

Self-medication practices among customers at non-pharmacy outlets during COVID-19 pandemic in Indonesia

Yosi Irawati Wibowo¹, I Gusti Agung Ari Kusuma Yana², Gusti Ayu Putu Laksmi Puspa Sari³, Bruce Sunderland⁴, Adji Prayitno Setiadi¹

¹Centre for Medicines Information and Pharmaceutical Care (CMIPC) and Department of Clinical and Community Pharmacy, Faculty of Pharmacy, Universitas Surabaya, Surabaya, Indonesia

²Clinical and Community Pharmacy Programme, Institut Teknologi dan Kesehatan Bali, Denpasar, Indonesia

³Faculty of Pharmacy, Universitas Mahasaraswati Denpasar, Denpasar, Indonesia

⁴School of Pharmacy and Biomedical Sciences, Faculty of Health Sciences, Curtin University, Perth, Australia

Article Info

Article history:

Received Nov 1, 2023

Revised Mar 17, 2024

Accepted Apr 24, 2024

Keywords:

COVID-19 pandemic

Drugs

Non-pharmacy outlet

Over-the-counter medicine

Self-medication

ABSTRACT

A cross-sectional study was performed to describe self-medication practices of customers at kiosks and minimarkets in District X, Indonesia, during COVID-19 pandemic in 2021. A sample of 98 customers from 67 kiosks, and 100 customers from 52 minimarkets were interviewed using a validated questionnaire. Descriptive statistics were used to summarise the findings. Most drugs purchased at kiosks and minimarkets were general sales drugs, i.e., analgesic-antipyretic (64.3% versus 46.0%); however, prescription drug sales were reported (3.1% vs 3.0%, respectively). Kiosk and minimarket customers purchased medications mainly based on the recommendations of non-health workers (69.4% vs. 34.0%, respectively), or electronic media (36.7% vs. 43.0%, respectively). The reasons to choose kiosks or minimarkets included accessibility, personal preferences, and service quality. Most kiosk/minimarket customers had knowledge on the drug brand names and indications, but only some knew the composition (8.16% vs. 29.0%, respectively) or side effects (9.18% vs. 35.0%, respectively). These findings indicated limited quality assurance on self-medication practices at non-pharmacy outlets.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Yosi Irawati Wibowo

Centre for Medicines Information and Pharmaceutical Care (CMIPC)

and Department of Clinical and Community Pharmacy, Faculty of Pharmacy, Universitas Surabaya

Surabaya, Indonesia

Email: yosi_wibowo@staff.ubaya.ac.id

1. INTRODUCTION

According to the World Health Organization, self-medication refers to the use of medicinal products by the consumer to treat self-diagnosed disorders or symptoms [1]. Self-medication is a global phenomenon, both in developed and developing countries. International studies have reported that self-medication prevalence varies between 11.2% and 93.7% [2]–[4]. Further, a systematic review of 69 studies worldwide has shown that the average incidence rate of self-medication from 2000 to 2018 was 74% in Europe, and 71% in Asia [4]. Indonesia is a South-East Asian developing country with the fourth highest world population [5]. Basic Health Survey data in 2013 reported that 35.2% of Indonesian households kept medicines for self-medication [6]. Based on Statistics Indonesia (*Badan Pusat Statistik*) data in 2022, self-medication practices among Indonesians have increased during the COVID-19 pandemic from 72.19% in 2020 to 84.34% in 2022 [7].

In Indonesia, drugs are categorized into two main types: over-the-counter (OTC) drugs (i.e., general sales, and general sales with cautionary labels), prescription drugs (i.e., potent drugs, narcotics and psychotropics); Food and Drug Control Agency (*Badan Pengawasan Obat dan Makanan*, BPOM) is the main regulatory body for drug monitoring [8], [9]. The whole range of drugs can be provided through pharmacies [i.e., community pharmacies, pharmacy units in hospitals or community health centres (*Puskesmas*)] [10]; while drug stores (which hold a drug retailer license) are only allowed to sell OTC products [11], [12]. Pharmacies as well as licensed drug stores are required to meet standards related to drug management and patient care to ensure the quality of medicines distributing across Indonesia [10]–[12]. The distribution of OTC drugs via non-pharmacy outlets, such as minimarkets or kiosks, was not regulated at the time of COVID-19 pandemic (when this study was conducted). It was just recently (in November 2023) that the government has regulated minimarkets/hypermarket/supermarket to retail OTC products [13].

Previous studies have reported that Indonesians often opt for self-treatment purchase products from non-pharmacy outlets, such as street peddlers (kiosks) and minimarkets [14]–[17]. While previous studies have shown that non-pharmacy outlets often have no adequate standards nor staff with pharmacy background [18], [19], their quality assurance required by the BPOM is questionable. The issue of counterfeit or sub-standard drugs has been a major concern in Indonesia; according to the Indonesia Anti-Counterfeiting Society (MIAP) data in 2016, counterfeit drugs constituted 25% of the country's \$2 billion pharmaceutical markets [20]. The incidence of involving counterfeiting drugs was mostly from online shops or street peddlers (kiosks) [21], [22].

While the phenomenon where Indonesians have opted to use non-pharmacy outlets to obtain their medications places in jeopardy the safety and quality issues of their purchases, currently only limited evidence is available related to self-medication practices at non-pharmacy outlets. Hence, this present study was conducted to describe self-medication practices among customers purchasing medications at kiosks and minimarkets, including the profile of medications purchased, the reasons to choose kiosks/minimarkets, and their knowledge on the medications being purchased during the COVID-19 pandemic. The findings would be of importance to understand customer needs as a basis to develop strategies to improve the quality use of medicines, while at the same time keeping adequate access to medications for all Indonesians.

2. METHOD

2.1. Study design and setting

A cross-sectional study was performed between October and November 2021. This study was conducted in one of the four districts in an urban city located at central part of Indonesia. District X has an area of 2,412.93 km² with the highest population density district of 8,601 per km² [23]; and has the largest number of minimarkets, micro, small and medium enterprises in the city [24]. This research was conducted at non-pharmacy outlets, i.e., street stalls (kiosks) and minimarkets, in District X. It was conducted in accordance with the Declaration of Helsinki, and obtained approval from the Institutional Ethical Committee University of Surabaya (205/KE/XI/2021).

2.2. Participant recruitment and data collection

This study used a convenience sample of customers visiting kiosks or minimarkets in District X. Based on the data from the Central Statistics Agency or *Badan Pusat Statistik* (BPS) in 2020, there were 198 kiosks in District X [24]. Since there was no address or contact number data available, one possible approach was for the researchers to search for kiosks selling medications in District X until a minimum sample size of 67 was achieved. The minimum number was determined using Slovin's formula with a margin of error of 10% [25]. There was no recent data regarding minimarkets in District X, hence the research team surveyed the area and found 101 minimarkets selling medications. In each kiosk or minimarket, a convenience sample of 1-2 customers purchasing medicines were approached following making a purchase. Authors explain the nature of the study and invite them to participate. If they agreed to participate, they were asked to provide written informed consent and were interviewed using a questionnaire. The interviews were recorded and lasted for approximately 10 minutes.

2.3. The instrument

The questionnaire used in this study was generated from a previous study, and consisted of open/closed-ended questions to obtain data on customer characteristics, drugs purchased, reasons for purchasing medicines at kiosks/minimarkets, sources of information underlying drug purchases, and knowledge about the drugs purchased [14]–[17]. Reasons for purchasing drugs and knowledge of the drugs purchased were asked through open-ended questions. Knowledge of the drugs purchased included drug names (brand names), composition, indications, directions for use, side effects, storage, and expiration dates; all of which were considered as basic drug information [26]. The developed questionnaire was face-validated with two experts in pharmacy practice to ensure its appropriateness with the study objectives. This was followed with a pilot study with 20 laypersons where minor changes related with the use of languages was applied to improve understanding, for example 'purchase drugs'

was changed to ‘drugs purchasing’, ‘what information was received regarding the drugs purchased’ rather than ‘what information is known about the drugs purchased’.

2.4. Data analysis

Data from closed-ended questions were analysed descriptively; continuous data were presented as mean±standard deviation (SD), while categorical data were summarised in frequency and percentage (%). Data analysis was assisted using the Statistical Package Social Science (SPSS) software, version 26 (IBM Corp., Armonk, NY, USA). Responses from open-ended questions related to reasons for purchasing medications at kiosks/minimarkets were analysed using quantitative content analysis [27]. The audio-recorded responses were transcribed verbatim, and analysed by two research members. The first step of the analysis was data familiarisation by reading the transcripts repeatedly and listening to the audio recording (at least once). This was followed by categorising the relevant data into codes. If there was a disagreement, a discussion with the research team was carried out to reach a consensus about the code. The codes were grouped and organised at a broader conceptual level into themes [27]. The frequencies and percentages of the codes/themes were then calculated. Further, open-ended responses on the knowledge of each type of drug information were categorised into ‘known’ (‘Yes’) if he/she can mention or show (on the packaging or leaflet) the related information; and ‘don’t know’ (‘No’) if he/she was unable to mention or show the relevant information. The frequencies and percentages of ‘Yes’ and ‘No’ responses for each piece of drug information were calculated.

3. RESULTS

A sample of 67 kiosks (a convenience sample) and 52 minimarkets (out of 101 minimarkets) selling medications in District X, Indonesia, were included as the study settings. All of these kiosks and minimarkets had no staff with a pharmacy background. A convenience sample of 98 customers from the 67 kiosks, and 100 customers from the 52 minimarkets were involved in this study, giving a median of 2 customers (range minimum-maximum: 1-2 customers) per kiosk or minimarket. Of 98 kiosks customers who were approached, all were willing to participate and had complete interviews (n=98); whereas of 104 minimarket customers who were approached, all were willing to participate, but 4 customers stopped/did not complete the interviews, giving a total of 100 customers from minimarkets.

