communities. This study will also create awareness to the general public on the danger of self–diagnosis and self-medication, this will help them to cultivate the habit of consulting certified medical personnel for their health issues, knowing the danger of drug misuse.

1.7 Scope of the Study

This study is concerned with the relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu market, Benin City. The study focuses on traders who are actively engaged in commercial activities within the market. The independent variable of this study is self-diagnosed malaria-typhoid, the dependent variable is antibiotics misuse, while the moderator variable is socio-economic status of the traders.

1.8 Operational Definition of Terms

Antibiotics: A substance, produced by a microorganism or of biological origin, which at low concentrations can inhibit the growth of, or are lethal to, other microorganisms.

Antibiotics misuse: The inappropriate or excessive use of antibiotics, including their use without a valid prescription, failure to complete a prescribed course of treatment, use for non-bacterial infections, and sharing antibiotics with others without medical supervision.

Endemic disease: A disease that is constantly present to a greater or lesser degree in people of a certain class or in people living in a particular location.

Malaria: An infectious disease caused by sporozoan parasites that are transmitted through the bite of an infected anopheles mosquito; marked by paroxysms of chills and fever.

Over-the-counter (OTC) drugs: Medications available for purchase without a prescription from a healthcare professional. In the context of this study, OTC drugs may include antibiotics and other medications commonly used for self-medication by traders at Uselu Market, Benin City, for symptoms of illnesses perceived as malaria-typhoid

Self-diagnosis: When one makes a medical diagnosis of an illness by oneself.

Socio-Economic Status: The social class of a person. It is often measured as a combination of education, income and occupation. It is usually described as low, medium and high.

Traders: Individuals actively involved in commercial activities within Uselu Market, Benin City, who buy and sell goods or services as their primary occupation or means of livelihood.

Typhoid: Typhoid fever is an acute febrile illness caused by the bacterium Salmonella enterica serovar Typhi transmitted through contaminated food and drink.

Widal test: A diagnostic blood test specifically designed to detect antibodies produced in response to Salmonella typhi, the bacteria responsible for causing typhoid fever, as well as antibodies against other Salmonella species. This test is typically performed by collecting a blood sample from the patient and then exposing the sample to specific antigens derived from Salmonella bacteria. The presence and levels of antibodies in the blood sample are then

measured to determine if the patient has been exposed to Salmonella infection and to help diagnose typhoid fever and other salmonellosis.

CHAPTER TWO

This chapter reviewed published materials related to the study, focusing on conceptual, theoretical and empirical review. The literature sources include peer-reviewed journals, and academic books. To ensure the relevance and quality of the reviewed literature, specific inclusion and exclusion criteria were applied. The inclusion criteria require studies related to the research topic, addressing malaria-typhoid diagnosis, antibiotics misuse or related health

behaviour among market traders or similar populations. Research conducted in Nigeria and similar socioeconomic settings, particularly within markets were prioritized. Articles published within the last five years were included to ensure current relevance with exceptions for theoretical works. Preference was given to peer-reviewed articles to maintain a high standard of credibility and only literature published in English was considered to avoid language barriers. Conversely studies not directly related to the research topic and older than five years were excluded.

2.1 Conceptual Review

2.1.1 The Concept of Malaria

Malaria is a tropical and subtropical disease caused by protozoan parasites of the genus Plasmodium. It is transmitted to humans through the bites of infected female Anopheles mosquitoes (Baiden et al., 2021).

Throughout history, it is believed that in all armed conflicts until World War II, more humans died from infectious diseases than from the actual violence (Mertens 2024). According to Danis (2023), malaria has been a significant cause of death throughout history, a parasitic disease whose pathogen was first identified by Alphonse Laveran in 1880 in febrile patients' blood, remains the most prevalent endemic disease in tropical and subtropical regions as of 2022. According to the latest "World Malaria Report" released in November 2021 by the WHO, extensive data from 2019-2020 illustrate its progression over the past two decades and outline measures aimed at improving control of this life-threatening endemic. In 2019, there were an estimated 232 million malaria cases across 87 endemic countries, a decrease from 245

million cases reported in 2000. The WHO African Region alone accounted for 94% of these cases, predominantly caused by the severe Plasmodium falciparum species (Danis, 2023).

The Anopheles mosquito serves as a vector for Plasmodium, with the relevant species for infection in humans being P. falciparum, P. vivax, P. ovale, P. malariae, and P. knowlesi. Of these, P. falciparum regularly induces the most severe of clinical presentations and today is responsible for the bulk of global morbidity and mortality, especially in sub-Saharan Africa (Mertens, 2024).

Frequent signs of infection include fevers that come and go, exhaustion, nausea, headaches, and swelling of the organs; in cases of severe malaria, especially in children and pregnant women, coma and death are possible outcomes. In order to control the disease globally, treatment typically entails the use of antimalarials (such as an artemisinin-based combination therapy); preventive measures against mosquito bites (such as bed nets sprayed with insecticide) and the aforementioned vector control techniques are equally crucial. Regrettably, resistances to the majority of insecticides and all antimalarials have already developed (Mertens, 2024).

2.1.2 The Concept of Typhoid

Typhoid fever is an acute febrile illness caused by the bacterium Salmonella enterica serovar Typhi. Typhoid fever remains a significant public health issue in low- and middle-income countries, with increasing cases of drug-resistant strains complicating treatment (Masuet-Aumatell & Atouguia, 2021). Following an incubation period of 6 to 30 days, enteric fever presents insidiously with the gradual onset of fever with fatigue, anorexia, headache, malaise, and abdominal symptoms. If treatment is delayed or inadequate, meningitis, sepsis, or

intestinal perforation can occur, there has been widespread successive use of antibiotics therapy but the current appearance of extensively drug-resistant bacteria has confounded treatment and raised concerns (Bhandari et al., 2024).

There are between 12·5 million and 16·3 million cases and 140 000 deaths per year due to typhoid. The most affected regions are sub-Saharan Africa and South Asia (Marks et al., 2024). Typhoid fever presents non-specific signs and symptoms common to numerous febrile illness (Marks et al., 2024). The most reliable method for diagnosing typhoid fever is the isolation of S. typhi from bone marrow or blood, the isolation of S. typhi from urine or stools is still important for the diagnosis of typhoid, especially in patients with compatible clinical characteristics even stools and urine are not sterile sites and blood cultures are frequently negative. However, in low-income countries most basic health facilities lack the tools and knowledge needed for the cultivation of such samples. The Widal agglutination test, which is cheaper, simple to conduct, and requires little equipment or experience, is being used in place of these laboratory instruments and health services due to their unavailability. Nevertheless, there are a few limitations to the Widal test, it is unable to differentiate between an ongoing infection and a prior infection or typhoid vaccine. A person with a history of infection may have a false positive result from the Widal test due to its cross-reactivity with other Salmonella species. Making treatment decisions based solely on compatible clinical symptoms or a combination of clinical symptoms and Widal results from a single acute episode is a common difficulty for doctors in nations with limited resources.

Due to diagnostic challenges, underdeveloped surveillance systems, and the lack of access to universal health care in many low income areas, the true incidence of Typhoid in much of the world can only be estimated and this causes a patterns of antibiotic use and the acquisition and

spread of mutation (Bhandari et al., 2024). Improved infrastructure clean water supply, adequate sanitation, and hygiene is the foundation for decreasing the incidence of enteric fever and other diseases spread via the fecal-oral route.

2.1.3 Self-Diagnosed Malaria and Typhoid

Self-diagnosis refers to individuals identifying their health conditions without professional medical consultation. In this context, self-diagnosed malaria and typhoid refer to traders at Uselu Market identifying them as having these diseases based on their symptoms, without laboratory confirmation. These traders may choose to self-medicate with antibiotics to avoid the extra cost from the facility custodies, extensive wait time required to refer to health care facilities, experience with similar signs or antibiotics and presumed information on antibiotics use (Sachdev et al., 2022).

