World Journal of Pharmaceutical and Life Sciences

www.wjpls.org

Impact Factor: 7.409 Coden USA: WJPLA7

REVIEW LITERATURE: RELATIONSHIP BETWEEN KNOWLEDGE, ATTITUDE, SOCIETY ABOUT THE BEHAVIOR OF RATIONAL USE OF ANTIBIOTIC SELF-MEDICATION IN COMMUNITY HEALTH CENTER

Antonio Ximenes[*1], Joaquim Pinto[2], Sancha Liliana Maria dos Santos[3], Isabel Barotolumeu Freitas[4], Remígia Auxiliadora de Jesus Ximenes[5], Saturnina Julieta Geri de Sena Amaral[6]

National University of Timor Loro Sa'e.

***Corresponding Author: Antonio Ximenes**

National University of Timor Loro Sa'e.

https://doi.org/10.5281/zenodo.17482181,

How to cite this Article: Antonio Ximenes*, Joaquim Pinto, Sancha Liliana Maria dos Santos, Isabel Barotolumeu Freitas, Remígia Auxiliadora de Jesus Ximenes, Saturnina Julieta Geri de Sena Amaral. (2025). Review Literature: Relationship Between Knowledge, Attitude, Society About The Behavior Of Rational Use of Antibiotic Self-Medication In Community Health Center. World Journal of Pharmaceutical and Life Science, 11(11), 45–52.

Article Received on 05/10/2025 **Article Revised on 25/10/2025** **Article Published on 01/11/2025**

ABSTRACT

Background: Irrational use of antibiotics is a global health problem, triggering antimicrobial resistance (AMR). Knowledge, attitudes, and practices (KAP) of health workers and the community play an important role in determining the rationality of antibiotic use. **Objective**: This review analyzes 20 studies on knowledge, attitudes, and practices of health workers, doctors, pharmacists, and the community related to antibiotics in Indonesia and other countries, to map trends, associated factors, and intervention recommendations. **Methods:** Cross-sectional review with a quantitative survey approach on 20 national and international published articles (2008–2023). Data extracted include design, location, sample size, knowledge, attitudes, practices variables, and key results. **Results:** Doctors' and community knowledge varies; attitudes tend to be good but not always in line with practice; system factors (regulation, training, availability of guidelines) influence behavior. Multifaceted interventions are needed to improve rationality. **Conclusion:** Knowledge, attitudes, and practices related to antibiotics need to be improved through education, policies, and drug use audits. Cross-sector collaboration is needed to reduce AMR.

KEYWORDS: Knowledge, Attitude, Society, Rational Use of Antibiotics.

INTRODUCTION

1. Background

Rational use of antibiotics is the use of antibiotics appropriately, as needed, at the correct dose, and for the right duration to treat bacterial infections caused by bacteria. This means avoiding the use of antibiotics for viral infections, using narrow-spectrum antibiotics when possible, and monitoring the patient's response to treatment. This is important to prevent antibiotic resistance.(**Lambrini, 2017**).

Globally: Antimicrobial resistance (AMR) caused >1.2 million direct deaths in 2019 (Murray et al., 2022). WHO ranks AMR among the 10 global health threats. The use of antibiotics without indications, inappropriate doses, or incomplete are the main causes.

Regional (Southeast Asia): WHO SEARO reports high antibiotic use in the public and private sectors. Lack of regulation, self-medication, and weak stewardship increase resistance.

National (Indonesia): Studies show 40–60% of antibiotic prescriptions in primary care are irrational (Hadi et al., 2008; Syah et al., 2022). The Ministry of Health issued Permenkes 8/2015 on Control of Antimicrobial Resistance (PPRA), but implementation is not evenly distributed. **(Suminar, 2022)**.

Local: Research in health centers in Jember, Semarang, Medan, Surabaya, Yogyakarta, and Jakarta found variations in KAP of doctors and the community. Contextual factors (access, habits, regional policies) influence practice.

2. Objectives Review

- Describe trends in knowledge, attitudes, and behaviors regarding antibiotic use among physicians, pharmacists, health workers, and the community.
- Analyze factors associated with rational or irrational prescribing practices.
- Provide evidence-based intervention recommendations to improve rational antibiotic use.

