

Effects of self-medication reasons, television advertisements, and pharmaceutical professionals' roles on self-medication practices

Agus Susanto¹, Heni Purwantiningrum¹, Meliyana Perwita Sari¹

¹Department of Pharmacy, Politeknik Harapan Bersama, Tegal City, Central Java Province, Indonesia

Corresponding Author: Agus Susanto **Email:** agussus@yahoo.com

Received: 26 December 2022 **Revised:** 6 April 2023 **Accepted:** 7 April 2023 **Available online:** May 2023

DOI: 10.55131/jphd/2023/210215

ABSTRACT

Self-medication has become increasingly common in society, and it is crucial to provide reliable information and emphasize the role of pharmacists in dispensing information to ensure that self-medication is carried out safely. This study aimed to analyse the reasons for self-medication, the influence of television advertisements, and the role of pharmacists in self-medication. The research used a descriptive-analytic approach with a cross-sectional design. The study involved 350 adult participants who were purposively selected in Tegal City, Central Java, Indonesia. Data were collected using a questionnaire and analysed using SPSS, employing univariate and bivariate analyses. The Chi-Square test was used to investigate the relationship between variables, with a significance level of 0.05. The findings showed that the primary reasons for self-medication were minor illnesses (63.1%), complete TV advertisements (86.3%), active involvement of pharmacists (68.9%), and good self-medication practices (73.1%). The study revealed that there was a significant relationship between the reasons for self-medication ($p=0.032$) and the role of pharmacists ($p=0.002$) in self-medication practices. In conclusion, the study found that self-medication practices were good, but pharmacists should be more active in providing information to clients to enhance the quality of self-medication. To achieve this, pharmacists need to play a more significant role in promoting appropriate self-medication practices by providing appropriate information on the safe use of medications. Moreover, health authorities should develop policies to regulate the advertising of over-the-counter drugs, emphasizing the risks of inappropriate use of medications through the media.

Key words:

reason; television advertisement; pharmaceutical professionals; self-medication practice

Citation:

Agus Susanto, Heni Purwantiningrum, Meliyana Perwita Sari. Effects of self-medication reasons, television advertisements, and pharmaceutical professionals' roles on self-medication practices. *J Public Hlth Dev.* 2023;21(1):179-188 (<https://doi.org/10.55131/jphd/2023/210215>)

INTRODUCTION

Self-medication refers to the utilization of medicines acquired from pharmacies or drugstores without consulting a medical practitioner with the purpose of treating an ailment or illness.^{1,2,3} The advancement in technology has made it easier to access drug-related information, leading to a rise in self-medication cases worldwide, including Indonesia.⁴ The Basic Health Research conducted by the Indonesian Ministry of Health in 2018 revealed that 35.2% of households store medicines for self-medication, with 35.7% of them containing potent drugs.⁵ Additionally, the prevalence of self-medication involving antibiotics persists as a common practice.^{6,7}

The increasing prevalence of self-medication practices has both positive and negative impacts. Improper self-medication, which encompasses misidentification of symptoms present, incorrect medication selection, improper method of use, incorrect dosing, using leftover medication, and delaying seeking advice from healthcare professionals when symptoms persist, represents a worldwide health problem with significant public health implications.⁸ These implications include the risk of drug resistance and organ damage, which contribute to 2.9%-3.7% of global deaths, mainly due to drug interactions. It is important to note that inappropriate self-medication can lead to negative health outcomes and should be addressed through proper education and regulation to promote the safe and responsible use of medications.^{9,10}

Several factors, including limited knowledge about drugs, drug use, and information, contribute to medication errors in self-medication.¹¹ Therefore, it is essential for the public to have access to accurate, complete, objective, and non-misleading information to self-medicate safely and effectively.¹² Among the parties involved in self-medication activities,

pharmaceutical professionals play a central role. They are responsible not only for dispensing drugs but also for providing patients with explanations about the drugs they will be consuming. It is important that pharmaceutical professionals have the necessary knowledge and communication skills to facilitate safe and effective self-medication practices.¹³

Apart from the crucial involvement of pharmaceutical professionals, self-medication practices are shaped by a variety of factors. Prior studies indicate that sociodemographic features, such as gender, age, education, employment status, and income level, correlate with self-medication behaviors.^{14,15} Other factors include the severity of the illness being treated, past experiences, medication accessibility, advertising, and treatment costs. Furthermore, perception, knowledge, attitude, and trust in medication also influence self-medication practices.^{16,17} Nonetheless, the most notable impact on self-medication practices stems from the role of healthcare workers, particularly pharmacy professionals.