3.1. Characteristics of the participating kiosk/minimarket customers

Most of the participating kiosk and minimarket customers were female (60.2% versus 54.0%, respectively) with a median age of 34.5 versus 31.5 years, respectively. The majority of the participating kiosks or minimarkets customers were senior high school or bachelor degree graduates (80.6% versus 68.0%, respectively), and had household incomes <2 million-5 million (91.8% versus 80.0%, respectively). The details of participating customers can be seen in Table 1.

3.2. Profiles of medications purchased

Of the 98 kiosk customers, the median of drugs purchased was one drug (range: 1-4); while of 100 customers at the minimarkets, the median of drug purchased was one drug (minimum-maximum range: 1-2). Most of the drugs purchased at kiosks and minimarkets were general sales drugs, i.e., analgesic-antipyretic (64.3% versus 46.0%). However, a small percentage of customers purchased prescription drugs, namely analgesics (e.g., mefenamic acid) (3.1% vs 3.0%, respectively). Details of the purchased drugs can be seen in Table 2.

Most kiosk customers purchases were based on the recommendations from other people, i.e., non-health workers (e.g., family members, neighbours, friends, kiosk/minimarket staff) (69.4%). Other sources of information were from the electronic media (such as radio or television) (36.7%), personal experience (6.1%) and social media (5.1%). While the main sources of information among minimarket customers to purchase medicine was electronic media (43.0%), and recommendations from other people, either non-health workers (34.0%) or health workers (e.g., doctors, pharmacists) (19.0%).

3.3. Reasons for purchasing medicines at kiosks/minimarkets

This study reported three main themes related to the reasons for customers to purchase medicines at kiosks or minimarkets, including: accessibility, personal preferences, and quality of service as shown in Table 3. The majority of customers chose to obtain drugs from kiosks or minimarkets because of accessibility, especially location accessibility (close distance) (86.7% versus 76.0%, respectively). Approximately 30% of customers of kiosks and minimarkets provided reasons of time accessibility (faster); financial accessibility (cheaper) was also mentioned as the reason for purchasing drugs at kiosks/minimarkets with a higher percentage

at kiosks than minimarkets (17.3% versus 5.0%, respectively). A lower percentage of customers (<10%) purchased drugs from kiosks or minimarkets due to personal factors or the service quality.

3.4. Knowledge about medications purchased

All kiosks and minimarkets customers were able to mention or point to the brand names of their purchased drugs and their indications; further, more than 80% were familiar with the directions of use, storage instructions as well as drug expiration dates as presented in Table 4. However, only a small percentage of kiosk and minimarket customers were aware of the drug composition (8.2% versus 29.0%, respectively) as well as the side effects (9.2% versus 35.0%, respectively).

Table 1. Characteristics of the participating customers

Characteristics		Kiosk (N=98) n (%)	Minimarket (N=100) n (%)
Age [median (range), in years]		34.5 (18-61)	31.5 (18-63)
Gender	Male	39 (39.8)	46 (46.0)
	Female	59 (60.2)	54 (54.0)
Highest education	No education	1 (1.0)	0 (0.0)
	Elementary school	4 (4.1)	4 (4.0)
	Junior high school	5 (5.1)	7 (7.0)
	Senior high school	40 (40.8)	39 (39.0)
	Diploma	9 (9.2)	15 (15.0)
	Bachelor	39 (39.8)	29 (29.0)
	Postgraduate	0 (0.0)	6 (6.0)
Occupation	Not working	7 (7.1)	1 (1.0)
	Student	8 (8.2)	18 (18.0)
	Housewife	15 (15.3)	11 (11.0)
	Self-employed	25 (25.5)	31 (31.0)
	Civil servant		
	Healthcare	0 (0.0)	2 (2.0)
	Non healthcare	1 (1.0)	11 (11.0)
	Private employee		
	Healthcare	0 (0.0)	1 (1.0)
	Non-Healthcare	42 (42.8)	21 (21.0)
Others (e.g., retired, labourer, priest)	0 (0.0)	4 (4.0)	
Household income (Rpiah/month)	<2 million	35 (35.7)	52 (52.0)
	2-5 million	55 (56.1)	28 (28.0)
	>5 million	8 (8.2)	20 (20.0)
Marital status	Single	32 (32.7)	38 (38.0)
	Married	61 (62.2)	58 (58.0)
	Divorced	3 (3.1)	1 (1.0)
	Living alone	2 (2.0)	3 (3.0)

Table 2. Profiles of medications purchased

Medications purchased		Kiosk customers (N=98) n (%)*	Minimarket customers (N=100) n (%)*
General sales drugs	Analgesic-antipyretic (e.g., paracetamol, paracetamol/caffeine)	63 (64.3)	46 (46.0)
	Antidiarrheal (e.g., attapulgite, attapulgite/pectin)	3 (3.1)	3 (3.0)
	Antacid (e.g., hydrotalcite, magnesium hydroxide)	6 (6.1)	1 (1.0)
	Laxative (e.g., sodium lauryl sulfoacetate/sodium citrate/sorbitol)	0 (0.0)	1 (1.0)
General sales with cautionary label drugs	Analgesic for menstrual pain (e.g., paracetamol/hyoscyamine)	0 (0.0)	3 (3.0)
	Analgesic-antipyretic (e.g., paracetamol, caffeine/propyphenazone/dexchlorpheniramine maleate)	13 (13.3)	6 (6.0)
	Antiemetic (e.g., dimenhydrinate)	2 (2.0)	0 (0.0)
	Common cold products (e.g., chlorpheniramine maleate/phenylpropanolamine HCl/paracetamol)	18 (18.4)	14 (14.0)
	Common cold-cough products (e.g., paracetamol/pseudoephedrine HCl/dextromethorphan HBr)	1 (1.0)	2 (2.0)
	Cough products (e.g., chlorpheniramine maleate/dextromethorphan HBr/guaifenesin)	1 (1.0)	4 (4.0)
	Analgesic (e.g., mefenamic acid, methampyrone)	3 (3.1)	3 (3.0)
Herbal medicines	Antidiarrheal (e.g., psidii guajavae folium)	5 (5.1)	5 (5.0)
	Immune system products (e.g., panax ginseng extract)	4 (4.1)	1 (1.0)
Supplements	Immune system products (e.g., zinc picolinate)	1 (1.0)	1 (1.0)
	Vitamin and/or mineral (e.g., ascorbic acid)	3 (3.1)	14 (14.0)

*Each kiosk/minimarket customer can buy more than one type of drug

Table 3. Reasons to purchase medications from kiosk/minimarket

Reasons		Illustrative quotes	Kiosk customers (N=98) n (%)*	Minimarket customers (N=100) n (%)*
Accessibility	Location accessibility	“The reason is it is closer to my home, so I prefer to get medications from the kiosk rather than from the pharmacy, which is quite far from my home.” (W 47.2) “I think I (usually) get my medications from the minimarket because it is close to my home.” (Mini 38.1)	85 (86.7)	76 (76.0)
	Time accessibility	“As it is hot outside (I do not want to spend a longer time to reach a place), it would be quicker to get medications from there (a kiosk).” (W 43.1) “In my opinion, it’s much quicker getting them (medications) from the minimarket.” (Mini 4.1)	32 (32.7)	28 (28.0)
	Financial accessibility	“The medications (bought from a kiosk) are also cheaper than those in big pharmacies” (W 2.1) “(Minimarkets) often offer discounts or promotions, so it might be cheaper to get medications from there rather than pharmacies.” (Mini 3.1)	17 (17.4)	5 (5.0)
Internal/ personal factors	Past experience	“Hmm well, I am used to (get medications from the kiosk).” (W13.2) “I am used to shop (including medications) at a minimarket.” (Mini 26.1)	5 (5.1)	6 (6.0)
	Belief (not major ailments)	“(I prefer getting medications from a kiosk) as they are for common ailments anyway” (W 49.1) “I did not buy prescription medicines, so I can buy them from minimarkets.” (Mini 5.1) “Well, medicines for common ailments are available at minimarkets. It is freely sold there, right?” (Mini 27.2)	2 (2.0)	6 (6.0)
	Trust	“Medications I bought from a kiosk can usually cure my illnesses.” (W 55.1) “Minimarkets have a reputation to maintain, so I choose to buy my medications there.” (Mini 31.1) “I think (minimarkets) have better quality assurance on the products (they sold), as they checked the expiration dates regularly.” (Mini 17.2)	1 (1.0)	3 (3.0)
	Service quality	Physical facility Cleanliness Responsiveness	“There are no parking fees” (W 6.1) “In kiosks, there are no parking attendants.” (W 65.1) “I think I prefer (minimarkets) as it is cleaner.” (Mini 17.2) “After dark, there is no pharmacies open... but minimarkets are still open until midnight” (Mini 25.1) “There is a pharmacy close to my home, but at these hours they are already closed. Minimarkets are better since they are open until midnight.” (Mini 10.2)	4 (4.1) 0 (0.0) 0 (0.0)
	Drug availability	“The medications are readily available.” (W 20.1) “The medications I am looking for are usually available.” (W62.2) “The reason I prefer to buy medications from minimarkets as they have got everything there.” (Mini 33.2)	6 (6.1)	8 (8.0)