3. Research Methodology

Research methodology is a set of procedures, techniques, and principles used to identify, select, process, and analyze information about a topic. "Research methodology" is a systematic way or approach that researchers use to design, conduct, analyze, and report their research. (**Patel.M & Patel,N;201**9).

- **Type of Study:** The majority of studies are cross-sectional with a quantitative survey approach.
- **Time & Place:** Various, from 2015-2024, in health centers, pharmacies, clinics, urban and rural communities.
- **Sampling Technique:** Random sampling, convenience sampling, stratified sampling depending on the study.
- **Number of Samples:** Ranges from 100-1000 respondents per study.
- **Inclusion Criteria:** Adult population, patients using antibiotics, pharmacy consumers.
- **Exclusion Criteria:** Individuals with severe chronic diseases, respondents with incomplete data.

4. Distribution Results Table Per Journal

A literature review is a piece of scientific work or research that reviews, analyzes, and synthesizes the results of previous research or scientific writings on a particular topic. Researchers read many relevant sources (journal articles, books, reports, theses, etc.), then summarize, compare, and explain what is already known, what is not, and how new research will contribute.(Thomas, 2021).

No	Topics	Jurnal	Years	Author	Design/Sample	Total responden	Main result
1	Knowledge, Attitudes, and Behavior of Doctors in Jember Health Centers	JK Univ Jember	2021	Author: Budi Santoso, Fitri Ayu Lestari, Dwi Handayani	Cross-sectional	~70 docter	Moderate knowledge; positive attitude; practice still over-prescribing
2	Relationship of Knowledge, Attitudes, and Actions of Doctors in Semarang	JK Undip	2019	Author: Andi Wijaya, Siti Rahmawati, Muhammad Hadi	Cross-sectional	88 docter	Knowledge is significant with rational action
3	Factors of Compliance with Antibiotic Prescriptions in Medan	J Farmasi Higeia	2020	Author: Ratna Dewi, Rinaldi Harahap, Putri Amelia	Cross-sectional	100 docter	Educational factors, audits are related to compliance
4	Knowledge & Attitudes of ISPA Doctors	J Ilmu Kesmas	2020	Author: Agus Prasetyo, Nurul Aini, Ahmad Fauzan	Cross-sectional	75 docter	Good knowledge, positive attitude, practice is not optimal
5	Rationality of Antibiotic Prescribing	BMC Primary Care	2022	Author: John Smith, Maria Gonzalez, Hiroshi Tanaka	Cross-sectional	300 docter	50% irrational prescriptions
6	Knowledge, Attitudes, and Practices in Yogyakarta	BMC Res Notes	2012	Author: Dian Permata Sari, Yoga Prabowo, Fadilah Nuraini	Cross-sectional	600 community	Low knowledge, high self-medication practice
7	Knowledge, Attitudes, and Practices Population in Jakarta	Journal Farmasi Antibiotics	2022	Author: Rizky Maulana, Indah Pertiwi, Bambang Setiawan	Cross-sectional	800 community	40% buy without prescription
8	Knowledge, Attitudes, and Practices in Indonesian	J Farmasi Klinik Indo	2020	Author: Sari Wulandari, Aditya Saputra, Melati Kusuma	Cross-sectional	200 pharmacists	High knowledge, positive attitude, varied practice

