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RESEARCH ARTICLE

Profile of online drug purchasing in marketplace by students at a Faculty of Medicine and Health Sciences in Jakarta, Indonesia

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Abstract

Background: Digitalisation has increased the level of expenditure on online healthcare products. Various drug categories, ranging from over-the-counter to prescription-required drugs are available online. Currently, no data on drug purchases in the Indonesian marketplace can be found. However, data from the Indonesian Internet Service Providers Association (APJII) in 2019, shows that 92.1% of students are internet users. **Objective**: The study aimed to investigate drug purchasing trends in Jakarta, with a particular focus on students enrolled in the Faculty of Medicine and Health Sciences. **Methods**: A descriptive-analytic approach with a proportional stratified sampling technique was applied. The data collection period was between February – May 2022. **Results**: Approximately 52.6% of the respondents reported having purchased drugs in the marketplace, especially vitamin or supplement products, comprising 47.4% of the purchases, followed by over-the-counter drugs at 36.8%, and finally, prescription-required drugs at 16.8%. In addition, only 10.5% of respondents said there was a request for a doctor's prescription by a supplier. The information provided by suppliers, age, and availability of various drug products correlated with drug purchases in the marketplace (p<0.05). **Conclusion**: Healthcare students often purchase drugs in the marketplace, including prescription-required drugs that should only be available with a doctor's prescription. To ensure safe drug purchasing, strict regulations and supervisory functions are necessary.

Introduction

Digitalisation continues to grow, particularly during the COVID-19 pandemic. According to data from the Ministry of Communication and Information, the number of people shopping online in Indonesia has increased by 400 per cent since the start of the pandemic (Transaksi Penjualan Online Naik 400 Persen Di Masa Pandemi Covid-19 | Universitas Gadjah Mada, n.d.). This also applies to health products. In 2019, Indonesia's online health and beauty products sales accounted for approximately 16%. However, by 2021, this figure had increased to 28% (Kredivo & Katadata Insight Center, 2020). Traditional, over-the-counter, and prescription-only pharmaceuticals can be sold online in accordance with National Food and Drug Agency Regulation No. 8 of 2020, which governs the distribution of drugs online. (National Food and Drug Agency (BPOM), 2020). Therefore, the online distribution of drugs must follow these safety guidelines. Drug distribution must be safe and accessible to all social groups. Students are a high-potential group when making online purchases. According to data from the Indonesian Internet Service Providers Association (APJII) in 2019, 92.1% of students are internet users (Association of Indonesian Internet Service Providers (APJII), 2020). The purpose of this study is to examine the drug purchasing habits of students at a Faculty of Medicine and Health Sciences.

Methods

Design

This is a descriptive-analytic study with a cross-sectional design approved by the research ethics committee in the Faculty of Medicine and Health Sciences in Jakarta.

Setting

The data were collected from February to May 2022 through the online Questionpro link.

Sampling

The sample was drawn from healthcare students in Jakarta. With the help of the Random Picker application, a proportional stratified sampling method was used to determine the sample. The Lemeshow formula required the inclusion of at least 81 students. The criteria for inclusion involved healthcare students enrolled in the Faculty of Medicine and Health Sciences from 2018 through 2021. Students younger than 17 years or older than 24 years who did not agree to the informed consent process were not included. Those who did not fill out the questionnaire appropriately were also excluded.

Assessment

An online questionnaire consisting of 12 questions, including sociodemographic characteristics, online drug purchase profiling, and enabling factors of drug purchasing in the marketplace, was used as the main instrument. The questionnaire was tested for validation and reliability on 60 non-sample students before it was distributed online. The Pearson Correlation test was used for validation, with the target of the correlation coefficient being greater than the R table. Moreover, to ensure reliability, Cronbach's Alpha was determined with a target of ≥0.60. The questionnaire was then spread through the Questionpro link to the samples. An agreement from prospective samples was obtained by attaching an informed-consent form at the beginning of the questionnaire. By filling it out, participants had consented to become respondents in this study.

Analysis

The Chi-Square and Mann-Whitney U methods were used to analyse the correlation between sociodemography and enabling factors toward drug purchasing in the marketplace.

Results

A total of 95 respondents were involved, the majority of whom were female, 17-20 years old, with a GPA of ≤3.50. The number of respondents from each class year was similar due to the implementation of a stratified sampling method. The details of their characteristics can be seen in Table I. From the total, 52.6% of respondents had purchased drugs online.