*Each customer was allowed to provide more than one reasons

Table 4. Customers’ knowledge about medications purchased

Types of drug information*		Kiosk customers (N=98) n (%)	Minimarket customers (N=100) n (%)
Drug name	Yes	98 (100.0)	100 (100.0)
	No	0 (0.0)	0 (0.0)
Composition	Yes	8 (8.16)	29 (29.0)
	No	90 (91.84)	71 (71.0)
Indication	Yes	98 (100.0)	100 (100.0)
	No	0 (0.0)	0 (0.0)
Direction for use	Yes	84 (85.71)	93 (93.0)
	No	14 (14.29)	7 (7.0)
Storage	Yes	85 (86.74)	96 (96.0)
	No	13 (13.26)	4 (4.0)
Side effects	Yes	9 (9.18)	35 (35.0)
	No	89 (90.82)	65 (65.0)
Expiration date	Yes	81 (82.65)	78 (78.0)
	No	17 (17.35)	22 (22.0)

*Yes, if consumers could mention/point out information about all of their purchased drugs; No, if they were unable to mention/point out information about any of their purchased drugs

4. DISCUSSION

This study has provided profiles of customers purchasing medications from non-pharmacy outlets in an Indonesian urban setting during the COVID-19 pandemic. The most common reason for customers to get medications from kiosks or minimarkets during the pandemic was their accessibility, either in relation to time, distance or cost. The medications they generally purchased were general sales medications, particularly analgesic-antipyretics; although limited sales of prescription drugs were also reported. Most customers have shown limited knowledge regarding the drug composition and side effects. This finding has indicated that widespread availability of kiosks/minimarkets can be an alternative to improve medication accessibility among Indonesians, particularly during an emergency situation, such as the COVID-19 pandemic; however, these kiosks/minimarkets need to be regulated (as licensed outlets) to guarantee adequate supervisions and quality assurance in the aspects of drug management and pharmaceutical care. The new regulation in November, 2023 (after this study was conducted) has regulated supermarkets as a retailer for OTC products, but kiosks has not yet been determined.

Most kiosk or minimarket customers participating in this study were females with a wide range of age (18-61 and 18-63 years, respectively). Previous Indonesian studies reported that female gender were more likely to be involved in self-medication [16], [28]. This might be because women have more contact with family members and with the healthcare system during their pregnancy and the child-growth monitoring period. They also serve as an important role model for their children [29]. Some physiological reasons such as dysmenorrhea, premenstrual syndrome, and pregnancy complications have also made women more likely to consume medications without consulting doctors [29]–[31]. Further, findings in this present study showed quite a number of kiosk respondents with a higher level of education, i.e. university graduates (39.8%), in addition to high school graduates (45.9%). A higher level of education is usually associated with a good health literacy, which might contribute to the person's ability to practice self-medication carefully [32], [33]. This warrants special considerations as while the majority of respondents in this study had an adequate level of education, they might not be aware that only licensed outlets can sell medications.

When looking at the reasons to obtain medications from kiosks or minimarkets during the pandemic, the participating customers in this study mentioned accessibility as the main reason, either in relation with distance, time, or cost. In line with this finding, a study in Sweden (n=2,580) revealed that 80% of respondents reported distance as the main reason for buying medications at non-pharmacy outlets; another reason was the convenience of shopping for over-the-counter (OTC) drugs along with groceries, and favourable prices [2]. This finding might indicate that customers purchasing medications might be more concerned with the ease of access through non-pharmacy outlets, especially during the COVID-19 pandemic, and have a lack of awareness that these outlets had not been regulated as a drug retailer (at the time of this study was conducted). Hence, the development of strategies to increase public awareness on the importance of obtaining medications from licensed outlets should be considered. It was reported that unlicensed outlets have been associated with more incidents of counterfeiting or substandard drugs [21], [22].

Most drugs purchased from kiosks and minimarkets during the pandemic were OTC products, i.e., analgesic-antipyretic (64.29% versus 46%, respectively). In parallel, international studies at the time of the pandemic reported that analgesic-antipyretics as the most common medicine for self-medication [28], [34], [35]; this may be due to fever and headache were one of the most common symptom of COVID-19. In addition to OTC products, however, this present study reported sales of analgesics which are categorised as prescription/pharmacy-only medications (e.g., mefenamic acid). Prior studies in non-pharmacy outlets (such as kiosks and minimarkets) also reported the sale of prescription drugs [18], [19]. This warrants special considerations as prescription or pharmacy only drugs should be dispensed/provided by pharmacists, and accompanied by adequate drug information [10], [11].

Further, this present study reported that the source of information for customers to choose a medication have mainly been based on the recommendations from other people (non-health workers) and electronic media. This finding has been comparable to those from prior studies in Indonesia and other developing countries [19], [36]–[39]. Thus, inaccuracy and incomplete information from those sources are expected; customers might not be able to choose appropriate medications for their symptoms, and generally had knowledge limited to the product name and its indication. This present study reported most kiosk/minimarket customers knew the product brand name and indication, but had limited knowledge with regards to the composition and side effects. This finding was comparable to previous studies countries [36], [38], [39]. Hence, it is of importance for a pharmacist or a pharmacy technician to facilitate a customer in choosing the right product for self-medication, and to provide adequate basic information regarding the product (i.e., the drug name, composition, indication, side effect and expiration date). It was evidenced that the lack of public knowledge on the medications they are taking has posed a risk of using the wrong products, using drugs with the same active ingredients or using excessive medications, which might lead to unwanted effects, duplication of therapy or overdose [40].

There are some limitations to this study. Firstly, the convenience sampling of customers might limit the generalisability of the finding. However, convenience sampling was considered as the only feasible option as no sampling frame of customers was available for conducting a random sampling. Secondly, most chain minimarkets refused to participate as the study settings due to the management policy; hence, this study is mostly representing customers from independent minimarkets. However, the number of minimarkets involved as the study settings was 51.2% thus this study should provide some insights on customer purchasing medicines at minimarkets in District X, Indonesia. Lastly, the qualitative data obtained from interviews could be subjected to bias if respondents are not sharing their true responses [41]. However, the respondents were provided with adequate study information at the beginning of the data collection, and explained on how their identity would be strictly protected, thus they were expected to be confident to share an honest opinion. The study did not check the quality of the purchased medications to detect counterfeit medicines as this was beyond the scope of this study.

5. CONCLUSION





While most customers accessed kiosks or minimarkets during the COVID-19 pandemic to purchase OTC products, a few prescription medication purchases were reported; this warrants special considerations. While the sources of information on medications purchased were mainly from non-health workers and electronic media, inaccuracy of some of information from such sources could occur. Further research to assess the quality of medications provided at these outlets should occur to protect the population purchasing counterfeit or poor-quality products.

REFERENCES





- [1] D. Baracaldo-Santamaría, M. J. Trujillo-Moreno, A. M. Pérez-Acosta, J. E. Feliciano-Alfonso, C.-A. Calderon-Ospina, and F. Soler, "Definition of self-medication: a scoping review," *Therapeutic Advances in Drug Safety*, vol. 13, pp. 2042098622112751, Jan. 2022, doi: 10.1177/20420986221127501.
- [2] S. Tesfamariam *et al.*, "Self-medication with over the counter drugs, prevalence of risky practice and its associated factors in pharmacy outlets of Asmara, Eritrea," *BMC Public Health*, vol. 19, no. 1, pp. 159, Dec. 2019, doi: 10.1186/s12889-019-6470-5.
- [3] A. E. Abdelwahed *et al.*, "Prevalence and influencing factors of self-medication during the COVID-19 pandemic in the Arab region: a multinational cross-sectional study," *BMC Public Health*, vol. 23, no. 1, pp. 180, Jan. 2023, doi: 10.1186/s12889-023-15025-y.
- [4] S. Ghasemyani *et al.*, "Global, WHO regional, and continental prevalence of self-medication from 2000 to 2018: a systematic review and meta-analysis," *Annals of Public Health*, Jan. 2022, doi: 10.55085/aph.2022.585.
- [5] G. Kudrna, T. Le, and J. Piggott, "Macro-Demographics and ageing in emerging Asia: the case of Indonesia," *Journal of Population Ageing*, vol. 15, no. 1, pp. 7–38, Mar. 2022, doi: 10.1007/s12062-022-09358-6.
- [6] A. P. Setiadi, Y. I. Wibowo, E. Setiawan, I. Mulyono, S. A. Wardhani, and B. Sunderland, "Strategies to implement community training to promote responsible self-medication in Indonesia: a qualitative study of trainers," *International Health*, vol. 14, no. 4, pp. 398–404, Jul. 2022, doi: 10.1093/inthealth/ihz115.
- [7] Central Bureau of Statistics, "Percentage of population who self-medicated in the past month 2020-2022 (in Indonesia: *Persentase penduduk yang mengobati sendiri selama sebulan terakhir 2020-2022*)," Central Bureau of Statistics. 2022. Accessed: Mar. 02, 2023. [Online]. Available: <https://www.bps.go.id/id/statistics-table/2/MTk3NCMy/persentase-penduduk-yang-mengobati-sendiri-selama-sebulan-terakhir--persen-.html>
- [8] Ministry of Health Republic of Indonesia (MoH-RI), *Regulation of the Minister of Health of the Republic of Indonesia Number: 917/Menkes/Per/X/1993 concerning compulsory registration of finished medicines* (in Indonesia: *Peraturan Menteri Kesehatan Republik Indonesia Nomor: 917/Menkes/Per/X/1993 tentang wajib daftar obat*). MoH-RI, 1993. [Online]. Available: <https://farmalkes.kemkes.go.id/peraturan/permenkes/>
- [9] Ministry of Health Republic of Indonesia (MoH-RI), *Regulation of the Indonesian Minister of Health No. 949/MENKES/PER/IV/2000 concerning criteria and procedures for drug registration* (in Indonesia: *Peraturan Menteri Kesehatan Republik Indonesia Nomor 949/MENKES/PER/IV/2000 tentang kriteria dan tata laksana registrasi obat*). MoH-RI, 2000. [Online]. Available: <https://farmalkes.kemkes.go.id/peraturan/permenkes/>
- [10] Republic of Indonesia (RoI), *Regulation of the Republic of Indonesia Number 51 of 2009 concerning pharmaceutical work* (in Indonesia: *Peraturan Pemerintah Republik Indonesia Nomor 51 Tahun 2009 tentang pekerjaan kefarmasian*). RoI, 2009. [Online]. Available: <https://jdih.kemenkeu.go.id/fulltext/2009/51tahun2009pp.htm>
- [11] Ministry of Health Republic of Indonesia (MoH-RI), *Regulation of the Minister of Health of the Republic of Indonesia Number 1331 of 2002 Amendment to Regulation of the Minister of Health of the Republic of Indonesia Number 167 of 1972 concerning drug retailers* (in Indonesia: *Keputusan Menteri Kesehatan Republik Indonesia Nomor 167 Tahun 1972 tentang Perubahan atas Peraturan Menteri Kesehatan Republik Indonesia Nomor 167/KAB/B.VIII/1972 tentang pedagang eceran obat*). MoH-RI, 2002.
- [12] Ministry of Health Republic of Indonesia (MoH-RI), *Regulation of the Minister of Health of the Republic of Indonesia Number 14 of 2021 concerning business activity and product standards in the implementation of risk-based business licensing in the health sector* (in Indonesia: *Peraturan Menteri Kesehatan Republik Indonesia Nomor 14 Tahun 2021 tentang standar kegiatan usaha dan produk pada penyelenggaraan perizinan berusaha berbasis risiko sektor kesehatan*). MoH-RI, 2021. [Online]. Available: <https://farmalkes.kemkes.go.id/peraturan/permenkes/>
- [13] Republic of Indonesia (RoI), *Law (UU) No. 17 of 2023 on Health* (in Indonesia: *Undang-undang (UU) Nomor 17 Tahun 2023 tentang kesehatan*). RoI, 2023. [Online]. Available: <https://peraturan.bpk.go.id/Details/258028/uu-no-17-tahun-2023>
- [14] A. Ferdiana *et al.*, "Community pharmacies, drug stores, and antibiotic dispensing in Indonesia: a qualitative study," *BMC Public Health*, vol. 21, no. 1, pp. 1800, Dec. 2021, doi: 10.1186/s12889-021-11885-4.
- [15] R. Limato *et al.*, "Optimizing antibiotic use in Indonesia: a systematic review and evidence synthesis to inform opportunities for intervention," *The Lancet Regional Health - Southeast Asia*, vol. 2, pp. 100013, Jul. 2022, doi: 10.1016/j.lansea.2022.05.002.