Previous studies have highlighted the importance of the role of pharmaceutical professionals in facilitating successful self-medication practices. Providing comprehensive information to patients about drugs can improve their knowledge and understanding of self-medication practices.^{18,19} Nonetheless, the effectiveness of pharmaceutical professionals in disseminating drug-related information remains suboptimal²⁰. There are still instances where patients encounter unaccommodating pharmaceutical professionals who withhold drug-related information in the absence of patient inquiry.²¹

This study builds on previous research by analysing the role of pharmaceutical professionals in self-medication activities on a broader scope and with more complex respondent characteristics. Additionally, this study

adds the variable of television advertising as an independent variable to the analysis. The study aims to explore the reasons for self-medication, television advertising, and the role of pharmaceutical professionals in self-medication practices. Specifically, this study seeks to investigate the relationship between the reasons for self-medication, television advertising, and the role of pharmaceutical professionals in self-medication practices.

METHODS

Study design

This study was an analytic survey approach and used a cross-sectional research design.

Research area

The study was carried out in Tegal City, one of the cities in Central Java Province, Indonesia, with an estimated population of 280,000 individuals. Tegal City is a pivotal transportation hub linking the provincial and national capitals. The city has a culturally homogeneous society, with the majority of its population being Javanese and using Javanese dialects such as Tegalana and Bahasa Indonesia as their daily language. Primary and secondary healthcare facilities are presently available within the city.

Population and sample of the study

The study's population consisted of adults aged 18 years and above residing in Tegal City, with an estimated population of 150,000 according to the Central Bureau of Statistics of Tegal City in 2018. The sample size of the study was determined to be 347 individuals at a 95% confidence level, using the Isaac and Michael table.²² To account for potential dropouts, the researchers added three individuals, resulting in a final sample size of 350 individuals. The inclusion criteria for the sample required participants to engage in self-medication at least twice in the six

months prior to data collection, be willing to participate in the study by completing a consent form, and be able to read and write. The exclusion criteria were respondents who did not complete the questionnaire and those who withdrew from the study before completion.

Data collection techniques

Data was collected online using Google Forms with the link <https://forms.gle/59cXkLgG4XEejvUy7>.

The link was shared with respondents through WhatsApp and Telegram. The sampling technique in the study used purposive sampling, which means that only data that meets the criteria is processed, while data that does not meet the criteria are excluded from the database. To ensure that the data obtained met the research criteria, the researcher provided a prerequisite explanation to potential respondents who could fill out the research questionnaire when distributing the questionnaire online.

Measurement Instruments

The data was gathered using a questionnaire that was prepared in Bahasa Indonesia. The questionnaire consisted of various sections, including patient characteristics, the reasons for self-medication, the impact of television advertisements, and the role of pharmaceutical professionals in self-medication practices. The questionnaire items were positively framed and presented five answer options, ranging from score 5 for "strongly agree" to score 1 for "strongly disagree." To ensure the validity and reliability of the questionnaire, it underwent content testing by two experts, one in health and one in linguistics. After their feedback, the questionnaire was revised to suit the study's objectives. Subsequently, the questionnaire underwent testing for validity and reliability using SPSS. The validity test showed that all questionnaire items were valid and reliable, with Cronbach's alpha coefficients of 0.776 for television

advertisements, 0.902 for the role of pharmaceutical professionals, and 0.806 for self-medication practices. Therefore, all questionnaire items were deemed suitable for measuring the research variables.

Data analysis

Statistical analysis of the field data was conducted using the SPSS software package, which involved performing both univariate and bivariate analyses. In the univariate analysis, the data were presented using frequency distributions and percentages to describe the sample characteristics. Furthermore, the Chi-square test was applied to examine the association between variables, with a significance level of 0.05 used as the cutoff.

Ethics approval

The study obtained ethics committee approval from the Health Research Ethics

Committee of Politeknik Kesehatan Kemenkes Semarang, Central Java, Indonesia with the reference number 0377/EA/KEPK/2022. All eligible respondents provided informed consent before participating in the study, and the questionnaire was kept anonymous to maintain confidentiality. No compensation was given to the respondents.

RESULTS

This study presents both univariate and bivariate field results. Characteristics, the participation of pharmaceutical experts, and self-medication practices comprise the univariate data display. The characteristics of those who responded to the survey are outlined in Table 1.

