CHAPTER I
INTRODUCTION

1.1 Background of the Study

The threat of antibiotic resistance, a subcategory of antimicrobial resistance, has led to major socio-economic consequences and placed a heavy burden on global healthcare systems. Antibiotic resistance occurs when bacteria mutate so that the medications (antibiotics) used to treat them are no longer effective. This happens primarily due to the inappropriate use of antibiotics, such as incorrect dosages or failure to complete the prescribed course. The resulting impacts include a sharp increase in treatment costs, prolonged hospital stays for patients, and significant economic losses for countries due to reduced workforce productivity.

The potential impact of antibiotic resistance on humanity has reached an alarming level, urgently demanding aggressive social and political interventions. It is projected that without effective, sustainable prevention, control, and innovation strategies, antibiotic resistance could cause 10 million deaths annually worldwide by 2050. This predicted mortality rate is expected to surpass the total number of deaths caused by cancer within the same timeframe, rendering antibiotic resistance an urgent humanitarian crisis that requires an immediate and multidisciplinary response from various sectors (Artanti, 2024).

Indonesia faces a major and urgent challenge in combating antibiotic resistance, primarily driven by two main factors: less than effective governance and the irrational use of antibiotics within the community, a situation exacerbated by the fact that the pace of bacterial resistance development domestically far outstrips global efforts to discover new antibiotics. Based on an analysis of 48 studies in Indonesia (2008–2024), the prevalence of ESBL-producing bacteria has reached 46.38%, indicating that nearly half of the analyzed samples are resistant to crucial antibiotics. This prevalence exhibits regional variations, with Sumatra recording the highest rate (63.99%) and Kalimantan the lowest (15.24%). Interestingly, the resistance rate in hospitals (47.13%) is nearly identical to that in the community (47.26%), underscoring that antibiotic resistance is a widespread issue among the general public and not confined solely to healthcare facilities.

Consequently, antibiotic resistance constitutes a highly complex and multidimensional health issue, demanding an integrated control strategy that does not rely exclusively on government regulations and the medical sector, but also requires the active role of structured

communication, education, behavioral change, and public awareness enhancement, particularly through interventions focused on healthcare service centers (Kadariswantiningsih, 2025).

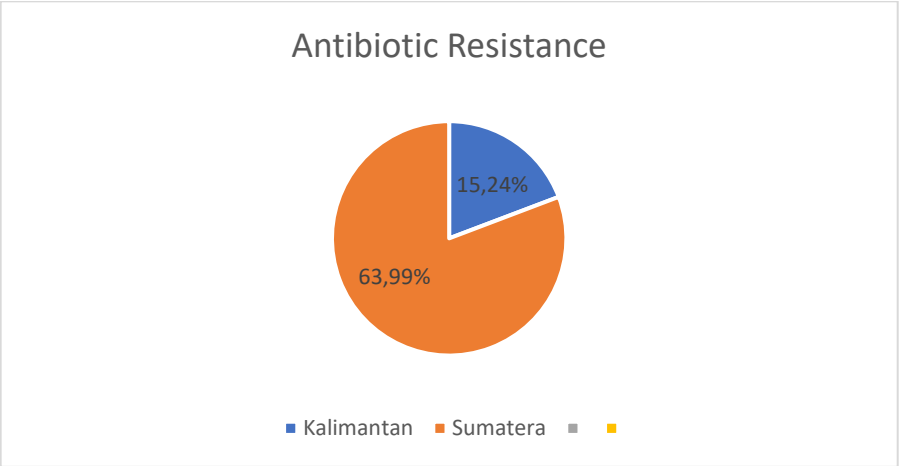

Figure 1.1 Antibiotic Resistance Percentage Diagram in Indonesia
(Source: Personal Documents, 2025)

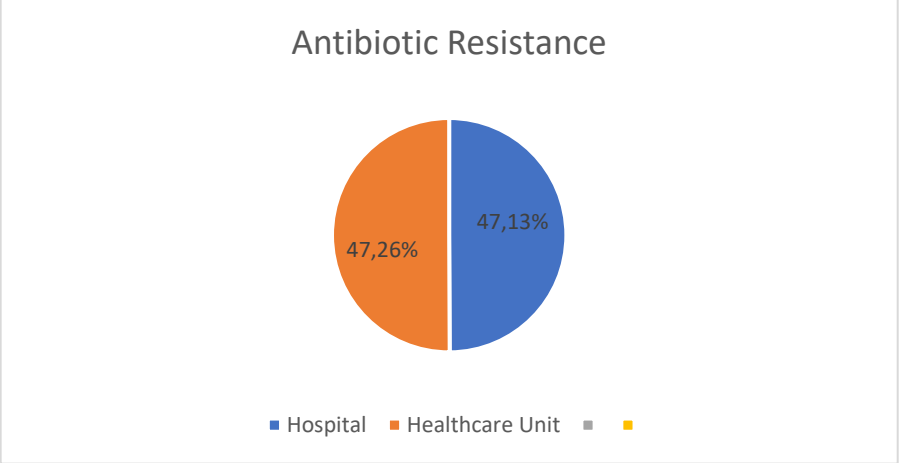

Figure 1.2 Diagram of the Percentage of Antibiotic Resistance in Hospitals and Community Health Centers in Indonesia
(Source: Personal Documents, 2025)