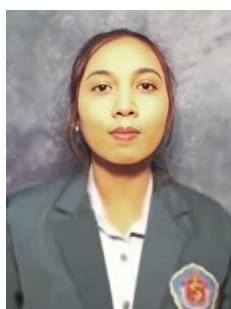
- [16] Z. Rauf, D. P. Putra, M. Masrul, and R. Semiarty, "Knowledge, attitudes, and families practices in selecting, obtaining, using, storing, and disposing of medicines on self-medication behavior in Indonesia," *Open Access Macedonian Journal of Medical Sciences*, vol. 9, no. E, pp. 1570–1577, Dec. 2021, doi: 10.3889/oamjms.2021.7700.
- [17] N. Ahmed, S. Ijaz, S. Manzoor, and S. Sajjad, "Prevalence of self-medication in children under-five years by their mothers in Yogyakarta City Indonesia," *Journal of Family Medicine and Primary Care*, vol. 10, no. 8, pp. 2798, 2021, doi: 10.4103/jfmpc.jfmpc_2457_20.
- [18] R. Miller and C. Goodman, "Performance of retail pharmacies in low- and middle-income Asian settings: a systematic review," *Health Policy and Planning*, vol. 31, no. 7, pp. 940–953, Sep. 2016, doi: 10.1093/heapol/czw007.
- [19] Z. A. Akbar, "Drug medication selling at drug stores and kiosk in Tuban District, Indonesia," Universitas Surabaya, 2021. Accessed: Mar. 06, 2024. [Online]. Available: <http://repository.ubaya.ac.id/id/eprint/46577>.
- [20] B. T. Prakoso, A. E. Meliala, A. J. S. Runturambi, "The politico-criminal configuration relationship between organized crime and the state as a form of state-organized crime in the phenomenon of production and circulation of counterfeit drugs in Indonesia," *International Journal of Social Science and Human Research*, vol. 4, no. 4, pp. 678–684, April. 2023, doi: 10.47191/ijsshr/v4-i4-15.
- [21] Ministry of Health Republic of Indonesia (MoH-RI), "Beware of counterfeit medicine circulation (in Indonesia: Waspada peredaran obat palsu)," MOH-RI, 2012. Accessed: Aug. 04, 2023. [Online]. Available: <https://sehatnegeriku.kemkes.go.id/baca/rilis-media/20120423/513673/waspada-peredaran-obat-palsu/>
- [22] A. MohanaSundaram, B. K. Padhi, A. Mohanty, S. Shrestha, and R. Sah, "The silent epidemic of substandard and falsified medicines in low- and middle-income countries: heed lessons from the tragic deaths of children in Indonesia," *International Journal of Surgery*, vol. 109, no. 3, pp. 523–525, Mar. 2023, doi: 10.1097/JS9.000000000000059.
- [23] Central Bureau of Statistics, "Sub-districts in city X in figures 2020 (in Indonesia: Kecamatan di kota X dalam angka 2020)," Central Bureau of Statistics, 2020. Accessed: Aug. 04, 2023. [Online]. Available: <https://denpasarkota.bps.go.id/publication/2020/04/27/3edb8279936f04132d831a2c/kota-denpasar-dalam-angka-2020.html>
- [24] I. W. C. Adyatma and M. D. Harmana, "Effectiveness of business credit utilization on SME productivity and SME income of cooperative members in Padangsambian Village, West Denpasar District, Bali Province (in Indonesia: Efektivitas pemanfaatan kredit usaha terhadap produktivitas UKM dan pendapatan UKM anggota koperasi di Desa Padangsambian, Kecamatan Denpasar Barat, Provinsi Bali)," *WICAKSANA: Jurnal Lingkungan dan Pembangunan*, vol. 4, no. 2, pp. 52–63, Nov. 2020, doi: 10.22225/wicaksana.4.2.2679.52-63.
- [25] G. P. Adhikari, "Calculating the sample size in quantitative studies," *Scholars' Journal*, pp. 14–29, Dec. 2021, doi: 10.3126/scholars.v4i1.42458.
- [26] Y. Wibowo *et al.*, "A pilot study of cadre training to promote responsible self-medication in Indonesia: which is better specific or general modules?," *Health & Social Care in the Community*, vol. 29, no. 2, pp. 554–563, Mar. 2021, doi: 10.1111/hsc.13118.
- [27] D. Im, J. Pyo, H. Lee, H. Jung, and M. Ock, "Qualitative research in healthcare: data analysis," *Journal of Preventive Medicine and Public Health*, vol. 56, no. 2, pp. 100–110, Mar. 2023, doi: 10.3961/jpmph.22.471.
- [28] Y. Zheng, J. Liu, P. K. Tang, H. Hu, and C. O. L. Ung, "A systematic review of self-medication practice during the COVID-19 pandemic: implications for pharmacy practice in supporting public health measures," *Frontiers in Public Health*, vol. 11, Jun. 2023, doi: 10.3389/fpubh.2023.1184882.
- [29] G. Pereira, F. G. Surita, A. C. Ferracini, C. de S. Madeira, L. S. Oliveira, and P. G. Mazzola, "Self-medication among pregnant women: prevalence and associated factors," *Frontiers in Pharmacology*, vol. 12, Dec. 2021, doi: 10.3389/fphar.2021.659503.
- [30] V. de Sanctis *et al.*, "Prevalence, attitude and practice of self-medication among adolescents and the paradigm of dysmenorrhea self-care management in different countries," *Acta Biomedica*, vol. 91, no. 1, pp. 182–192, 2020, doi: 10.23750/abm.v91i1.9242.
- [31] E. Gerbier *et al.*, "Self-reported medication use among pregnant and postpartum women during the third wave of the COVID-19 pandemic: a European multinational cross-sectional study," *International Journal of Environmental Research and Public Health*, vol. 19, no. 9, pp. 5335, Apr. 2022, doi: 10.3390/ijerph19095335.
- [32] C. Lorini, V. Lastrucci, D. Paolini, and G. Bonaccorsi, "Measuring health literacy combining performance-based and self-assessed measures: the roles of age, educational level and financial resources in predicting health literacy skills. A cross-sectional study conducted in Florence (Italy)," *BMJ Open*, vol. 10, no. 10, pp. e035987, Oct. 2020, doi: 10.1136/bmjopen-2019-035987.
- [33] H. Singh, J. Kolschen, F. Samkange-Zeeb, T. Brand, H. Zeeb, and B. Schüz, "Modifiable predictors of health literacy in working-age adults - a rapid review and meta-analysis," *BMC Public Health*, vol. 22, no. 1, pp. 1450, Dec. 2022, doi: 10.1186/s12889-022-13851-0.
- [34] G. Kazemioula, S. M. A. Alavi, F. Taheri, R. G. Gheshlagh, and M. H. Lotfalizadeh, "Prevalence of self-medication during COVID-19 pandemic: a systematic review and meta-analysis," *Frontiers in Public Health*, vol. 10, Nov. 2022, doi: 10.3389/fpubh.2022.1041695.
- [35] O. S. Ayosanmi *et al.*, "Prevalence and correlates of self-medication practices for prevention and treatment of COVID-19: a systematic review," *Antibiotics*, vol. 11, no. 6, pp. 808, Jun. 2022, doi: 10.3390/antibiotics11060808.
- [36] S. Awada *et al.*, "Self-medication practices and knowledge among Lebanese population: a cross-sectional study," *Dr. Sulaiman Al Habib Medical Journal*, vol. 2, no. 2, pp. 56–64, 2020, doi: 10.2991/dsahmj.k.200507.002.
- [37] C. Achuil and A. Bekele, "Assessment of self medication practice and drugs storage among South Sudanese community in Addis Ababa, Ethiopia," *Journal of Advanced Pharmaceutical Science And Technology*, vol. 2, no. 3, pp. 11–25, Sep. 2020, doi: 10.14302/issn.2328-0182.japst-20-3526.
- [38] M. Khalifeh, N. Moore, and P. Salameh, "Social knowledge and attitude toward over-the-counter drug use," *American Journal of Clinical Medicine Research*, vol. 6, no. 2, pp. 35–40, Jun. 2018, doi: 10.12691/ajcmr-6-2-3.
- [39] M. A. Mohammed and M. A. W. Alwardi, "Evaluation of knowledge, attitude and practice about self-medication regarding OTC analgesia among undergraduate university students: A survey-based study," *Journal of Pharmaceutical Negative Results*, vol. 13, no. 3, Jan. 2022, doi: 10.47750/pnr.2022.13.03.035.
- [40] J. Duleba, U. Religioni, E. Slodka, A. Fal, J. Krysiński, and P. Merks, "The awareness of risks associated with OTC drugs available in non-pharmacy outlets among Polish patients-a cross-sectional study," *Healthcare*, vol. 9, no. 2, pp. 187, Feb. 2021, doi: 10.3390/healthcare9020187.
- [41] J. L. Johnson, D. Adkins, and S. Chauvin, "A review of the quality indicators of rigor in qualitative research," *American Journal of Pharmaceutical Education*, vol. 84, no. 1, pp. 7120, Jan. 2020, doi: 10.5688/ajpe7120.