Table 1. Frequency Distribution of Respondent Characteristics (n=350)

Variable	N	%
Gender		
Male	99	28.3
Female	251	71.7
Age		
< 50 years	311	88.9
≥ 50 years	39	11.1
Education		
Elementary	0	0.0
Secondary school	19	5.4
High school	231	66.0
College	100	28.6
Occupation		
Student	197	56,3
Employed	37	10,6
Civil servant/military/police	20	5,7
Farmer/labor/fisherman	40	11,4
Others	56	16.0
Income level		
< Regional minimum wage	78	22.3
≥ Regional minimum wage	272	77.7

The results from Table 1 reveal that the majority of respondents who engaged in self-medication were female, accounting for 71.7% of the sample. Additionally, the

vast majority of respondents were under 50 years old, with 88.9% falling into this age bracket. In terms of educational background, most respondents had

completed high school, comprising 66.0% of the sample. As for occupation, a majority of respondents were students (56.3%).

Finally, most respondents reported earning an income above the regional minimum wage (77.7%).

Table 2. Cross-tabulation of characteristics with self-medication practices (n=350)

Variables	Self-medication practice				X ²	p-value
	Not good	%	Good	%		
Gender						
Male	33	33.3	66	66.7	2.947	0.086
Female	61	24.3	190	75.7		
Age						
< 50 years	86	27.7	225	72.3	0,899	0.343
≥ 50 years	8	20.5	31	79.5		
Education						
Secondary school	7	36.8	12	63.2	2.027	0.363
High school	57	24.7	174	75.3		
College	30	30.0	70	70.0		
Occupation						
Student	42	21.3	155	78.7	10.602	0.031*
Civil-servant/military/police	10	27.0	27	73.0		
Self-employed	8	40.0	12	60.0		
Farmer/labor/fisherman	11	27.5	29	72.5		
Other	23	41.1	33	58.9		
Income level						
<minimum wage regional	25	32.1	53	67.9	1.378	0.240
≥ minimum wage regional	69	25.4	203	74.6		

Based on the Chi-Square test on each variable of respondent characteristics with self-medication practices (Table 2), only the type of work variable has a significant relationship with self-

medication practices ($p=0.031$). The variables of gender, age, education, and income level had no significant relationship with the variable of self-medication practices.

Table 3. Relationship between reasons for self-medication, TV advertisements, and the role of pharmaceutical professionals with self-medication practices (n=350)

Variables	Self-medication practice		χ^2	P-value
	Not good	%		
Self-medication Reasons			8.831	0.032*
Emergency	15	27.3	40	72.7
Minor pain	55	24.9	166	75.1
Cost-effective	19	44.2	24	55.8
Others	5	16.1	26	83.9
Television Advertisement			3.208	0.073
Incomplete	18	37.5	30	62.5
Completed	76	25.2	226	74.8
Role of Pharmacist			12.808	0.002*
Less Active	8	61.5	5	38.5
Active Enough	53	22.4	184	77.6
Active	32	34.0	62	66.0

The results of the Chi-Square test (Table 3) for the relationships between reasons for self-medication, television advertising, and the role of pharmaceutical workers in self-medication practices showed p-values of 0.032, 0.073, and 0.002, respectively. These findings indicate that the variables of reasons for self-medication and the role of pharmaceutical workers are significantly related to self-medication practices. However, the variable of television advertising does not show a significant relationship with self-medication practices.

DISCUSSION

Field findings related to the characteristics of the respondents showed that the respondents who practiced self-medication the most were women and the age group below 50 years. This result aligns with a previous study conducted in Umuahia, Abia State, and Nigeria. The study showed that women and the 30-40 age group practiced self-medication.²³ This finding is also supported by basic health research conducted by the Ministry of Health of the Republic of Indonesia.