2.1.4 Antibiotics Misuse

Antibiotics misuse involves the incorrect use of antibiotics medications such as; failure to complete an actual antibiotic prescription, skipping doses, reusing leftover medicines, and excessive consumer use. These actions has significantly contributed to the global problem of antibiotic resistance, approximately half of all antibiotics are prescribed, dispensed, or sold inappropriately. The unethical use of antibiotics is a leading cause of their reduced efficacy and effectiveness, making common illnesses more difficult to treat (Akande et al., 2023).

2.1.5 Prevalence of Self-Diagnosis

Self-care refers to actions or behaviours individuals perform to maintain their health, fend off illness, and stay healthy. An aspect of self-care according to Anabire et al. (2023), is self-medication which refers to the use of drugs to treat self-diagnosed disorders, symptoms, or the intermittent or combined use of prescribed drugs for chronic or recurrent disease or symptoms, however self-medication lacks clinical evaluation of the condition by a trained medical professional which could result in missed diagnosis and delay in appropriate treatment. The activity of self-medication was high among the study participants, self-medicated drugs were antimalarials and painkillers and the number one reason that accounted for this activity was previous experience with symptoms.

2.1.6 Factors Influencing Self-Diagnosis and Antibiotics Misuse

Socioeconomic factors

(a) Level of Income

In low- and middle-income countries (LMICs), income level restricts access to healthcare, leading to widespread antimicrobial misuse, a key driver of antibiotic resistance. Self-medication is often preferred due to its perceived convenience, lower cost, and time-saving benefits compared to seeking healthcare facilities. This has resulted in a persistent and alarming rate of non-prescribed antibiotic misuse in LMICs (Do et al., 2021; Torres et al., 2021).

(b)Education

Education also plays a significant role in health literacy, which affects how individuals understand and respond to health issues. Traders with lower educational levels may not fully understand the implications of self-diagnosis and the misuse of antibiotics. They might be more inclined to rely on anecdotal advice and non-professional sources for their health decisions. This lack of awareness can contribute to inappropriate use of antibiotics, fostering antibiotic resistance and health complications (Ji & Hong, 2020; Isabel et al., 2021), in their study about adherence to antidepressant treatment and income level also reported that adherence to antidepressants was lower among those with a lower income than those with a higher income. Symptoms assumed to be minor, instruction from friends or relatives, absence of time and unwillingness to leave the trade area, monetary limitation, impolite behaviour of health workers, confidence in the efficacy of antibiotics, experience with similar symptoms, and a layman often cannot even acknowledge if the given medicine is antibiotic or not, contributing to confusions and negligence in completing the antibiotic therapy (Sachdev et al., 2022). Understanding these factors is crucial for addressing the root causes of self-diagnosis and promoting proper healthcare-seeking behaviour.

(c) Occupation

The nature of occupation often leads to a preference for quick and accessible healthcare solutions. Traders, due to their busy schedules, may lack the time to visit healthcare facilities for proper diagnosis. Instead, they might choose self-diagnosis and purchase antibiotics from local pharmacies or patent medicine dealers. This trend is exacerbated by the easy access to antibiotics, which can be obtained without prescriptions, leading to misuse and overuse (Isabel et al., 2021).

2.1.7 Implications of Self-Diagnosis:

The implications of AMR are significant. As resistance increases, the effectiveness of current antibiotics diminishes, leading to longer illness durations, increased healthcare costs, and higher mortality rates. Infections that were once easily curable with antibiotics can become persistent and severe, requiring more complex and expensive treatments. The pipeline for new antibiotics is limited, and the development of new drugs cannot keep pace with the rate at which resistance is developing. This creates a pressing need for improved antibiotic stewardship and the implementation of policies to regulate the availability of antibiotics as over-the-counter drugs (Majumder et al., 2020).

2.1.8 Antibiotics Misuse and Resistance

Misuse of antibiotics contributes to antimicrobial resistance, that is, when microorganisms, such as bacteria or viruses, are frequently exposed to antimicrobial drugs, they can develop mechanisms to resist the effects of these drugs. This process occurs because the microorganisms undergo genetic changes that enhance their survival in the presence of the antimicrobial agents intended to eliminate them. Over time, these adaptations accumulate, and the microorganisms become increasingly resistant to the drugs. The advent of antibiotics revolutionized medicine but it has also contributed to their widespread use, overuse and misuse of antibiotics which is now a global health concern. Antibiotics are often prescribed for illnesses that do not require them, such as viral infections against which they are ineffective (Cheysson et al., 2021). In some cases, patients may not complete the full course of antibiotics as prescribed, leading to partial treatment of the infection and allowing resistant microorganisms to survive and proliferate.

As microorganisms are exposed to antimicrobial drugs, those that possess or acquire resistance mechanisms survive and multiply. These resistant strains can then spread, both within communities and across the globe, leading to infections that are increasingly difficult to treat. The genetic changes that confer resistance can be passed between microorganisms, further accelerating the spread of AMR. This ability of microorganisms to adapt and survive in the face of antimicrobial treatment underscores the dynamic nature of microbial evolution and the ongoing challenge it presents to public health.

2.1.9 Self-Diagnosis and the Misuse of Antibiotics

Research indicates a significant connection between self-diagnosis and the misuse of antibiotics. For instance, Anabire et al. (2023) found that self-medication, a form of self-diagnosis, was prevalent among individuals who believed they had malaria or typhoid. This often led to the use of antimalarials and antibiotics without proper medical guidance, resulting in inappropriate treatment and potential health risks.

The implications of self-diagnosis are significant, particularly in the context of antimicrobial resistance (AMR). This results in longer illness durations, higher healthcare costs, and increased mortality rates. Infections that were once easily treatable with antibiotics can become severe and persistent, requiring more complex and expensive treatments. The limited pipeline for new antibiotics exacerbates this issue, as the development of new drugs cannot keep pace with the rate at which resistance is developing.

Misuse of antibiotics is a primary driver of AMR, Cheysson et al. (2021) highlighted that inappropriate use of antibiotics, such as taking them for viral infections or not completing

prescribed courses, leads to the survival and proliferation of resistant microorganisms. These resistant strains can spread within communities and globally, making infections harder to treat. The genetic changes that confer resistance can be transferred between microorganisms, accelerating the spread of AMR.

In regions with high rates of self-diagnosed malaria and typhoid, there is often a parallel increase in antibiotic resistance. Effective interventions should focus on addressing the factors that contribute to self-diagnosis and promoting the proper use of antibiotics. This can mitigate the risks associated with antibiotic resistance and improve overall public health. Understanding the relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market is crucial for developing effective interventions. By addressing the root causes of self-diagnosis and educating the public on the dangers of antibiotic misuse, it is possible to reduce the prevalence of AMR.

2.2 Theoretical Framework

The Health Belief Model (HBT) is a psychological theory that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals (Hochbaum, 1958). The model was originally developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels working in the U.S. Public Health Service (Polit & Beck, 2007). The HBM has been widely used to study various health behaviours and understand how people's beliefs influence their health-related actions, particularly in the context of disease prevention and health promotion.

The HBM suggests that people's beliefs about health problems, perceived benefits of action and barriers to action, and self-efficacy explain engagement (or lack of engagement) in health-

promoting behaviour. A stimulus, or cue to action, must also be present in order to trigger the health-promoting behaviour. When applied to the issue of self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market in Benin City, the HBM highlights several key components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy.

2.2.1 Perceived Severity

Perceived severity in the context of Health Belief Model, perceived severity refers to an individual's personal assessment of the seriousness of a health condition and the potential consequences associated with it (Okechukwu & Babatunde, 2021). According to this model, individuals who view a specific health problem as very serious are more likely to engage in behaviours aimed at preventing or reducing the severity of that health issue.

In essence, the Health Belief Model suggests that the perception of a health issue's seriousness is a key motivator for individuals to take preventive measures or adopt behaviours to mitigate potential health risks.

2.2.2 Perceived Susceptibility

Perceived susceptibility, as defined by the Health Belief Model, involves an individual's evaluation of their risk of developing a particular health issue. The model posits that individuals who believe they are at risk for a specific health problem are more likely to take actions to reduce their risk (Rosenstock et al., 1988).According to Rosenstock et al. (1988), perceived susceptibility can manifest in several ways:

a. Denial of Susceptibility

Some individuals may deny their risk of contracting an illness, believing they are immune or invulnerable to it.

b. **Perceived Unlikelihood**

Others may recognize the possibility of developing the illness but consider it highly unlikely.