BIOGRAPHIES OF AUTHORS

Yosi Irawati Wibowo     has been a drug information pharmacist at Medicines information and Pharmaceutical Care (CMPIC), and a senior lecturer in the Faculty of Pharmacy, Universitas Surabaya, Indonesia. She has been involved in numerous research projects in collaboration with the East Java Provincial Health Office to promote rational use of medicines. She has authored or co-authored multiple peer-reviewed scientific papers related to pharmacy practice, and has particular interests in optimising the role of pharmacists and quality use of medications. She can be contacted at email: yosi_wibowo@staff.ubaya.ac.id.







I Gusti Agung Ari Kusuma Yana     is a junior lecturer at the Clinical and Community Pharmacy Programme, Institut Teknologi dan Kesehatan Bali, Indonesia. He was recently graduated his master degree from Universitas Surabaya, Indonesia. His research interests include optimising the role of pharmacists and social pharmacy. He can be contacted at email: gunkke17@gmail.com.







Gusti Ayu Putu Laksmi Puspa Sari     is a junior lecturer at the Faculty of Pharmacy, Universitas Mahasaraswati Denpasar, Indonesia. She received her master degree in Pharmacy from Universitas Surabaya, Indonesia. She has particular research interests in social pharmacy as well as health services and policy. She can be contacted at email: ayulaksmi9999@gmail.com.



Bruce Sunderland     is an academic within the Pharmacy Discipline of the Curtin Medical School. He is active in the areas of pharmacy practice especially community pharmacy-based services and drug stability. He has supervised many PhD and research Master of Philosophy theses and published more than 280 research articles in refereed journals. He can be contacted at email: B.Sunderland@curtin.edu.au.



Adji Prayitno Setiadi     is an academic affiliated with Faculty of Pharmacy, Universitas Surabaya, Indonesia. He was the director of Centre for Medicines information and Pharmaceutical Care (CMPIC), Universitas Surabaya from 2015 to 2021. He has awarded several research grants to promote quality use of medications among Indonesians. He has also served an expert panel in the Ministry of Health Republic of Indonesia in developing policies and guidelines to optimise the role of pharmacists in rational drug therapy. He can be contacted at email: adji_ps@staff.ubaya.ac.id.

ISSN 2252-8806

INTERNATIONAL JOURNAL OF
**PUBLIC HEALTH
SCIENCE**

<http://ijphs.iaescore.com>



Intelktual Pustaka
Media Utama



Institute of Advanced Engineering and Science



Home > About the Journal > **Editorial Team**

Editorial Team

Advisory Board

[Prof. Hans-Olov Adami, MD](#), Karolinska Institutet, Sweden
[Assoc. Prof. Dr. Luoping Zhang, PhD](#), University of California, United States
[Dr. Khalid M. Al Aboud](#), King Faisal Specialist Hospital and Research Centre, Saudi Arabia

Editor-in-Chief

[Prof. Dr. Jay G. Silverman](#), University of California, United States

Managing Editor

[Assoc. Prof. Dr. Lina Handayani](#), Universitas Ahmad Dahlan, Indonesia

Associate Editors

[Prof. Dr. Mane Abhay Babruwahan](#), Navodaya Medical College, India
[Assoc. Prof. Dr. Giovanna Ricci](#), Università degli Studi di Camerino, Italy
[Assoc. Prof. Dr. Henry Odhianoson Imhonde](#), Ambrose Alli University, Nigeria
[Assoc. Prof. Dr. Jitendra Gupta](#), GLA University, India
[Assoc. Prof. Dr. Mohd Hasni Jaafar](#), Universiti Kebangsaan Malaysia, Malaysia
[Asst. Prof. Dr. Maha Gasmi](#), University of Manouba, Tunisia
[Asst. Prof. Dr. Mohsin Abbas](#), University of Buraimi, Oman
[Dr. Ali Mohamed Ali Ismail](#), Cairo University, Egypt
[Dr. Fazal Shirazi](#), University of Texas MD Anderson Cancer Center, United States
[Dr. Miguel A. Mayer MD, PhD, MPH, MSc, DipI](#), Universitat Pompeu Fabra Barcelona, Spain
[Dr. Muhiuddin Haider](#), University of Maryland, United States
[Dr. Rashid Menhas](#), Zhejiang University, China
[Dr. Tassanee Rawiworrakul](#), Mahidol University, Thailand
[Dr. Xiaoli Gao](#), University of Texas Health Science Center at San Antonio, United States
[Mr. Ridwan Islam Sifat](#), University of Maryland, Baltimore County, United States
[Tran Van Dinh, MPH, PhD](#), National Institute of Hygiene and Epidemiology, Viet Nam

Editorial Board Members

[Dr. Sajad Rashidi](#), Department of Medical Laboratory Sciences, Khomein University of Medical Sciences, Khomein, Iran, Iran, Islamic Republic of
[Dr. K. Bincy](#), Department of Community Medicine, SRM Institute of Science and Technology, India
[Prof. Dr. George Williams Rutherford](#), University of California, United States
[Prof. Dr. Godfrey Mutashambara Rweggerera](#), University of Botswana, Botswana
[Prof. Dr. Jens Aagaard-Hansen](#), University of the Witwatersrand, South Africa
[Prof. Dr. Louise H. Taylor](#), Global Alliance for Rabies Control, United States
[Prof. Dr. Michael Kundi](#), Medical University Vienna, Austria
[Prof. Dr. Mogens Vyberg, PhD](#), Aalborg University, Denmark
[Prof. Dr. Robson Xavier Faria](#), Universidade Federal Fluminense, Brazil
[Prof. Dr. Siti Zubaidah](#), Universitas Negeri Malang, Indonesia
[Prof. Dr. Sigit Purnama](#), Universitas Islam Negeri Sunan Kalijaga Yogyakarta, Indonesia
[Prof. Dr. Viskasari P. Kalanjati](#), Universitas Airlangga, Indonesia
[Assoc. Prof. Dr. Emmanuel Kusi Achampong](#), University of Cape Coast, Ghana
[Assoc. Prof. Dr. Juan Luis González Pascual](#), Universidad Europea de Madrid, Spain
[Dr. Prabu Christopher](#), Vellore Institute of Technology, Vellore, India
[Assoc. Prof. Dr. Simona Zaami](#), Sapienza University of Rome, Italy
[Mr. Lim Kuang Kuay](#), Institute for Public Health, Malaysia
[Dr. Abdolhakim Jorbonyan](#), Mazandaran University of Medical Sciences, Iran, Islamic Republic of
[Dr. Abhinand Thavalappil](#), Ontario Veterinary College, Canada
[Dr. Ahmad Ghiffari](#), Universitas Muhammadiyah Palembang, Indonesia
[Dr. Alene Geteneh](#), Woldia University, Ethiopia
[Dr. Aletha Yvette S. Akers](#), University of Pittsburgh, United States
[Dr. Andrew Winokur](#), UConn Health, United States
[Dr. Anton Suryatma](#), National Research and Innovation Agency Republic of Indonesia, Indonesia
[Dr. Asha Hegde](#), Manipal Academy of Higher Education, Karnataka, India
[Dr. Atiqulla Shariff](#), JSS College of Pharmacy, India
[Dr. Barbara Abrams](#), University of California, United States
[Dr. Barbara K. Campbell](#), Oregon Health & Science University, United States
[Dr. Christopher Bowie](#), Victoria University of Wellington, New Zealand
[Dr. Crystal LaRae Wynn](#), Virginia State University, United States
[Dr. Daniel Susilo](#), Bunda Mulia University, Indonesia
[Dr. Erika Villavicencio-Ayub](#), Universidad Nacional Autónoma de México, Mexico
[Dr. Fhumulani Mavis Mulaudzi](#), University of Pretoria, South Africa
[Dr. Gloria Nnadwa Alhassan](#), Cyprus International University, Turkey
[Dr. Jennifer A. Fish](#), The University of South Australia, Australia
[Dr. Li-Ping Zou](#), Second Military Medical University, China
[Dr. Lynn B. McCool](#), Drake University, United States
[Dr. Maja Subelj](#), National Institute of Public Health, Slovenia
[Dr. Mehran Akbari](#), Khomein University of Medical Sciences, Iran, Islamic Republic of
[Dr. Noor Hafzalinda Hamzah](#), Universiti Kebangsaan Malaysia, Malaysia