Women, especially married ones, are central to medicine provision at home. They buy medicine as a stock to keep at home for future treatment, and the medicine is used for themselves and other family members.⁵

Furthermore, related to the respondents' educational background, the majority had secondary-level education. Although this study's findings did not demonstrate a significant relationship, several studies have shown a relationship between education level, age, and self-medication practices. Both factors affect the ability to obtain health information, including drugs.³ Berkman et al. stated that a person with a higher education level demonstrates a greater level of health literacy than someone with a lower level of education. In higher education, people have higher reading and comprehension skills, positively affecting health literacy.²⁴

The results of research on the variable reasons for self-medication show that the majority of cases are due to experiencing minor pain. These findings are consistent with research conducted in India, which concluded that the most common self-medication activities are due to complaints or mild pain²⁵. Another study

conducted in Thailand found that self-medication is generally done because the pain suffered is not considered serious.¹ In addition, self-medication is also done using leftover medicine to save time. However, improper and unsupervised use of medicines can cause dangerous side effects on health. Therefore, better awareness and understanding of the use of medicines are necessary to avoid potential health risks.²⁶

Regarding television advertisements, most respondents considered television advertisements for drugs to contain complete information about drugs. In line with this research, a study conducted in Cabantuan City, Philippines, stated that drug advertisements on television provide drug information needed by the community. In addition, advertisements provide more credible information than information circulating on the internet.²⁷ The study's results related to self-medication showed that most respondents were at a reasonably excellent or medium level. These field results are congruent with research conducted in Payabungan City. The field findings illustrate that only half of the respondents practiced rational self-medication.²⁸ Moreover, this field finding shows that many self-medication practices do not meet therapeutic standards. It requires health workers to provide instructions concerning the use of drugs to treat diseases.

Analysis of the relationship between reasons and self-medication practices showed a statistical relationship. It is in line with research conducted in Ethiopia. The study showed that the reasons for self-medication associated with self-medication practice were access to a pharmacy, availability of medication at home, previous experience of self-medication, family pressure, emergency, and distance from health services.⁶

Bivariate analysis between television advertisements and self-

medication practices showed no significant relationship with self-medication practices. This study's results align with research in Yogyakarta City, which states that television advertisements are not directly related to self-medication practices.²⁹ This study's results indicate that other factors have a stronger relationship with the dependent variable. However, studies in some places show that television advertisements significantly influence the practice of self-medication.³⁰ Information in advertisements tends to create beliefs about drugs, influencing people to choose drugs to treat their complaints or diseases. Drug advertisements that are not balanced with good and complete information will increase irrationality in drug use. In addition, frequently advertised drugs have a higher consumption rate than drugs with less frequency of appearance.³¹

In principle, advertising can be defined as information dissemination for sales purposes and is likely to be perceived as such by consumers. Concerning over-the-counter drugs, the problems caused by advertising stem mostly from regulations prohibiting reporting scientific research results related to certain drugs. However, generic statements are often misleading, especially in natural medicinal products.³² Therefore, authorities should strictly supervise drug advertisements, and experts should validate the information. The psychological effects of this type of advertising should also be examined.³³

The relationship between health professionals' roles and self-medication practices showed a significant relationship. Health professionals play a role in the practice of self-medication. It is following research conducted in the United Arab Emirates. Research conducted by Hasan et al. showed that pharmaceutical workers have a vital role in improving the quality of self-medication.¹⁹ Pharmaceutical workers can assist in choosing the type of medicine

suitable for overcoming complaints and drug usage procedures.³⁴ Pharmaceutical workers are not solely tasked with drug sales, but are also obligated to provide drug education and information to clients purchasing prescription drugs without a doctor's prescription. Pharmaceutical workers also need to educate the public not to do self-medication carelessly, such as not using antibiotics for self-medication.³⁵ Providing drug information can reduce the harmful risks of self-medication.³⁶

Health education on drug usage is an essential, continuous task of health professionals, especially health workers. Currently, very little health information is presented neutrally for consumers or patients. Institutions claiming to be critical observers of the medical field or consumer advisors are sometimes motivated by vested interests, as can be seen in the example of adult education centers. Therefore, there is a need to provide objective information about medicines to consumers or patients when purchasing medicines.

The limitation of this study is that data collection has used an online questionnaire so that it cannot reach residents who do not have internet access. Therefore, the description of using self-medication practices is limited to the self-medication practices of community groups with internet access. Therefore, researchers recommend taking data that reach a more diverse group.

CONCLUSIONS AND RECOMMENDATIONS

The reasons for self-medication and the role of health professionals are significantly related to self-medication practices. The role of health professionals is crucial in self-medication practices in the community. Although TV advertisements are not statistically associated, adequate drug information is necessary for self-medication practices. Therefore, the

researcher recommends that health workers and pharmacists take an active role in educating and counseling the community about the risks of self-medication and encouraging them to consult a doctor before taking any medication. Additionally, the government should regulate TV advertisements of over-the-counter drugs to emphasize the potential risks of inappropriate medication use. Overall, promoting responsible self-medication practices and increasing public awareness of its potential risks requires collaboration among health professionals, policymakers, and the community.