The combination of perceived seriousness and perceived susceptibility is termed "perceived threat" According to the Health Belief Model, a higher perceived threat, resulting from elevated levels of both perceived seriousness and perceived susceptibility, increases the likelihood of engaging in health-promoting behaviours.

Research within the HBM framework has shown that older adults' health behaviours are influenced by their perceptions of susceptibility and severity regarding health conditions. These perceptions shape their motivation to engage in preventive behaviours (Robert & Frank 2024).

2.2.3 Perceived Benefits

In the realm of health-related behaviours, the perceived benefits of taking action significantly influence an individual's decisions. Within the Health Belief Model, perceived benefits refer to an individual's assessment of the value or effectiveness of engaging in a health-promoting behaviour to reduce the risk of disease.

2.3.4 Perceived Barriers

The Health Belief Model acknowledges that health-related behaviours are influenced by an individual's perception of the barriers to taking action (Glanz et al., 2008). Perceived barriers

represent an individual's evaluation of the obstacles or challenges that may prevent them from making behavioural changes.

2.3.5 Moderating Variables

Individual characteristics encompassing a range of demographic, psychosocial, and structural factors play a crucial role in shaping health-related perceptions. These variables can significantly influence how a person views the seriousness of a health issue, their susceptibility to it, the benefits of taking action and the barriers they may face. Demographic factors such as socioeconomic status contribute to these perceptions. Self-diagnosed malaria-typhoid trends and the misuse of antibiotics in this study can be examined through the lens of these modifying variables. Demographic factors may contribute to trader's misconceptions about illnesses and improper use of antibiotics.

For example, traders with limited access to healthcare services might rely on self-diagnosis and over-the-counter medications, leading to a higher incidence of antibiotics misuse. Conversely, those with better access to health information and services may be more knowledgeable about the risks of inappropriate antibiotic use and more likely to seek professional medical advice.

The Health Belief Model posits that these modifying variables can indirectly affect health-related behaviours by shaping an individual's perceptions of seriousness, susceptibility, benefits, and barriers (Rosenstock et al., 1988; Glanz et al., 2008).

2.3.6 Cues to Action

Every effort to improve one's health requires a prompt or signal. These cues can be internal or external. For example, pain might serve as an internal cue, while external cues can include information, suggestions, or encouragement from others. The success of an intervention depends on the caregiver's ability to assess vulnerability and the severity of the situation. The balance between perceived benefits and barriers influences the course of action. Numerous studies have shown that perceived barriers are a particularly influential component of the Health Belief Model. Additionally, perceived susceptibility plays a crucial role in understanding preventive health behaviour (Renu et al., 2015).

The study by Lee et al. (2024) uses the health belief model to explore the impact of text message reminders on increasing COVID-19 booster vaccination rates among elderly individuals. Health-related behaviors can be understood and predicted based on individuals' beliefs regarding health conditions and their perceptions of the benefits and barriers to engaging in particular health actions. The text message reminders likely targeted the concepts of perceived susceptibility and perceived severity—two critical elements of the HBM. By highlighting the risks associated with COVID-19 and the potentially severe consequences of the disease for older adults, the messages may have heightened the participants' awareness of their vulnerability, thereby encouraging them to consider the importance of receiving the booster vaccine.

Furthermore, the study aligns with the HBM's focus on perceived benefits. The reminders likely communicated the protective advantages of the COVID-19 booster, reinforcing the idea that vaccination is a beneficial action that can reduce the risk of severe illness. In addressing

perceived barriers, the reminders may have provided solutions to common concerns such as forgetfulness or anxiety about side effects, thereby lowering the psychological and practical obstacles that could prevent individuals from getting vaccinated.

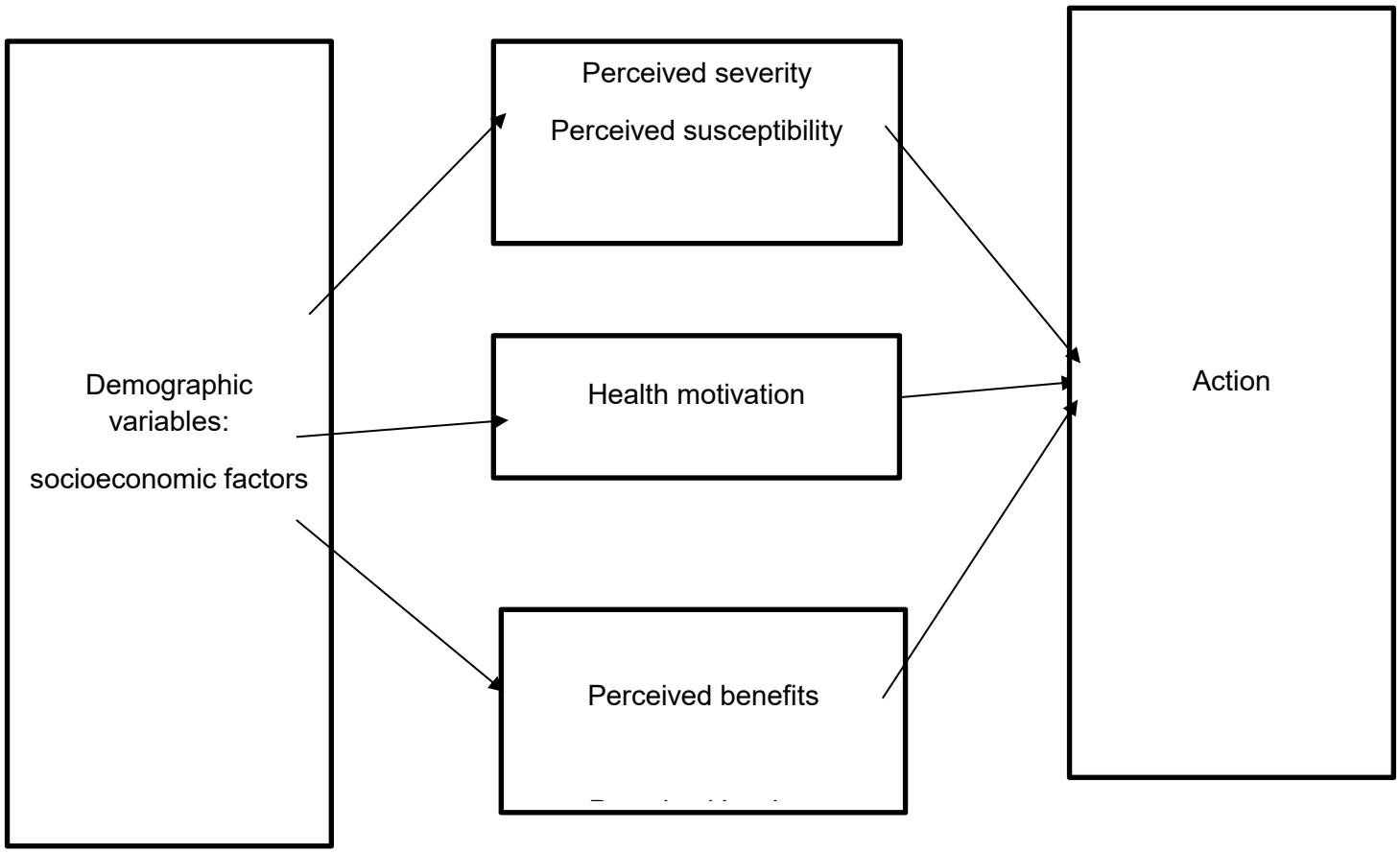

Figure: 2.1 Adapted from Health Belief Model by Renu (2015).