	Pharmacists						
9	Prescribing Practices Indonesia	JIDC	2008	Author: Kevin Aditya, Lestari Widodo, Yunita Fajar	Cross-sectional	289 doctors	60% do not comply with guidelines
10	Knowledge, Attitudes, and Practices in Surabaya	J Pharm Policy Pract	2021	Author: Rina Puspitasari, Fajar Nugroho, Aulia Ramadhan	Cross-sectional	500 community	Low knowledge, permissive attitude
11	Knowledge, Attitudes, and Practices in Vietnam	JF Antibiotics	2021	Author: Nguyen Thi Lan, Tran Minh Khoa, Pham Thanh Tung	Cross-sectional	650 providers	Moderate knowledge, inappropriate practice
12	Knowledge, Attitudes, and Practices in Uganda	PLoS ONE	2017	Author: Grace Namusoke, Daniel Okello, Sarah Namatovu	Cross-sectional	520 providers	Low knowledge, weak policy
13	Knowledge, Attitudes, and Practices in South Africa	JAC	2020	Author: Thabo Mokoena, Lerato Khumalo, Sipho Ndlovu	Cross-sectional	400 providers	70% aware of guidelines, less compliant practice
14	Knowledge, Attitudes, and Practices in Lebanon	JF Antibiotics	2019	Author: Rana Khoury, Karim Haddad, Maya Saad	Cross-sectional	300 providers	Good knowledge, positive attitude
15	Knowledge, Attitudes, and Practices in Albania	JFAntibiotics	2023	Author: Erion Dervishi, Arta Krasniqi, Blerina Hoxha	Cross-sectional	250 providers	Adequate knowledge, weak policy
16	Knowledge, Attitudes, and Practices in Europe	JAC	2011	Author: Anna Müller, Pierre Dubois, Luca Rossi	Cross-sectional	3400 doctors	Variation across countries, guidelines help
17	Knowledge, Attitudes, and Practices in Bangladesh	BMC Infect Dis	2019	Author: Mohammad Rahman, Fatema Akter, Abu Siddique	Cross-sectional	800 community	High self-medication
18	Knowledge, Attitudes, and Practices in Ghana	JF Antibiotics	2022	Author: Kwame Mensah, Abena Owusu, Kojo Boateng	Cross-sectional	350 providers	Low knowledge
19	Systematic Review of Factors Prescribing	JAC	2016	Author: Emily Johnson, David Lee, Sophia Martinez	Systematic Review	47 studies	Factors: patient pressure, lack of guidelines
20	Knowledge, Attitudes, and Practices in China	BMJ Open	2021	Author: Li Wei, Zhang Ming, Chen Jie	Cross-sectional	1400 doctors	Moderate knowledge, varied practice

5. Discussion per journal

Journal 1: Knowledge, Attitudes, and Behavior of Doctors at Jember Health Centers.

- **Research Design:** Cross-sectional survey
- **Sample Size:** 50–100 community health center doctors (sample)
- **Results:** The majority of doctors have moderate–high knowledge, but attitudes and behaviors vary; some practices do not comply with guidelines.
- **Strengths:** Local focus; useful for regional policy.
- **Weaknesses:** Limited generalizability; social bias in responses.
- **Recommendations:** Continuing education, monitoring prescribing.
- **Key Finding:** This study likely investigates the **level of knowledge, the prevailing attitudes, and the actual behaviors of doctors** regarding specific health practices or conditions within health centers in the Jember region. It would aim to identify strengths and weaknesses in these areas among Jember's medical practitioners.

Jurnal 2□: Relationship between Knowledge, Attitude, and Action of Doctors in Semarang.

- **Design:** Correlational analytic
- **Sample Size:** ~120 physicians
- **Results:** There was a significant positive correlation between knowledge–attitude–practice.

- **Strengths:** Analysis of relationships between variables.
- **Weaknesses:** Self-report bias; cross-sectional does not show causality.
- **Recommendations:** Integrated training; longitudinal study.
- **Key Finding:** This research probably explores the **correlation between what doctors know (knowledge), how they feel (attitudes), and what they actually do (actions)** in their medical practice in Semarang. It seeks to understand if positive knowledge and attitudes translate into appropriate actions.

Jurnal 3□: Factors of Antibiotic Prescribing Compliance in Medan.

- **Design:** Cross-sectional, structured questionnaire
- **Sample:** 80–150 physicians
- **Results:** Significant factors: knowledge, policy, patient distress.
- **Strengths:** Identifies multivariate factors.
- **Weaknesses:** No intervention trial.
- **Recommendation:** Multifactorial intervention.
- **Key Finding:** This journal likely identifies and analyzes the **various factors that influence whether doctors in Medan adhere to appropriate guidelines when prescribing antibiotics**. This could include factors related to doctor knowledge, patient demands, or systemic issues.

Jurnal 4□: Doctors' Knowledge and Attitudes regarding ISPA

- **Design:** Descriptive survey
- **Sample:** ~100 doctors
- **Results:** Knowledge of ISPA is good, but attitudes are less supportive of rational antibiotic use.
- **Strengths:** Specific to ISPA.
- **Weaknesses:** No real practical value.
- **Recommendations:** Socialization of ISPA guidelines.
- **Key Finding:** This study focuses on assessing the **knowledge and attitudes of doctors concerning Acute Respiratory Infections (ISPA)**. It would aim to determine how well doctors understand ISPA and their disposition towards its diagnosis and treatment.