USER	
Username	<input type="text"/>
Password	<input type="password"/>
<input type="checkbox"/>	Remember me
<input type="button" value="Login"/>	

CITATION ANALYSIS
<ul style="list-style-type: none"> Scopus Google Scholar Scholar Metrics Scinapse Dimensions Scilit

SPECIAL LINKS
<ul style="list-style-type: none"> Author Guidelines Editorial Boards Online Submission Abstracting and Indexing Publication Ethics Visitor Statistics Contact Us Registration for IJPHS's Professional Reviewers

JOURNAL CONTENT
Search <input type="text"/>
Search Scope All <input type="button" value="v"/>
<input type="button" value="Search"/>
Browse <ul style="list-style-type: none"> By Issue By Author By Title

INFORMATION
<ul style="list-style-type: none"> For Readers For Authors For Librarians

[Dr. Phayong Thepaksorn](#), Praboromarajchanok Institute, Thailand
[Dr. Qorinah Estiningtyas Sakilah Adnani](#), Faculty of Medicine, Universitas Padjadjaran, Indonesia
[dr. Rakhmad Hidayat, Sp.S\(K\), MARS](#), Universitas Indonesia, Indonesia
[Dr. Rob M.G. van Bommel](#), Catharina Hospital, Netherlands
[Dr. Rui Manuel de Almeida Poinhos](#), Reitoria da Universidade do Porto, Portugal
[Dr. Stephanie S. Rothenberg](#), University of Pittsburgh Medical Center Magee-Womens Hospital, United States
[Dr. Tarik Bereket](#), University of Toronto, Canada
[Dr. Vera Fernandes](#), Hospital de Braga, Portugal
[Dr. Yogesh Kumar Jain](#), All India Institute of Medical Sciences, Jodhpur, India

International Journal of Public Health Science (IJPHS)

p-ISSN: 2252-8806, e-ISSN: 2620-4126

This journal is published by the [Intelektual Pustaka Media Utama \(IPMU\)](#), in collaboration with [Institute of Advanced Engineering and Science \(IAES\)](#).



[View IJPHS Stats](#)



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).



- HOME
- ABOUT
- LOGIN
- REGISTER
- SEARCH
- CURRENT
- ARCHIVES
- ANNOUNCEMENTS

Home > Archives > **Vol 13, No 4**

Vol 13, No 4

December 2024

DOI: <http://doi.org/10.11591/ijphs.v13i4>

Table of Contents

Associated factors of non-recurrence stroke among stroke patients in Thailand	PDF
Isaree Padphai, Wanida Sripromsa, Pawinee Sanchon, Duangruedee Chotklang, Wiphada Wijakkanalan, Nitchakarn Meelun, Arinrada Ladla	
A systematic review on internet addiction through various assessment tools among Chinese college student's context	PDF
Li Yue, Zainudin Bin Abu Bakar, Zakiah Binti Mohamad Ashari	
Influence of behavioral and genetic variables on the prevalence of type 2 diabetes mellitus in middle-aged monks of Thailand	PDF
Utane Hakaew, Chutikan Sakphisutthikul, Wongs Laohasiriwong, Pittaya Thammawongsa, Roshan Kumar Mahato	
Self-regulation and resilience: the role on active procrastination of young adults	PDF
Ivy Josiah Vincent, Mei-Yui Law, Zariv Long-Kwan Chew, Chooi-Seong Lai	
Prevalence and determinants associated with adolescent idiopathic scoliosis: results of screening in Surakarta, Indonesia	PDF
Alinda Nur Ramadhani, Dea Linia Romadhoni, Almas Awanis	
Incidence of congenital hypothyroidism in special region of Yogyakarta in 2018-2020	PDF
Rhea Sabella Rahmawati, Tri Ratnaningsih, Windarwati Windarwati, Suryono Yudha Patria	
The impact of COVID-19 on dengue cases in low- and middle-income countries: a systematic review	PDF
Ajeng Rahastris, Sulistyawati Sulistyawati	
Nearest neighbor analysis of the spread of tuberculosis in Padang	PDF
Rapitos Sidiq, Indang Dewata, Heldi Heldi, Neni Fitra Hayati	
Knowledge and stigma of depression among adolescents in Indonesia: a cross-sectional study	PDF
Rika Sarfika, Putri Indah Permata, Fitri Mailani, Nindy Eka Wijaya, I Made Moh, Yanuar Saifudin, Ferry Efendi	
Spatio-temporal analysis of pulmonary tuberculosis in Astambul District, South Kalimantan, Indonesia 2020-2021	PDF
Dian Rosadi, Novita Agustina, Hadrianti Haji Darise Lasari, Rudi Fakhriadi, Noor Ahda Fadillah, Indra Haryanto Ali	
Structural equation modeling: exploring relationships of body mass index, waist circumference, and hypertension in elderly	PDF
Wahyu Tri Sudaryanto, Isnaini Herawati, Wahyuni Wahyuni, Ika Yuli Ayuningrum, Bhisma Murti, Rizki Setiawan, Nuristiqomah Dwi Putri	
The differences historical abortion and hemoglobin between hazard volcano eruption	PDF
Nugroho Susanto, Wuri Ratna Hidayani, Nur Apriyan	
Correlation of physical activity with cognition and mental health in medical students	PDF
Yhusi Karina Riskawati, Faresa Aulia Rastramadhani, Henny Mulyani, Ridha Saniyyah Rindradi, Muhammad Isa Mahendra, Christyaji Indradmojo, Aswaty Nur	
Determinants factors self-management barriers: characteristics, spiritual well-being, and religiosity in type 2 diabetes patients	PDF
Sitti Syabariyah, Inggriane Puspita Dewi, Ida Sri Lestari, Sajodin Sajodin, Nur Rohmah Suwandi	
Unraveling spinal cord injury caregiver burden in Indonesia	PDF

USER

Username

Password

Remember me

- CITATION ANALYSIS**
- Scopus
 - Google Scholar
 - Scholar Metrics
 - Scinapse
 - Dimensions
 - Scilit

- SPECIAL LINKS**
- Author Guidelines
 - Editorial Boards
 - Online Submission
 - Abstracting and Indexing
 - Publication Ethics
 - Visitor Statistics
 - Contact Us
 - Registration for IJPHS's Professional Reviewers