2.3.7 Application of the Theory to this Study

The health belief theory helps to understand behaviours that are considered to be influenced by individuals' perceptions of risk, benefit, and barriers through a reasoning process. Health belief theory (HBT) is an ideal framework to interpret and predict health-related behaviours (Wang et al., 2022). It helps to understand how the traders' health beliefs influence their self-diagnosis of malaria and typhoid and subsequent misuse of antibiotics, it also helps in identifying the psychological and social factors that drive these behaviours and underscores the importance of addressing these beliefs through targeted educational and policy interventions. By examining the constructs of the HBT, interventions can be designed to:

1. Increase awareness about the risks and consequences of antibiotic misuse.
2. Highlight the benefits of seeking professional medical advice.
3. Reduce perceived barriers to accessing healthcare.
4. Provide cues to action that encourage proper healthcare-seeking behaviours.
5. Enhance self-efficacy through education and support.

2.3 Empirical Studies

Self-Diagnosed Malaria-Typhoid among Traders.

Malaria and typhoid fever co-infections are prevalent in many sub-Saharan African regions, particularly among market traders who are constantly exposed to unsanitary conditions and high human traffic. A study conducted by Akinola (2024), dispels the myth of widespread malaria-typhoid co-infections in Nigeria, found that many cases attributed to co-infections are

often the result of misdiagnosis due to overlapping symptoms and inadequate diagnostic facilities. While this review is comprehensive, it primarily focuses on clinical settings and does not sufficiently address the context of market traders who may resort to self-diagnosis due to limited access to healthcare.

The study by Okoror et al. (2024), revealed that misdiagnosis of dengue fever as malaria and typhoid is prevalent in rural areas of Southwest Nigeria, leading to inappropriate treatments. This misdiagnosis was primarily attributed to the overlapping symptoms of these diseases and the reliance on clinical judgement without proper diagnostic tools. The study involved 663 participants from rural areas of Southwest Nigeria, using a combination of blood sample analysis and questionnaires to identify cases of misdiagnosis and co-infection of malaria, typhoid, and dengue fever. It was discovered that a significant misdiagnosis of dengue fever as malaria and typhoid fever. Out of the total sample, a considerable number of patients were treated based on presumptive diagnosis rather than laboratory confirmation. The study's methodology highlights the challenges in rural healthcare settings where access to accurate diagnostic tools is limited. This often leads to reliance on presumptive diagnosis, which can result in inappropriate treatment.

Tetteh-Quarcoo et al. (2021), observed that market traders in the Greater Accra Region of Ghana have a moderate understanding of malaria but hold significant misconceptions, such as attributing the disease to sun exposure. Additionally, many traders forgo proper diagnostic procedures, opting for self-diagnosis based on symptoms alone, which leads to increased health risks and inaccurate treatments. They also examined the knowledge, attitudes, and practices (KAP) related to malaria among day and night market traders in the Greater Accra Region. Using a descriptive cross-sectional approach, they surveyed 760 respondents from 10

markets. The study found no significant difference in malaria KAP between day and night traders. Despite moderate overall knowledge, misconceptions about malaria were widespread. Many traders, even those with high knowledge levels, did not always confirm their suspicions with laboratory tests, indicating poor attitudes and practices. The study revealed significant associations between traders' knowledge level and their choice of malaria treatment. Tetteh-Quarcoo et al. (2021) called for better educational interventions to address misconceptions about malaria, while Otorkpa (2019) stresses the need for proper diagnostic measures. However, neither study fully addresses systemic barriers such as healthcare infrastructure, cost, and availability of trained personnel. There is a clear need for further research to evaluate the long-term effectiveness of educational programs and explore how improving healthcare infrastructure could reduce self-diagnosis and self-medication practices.

Another research by Ndidi et al. (2022) in Abuja, Nigeria offers a comparative analysis of different diagnostic methods for malaria and typhoid fever. The study identified significant discrepancies in diagnostic accuracy among various methods, pointing out that reliance on less accurate diagnostic tools contributes to misdiagnosis and mistreatment. However, the study does not adequately explore the practical barriers traders face in accessing these diagnostic methods, such as cost and availability, which are critical for understanding self-diagnosis practices.

Antibiotic Misuse Related to Malaria-Typhoid among Traders

Isabel et al. (2021), conducted a cross-sectional study to assess the accessibility and misuse of antibiotics in Benin City, Edo State, Nigeria. This study, which involved 450 participants from community pharmacies across four local government areas, utilized a structured questionnaire

for data collection. The findings revealed that 73.11% (329 participants) had used antibiotics within the last six months before their current pharmacy visit, and 46% (207 participants) took antibiotics without undergoing laboratory investigation. On their current visit, 60.89% (274 participants) included antibiotics in their purchased medications. Additionally, 64.22% (289 participants) sometimes acquired antibiotics without a prescription. The study noted that pharmacists recommended antibiotics more frequently than doctors (44.11% vs. 24.44%), and 62.89% of the participants sourced their antibiotics from pharmacies. Furthermore, 65.56% (295 participants) believed that the country should regulate antibiotic use. This research indicates that community pharmacies are a primary source of antibiotics, often without prescriptions, underscoring the prevalence of self-medication and self-diagnosis for conditions such as malaria and typhoid.

A study examining antibiotic access and use in six low- and middle-income countries (LMICs) found that self-medication was widespread in countries like Vietnam and Bangladesh, where antibiotics were often obtained without a prescription. The study highlighted that the convenience and lower cost of purchasing antibiotics directly from drug stores contributed significantly to this practice (Do et al., 2021). Zieliński et al. (2023), in their study on the problem of antimalarial-drug abuse by the inhabitants of Ghana discusses the misuse of antimalarial drugs in Ghana and its potential consequences, including the emergence of drug-resistant strains. The study utilised a questionnaire to assess the knowledge, attitudes, and practices regarding malaria and antimalarial drugs among Ghanaians. Findings of the study revealed a high awareness of malaria symptoms and causes, particularly among those with higher education. However, many respondents did not consult medical personnel or perform

diagnostic tests before using anti-malarials. The paper underscores the importance of public education and accessibility to proper medical advice for the correct use of antimalarial drugs.

Babalola et al., (2020), explored rural-urban disparities and factors linked to delay care-seeking and testing for malaria before medication use among mothers of under-five children in Igabi LGA, Kaduna, Nigeria. Using a cross-sectional survey of 630 mother-child pairs, the study found that rural children had a higher prevalence of fever, with their mothers more likely to delay care-seeking. Factors such as malaria knowledge and lack of formal education were significant. The study conducted by Iribhogbe and Odoya (2021), aimed to evaluate the prevalence of self-medication practices with antimalarials and understand the determinants of malaria treatment-seeking behaviour among postpartum mothers in a rural community in Nigeria. The research involved a cross-sectional descriptive study design, where structured questionnaires were administered to postpartum mothers to collect data on their self-medication practices, sources of antimalarial drugs, and factors influencing their treatment-seeking behaviour. Results of the study found a significant difference between prevalence of self-medication and level of education among postpartum mothers.

The knowledge of antibiotics and misuse is strongly linked to socioeconomic status. Generally, individuals with higher income and education levels are more informed about antibiotics resistance and proper use. in contrast, those from lower socioeconomic backgrounds often face knowledge gaps and limited access to accurate information, increasing the likelihood of misuse **(**Karuniawati et al., 2021). The socioeconomic context characterized by limited healthcare infrastructure and resources exacerbates these issues, leading to frequent misdiagnosis and mistreatment. Patients often resort to self-medication with antibiotics, which is exacerbated by socioeconomic barriers to accessing professional healthcare. While the study

provides valuable insights into the diagnostic challenges in rural healthcare settings, it lacks comprehensive data on the socioeconomic factors that drive self-diagnosis and treatment behaviors. Furthermore, the study's focus on rural areas limits its generalizability to urban populations. These studies expose the widespread issue of misdiagnosis and self-diagnosis among traders stemming from systemic healthcare barriers, a critical gap in addressing traders' practical challenges in accessing accurate diagnoses and treatments. Future research is needed to bridge this gap by exploring solutions to improve diagnostic accuracy and accessibility. A key issue is the systemic barrier to proper diagnosis and treatment, including inadequate healthcare infrastructure, cost, and trained personnel. This leads to self-diagnosis, antibiotic misuse, and exacerbated health issues.