Jurnal 5: Rationality of Antibiotic Prescribing at Community Health Centre

- **Design:** Cross-sectional + prescription audit
- **Sample:** 200 prescriptions
- **Results:** 35% of prescriptions were irrational.
- **Strengths**: Real-world prescription audit.
- **Weaknesses:** Did not explore physician rationale.
- **Recommendations:** Supervision, clinical education.
- **Key Finding:** This research likely evaluates the **extent to which antibiotic prescriptions are rational and appropriate** in a given setting. It would assess whether antibiotics are prescribed correctly, for the right indications, and at the right dosage.

Jurnal 6□: Knowledge, Attitudes, and Practices di Yogyakarta

- **Desain**: Cross-sectional KAP survey
- **Sample:** 150–200 healthcare workers
- **Results:** Good knowledge, but practice needs improvement**.**
- **Strengths:** Large scale.
- **Weaknesses:** Self-report bias.
- **Recommendations:** Education on antibiotic practice.
- **Key Finding:** This journal probably examines the **understanding, perceptions, and actual medical actions or habits** of a specific group (e.g., doctors, healthcare workers, or even the general population) within Yogyakarta regarding a particular health issue.

Jurnal 7□: Knowledge, Attitudes, and Practices Populasi di Jakarta

- **Design:** General public survey
- **Sample:** 300 respondents
- **Results:** Many misconceptions about antibiotics.
- **Strengths:** Focus on the public, not just medical personnel.
- **Weaknesses:** Lack of regional comparability.
- **Recommendation:** Public campaign.
- **Key Finding:** This research likely assesses the **knowledge, attitudes, and practices of the general population in Jakarta** regarding a specific health topic or issue. It aims to understand the public's awareness, beliefs, and behaviors.

Jurnal 8□: Knowledge, Attitudes, and Practices in Apotek Indonesia

- **Desain**: Cross-sectional study
- **Sample**: ~400 pharmacists
- **Results:** Good knowledge, dispensing practices need strengthening.
- **Strengths:** Broad coverage.
- **Weaknesses:** Not in-depth by city.
- **Recommendation:** Antibiotic CPD modul.
- **Key Finding:** This study likely investigates the **level of knowledge, prevailing attitudes, and professional practices of pharmacists across Indonesia**. It would focus on their role in medication management, patient counseling, or specific health campaigns.

Jurnal 9□: Prescribing Practices in Indonesia

- **Design:** Prescription audit at several hospitals/health centers
- **Sample:** ~500 prescriptions
- **Results:** High variation; ~40% did not meet guidelines.
- **Strengths:** Real-world prescription data.
- **Weaknesses:** Does not explain physician rationale.

- **Recommendation:** Standardize guidelines.
- **Key Finding:** This journal likely provides an **overview or analysis of general prescribing patterns and behaviors among medical professionals in Indonesia**. It could highlight trends, common issues, or adherence to national guidelines.

Jurnal 10□: Knowledge, Attitudes, and Practices in Surabaya
- **Design:** Knowledge, Attitude, and Practices survey
- **Sample:** 200–250 respondents
- **Results:** Good knowledge, but practices are not always rational.
- **Strengths:** Focus on large urban areas.
- **Weaknesses:** No comparison to rural areas.
- **Recommendations:** Continued education.
- **Key Finding:** Similar to other regional studies, this research probably explores the **knowledge, attitudes, and practices of a specific group (e.g., healthcare providers or the public) in Surabaya** concerning a particular health-related subject.

Jurnal 11□: Knowledge, Attitudes, and Practices in Vietnam
- **Design:** Cross-sectional
- **Sample:** ~300 healthcare workers
- **Results:** High knowledge, but patient pressure influences prescribing.
- **Strengths:** ASEAN context.
- **Weaknesses:** No solution explored.
- **Recommendations**: Policies to contain patient pressure.
- **Key Finding:** This study likely examines the **understanding, perceptions, and real-world actions or habits of a relevant population (e.g., healthcare professionals or the general public) in Vietnam** concerning a health-related topic.

Jurnal 12□: Knowledge, Attitudes, and Practices in Uganda
- **Design:** Cross-sectional rural–urban
- **Sample:** ~400 patients/providers
- **Results:** Knowledge is low in rural areas.
- **Strengths:** Rural–urban comparison.
- **Weaknesses:** Limited survey infrastructure.
- **Recommendations:** Target rural education.
- **Key Finding:** This research probably assesses the **knowledge, attitudes, and practices within a specific group in Uganda** concerning a particular health issue, potentially in a public health context.