There is a gap between the severity of the antibiotic resistance threat in Indonesia and the level of public literacy and behavior, particularly targeting the productive age group as the primary focus. This gap is divided into two main measurable aspects: the high prevalence of self-medication practices, which is supported by data indicating low knowledge, and the low adherence of patients in consuming prescribed antibiotics. Self-medication, defined as the act of purchasing, storing, and consuming antibiotics without an official prescription and a definitive diagnosis from a healthcare professional, represents a common and dangerous form of misuse (Pratiwi et al., 2020).

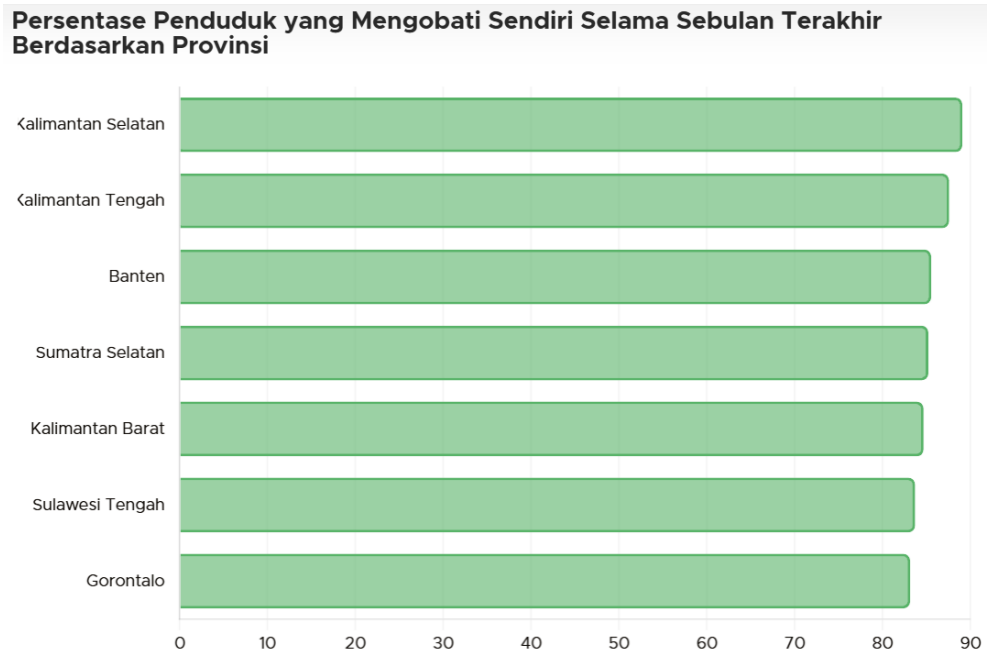

Figure 1.3 Percentage of Population Self-Treating During the Past Month by Province

(Source: Badan Pusat Statistik (BPS), accessed on October 12, 2025)

The root cause of antibiotic resistance in the Puskesmas Wonokromo (Community Health Center) area is the inappropriate misuse of antibiotics, which is dominated by the practice of antibiotic self-medication. Although antibiotics function to treat infections, their erroneous use, particularly incorrect dosages, can trigger bacterial resistance, thereby rendering consumers immune to the medication in the future and harming both individuals and the wider community. This self-medication behavior primarily arises due to a lack of public knowledge or misconceptions regarding the function and indications of antibiotics, leading to the mistaken belief that antibiotics are a versatile remedy for all types of infections, including viral infections such as the flu, which clinically do not require antibiotics at all (Pambudi, 2022).

Low antibiotic literacy in society serves as the primary factor exacerbating irrational self-medication behavior. The misuse of antibiotics is a problematic health issue within the realm of primary care, where high rates of inappropriate antibiotic consumption and easy access contribute to this problem. The direct involvement of the Puskesmas as the first gateway for the community to access healthcare services is highly vital and must be supported by appropriate communication tools (Malik, 2024).