2.3.1 Appraisal of Reviewed Literature

The literature review focused on materials related to the study on the theoretical and empirical connections between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders. From the literature review, previous studies primarily focused on specific regions in sub-Saharan Africa, such as Ghana and Nigeria, with limited information on traders at Uselu Market, Benin City. While traders are mentioned in some studies, there is a lack of comparative data on how their practices differ from other occupational groups. Most studies employed cross-sectional survey methods, leaving a gap in qualitative research that could provide deeper insights into the reasons behind self-diagnosis and self-medication behaviours. The review mentioned misconceptions such as attributing malaria to sun exposure, but lacks a detailed analysis of various misconceptions and their specific impact on treatment practices and health outcomes. Moreover, there is insufficient information on the regulatory frameworks

in place and their effectiveness in mitigating misuse of self-diagnosed malaria-typhoid and antibiotics misuse. While some studies touch on the influence of education and socioeconomic status on self-diagnosed malaria-typhoid and antibiotics misuse in some areas outside Uselu Market, a further research is needed to explore the relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market in Benin City. This study was carried out to fill these gaps.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter presents a description of the procedure for the study. It was discussed under the following sub-headings; research design, population of the study, sample and sampling techniques, research instrument, validity of instrument, reliability of instrument, method of data collection, and method of data analysis.

3.1 Research Design

This study employs a correlational research design to investigate the relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market, Benin City. A correlational research is a research design that investigates the degree and direction of relationship between variables in a study without the researcher manipulating any of the variables (Bryman, 2022). This type of research design tests hypotheses to find out the relationship between the independent and dependent variables (Creswell & Poth, 2022). This study will employ a correlational research design because the researcher seeks to investigate the relationship between the variables in this study, and none of the variables will be manipulated by the researcher.

3.2 Research Setting

The research setting, as defined by Koswara (2022), encompasses the physical, social, and cultural environment in which data collection occurs within a study. This study was conducted at Uselu Market in Benin City, Nigeria. Benin City, the capital of Edo State, which has a total of eighteen (18) local government areas (LGAs), with Uselu Market located in Egor LGA.

The market, also known as Edaiken Market, is renowned for commercial activities attracting people from various tribes, including Bini, Esan, Hausa, Ibo, and Yoruba, as well as from neighboring states like Delta and Kogi. Uselu Market is situated along the bustling Benin-Lagos Expressway, the market underwent renovations by the State Government, resulting in improved infrastructure, including lock-up shops with electricity, well-organized stalls, and stands. The market features a mix of lock-up stalls/shops, temporary kiosks (umbrella stands), and hawkers. The lock-up shops are arranged in rows and columns, with each row specializing in different products, such as perishable goods, sundries, and household accessories. Hawkers operate at the market entrance, primarily during nighttime. This setting has a population of 2000 individuals including men and women who were performing daily trade in the market (data obtained from Egor local government revenue house) comprising men and women engaged in their daily trade activities within the market.

3.3 Target Population

A targeted population is the specific group of people who are the focus of a study. It is the group from which a sample is drawn, and the findings of the study are intended to be applicable to the group (American Statistical Association, 2020). The target population for this study was over 2000 traders who operate lock-up shops at Uselu Market in Benin City, Edo State, Nigeria. In order to maintain the study's focus, specific inclusion and exclusion criteria was established. Only occupants of lock-up stalls were included, as they are the primary traders at Uselu Market. Conversely, hawkers, kiosk owners, and buyers were excluded, as their frequency at the research setting may not be confirmed. Additionally, traders who declined voluntary participation were also excluded from the study.

3.4 Sample Size and Sampling Techniques

A sample size of 322 traders at Uselu Market in Benin City, Edo State, was selected from a population of 2,000 traders. The sample consists of 129 wholesalers and 193 retailers, ensuring representation across different categories of traders. This sample size is considered adequate for statistical analysis, as supported by Gill et al. (2010), who stated that a sample of 322 is sufficient for a population of 2,000 (APPENDIX I).

A quota sampling technique was employed to ensure proportional representation of different categories of traders, specifically wholesalers and retailers dealing in foodstuffs, textiles, cosmetics, and provisions. Proportional selection was applied, it provides an equal sample that is proportional to the size of the stratum's population ensuring the sample reflects the relative size of each stratum, thereby maintaining proportional representation (Rahman et al., 2022), each category of traders was sampled at the same fraction of 16.1% of its total population. This approach ensures that the sample reflects the distribution of traders in the market while allowing flexibility in selecting respondents based on accessibility and willingness to participate.

3.4.1 Sample Size

Table 3.2 Sample Size According to the Types of Traders

Type of Targeted Traders		**Number of Traders to be Selected at 16.1%**
Wholesalers	800	129
Retailers	1200	193
Total	2000	322

3.5 Research Instrument

The instruments for data collection was a self-structured questionnaire with two sections (Appendix I). Section A contains items designed to elicit information about the respondents' demographic variables of gender and socio-economic status. Section B comprised of research data on the respondents based on the research questions, it included 18 items modified four-point Likert scale questions of strongly agreed (SA) = 4 points, agreed (A) =3 points, disagreed (D) =2 points, strongly disagreed (AD) = 1 point, to elicit responses on the association between self-diagnosis of malaria typhoid trends and the subsequent misuse of antibiotics among traders at Uselu Market Benin City.

3.6 Validity of Instrument

Validity of an instrument is the ability of the instrument to measure what it is intended to measure accurately and reliably (Gravetter & Forzano, 2022). Draft copies of the instrument

were presented to the researcher's supervisor and one expert in measurement and evaluation from Delta state University, Abraka for review and modification. The corrections were effected to establish both face and content validity. Face validity has to do with the confidence gained from the careful observation of a measuring instrument on the basis of its face, It's a way to evaluate new instruments and consider the extent to which the content of test items matches the clinical description of the condition (King et al., 2020). This particularly deals with the ability of the instrument to be free from spelling errors and structurally designed appropriately. Content validity on the other hand has to do with the ability of an instrument to cover the full range of the meaning of concepts, Defined as "the degree to which the content of an instrument is an adequate reflection of the construct to be measured (Pellekooren et al., 2021).

It ensures that issues arising therein from the instrument are derived from the sub-themes, so as to be able to cover and address the problem under investigation. The face and content validity are to establish how well the instrument is designed as well as its ability to cover the main issues of the study (Saldanha et al., 2021).

3.7 Reliability of Instrument

Reliability of an instrument is the ability of an instrument to produce consistent stable results, free from errors and variability (Kline, 2020). Cronbach's alpha analysis was used to estimate the internal consistency reliability of the items in the questionnaire. Reliability is a key component of research quality, and it refers to stability and consistency of results across different conditions (Anjum et al., 2022), the researcher administered the questionnaire to thirty (30) traders at Adolor Junction, Benin city, Edo State. The traders will not be part of the

sample, but share similar characteristics with the traders chosen for the main study. The responses was scored, coded, and entered into the Social Science Statistical Package (SPSS), version 19 for computer assisted data analysis. The items in the instrument were analyzed and tested for a significant level of P<0.5. The reliability value for self-diagnosed malaria-typhoid scale was 0.72, P<0.5, and antibiotic misuse scale was 0.59 P<0.5, indicating that the instrument was useful and reliable.

3.8 Method of Data Collection

The questionnaire copies were administered personally by the researcher to the respondents. A period of about three weeks was to carry out this activity. The researcher explained clearly the study's purpose, obtained informed consent, and ensured the confidentiality of respondents. To facilitate completion, the researche offered assistance by reading the questionnaire items aloud to traders who require it, and information was translated in local languages such as “pidgin english” depending on preference of the respondent. Completed questionnaires were collected promptly to minimize the risk of loss or incomplete responses.

3.9 Method of Data Analysis

Descriptive statistics using mean, standard deviation, frequency and percentage distribution, while Inferential statistics of chi-square was used to test for the research hypotheses with the aid of the Statistical Package for Social Science (SPSS) version 24.0 for windows.relationship between the variables.

Alpha level was set at <0.05.