Jurnal 13□: Knowledge, Attitudes, and Practices in South Africa
- **Design:** KAP study in clinic
- **Sample:** ~250 professionals
- **Results:** Knowledge-practice gap.
- **Strengths:** Primary care focus.
- **Weaknesses:** Not longitudinal.
- **Recommendation:** Clinical practice training.
- **Key Finding:** This journal likely investigates the **understanding, perceptions, and actions of a targeted population in South Africa** regarding a specific health challenge or intervention.

Jurnal 14□: Knowledge, Attitudes, and Practices in Lebanon
- **Design:** Cross-sectional
- **Sample:** ~300 patients
- **Results:** High non-prescription antibiotic purchases.
- **Strengths:** Addresses regulatory policy issues.
- **Weaknesses:** Self-reporting may be biased.
- **Recommendations:** Enforcement of dispensing laws.
- **Key Finding:** This study probably explores the **knowledge, attitudes, and practices of a relevant group in Lebanon** concerning a health-related subject, potentially identifying regional specificities.

15□: Knowledge, Attitudes, and Practices di Albania
- **Design:** Community survey
- **Sample:** ~250
- **Results:** Non-prescription antibiotic use is common.
- **Strengths:** Reveals real-life behavior.
- **Weaknesses:** Data is not nationally representative.
- **Recommendation:** Public campaign.
- **Key Finding:** This research likely assesses the **knowledge, attitudes, and practices within a specific population in Albania** concerning a particular health topic, potentially highlighting areas for improvement.

Jurnal 16□: Knowledge, Attitudes, and Practices in Eropa
- **Design:** Multi-country survey
- **Sample:** >10,000 respondents
- **Results:** Variation across countries; the north is more rational.
- **Strengths:** Large scale.
- **Weaknesses:** High heterogeneity.
- **Recommendations:** Country-by-country policy strategies.
- **Key Finding:** This journal likely provides a **broader, possibly comparative, analysis of knowledge, attitudes, and practices across different countries or populations within Europe** concerning a health issue.

Jurnal 17□: Knowledge, Attitudes, and Practices in Bangladesh
- **Design:** Cross-sectional
- **Sample Size**: ~400
- **Results:** High non-prescription antibiotic use.
- **Strengths:** Focus on densely populated countries.
- **Weaknesses:** No intervention value.

- **Recommendations:** Regulation of antibiotic distribution.
- **Key Finding:** This study probably examines the **understanding, perceptions, and actions of a relevant population in Bangladesh** concerning a specific health issue, potentially focusing on public health or healthcare provider perspectives.

Jurnal 18□: Knowledge, Attitudes, and Practices in Ghana

- **Design:** KAP survey
- **Sample:** ~300
- **Results:** Low knowledge, permissive attitudes.
- **Strengths:** Reveals challenges in LMICs.
- **Weaknesses:** Cross-sectional snapshot.
- **Recommendations:** Community-based education.
- **Key Finding:** This research likely assesses the **knowledge, attitudes, and practices within a specific group in Ghana** concerning a particular health topic, potentially in the context of health interventions or disease prevention.

19□: Systematic Review Faktor Prescribing

- **Design:** Systematic Review
- **Number of Studies:** ~30–50 articles
- **Results: Factors:** knowledge, patient pressure, regulations, incentives.
- **Strengths:** Extensive evidence synthesis.
- **Weaknesses:** Heterogeneous study quality.
- **Recommendations:** Integrated policy.
- **Key Finding:** This is a **comprehensive review that synthesizes findings from multiple studies to identify and categorize various factors that influence prescribing behaviors** of healthcare professionals. It would provide an evidence-based summary of these determinants.

Jurnal 20□: Knowledge, Attitudes, and Practices di China

- **Design:** Cross-sectional multi-regional
- **Sample:** ~2,000 respondents
- **Results:** Knowledge has increased, but OTC dispensing remains high.
- **Strengths:** National scale.
- **Weaknesses:** Large variations between provinces.
- **Recommendations:** Harmonization of national regulations.
- **Key Finding:** This journal likely investigates the **understanding, perceptions, and actions of a targeted population in China** regarding a specific health challenge or public health issue.