In addition to self-medication, another crucial factor contributing to antibiotic resistance is patient non-compliance in consuming prescribed antibiotics, even after they have received the medication from healthcare facilities like the Puskesmas. Common and dangerous behaviors, such as discontinuing antibiotic consumption once disease symptoms have subsided,

serve as a primary trigger for the formation of resistant bacteria, as the weakest bacteria die while the strongest survive (Antika, 2024).

The fact that verbal information provided in healthcare facilities is often less effective in ensuring long-term knowledge retention and patient behavioral change underscores the need for intervention. Therefore, the prevention of antibiotic resistance must focus on altering public behavior through education that instills awareness of the importance of correct and rational drug use, utilizing the Puskesmas as the campaign hub supported by strong visual materials. The involvement of the Puskesmas Wonokromo in this Final Project aims to address two main issues in an integrated manner, ranging from low community literacy that triggers self-medication to the non-compliance of patients who have already received prescriptions. Both of these problems require an effective, engaging, and credible Visual Communication Design (VCD) intervention to drive change.

To ensure a maximum and sustainable impact on behavioral change, the design strategy must be holistic and supported by cross-sector collaboration, which ensures that digital messages are reinforced within community and offline spheres. This collaboration is crucial, considering that the issue of antibiotic resistance requires cooperation among academics, designers, and healthcare professionals. Therefore, the Puskesmas Wonokromo was chosen as the stakeholder for this Final Project, providing a credible and applicable implementation environment.

The Puskesmas is a primary healthcare institution that possesses territorial authority, information credibility, and direct access to the local community. This collaboration offers high applicable value, ensuring that the designed visual content has guaranteed medical accuracy through validation by Puskesmas healthcare professionals, and that the resulting outputs can be directly integrated and implemented within the Puskesmas counseling activities and health programs, such as healthcare volunteer (*kader*) programs or outpatient education. This design concept aims to bridge the gap between attractive design and credible health implementation, making this project both academically and practically relevant.

The Puskesmas Wonokromo is one of the community health centers located in a densely populated urban area of Surabaya with high mobility. This Puskesmas has not yet conducted education regarding the threat of antibiotic resistance due to the absence of educational media. The location of this health center is also strategic, allowing it to represent the drug-use behavior of the lower-middle-class society in Surabaya. Thus, the design of this campaign will assist the Puskesmas Wonokromo in conducting an educational campaign regarding the threat of

antibiotic resistance for the surrounding community. This effort is expected to demonstrate effectiveness in enhancing knowledge and altering public behavior, serving as the state-of-the-art foundation for this design.

Given that low antibiotic literacy in society is the primary factor exacerbating irrational self-medication behavior, the proposed solution is an educational campaign focused on altering public behavior through education that instills awareness of the importance of correct and rational drug use (Malik, 2024). This campaign strategy is executed through collaboration with the Puskesmas Wonokromo, which serves as the campaign hub and the venue for offline implementation. This health center was selected as a strategic stakeholder because it possesses credibility, medical authority, and direct access to the local community. The offline campaign at the Puskesmas will utilize print media as functional counseling tools for healthcare professionals and as static educational media in strategic areas, such as waiting rooms. The integration of these design media serves a dual purpose: to address the low literacy that triggers self-medication and to tackle the issue of dosage non-compliance among patients who have already received prescriptions, while simultaneously bridging the gap between attractive design and credible healthcare implementation.

Accordingly, this project aims to produce design products that are not only visually innovative but also functional and applicable within the primary healthcare system. Its scientific contribution lies in providing a design model that is fully integrated with the local healthcare delivery system to address public health issues.

1.2 Problems Identification

Based on the background description above, several main problems arising from the gap between rational antibiotic use and the actual conditions in society, particularly among those interacting with primary healthcare services, can be identified as follows:

1. Public literacy regarding antibiotics is categorized as low. This knowledge gap is the primary root cause of inappropriate self-medication behavior, which directly accelerates the rate of antibiotic resistance (Malik, 2024).
2. The high prevalence of antibiotic self-medication practices without a doctor's prescription and the low compliance of patients in finishing their prescribed antibiotic dosages (Irfan, 2024).
3. The Puskesmas Wonokromo does not yet possess educational media regarding antibiotics and antibiotic resistance, based on observations conducted at the Puskesmas Wonokromo.

1.3 Problem Formulation

Based on the background and problem identification above, the problem formulation for this design project is:

How to design a social campaign on the threat of antibiotic resistance at the Puskesmas Wonokromo?