3.10 Ethical Considerations

To ensure voluntary participation, respondents were not compelled to engage in the research, and their perspectives and concerns was addressed with the highest level of confidentiality. Anonymity was maintained to protect the Traders identities. Ethical approval for this study was obtained from the Ethics and Research Committee of College of Medical Sciences, University of Benin City, Edo state (APPENDIX III).

Informed consent: Participants was fully informed about the study's purpose and potential benefits, and they provided their voluntary consent to participate.

Privacy and confidentiality: Participants' personal information and data was kept confidential and protected from unauthorized access or disclosure.

Non-maleficence: This research study ensured that no physical or emotional harm came to the participants.

Ethical use of data: Data collection and analysis methods was done conducted ethically. The collected data were used strictly for academic purposes and not to harm or exploit participants.

Compliance with regulations and guidelines: The study adhered to all applicable regulations and guidelines governing research, including those related to human subjects.

Plagiarism: The study was tested for plagiarism and complied with the institution's accepted plagiarism standards.

CHAPTER FOUR

RESULTS

4.1 SOCIO DEMOGRAPHIC VARIABLES OF THE RESPONDENTS

Table 4.1: Socio Demographic Variable of the Respondents N=322

Variable	Category	Frequency	Percentages
Gender	Male	67	20.8
	Female	255	79.2
Age	18-25years	166	51.6
	26-35years	95	29.5
	36-45years	42	13.0
	46-55years	6	1.9
	56-65years	13	4.0
Income	N10,000-50,000	112	34.8
		48	14.9
	N100,000-150,000	127	39.4
	N160,000-250,000	17	5.3
	N260,000-300,000	13	4.0
	N300,000 and above	5	1.6
Education	Primary	29	9.0
	Secondary	164	50.9

	Tertiary	129	40.1
Type of trader	Retailer	199	61.8
	Wholesaler	123	38.2
What do you sell	Airtime/data	14	4.3
	Baking items	6	1.9
	Cosmetics	28	8.7
	Foodstuff	56	17.4
	Human hair	31	9.6
	Materials	8	2.5
	Phones	21	6.5
	Plastics	10	3.1
	Provisions	16	5.0
	Skincare products	13	4.0
	Spare parts	6	1.9
	Wears	113	35.1
The last time you treated malaria-typhoid	1-4months	73	22.7
	5-8months	127	39.4
	9-12months	73	22.7
	Over 1year	49	15.2
Who prescribed medications	Medical prescription	147	45.7
	Self-prescription	175	54.3
If it was a medical	Nurse	69	21.4

prescription, who was it?			
	Doctor	13	3.4
	Pharmacist	28	8.7
	Chemist	37	11.5

A total of 322 respondents, revealing a predominantly female population (79.2%) with a majority aged 18-25 (51.6%). The respondents' monthly incomes were mainly divided between N100,000-150,000 (39.4%) and N10,000-50,000 (34.8%). Educational attained a secondary level of education, 129(40.1%) of the respondents had attained a tertiary level of education while 29(9.0%) of the respondents had primary education. 61.8% were retailers and 38.2% wholesalers, with top-selling products including wears/clothing (35.1%), foodstuffs (17.4%), and human hairs (9.6%). 39.4% of the respondents reported they last treated malaria 5-8 months ago, while 22.7% did so 1-4 months ago. Notably, 54.3% self-prescribed medications, whereas 45.7% received prescriptions from medical practitioners.

4.2 SELF DIAGNOSED MALARIA-TYPHOID TRENDS

Table 4.2: Self diagnosed malaria-typhoid trends (n=322)

Questions	SA	A	D	SD
I usually diagnose myself of malaria-typhoid.	139(43.2%)	83(25.8%)	67(20.8%)	33(10.2%)
I usually visit healthcare providers to diagnose malaria-typhoid.	79(24.5%)	196(60.9%)	39(12.1%)	8(2.5%)
I often believe I have malaria without consulting a healthcare professional.	122(37.9%)	130(40.4%)	63(19.6%)	7(2.2%)
I have the confidence that I have the ability to correctly diagnose myself of malaria-typhoid.	116(36.0%)	48(14.9%)	115(35.7%)	43(13.4%)
I prefer to diagnose myself of malaria-typhoid rather than wasting time going to seek the service of a health professional.	71(22.0%)	76(23.6%)	100(31.1%)	75(23.3%)
I feel going to health professionals for diagnosis of malaria-typhoid is a waste of money.	96(29.8%)	48(14.9%)	70(21.7%)	108(33.5%)
I find it very important to visit health professionals for diagnosis of malaria-typhoid.	109(33.9%)	135(41.9%)	46(14.3%)	32(9.9%)
I believe that diagnosis of malaria-typhoid is something I can do by myself.	84(26.1%)	88(27.3%)	107(33.2%)	43(13.4%)
High rate of self-diagnosis of malaria-typhoid 252(78.3%)				
low rate of self-diagnosis of malaria-typhoid 70(21.7%)				
Mean score 20.33±5.18				

139(43.2%) of the respondents strongly agreed that they usually diagnose themselves of malaria-typhoid. 196(60.9%) of the respondents agreed that they usually visit healthcare providers to diagnose malaria-typhoid. 130(40.4%) of the respondents agreed that they often believe they have malaria without consulting a healthcare professional. 116(36.0%) of the respondents strongly agreed that they have the confidence that they have the ability to correctly diagnose themselves of malaria-typhoid. 100(31.1%) of the respondents disagreed that prefer to diagnose themselves of malaria-typhoid rather than wasting time going to seek the service of a health professional. 108(33.5%) of the respondents strongly disagreed that going to health professionals for diagnose of malaria-typhoid is a waste of money. 109(33.9%) of the respondents strongly agreed that they find it very important to visit health professionals for diagnose of malaria-typhoid. 107(33.2%) of the respondents disagreed that that diagnosis of malaria-typhoid is something they can do by themselves. There was a high rate of self-diagnosed malaria typhoid among the respondents with 252(78.3%) of the respondents reporting to have preferred diagnosing themselves of malaria typhoid as shown in table 4.2 above.

4.3 ANTIBIOTICS MISUSE AMONG THE RESPONDENTS

Table 4.3: Antibiotics Misuse among the Respondents

Antibiotics Misuse Scale	SA	A	D	SD
I use antibiotics to treat suspected malaria-typhoid.	77(23.9%)	126(39.1%)	38(11.8%)	81(25.2%)
I use antibiotics without a doctor's prescription when I feel symptoms of malaria-typhoid.	55(17.1%)	83(25.8%)	104(32.3%)	80(24.8%)
I buy antibiotics without prescription when I feel sick	34(10.6%)	94((29.2%)	101(31.4%)	93(28.9%)
I use antibiotics when I suspect I have malaria-typhoid.	40(12.4%)	114(35.4%)	103(32.0%)	65(20.2%)
I use antibiotics left over from a previous illness.	50(15.5%)	48(14.9%)	114(35.4%)	110(34.2%)
I am aware of the potential health risk of misusing antibiotics.	131(40.7%)	136(42.2%)	23(7.1%)	32(9.9%)
I feel it is important to seek medical advice before taking antibiotics.	158(49.1%)	96(29.8%)	68(21.1%)	
I don't usually discuss my symptoms with pharmacist before purchasing antibiotics.	35(10.9%)	78(24.2%)	94(29.2%)	115(35.7%)
I often complete the full course of antibiotics prescribed to me by medical practitioner.	87(27.0%)	143(44.4%)	69(21.4%)	23(7.1%)
I usually buy antibiotics from patent medicine store to treat myself of malaria-typhoid,	77(23.9%)	88(27.2%)	82(25.5%)	75(23.3%)
Low rate of antibiotics misuse 99(30.7%)				
High rate of antibiotics misuse 223(69.2%)				
Mean score 21.99 ± 5.99				

4.4 RELATIONSHIP BETWEEN RATE OF SELF-DIAGNOSED MALARIA TYPHOID AND RATE OF MISUSE OF ANTIBIOTICS AMONG THE RESPONDENTS

Table 4.4: Chi-square showing the relationship between rate of self-diagnosed malaria typhoid and rate of misuse of antibiotics among the respondents

Self-Diagnosed	low rate of antibiotics misuse	high rate of antibiotics misuse	X^2	p
low rate	51	19	74.496	<0.001
High rate	48	204		

A chi-square test was done to examine the relationship between the rate of self-diagnosed malaria typhoid and the rate of antibiotics misuse among the respondents. The findings revealed there was a significant relationship between rate of self-diagnosed malaria typhoid and the rate of antibiotics misuse among the respondents (p=<0.001) as shown in table 4. 4.