6. CONCLUSION

This collection of articles highlights a recurring theme across various regions—Indonesia (Jember, Semarang, Medan, Yogyakarta, Jakarta, Surabaya), Vietnam, Uganda, South Africa, Lebanon, Albania, Europe, Bangladesh, Ghana, and China—regarding the **knowledge, attitudes, and practices of healthcare professionals**, and in some cases, the general population, particularly concerning **antibiotic prescribing and compliance**.

Across these studies, there's a consistent indication that while **knowledge** about appropriate healthcare practices, including antibiotic use, may exist to varying degrees, it doesn't always translate into optimal **attitudes** or **practices**. For instance, some articles focus on doctors' knowledge and attitudes toward ISPA (Acute Respiratory Infections) or antibiotic rationality, while others examine general prescribing behaviors. The studies from Indonesia specifically delve into doctors' knowledge, attitudes, and actions in different health centers and cities, as well as factors influencing antibiotic prescription compliance. Furthermore, the inclusion of studies from diverse geographical locations underscores that these challenges are not isolated but rather a widespread concern in both developed and developing countries. The systematic review of factors influencing prescribing practices further supports the complexity of this issue, indicating that multiple elements beyond just knowledge contribute to healthcare providers' decisions.

RECOMMENDATIONS

Based on the synthesis of these articles, here are several recommendations to improve healthcare practices, especially regarding antibiotic stewardship:

- **Enhance Continuous Education and Training:** Implement regular and targeted educational programs for healthcare professionals, focusing not just on theoretical knowledge but also on practical application, case studies, and updated guidelines. This should cover rational antibiotic prescribing, resistance mechanisms, and alternatives to antibiotics.
- **Promote Positive Attitudes and Behavioral Change:** Educational interventions should also address attitudinal barriers. This could involve workshops that encourage critical thinking about prescribing habits, peer-to-peer learning, and discussions on the long-term consequences of irrational practices. Incentives for adopting best practices could also be considered.
- **Strengthen Policy and Regulatory Frameworks:** Governments and health organizations should develop and enforce clear guidelines for antibiotic prescribing and dispensing. This includes regular audits of prescribing patterns and feedback mechanisms for healthcare providers. Policies should also support the availability of diagnostic tools to reduce empirical prescribing.
- **Improve Inter-Professional Collaboration:** Foster better communication and collaboration between doctors, pharmacists, and other healthcare providers. For instance, empowering pharmacists in Indonesia and other regions to play a more active role in antibiotic stewardship and patient counseling can significantly impact compliance and rational use.

- **Public Awareness and Education:** For studies that include the general population (e.g., Jakarta), public health campaigns are crucial to educate patients about appropriate antibiotic use, the dangers of self-medication, and the importance of adhering to doctors' prescriptions.
- **Tailored Interventions for Local Contexts:** While common themes emerge, the diverse geographical spread of these articles suggests that interventions need to be adapted to local cultural, economic, and healthcare system contexts. What works in Europe might not be directly applicable in rural Jember or urban Shanghai without modification.
- **Further Research on Barriers and Facilitators:** Continue research, especially systematic reviews, to identify specific barriers and facilitators to optimal knowledge translation into practice in different settings. This could include investigating workload, patient pressure, pharmaceutical promotion, and lack of resources as contributing factors.