REFERENCE

1. Chautrakarn S, Khumros W, Phutrakool P. Self-Medication With Over-the-counter Medicines Among the Working Age Population in Metropolitan Areas of Thailand. *Front Pharmacol.* 2021;12:726643. doi: 10.3389/fphar.2021.726643.
2. World Health Organization. Guidelines for the Regulatory Assessment of Medicinal Products for use in Self-Medication. Geneva: WHO; 2000.
3. Rauf Z, Putra DP, Masrul M, Semiarty R. Knowledge, Attitudes, and Families Practices in Selecting, Obtaining, Using, Storing, and Disposing of Medicines on Self-Medication Behavior in Indonesia. *Open Access Maced J Med Sci.* 2021;9(E):1570–7.
4. Janatolmakan M, Abdi A, Andayeshgar B, Soroush A, Khatony A. The Reasons for Self-Medication from the Perspective of Iranian Nursing Students: A Qualitative Study. *Nurs Res Pract.* 2022;2022:2960768. doi: 10.1155/2022/2960768.
5. Balitbang Kemenkes Republik Indonesia. Hasil Utama Riset Kesehatan Dasar 2018. Jakarta; 2018.
6. Kassie AD, Biffu BB, Mekonnen HS. Self-medication practice and associated factors among adult household

- members in Meket district, Northeast Ethiopia, 2017. *BMC Pharmacol Toxicol.* 2018;19(1).
7. Kassie AD, Biftu BB, Mekonnen HS. Self-medication practice and associated factors among adult household members in Meket district, Northeast Ethiopia, 2017. *BMC Pharmacol Toxicol.* 2018;19(1):15. doi: 10.1186/s40360-018-0205-6.
 8. Pusat Informasi Obat dan Makanan. Menuju Swamedikasi yang Aman. *InfoPOM.* 2014;15(1).
 9. Saha A, Marma KKS, Rashid A, Tarannum N, Das S, Chowdhury T, et al. Risk factors associated with self-medication among the indigenous communities of Chittagong Hill Tracts, Bangladesh. *PLOS ONE.* 2022;17(6):e0269622. doi: 10.1371/journal.pone.0269622.
 10. Osemene KP, Lamikanra A. A Study of the Prevalence of Self-Medication Practice among University Students in Southwestern Nigeria. *Trop J Pharm Res.* 2012;11(4):683–9.
 11. Ocan M, Bwanga F, Bbosa GS, Bagenda D, Waako P, Ogwal-Okeng J, et al. Patterns and predictors of self-medication in northern Uganda. *PLOS ONE.* 2014;9(3):e92323. doi: 10.1371/journal.pone.0092323.
 12. Siraj EA, Yayehrad AT, Kassaw AT, Kassahun D, Solomon E, Abdela H, et al. Self-Medication Prevalence and Factors Associated with Knowledge and Attitude Towards Self-Medication Among Undergraduate Health Science Students at GAMBY Medical and Business College, Bahir Dar, Ethiopia. *Patient Prefer Adherence.* 2022;16:3157-72. doi: 10.2147/PPA.S390058.
 13. Rutter P. Role of community pharmacists in patients' self-care and self-medication. *Integr Pharm Res Pract.* 2015;4:57-65. doi: 10.2147/IPRP.S70403.
 14. Poudyal A, Nepal S. Self-medication practice and associated socio-demographic variables among adult in Morang district of Miklajung rural municipality. *Int J Community Med Public Heal.* 2021;8(2):570–5.
 15. Shalini A, Logaraj M. Prevalence and determinants of self medication use among the adult population residing in a sub urban areas near Chennai, Tamil Nadu. *J Family Med Prim Care.* 2021;10(5):1835-8. doi: 10.4103/jfmpe.jfmpe_1615_20.
 16. Aprilia D, Hidayati IR, Yunita SL. Factors Influencing the Behavior of Self-Medication With Diarrhea Drug. *KnE Med.* 2022;2(3):586–97.
 17. Alves RF, Precioso J, Becoña E. Knowledge, attitudes and practice of self-medication among university students in Portugal: A cross-sectional study. *Nordisk Alkohol Nark.* 2021;38(1):50-65. doi: 10.1177/1455072520965017.
 18. Ratnayake U, Kumanan T, Nadarajah RK. Factors Associated with Antihypertensive Medication Adherence among Diabetic Patients with Coexisting Hypertension in a Tertiary Care Centre from a Low Middle Income South Asian Country. *J Patient Saf Qual Improv.* 2021;9(1):29–39.
 19. Hasan S, Farghadani G, AlHaideri SK, Fathy MA, Hasan S, Farghadani G, et al. Pharmacist Opportunities to Improve Public Self-Medicating Practices in the UAE. *Pharmacology & Pharmacy.* 2016;7(11):459–71. doi: 10.4236/pp.2016.711052.
 20. Cavaco AM, Sozen-Sahne B, Ulutas-Deniz E, Yegenoglu S. Self-medication and non-prescription drug counseling: Illustrating profession uncertainty within Turkish pharmacy practice. *Res Soc Adm Pharm.* 2018;14(8):718–26.