4.5 ASSOCIATION BETWEEN SOCIO-ECONOMIC STATUS AND THE RATE OF SELF-DIAGNOSED MALARIA TYPHOID AND RATE OF ANTIBIOTICS MISUSE AMONG THE RESPONDENTS

Table 4.5: Chi-square association between socio-economic status and the rate of self-diagnosed malaria typhoid and rate of antibiotics misuse among the respondents

	Self-Diagnosed Malaria Typhoid			
	low rate	**High rate**	**X^2**	**P**
N10,000-50,000	31	81	11.470	0.043
N60,000-90,000	15	33		
N100,000-150,000	48	79		
N160,000-250,000	5	12		
N260,000-300,000	0	13		
300,000 and above	0	5		
	Antibiotics	**Misuse**		
	Low rate	**High rate**		
N10,000-50,000	28	84	6.329	0.276
N60,000-90,000	10	38		
N100,000-150,000	27	100		
N160,000-250,000	5	12		
N260,000-300,000	0	13		

300,000 and above	0	5

A chi-square test was done to examine the relationship between the socioeconomic status and the rate of self-diagnosed malaria typhoid and the rate of antibiotics misuse among the respondents. The findings revealed a significant relationship between the socioeconomic status and the rate of self-diagnosed malaria typhoid among the respondents (p=<0.043). There was no significant relationship between the socioeconomic status and the rate of antibiotics misuse among the respondents (p=<0.276).

4.6 HYPOTHESIS TESTING

HO1: There is a significant relationship between self-diagnosed malaria-typhoid and the misuse of antibiotics among traders at Uselu Market, Benin City.

Test: chi-square

Alpha level: 0.05

Observed p value: <0.001

JUDGEMENT: Since the observed p value is less than 0.05, the alternate hypothesis is therefore accepted.

HO2: There is a significant impact of socio-economic status in the relationship between self-diagnosed malaria-typhoid and antibiotics misuse among traders at Uselu market, Benin City.

1. There would be significant relationship between the socioeconomic status and the rate of self-diagnosed malaria typhoid among the respondents

Test: chi-square

Alpha level: 0.05

Observed p value: 0.043

JUDGEMENT: Since the observed p value is less than 0.05, the alternate hypothesis is therefore accepted

2. There would be significant relationship between the socioeconomic status and the rate of antibiotics misuse among the respondents

Test: chi-square

Alpha level: 0.05

Observed p value: <0.276

JUDGEMENT: Since the observed p value is greater than 0.05, the alternate hypothesis is therefore rejected.

CHAPTER FIVE

DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter provides the discussion of findings in accordance with the stated objectives, research questions, hypothesis, and implications for nursing, summary, conclusion, recommendation, and suggestion for further studies.

5.1 Discussion of Findings

Demographic Data of Respondents.

The demographic data of Uselu Market traders show that participants are predominantly female adults aged 18-35 with secondary education. Monthly incomes range from N100,000-150,000. Limited education and income may influence health behaviors, such as self-diagnosis and antibiotic misuse. This aligns with research by Anabire et al. (2023), Babalola et al. (2020), and Torres et al. (2021), highlighting the impact of socioeconomic factors on health practices.

Notably, socioeconomic status significantly affects self-diagnosis but has a lesser impact on antibiotic misuse, differing from Karuniawati et al.'s (2021) findings. Local factors, such as easy access to over-the-counter antibiotics, may contribute to this discrepancy.

Self-Diagnoses of Malaria-Typhoid among Traders

The study reveals that a substantial portion of traders at Uselu Market self-diagnose malaria-typhoid. A high rate of 78.3% of respondents preferred self-diagnosing rather than seeking medical consultation, with 43.2% strongly agreeing to this practice. The data also indicate that

36% of respondents felt confident in their ability to diagnose themselves. This tendency might stem from cost considerations, convenience, and familiarity with symptoms, particularly since many respondents (33.9%) acknowledged the value of consulting health professionals for a more reliable diagnosis. This finding corresponds with Tetteh-Quarcoo et al. (2021), Ndidi et al. (2022) and Okoror et al. (2024), who observed that self-diagnose malaria-typhoid was prevalent among traders.

Antibiotic Misuse Related to Malaria-Typhoid Self-Diagnoses among Traders

The findings showed a high level of antibiotic misuse among traders, with 69.2% of respondents reporting misuse. Specific behaviors included using antibiotics without a doctor's prescription (39.1%) and treating malaria-typhoid symptoms with antibiotics (35.4%). Notably, 49.1% recognized the importance of consulting medical practitioners before taking antibiotics. However, despite this awareness, the tendency to self-prescribe antibiotics is concerning, especially given the health risks associated with misuse, such as resistance development and potential side effects. This finding agrees with Do et al., (2021). Isabel et al. (2021), and Zieliński et al. (2023), who revealed that antibiotic misuse was prevalent among traders.

Relationship Between Self-Diagnosed Malaria-Typhoid and Misuse of Antibiotics

The chi-square analysis found a significant relationship between self-diagnosing malaria-typhoid and the misuse of antibiotics among respondents ($p < 0.001$). This relationship suggests that the self-diagnosing behaviour among traders at Uselu Market strongly correlates with a tendency to misuse antibiotics, likely driven by the convenience and cost-effectiveness of self-treatment practices. This finding highlights a cycle where self-diagnosis may encourage self-medication with antibiotics, contributing to the prevalence of misuse. This finding is in

line with Otorkpa (2019), Tetteh-Quarcoo et al. (2021), Ndidi et al. (2022), Akinola (2024), and Okoror et al. (2024) who that many cases of malaria-typhoid are often as the result of self-diagnosed malaria-typhoid.

Influence of Socioeconomic Status on Self-Diagnosed Malaria-Typhoid and Antibiotic Misuse

Socioeconomic status emerged as a moderator in self-diagnosis and antibiotic misuse, but did not significantly influence the relationship between self-diagnosed malaria-typhoid and antibiotic misuse. There was no statistically significant relationship between socioeconomic status and self-diagnosed malaria-typhoid ($p = 0.043$), suggesting that individuals with different income or educational levels may have varying propensities for self-diagnosis. However, the lack of a significant influence of socioeconomic status in the relationship between self-diagnosed malaria-typhoid and antibiotic misuse, ($p = 0.276$) implies that misuse practices cut across different socioeconomic groups, indicating that other factors, such as access to health information and community health norms, may play a more critical role in influencing antibiotic misuse. The finding agrees with Do et al., (2021) and Zieliński et al. (2023), who found that socioeconomic status had no influence in the relationship between self-diagnosed malaria-typhoid and antibiotic misuse. Contrary to the findings of this study, Iribhogbe and Odoya (2021), found that socioeconomic status had influence in the relationship between self-diagnosed malaria-typhoid and antibiotic misuse.

5.2 Implications to Nursing

Nursing encompasses health promotion and disease prevention, community level awareness on antibiotics stewardship is important. The findings underscore the importance of educational

interventions by nursing professionals to address the prevalence of self-diagnosis and antibiotic misuse. Nurses and other healthcare providers can lead community outreach programs to educate traders on the risks of self-diagnosis and antibiotic misuse. These efforts could reduce the health risks associated with inappropriate self-medication, such as antibiotic resistance. Moreover, nurses could advocate for better accessibility to affordable healthcare services, encouraging proper medical consultation instead of self-diagnosis.

5.3 Limitations of the Study

This investigation encountered several methodological limitations that warrant consideration. Firstly, the reliance on self-reported data potentially introduces social desirability bias, leading to underreporting of sensitive behaviors such as antibiotic misuse.Additionally, the study's target population included illiterate traders, necessitating researcher-assisted questionnaire administration. This approach was time-consuming and may have introduced interviewer bias.