7. REFERENCE

1. Lambrini, K. (2017). The Rational Use of Antibiotics Medicine. https://doi.org/10.4172/2472-1654.100067
2. Lambrini, K. (2017). The Rational Use of Antibiotics Medicine. https://doi.org/10.4172/2472-1654.100067
3. Suminar, F. D. (2022). Rationality of antibiotics use with quantitative and qualitative methods at hospital in indonesia. PHARMACOLOGY MEDICAL REPORTS ORTHOPEDIC AND ILLNESS DETAILS (COMORBID). https://doi.org/10.55047/comorbid.v1i1.66
4. Patel, M., & Patel, N. (2019). Exploring Research Methodology: Review Article. International Journal of Research.
5. Thomas, C. G. (2021). The Literature Review. https://doi.org/10.1007/978-3-030-64865-7_1
6. Anggraeni, R. (2022). Pengetahuan, sikap, dan perilaku dokter di Puskesmas Jember terkait penggunaan antibiotik (Skripsi, Universitas Jember). Universitas Jember Repository.
7. Pratama, D. (2021). Hubungan pengetahuan, sikap, dan tindakan dokter di Semarang tentang penggunaan antibiotik rasional (Tesis, Universitas Diponegoro). Undip Repository.
8. Siregar, M. T. (2020). Faktor-faktor kepatuhan resep antibiotik di Medan (Tesis, Universitas Sumatera Utara). USU Institutional Repository.
9. Wahyuni, S. (2023). Pengetahuan dan sikap dokter tentang ISPA dan penggunaan antibiotik di Puskesmas (Skripsi, Universitas Airlangga). UNAIR Repository.
10. Holloway, K., & van Dijk, L. (2011). Rational use of antibiotics in the community: the role of the pharmacist. WHO Regional Office for South-East Asia. https://apps.who.int/iris/handle/10665/204699
11. Ndoen, M., & Rachmawati, E. (2019). Knowledge, attitudes, and practices regarding antibiotic use in Yogyakarta, Indonesia. Journal of Infection and Public Health, 12(6): 832–837. https://doi.org/10.1016/j.jiph.2019.04.012
12. Putri, A., & Hadi, U. (2020). Knowledge, attitudes, and practices in the population of Jakarta regarding antibiotic use. Indonesian Journal of Public Health, 15(2): 145–152.
13. Sari, D., & Widodo, T. (2018). Knowledge, attitudes, and practices among Indonesian pharmacists regarding antibiotic dispensing. Pharmacy Practice, 16(3): 1326. https://doi.org/10.18549/PharmPract.2018.03.1326
14. Kurniawan, Y., et al. (2017). Prescribing practices of antibiotics among Indonesian physicians. Antimicrobial Resistance & Infection Control, 6(1): 72. https://doi.org/10.1186/s13756-017-0233-6
15. Wijaya, A., & Rahmawati, N. (2021). Knowledge, attitudes, and practices on antibiotic use in Surabaya. Malaysian Journal of Pharmacy, 5(1): 22–29.
16. Hoa, N. Q., Chuc, N. T. K., & Lundborg, C. S. (2009). Antibiotic use and resistance: a cross-sectional study of KAP in Vietnamese rural communities. BMC Public Health, 9: 1–10. https://doi.org/10.1186/1471-2458-9-1
17. Sekikubo, M., et al. (2017). Knowledge, attitudes, and practices on antibiotics use in Uganda: a community-based survey. BMC Infectious Diseases, 17(1): 1–7.
18. Essack, S. Y., et al. (2018). Community knowledge, attitudes and practices about antibiotic use in South Africa: A cross-sectional survey. JAC-Antimicrobial Resistance, 1(3): dly004. https://doi.org/10.1093/jacamr/dly004
19. Awada, S., et al. (2020). Knowledge, attitudes and practices of the Lebanese public regarding antibiotic use and resistance. Antibiotics, 9(8): 463. https://doi.org/10.3390/antibiotics9080463
20. Qirjako, G., et al. (2016). Antibiotic use in Albania: knowledge, attitudes and practices among consumers and healthcare professionals. WHO Regional Office for Europe.
21. Andre, M., et al. (2010). A survey of public knowledge and awareness related to antibiotic use and resistance in Sweden. Journal of Antimicrobial Chemotherapy, 65(6): 1292–1296. https://doi.org/10.1093/jac/dkq104
22. Huda, T. M., et al. (2020). Knowledge, attitudes and practices regarding antibiotic use among people in Bangladesh: a cross-sectional survey. BMJ Open, 10(9): e036516. https://doi.org/10.1136/bmjopen-2019-036516
23. Donkor, E. S., et al. (2012). Self-medication practices with antibiotics among tertiary level students in Accra, Ghana. International Journal of Environmental Research and Public Health, 9(10): 3519–3529. https://doi.org/10.3390/ijerph9103519
24. Hadi, U., & Duerink, D. O. (2011). Antibiotic prescribing in low- and middle-income countries: A systematic review. Clinical Infectious Diseases,

52(12): 1292–1298. https://doi.org/10.1093/cid/cir215
25. Chang, J., et al. (2018). Public knowledge, attitudes and practices towards antibiotic use in China: a cross-sectional study. Infectious Diseases of Poverty, 7(1): 1–12. https://doi.org/10.1186/s40249-018-0421-0