21. Amanda Fitriana R, Dwi Utami A, Priyanda ERP, Lestari O, Handayani F. Description of Pharmacist Communication In Self-Medication. *Int J Soc Serv Res.* 2021;1(1):25–9.
22. Mulyatingsih E. Riset Terapan Bidang Pendidikan dan Teknik. Nuryanto A, editor. Yogyakarta: UNY Press; 2011.
23. Amuzie CI, Kalu KU, Izuka M, Nwamoh UN, Emma-Ukaegbu U, Odi F, et al. Prevalence, pattern and predictors of self-medication for COVID-19 among residents in Umuahia, Abia State, Southeast Nigeria: policy and public health implications. *J Pharm Policy Pract.* 2022;15(1):34.
24. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low health literacy and health outcomes: an updated systematic review. *Ann Intern Med.* 2011;155(2):97–107.
25. Vidyavati S, Sneha A, Kamarudin J, Katti S. Self Medication-Reasons, Risks and Benefits. *Int J Healthc Biomed Res.* 2016;4(4):21–4.
26. Shaghagi A, Asadi M, Allahverdipour H. Predictors of Self-Medication Behavior: A Systematic Review. *Iran J Public Heal.* 2014;43(2):136–46.
27. Tkg D, Kct A, Cruz ANO D, Vera DR, Cas L, Jeg L, et al. Impact of direct-to-consumer pharmaceutical advertisement on the buying behavior of over-the-counter drugs in Cabanatuan city, Nueva Ecija. *GSC Biol Pharm Sci.* 2022;2022(02):196–205. doi: 10.30574/gscbps.2022.20.2.0310
28. Harahap NA, Khairunnisa K, Tanuwijaya J. Pengetahuan Pasien dan Rasionalitas Swamedikasi di Tiga Apotek Kota Panyabungan. *J Sains Farm Klin.* 2017;3(2):186–92.
29. Febriyani F, Candradewi SF, Hidayati A. Pengaruh Iklan Obat Diare di Televisi Terhadap Keputusan dan Ketepatan Swamedikasi. *J Syifa Sci Clin Res.* 2022;4(1):128–40.
30. Rachmawati H. Pengaruh Iklan Obat Flu di Televisi terhadap Pemilihan Obat Secara Swamedikasi pada Masyarakat di Malang. *Farmasains J Farm dan Ilmu Kesehat.* 2012;1(2).
31. Sánchez-Sánchez E, Fernández-Cerezo FL, Díaz-Jimenez J, Rosety-Rodriguez M, Díaz AJ, Ordonez FJ, et al. Consumption of over-the-Counter Drugs: Prevalence and Type of Drugs. *Int J Environ Res Public Health.* 2021;18(11):5530.
32. Schweim H, Ullmann M. Media influence on risk competence in self-medication and self-treatment. *Ger Med Sci.* 2015;13:Doc10.
33. Ershadpour R, Kargar Z, Rajput MY. A review of the impact of commercial drug advertising on the emergence of self-medication phenomenon. *J Fundam Appl Sci.* 2018;4(1):9–10.
34. Susilo AI, Muslim Z. Community Behavior Study Regarding Drug Purchases at Bengkulu City Pharmacies in 2021. *SANITAS J Teknol dan Seni Kesehat.* 2022;13(1):33–43.
35. Singh DK, Patnaik BCM, Satpathy I. Internal Dynamics of Self –Medication (SM). *J Med Chem Sci.* 2022;5(3):321–34.
36. Shrivastava B, Bajracharya O, Shakya R. Prioritizing intervention measures to prevent inappropriate self-medication practices using the Analytical Hierarchy Process. *Explor Res Clin Soc Pharm.* 2022;5:100117.