1.4 Scope of Problem

To clarify the scope of the design and avoid overly broad discussion, this project is limited to the following points:

1. The target audience of this design project consists of patients and visitors of the Puskesmas Wonokromo within the productive age group (25-35 years old).
2. The design outputs include visual communication media designed for offline educational campaigns at the Puskesmas Wonokromo, such as motion graphics, demonstration tools, posters, flyers, x-banners, and merchandise.
3. The implementation of this educational campaign is strictly conducted within the context of counseling programs facilitated by the Puskesmas Wonokromo.

1.5 Objectives

Based on the problem formulation and limitations stated above, it can be concluded that the objectives of this design project are as follows:

1. To produce campaign outputs capable of educating the audience to discontinue the practice of antibiotic self-medication without a doctor's prescription and to improve patient compliance in finishing the entire prescribed antibiotic dosage.
2. To create and design effective and engaging media to enhance the knowledge of patients and visitors at the Puskesmas Wonokromo regarding the correct use of antibiotics and the serious dangers of antibiotic resistance.
3. To provide a functional, attractive, and credible educational media model for the Puskesmas Wonokromo, allowing it to be integrated sustainably into their counseling programs.

1.6 Benefits of the Design

Based on the design objectives stated above, the outcomes of this project are expected to provide the following benefits:

1. To generate effective educational media that enhances the knowledge of patients and visitors at the Puskesmas Wonokromo regarding the correct function and use of antibiotics, as well as the serious dangers of antibiotic resistance.

2. To produce a campaign capable of educating the audience to discontinue the practice of antibiotic self-medication without a doctor's prescription and to improve patient compliance in finishing the entire prescribed antibiotic dosage.
3. To provide credible, engaging, and medically accurate visual counseling tools to assist healthcare professionals and health volunteers at the Puskesmas Wonokromo in conducting engaging and effective education.

1.7 Design Framework

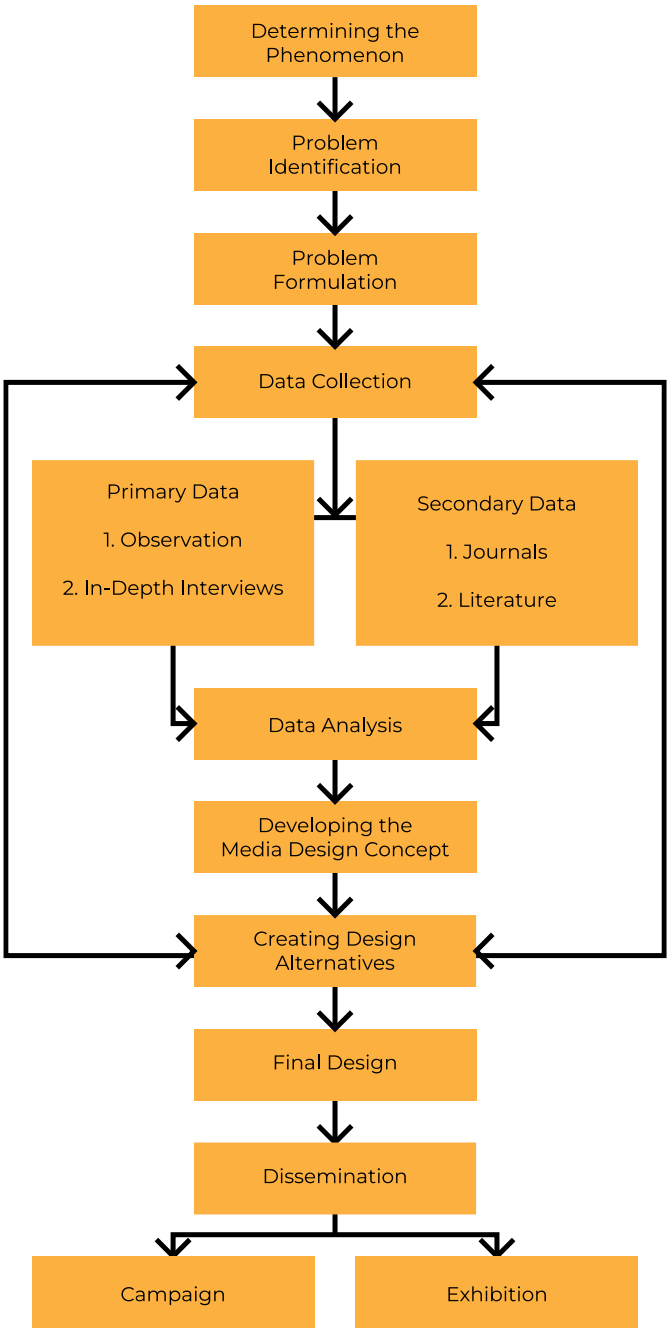

Figure 1.4 Design Framework

(Source: Personal Documents, 2025)