The study's sample also had a representation bias, as only 18.9% of the participants belonged to the older population (35-65 years), which may not accurately reflect their perspectives.

Furthermore, the study's focus on traders at a single market limits the generalizability of findings to other populations or regions. Lastly, the cross-sectional design precludes establishing causality between self-diagnosis and antibiotic misuse.

5.4 Summary

The study explored self-diagnosis and antibiotic misuse among traders at Uselu Market, revealing a high prevalence of both practices. Significant associations were found between self-diagnosis and antibiotic misuse, and socioeconomic status was shown to moderate the

likelihood of self-diagnosis but not misuse. These findings suggest that while self-diagnosis is influenced by socioeconomic factors, misuse practices are widespread across demographics, emphasizing the need for broad-based health interventions.

5.5 Conclusion

The findings indicate that self-diagnosis of malaria-typhoid is common among traders at Uselu Market and is strongly linked to antibiotic misuse. Socioeconomic factors play a role in the likelihood of self-diagnosis but have limited influence on misuse patterns. Efforts to educate traders on the risks of self-diagnosis and antibiotic misuse could potentially reduce these practices and improve health outcomes.

5.6 Recommendations

1. Implement targeted educational programs at Uselu Market to inform traders about the risks of self-diagnosis and antibiotic misuse.

2. Encourage the establishment of accessible health services near marketplaces to offer affordable diagnostics and reduce the need for self-diagnosis.

3. Strengthen regulations to limit the sale of antibiotics without prescriptions to reduce misuse.

4. Use community engagement strategies, such as talks by healthcare workers at markets, to raise awareness about antibiotic resistance and the importance of consulting healthcare professionals.

5.7 Suggestions for Further Research

Future studies should investigate self-diagnosis and antibiotic misuse in different regions and compare urban and rural areas to better understand these practices. Longitudinal research could also provide insights into the causal relationships between self-diagnosis and antibiotic misuse. Additionally, qualitative studies exploring traders' motivations for self-diagnosis and self-medication practices may yield further actionable insights.

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APPENDICES

APPENDIX I

Gil et al (2010) table for sample size determination.

	Variance of the Population p =50%		
	Confidence level =95% Margin of error		
Population Size	5	3	1
50	44	48	50
75	63	70	74
100	79	91	99
150	108	132	148
200	132	168	196
250	151	203	244
300	168	234	219
400	196	291	384
500	217	340	475
600	234	384	565
700	248	423	652
800	260	457	738
1000	278	516	906
1500	306	624	1297
2000	322	696	1655
3000	341	787	2286
5000	357	879	3288
10000	370	964	4899
25000	378	1023	6939
50000	381	1045	8057
100000	383	1056	8762
250000	384	1063	9249
500000	384	1065	9423
1000000	384	1066	9513

APPENDIX II

DEPARTMENT OF NURSING SCIENCE

SCHOOL OF BASIC MEDICAL SCIENCES

UNIVERSITY OF BENIN, BENIN CITY, EDO STATE

Dear Respondent,

QUESTIONNAIRE

I am Oshiogwemo, Synthche, a final year student in the above institution. I am carrying out a research on the relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market, Benin City. Kindly assist me by indicating your opinion where necessary. Your participation is voluntary and you are free to withdraw from the study without any negative consequences. This study is strictly for academic purpose and you are hereby assured that all information supplied will be treated in a strictly confidential manner. Thank you.

INFORMED CONSENT

The general nature of the study entitled **"**relationship between self-diagnosed malaria-typhoid trends and antibiotics misuse among traders at Uselu Market, Benin City**"** being conducted by Oshiogwemo, Synthche has been explained to me. I understand that I will be asked to fill a questionnaire. (My participation in this study should take a total of 10 minutes. I understand that my responses will be confidential and that anonymity will be present and that my name will not be associated with any results of this study. Also, I may refuse to answer questions on the questionnaire and that I may discontinue participation at any time. I am aware that non participation will not count against me in any way.

My name, signature and dates below signified my voluntary participation in this study.

I _____ have accepted to take part in this research.

_____ _____

Signature Date

SECTION A: PERSONAL DATA

Please Tick (✓) to indicate the right responses that best suggest your answer or option.

1. Gender: Male ( ); Female ( ).

2. Age: 18-25 years ( ); 26-35 years ( ); 36-45 years ( ); 46-55 years ( ); 56-65 ( ); 66 years and above.

3. What is your approximate monthly income?: N10,000-N50,000 ( ); N60,000-N90,0000 ( ); N100,000-N150,000; ( ); N160,000-250,000 ( ); N260,000-300,000 ( ); N300,000 and above ( ).

4. What is your highest level of education?----------

5. Type of Trader: Wholesaler ( ); Retailer ( ).

6. What do you sell?

7. When was the last time you treated malaria-typhoid?

8. What are the symptoms of Malaria-typhoid?————-

8. Was it self-prescription ( ) or by a medical practitioner ( )?

If a medical practitioner, was it a nurse, doctor, pharmacist, or chemist.————————

SECTION B: PLEASE READ THE STATEMENTS CAREFULLY AND TICK (√)

TO INDICATE YOUR RESPONSES.

Key:

Strongly Agreed: SA; Agreed: A; Strongly Disagreed: SD; Disagreed: D

S/N	Items	Response			
		SA	A	D	SD
	Self-Diagnosed Malaria-Typhoid Trends Scale				
9	I usually diagnose myself of malaria-typhoid.				
10	I usually visit healthcare providers to diagnose malaria-typhoid.				
11	I often believe I have malaria without consulting a healthcare professional.				
12	I have the confidence that I have the ability to correctly diagnose myself of malaria-typhoid.				
13	I prefer to diagnose myself of malaria-typhoid rather than wasting time going to seek the service of a health professional.				
14	I feel going to health professionals for diagnose of malaria-typhoid is a waste of money.				
15	I find it very important to visit health professionals for diagnose of malaria-typhoid.				

16	I believe that diagnose of malaria-typhoid is something I can do by myself.				
	Antibiotics Misuse Scale				
11	I use antibiotics to treat suspected malaria-typhoid.				
18	I use antibiotics without a doctor's prescription when I feel symptoms of malaria-typhoid.				
19	I buy antibiotics without prescription when I feel sick				
20	I use antibiotics when I suspect I have malaria-typhoid.				
21	I use antibiotics left over from a previous illness.				
22.	I am aware of the potential health risk of misusing antibiotics.				
23.	I feel it is important to seek medical advice before taking antibiotics.				
24.	I don't usually discuss my symptoms with pharmacist before purchasing antibiotics.				
25.	I often complete the full course of antibiotics prescribed to me by medical practitioner.				
26.	I usually buy antibiotics from patent medicine store to treat myself of malaria-typhoid,				

APPENDIX III

Scale: SELF-DIAGNOSED MALARIA-TYPHOID TRENDS

Case Processing Summary

		N	%
Cases	Valid	28	87.5
	Excluded[a]	4	12.5
	Total	32	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.710	.724	10

Item Statistics

	Mean	Std. Deviation	N
SDMT1	2.96	.793	28
SDMT2	2.75	.887	28
SDMT3	2.61	.875	28
SDMT4	2.86	.932	28
SDMT5	2.79	.630	28
SDMT6	2.54	.693	28
SDMT7	3.04	.793	28
SDMT8	2.61	.875	28
SDMT9	2.57	.504	28
SDMT10	2.64	.731	28

Scale: ANTIBIOTICS MISUSE SCALE

Case Processing Summary

		N	%
Cases	Valid	25	78.1
	Excluded[a]	7	21.9
	Total	32	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.587	.594	10

Item Statistics

	Mean	Std. Deviation	N
AM1	2.48	.510	25
AM2	2.56	.821	25
AM3	2.48	.586	25
AM4	2.52	.586	25
AM5	2.76	.831	25
AM6	3.08	.702	25
AM7	2.40	.645	25
AM8	2.92	.640	25
AM9	2.92	.702	25
AM10	2.80	.816	25