JOURNAL CONTENT

Search

Search Scope

Browse

- By Issue
- By Author
- By Title

- INFORMATION**
- For Readers
 - For Authors
 - For Librarians

Vitriana Biben, Novitri Sumardi, Arya Wijaya, Septania Elfira Simatupang, Sitti Ayu Hemas Nurarifah	1634-1640
<u>Self-reported worry and action among Vietnamese citizens during the COVID-19 pandemic in 2021: latent class analysis</u> Hung Pham Quoc, Son Dao Anh, Tung Pham Anh	PDF 1641-1646
<u>Relationship between anxiety, loneliness, and sleep-disorders with social media addiction among adolescent</u> Rika Sarfika, Zahratul 'Alini, Randy Refnandes, Nindi Eka Wijaya, I Made Moh. Yanuar Saifudin	PDF 1647-1655
<u>Multidrug resistant tuberculosis risk factors in Makassar, Indonesia</u> Siti Latifah Burhan, Wahiduddin Wahiduddin, Ida Leida Maria, M Nadjib Bustan, Lalu Muhammad Saleh, Balqis Balqis	PDF 1656-1663
<u>Physical fitness and its impact on psychological health during the COVID-19 lockdown</u> Neharika Sharma, Prabhdeep Singh, Prasad D Pore	PDF 1664-1671
<u>Cross-culture adaptation and validation of Indonesian language version of Pittsburgh Sleep Quality Index</u> Achmad Fauzi, Fatimah Ahmedy, Rosidah Rosidah	PDF 1672-1678
<u>Cognitive behavior therapy intervention on adolescents to decrease anxiety problem study: the role of serotonin</u> Pandeirot Marjory Nancye, Amin Husni, Dian Ratna Sawitri	PDF 1679-1688
<u>Social networking behaviour and psychological distress among Malaysian undergraduates during the COVID-19 pandemic</u> Liang Jing Teh, Su Luan Wong	PDF 1689-1695
<u>Quality of life among physicians in Egypt and its influencing factors: a cross-sectional study</u> Amira Ismail Abdelrahman, Nora Atef Goda, Mohamed Mahmoud Bendary	PDF 1696-1703
<u>Loneliness in overseas students: reviewed from father nurturance</u> Ersa Lanang Sanjaya, Mopheta Audiola Dorkas	PDF 1704-1710
<u>Cybersex behavior and related factors among adolescents in Indonesia</u> Astrida Budiarti, Mey Lita Eka Varwani, Puji Hastuti, Iis Fatimawati	PDF 1711-1715
<u>Reducing human immunodeficiency virus stigma: a scoping review of intervention strategies</u> Shabrina Arifia Qatrannada, Zahroh Shaluhiyah, Cahya Tri Purnami	PDF 1716-1726
<u>A systematic literature review on the impact of participation in sport and physical activities on psychological resilience</u> Haslinda Husain, Shamsulariffin Samsudin, Ahmad Fauzi Mohd Ayub, Mohamad Firdaus Ahmad, Nur Syazwani Zulaikha S afwan	PDF 1727-1737
<u>Participatory action research for dengue control in Samarinda, Indonesia</u> Muhammad Rasyid Ridha, Ririh Yudhastuti, Juhairiyah Juhairiyah, Triwibowo Ambar Garjito, St. Aisyah, Khairatun Nisa, Norsita Agustina	PDF 1738-1748
<u>Intervention programme to improve emotional regulation among adolescent with mental disorders: a systematic review</u> Siti Kholifah, Siti Khuzaimah Ahmad Sharoni, Ah Yusuf	PDF 1749-1756
<u>A systematic review of multi-level intervention to enhance the quality of life patient with human immunodeficiency virus</u> Gusti Ayu Krisma Yuntari, I Made Ady Wirawan, Ni Nyoman Sri Budayanti, Putu Eka Arimbawa	PDF 1757-1768
<u>Nice couple, funny couple, happy couple: emotional intelligence, humor style, and relationship satisfaction</u> Niya Treza Sunil, Anasuya Jegathevi Jegathesan, Kususanto Ditto Prihadi	PDF 1769-1774
<u>A study on the relationship between psychological capital, organizational identification, and job burnout among university teachers</u> Yang Mingmei, Lim Seong Pek	PDF 1775-1782
<u>Traditional beliefs and practices of postpartum care in rural East Nusa Tenggara, Indonesia</u> Sarci Magdalena Toy, Enjelita Mariance Ndoen, Helga Jilvera Nathalia Ndun	PDF 1783-1793
<u>Risk analysis of adolescent sexual activity in college Surabaya, Indonesia: cross-sectional study</u> Eny Qurniyawati, Zida Husnina, Jayanti Dian Eka Sari, Asma Azzahra, Izzah Nur Shabrina, Prima Kartika, Nayla Mohamed Goma Nasr	PDF 1794-1802

Indications and findings of upper gut endoscopy in pediatric patients Annisa' Hasanah, Tara Mandiricha	PDF 1803-1808
Economic implications of ddPCR and NGS-based noninvasive prenatal testing for fetal aneuploidy screening Amit Kumar Mittal, Dolat Singh Shekhawat, Mamta Patel, Pratibha Singh, Kuldeep Singh	PDF 1809-1818
Impact of bounding attachments on breastfeeding success in primipara postpartum mothers Nurus Safaah, Esti Yunitasari, Budi Prasetyo, Mira Triharini, Pipit Feriani	PDF 1819-1825
Maternal hair lead and cytokine pro-inflammatory effects in preterm birth Qonita Nur Qolby, Julian Dewantiningrum, Besari Adi Pramono, Nani Maharani, Eka Djatnika Nugraha, Muflihatul Muniroh	PDF 1826-1833
The effect of murottal Al-Quran therapy on pain intensity and oxygen saturation in active phase parting women Yustiari Yustiari, Wahida Wahida, Khalidatul Khair Anwar, Hasmia Naningsi, Melania Asi, Endah Saraswati	PDF 1834-1840
Exclusive breastfeeding behavior based on physical endurance and economic resilience of the family Titi Maharrani, Evi Yunita Nugrahini, Mohammad Dwinanda Junaedi, Evi Pratami	PDF 1841-1847
Family functions to increase breastfeeding self efficacy of adolescent primigravida Ratna Hidayati, Moch. Maftuchul Huda, Dhiana Setyorini, Wahyu Sri Astutik	PDF 1848-1854
Exploring fertility differentials between tea and ex-tea garden laborers of Assam Lipika Kalita, Hari K. Choudhury	PDF 1855-1863
Risk factors and trends analysis of unwanted pregnancy in Indonesia Supriyadi supriyadi, Tris Eryando, Purnawan Junadi	PDF 1864-1871
The influence of social support, perception, and maternal behavior in preventing stunting cases in Indonesia Eko Mindarsih, Muhammad Akhyar, Budiyantri Wiboworini, Suminah Suminah	PDF 1872-1880
Effect of combining oketani and oxytocin massage towards breast milk production: a quasi-experimental study Adinda Putri Sari Dewi, Kusumastuti Kusumastuti	PDF 1881-1887
Cultural diversity and leadership styles in Malaysia's corporate sector Suriya Kumareswaran Vallasamy, Eillen Chandrapragasan, Harivanandan Muthu, Kartig Subramaniam, Deepakk Nair	PDF 1888-1894
Global Leadership Initiative on Malnutrition criteria for predicting surgical site infection in elective laparotomy patients Pauline Octaviani, Yohannessa Wulandari, Febiansyah Ibrahim, Diyah Eka Andayani	PDF 1895-1902
The effect of empowerment to improve patient safety culture among hospital nurses Rusdi Rusdi, Faridah Mohd Said, Nur Syazana Umar	PDF 1903-1911
Patient safety culture as a mediator between healthcare personnel's psychological empowerment and patient outcome Eldaa Prisca Refianti Sutanto, Ferdi Antonio, Roy G.A. Massie	PDF 1912-1923
Pre-clinical experiences among nursing students of reputable Islamic university in the capital city of Indonesia Jamaludin Jamaludin, Mutiara Eka Rahmanda, Handono Fatkhur Rahman	PDF 1924-1929
Peer support and healthy lifestyle among adolescents in urban areas in Indonesia Praba Diyan Rachmawati, Ilya Krisnana, Iqlima Dwi Kurnia, Nuzul Quraniati, Yuni Sufyanti Arief, Titis Mustikowati Danasari, Pratumna Rithpo	PDF 1930-1937
Components of basic feeding rule for infants aged 6-24 months: a scoping review Fitri Haryanti, Fitriana Andarwati, Hani Risnawati, Lely Lusmilasari, Sri Hartini	PDF 1938-1945
Correlation of climate factors and the number of SARS-CoV-2 cases at Semarang, Central Java Mochamad Rizal Maulana, Eko Naning Sofyanita, Adita Puspitasari Swastya Putri	PDF 1946-1951
Holistic characterization analysis of tar waste content from gasification process at Surakarta landfill Putu Elsa Purnama Rahayu, Siti Rachmawati, Prabang Setyono	PDF 1952-1959

Risk factors of metabolic syndrome in women of reproductive age at mining area	PDF
Novia Luthviatin, Onny Setiani, Bagoes Widjanarko, Mohammad Zen Rahfiludin, Apoina Kartini, Mursid Raharjo	1960-1967
Spatial analysis of environmental sanitation and stunting incidents	PDF
Risnawati Tanjung, Dini Lestrina, Jernita Sinaga	1968-1977
The intercultural caring-coping patterns of disaster-displaced families in temporary shelters	PDF
Randy Ian Ferenal Gallego, Araceli Ocampo Balabagno	1978-1989
Analysis of vaccination policy in the era of the COVID-19 pandemic in Indonesia	PDF
Nuryanti Mustari, Junaedi Junaedi, Hafiz Elfiansya Parawu, Hardianto Hawing, Herman Herman, Ulfiyah Syukri, Aqmal Reza Amri	1990-2004
Sexual violence mitigation in realizing a violence-free campus	PDF
Aulia Nursyifa, Gumilar Rusliwa Somantri, Francisia Saveria Sika Ery Seda	2005-2016
Assessing community pharmacists' thoughts on telepharmacy in Bali province	PDF
I Gusti Ayu Rai Widowati, Ni Putu Aryati Suryaningsih, Ida Ayu Manik Partha Sutema, Ketut Agus Adrianta	2017-2023
Self-medication practices among customers at non-pharmacy outlets during COVID-19 pandemic in Indonesia	PDF
Yosi Irawati Wibowo, I Gusti Agung Ari Kusuma Yana, Gusti Ayu Putu Laksmi Puspa Sari, Bruce Sunderland, Adji Prayitno Setiadi	2024-2032
Comparative analysis of deep learning models for various nonalcoholic fatty liver disease datasets	PDF
Konakanchi Venkata Subrahmanya Srirama Murthy, Reddy Shiva Shankar, Samarendra Narayana Pradhan, Bhabodeepika Mohanty, Veeranki Venkata Rama Maheswara Rao	2033-2043
Low-frequency vibration therapy enhances recovery in college football athletes after fatigue-induced exercise	PDF
Wenlong Zhao, Wichai Eungpinichpong, Xingze Wang	2044-2052
Factors of susceptibility to online romance scam in Malaysia: unraveling the complex pathways	PDF
Evi Kurniasari Purwaningrum, Yi Ming Ho, Diana Imawati, Kususanto Ditto Prihadi, Mansor Abu Talib	2053-2060

International Journal of Public Health Science (IJPHS)

p-ISSN: 2252-8806, e-ISSN: 2620-4126

This journal is published by the [Intelektual Pustaka Media Utama \(IPMU\)](#) in collaboration with [Institute of Advanced Engineering and Science \(IAES\)](#).





[View IJPHS Stats](#)




This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).

International Journal of Public Health Science

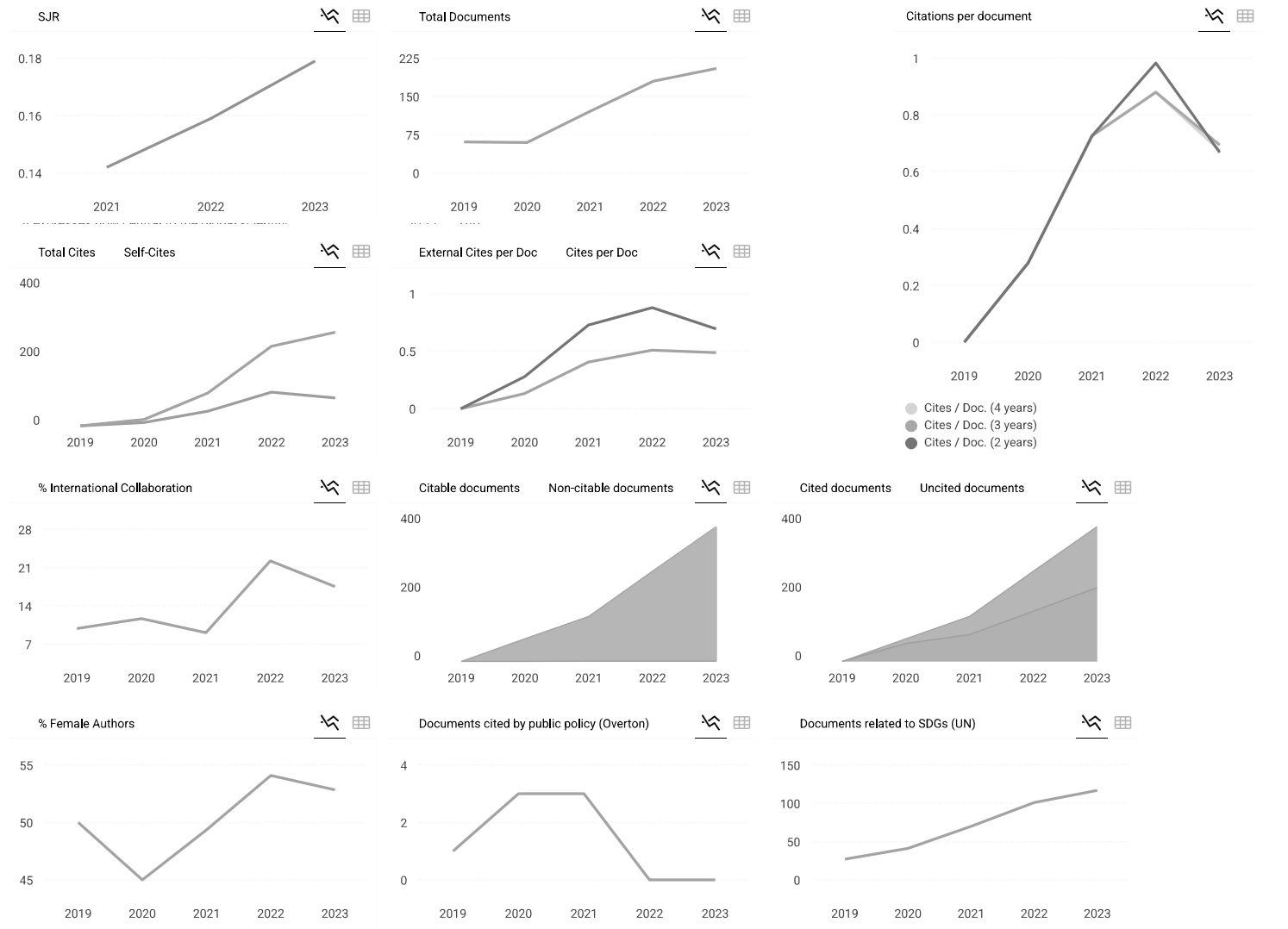
COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
Indonesia  Universities and research institutions in Indonesia  Media Ranking in Indonesia	Medicine Health Policy Medicine (miscellaneous) Public Health, Environmental and Occupational Health Nursing Nutrition and Dietetics Social Sciences Health (social science)		10
PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Journals	22528806, 26204126	2019-2023	Homepage How to publish in this journal ijphs@iaescore.com

SCOPE

International Journal of Public Health [Science](#) (IJPHS) is an interdisciplinary journal that publishes material on all aspects of public health [science](#). This IJPHS provides the ideal platform for the discussion of more sophisticated public health research and practice for authors and readers world wide. The priorities are originality and excellence. The journal welcomes high-impact articles on emerging public health science that covers (but not limited) to epidemiology, biostatistics, nutrition, family health, infectious diseases, health services research, gerontology, child health, adolescent health, behavioral medicine, rural health, chronic diseases, health promotion, evaluation and intervention, public health policy and management, health economics, occupational health and environmental health.

 Join the conversation about this journal

<p>1 Journal of Public Health and Development THA</p> <p>74% similarity</p>	<p>2 Malaysian Journal of Public Health Medicine MYS</p> <p>73% similarity</p>	<p>3 Kesmas IDN</p> <p>72% similarity</p>	<p>4 Journal of Public Health Research ITA</p> <p>70% similarity</p>	<p>5 Frontiers in Public Heal CHE</p> <p>70% similarity</p>
---	--	---	--	---



← Show this widget in your own website


Just copy the code below and paste within your html code:

```
<a href="https://www.scimagoj.com" data-bbox="200 795 310 805">
```

powered by scimagojr.com

SCImago Graphica

Explore, visually communicate and make sense of data with our new data visualization tool.



Iwan Suryadin 2 months ago

Dear Scimago. Introducing me Iwan Suryadi. We would like to ask if ijphs is still indexed by Scopus or has it been discontinued?

reply



Melanie Ortiz 2 months ago

SCImago Team

Dear Iwan, thank you very much for your comment. We suggest you consult the Scopus database directly. Keep in mind that the SJR is a static image (the update is made one time per year) of a database (Scopus) which is changing every day.

The Scopus' update list can also be consulted here:

<https://www.elsevier.com/solutions/scopus/how-scopus-works/content>

Best Regards, SCImago Team

M Mulyanti 3 months ago

assalamuaalaykum. hi, i'm mulyanti, lecturer of Poltekkes Kemenkes Jayapura. i wanna to submit my articles in this journals. i need your help.

sincerely
Mulyanti

reply



Melanie Ortiz 3 months ago

SCImago Team

Dear Mulyanti,

Thank you for contacting us.

We suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.

Best Regards, SCImago Team

M Mulyanti 4 months ago

excuse, i'm mulyanti, lecturer of politeknik kesehatan jayapura, i'm focus in nutrition and malaria studies.

may i join to publish my atricles in this journals?

sincerely, tks

reply



Melanie Ortiz 4 months ago

SCImago Team

Dear Mulyanti, thank you very much for your comment, we suggest you look for the author's instructions/submission guidelines in the journal's website. Best Regards, SCImago Team

P Priya Mathew 2 years ago

I want to submit my paper

reply



Melanie Ortiz 2 years ago

ScImago Team

Dear Priya,
Thank you for contacting us.
We suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff , so they could inform you more deeply.
Best Regards, ScImago Team

Leave a comment

Name

Email

(will not be published)

I'm not a robot reCAPTCHA
Privacy - Terms

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

Developed by:



Powered by:



Follow us on @ScimagoJR

Scimago Lab, Copyright 2007-2024. Data Source: Scopus®

EST MODUS IN REBUS
Horatio (Satire 1.1.108)

[Legal Notice](#)

[Privacy Policy](#)

🔍 This site uses Google AdSense ad intent links. AdSense automatically generates these links and they may help creators earn money.





Source details

International Journal of Public Health Science

Years currently covered by Scopus: from 2019 to 2024

Publisher: Intelektual Pustaka Media Utama

ISSN: 2252-8806 E-ISSN: 2620-4126

Subject area: Medicine: Medicine (miscellaneous) Social Sciences: Health (social science) Medicine: Health Policy
Medicine: Public Health, Environmental and Occupational Health Nursing: Nutrition and Dietetics

Source type: Journal

- [View all documents >](#)
- [Set document alert](#)
- [Save to source list](#)

CiteScore 2023

1.1



SJR 2023

0.179



SNIP 2023

0.190



[CiteScore](#) [CiteScore rank & trend](#) [Scopus content coverage](#)

CiteScore 2023 ▼

$$1.1 = \frac{602 \text{ Citations } 2020 - 2023}{565 \text{ Documents } 2020 - 2023}$$

Calculated on 05 May, 2024

CiteScoreTracker 2024 ⓘ

$$1.4 = \frac{757 \text{ Citations to date}}{559 \text{ Documents to date}}$$

Last updated on 05 January, 2025 • Updated monthly

CiteScore rank 2023 ⓘ

Category	Rank	Percentile
Medicine		
Medicine (miscellaneous)	#260/398	34th
Social Sciences		
Health (social science)	#266/371	28th

[View CiteScore methodology >](#) [CiteScore FAQ >](#) [Add CiteScore to your site](#)

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語版を表示する](#)

[查看简体中文版本](#)

[查看繁體中文版本](#)

[Просмотр версии на русском языке](#)

Customer Service

[Help](#)

[Tutorials](#)

[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗ [Cookies settings](#)

All content on this site: Copyright © 2025 Elsevier B.V. ↗, its licensors, and contributors. All rights are reserved, including those for text and data mining, AI training, and similar technologies. For all open access content, the relevant licensing terms apply.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies ↗.