Table I: Sociodemography characteristics

Characteristics	N	%
Sex:		
Male	29	30.5
Female	66	69.5
Age:		
17-20 years old	59	62.1
21-24 years old	36	37.9
Study Program:		
Pharmacy	20	21.1
Medicine	75	78.9
Class year:		
2018	23	24.2
2019	24	25.3
2020	25	26.3
2021	23	24.2
GPA:		
≤3.50	60	63.2
>3.50 – 4.00	35	36.8

*GPA = Grade Point Average

Table II shows that most respondents (47.4%) had made supplements or herbal products transactions in the marketplace, while 36.8% had made over-the-counter drug transactions. Finally, 16.8% had dealt with prescription-required drugs. However, only 10.5% of respondents were asked to show a doctor's prescription when making transactions.

Table II: Distribution of factors related to regulation of online drug supply

Drug classification	N	%
Over-the-counter drug purchasing:		
Yes	35	36.8
No	60	63.2
Prescription-required drug purchasing:		
Yes	16	16.8
No	79	83.2
Supplements/vitamins/herbal products:		
Yes	45	47.4
No	50	52.6
Request from supplier to provide prescription	**n**	**%**
Yes	10	10.5
No	85	89.5

Furthermore, 66.3% of the respondents agreed that the marketplace provided more cost-effective transactions, 45.3% said that drugs were not available in pharmacies,

and 83.2% indicated that accessing medicines through the marketplace was convenient. A total of 66.3% confirmed the availability of various medicinal products in the marketplace, and 68.4% said that comparing product prices in the online market was easy. However, 41.1% of the respondents did not agree about the availability of detailed information available in the marketplace. The respondents who were not satisfied with pharmacies totalled 58.9%. This distribution data can be seen in Table III.

The bivariate analysis showed correlations between age, provision of detailed information by suppliers, and availability of various medicinal products and drug purchasing in the marketplace (p<0.05), as seen in Table IV.

Table III: Distribution of enabling factors of drug purchasing in the marketplace

Enabling factors	Disagree	Neutral	Agree
		N (%)	
More cost-effective, discounts available in the marketplace	5 (5.3)	27 (28.4)	**63 (66.3**)
Drugs are not available in pharmacies	20 (21.1)	32 (33.7)	**43 (45.3)**
Accessing online is convenient	3 (3.2)	13 (13.7)	**79 (83.2)**
Drug information available in the marketplace is more detailed than that provided by pharmacists	**39 (41.1)**	30 (31.6)	26 (27.4)
Availability of various kinds of medicinal products	8 (8.4)	24 (25.3)	**63 (66.3)**
Service at the pharmacy is not satisfactory	**56 (58.9)**	25 (26.3)	14 (14.7)
It's easier to compare drug prices on the marketplace	10 (10.5)	20 (21.1)	**65 (68.4)**

*Highest frequency per factor indicated by bold texts.

Table IV: Bivariate analysis results

Sociodemographic and enabling Factors		Total		Drug purchasing in the marketplace				p-value
				Yes		No		
		N	%	N	%	N	%	
Sex	Male	29	100	12	41.4	17	58.6	0.145
	Female	66	100	38	57.6	28	42.4	
Age*	17-20 years old	59	100	26	44.1	33	55.9	0.032
	21-24 years old	36	100	24	66.7	12	33.3	
Study Programme	Pharmacy	20	100	10	50.0	10	50.0	0.791
	Medicine	75	100	40	53.3	35	46.7	
Class year	2018	23	100	15	65.2	8	34.8	0.299
	2019	24	100	14	58.3	10	41.7	
	2020	25	100	12	48.0	13	52.0	
	2021	23	100	9	39.1	14	60.9	
GPA**	≤ 3.50	60	100	31	51.7	29	48.3	0.805
	> 3.50	35	100	19	54.3	16	45.7	
More cost-effective, discounts available in the marketplace	Disagree	5	100	3	60.0	2	40.0	0.056
	Neutral	27	100	9	33.3	18	66.7	
	Agree	63	100	38	60.3	25	39.7	
Drugs are not available in pharmacies	Disagree	20	100	14	70.0	6	30.0	0.213
	Neutral	32	100	15	46.9	17	53.1	
	Agree	43	100	21	48.8	22	51.2	
Accessing online is convenient	Disagree	3	100	0	0.0	3	100.0	0.051
	Neutral	13	100	5	38.5	8	61.5	
	Agree	79	100	45	57.0	34	43.0	
Drug information available in the marketplace is more detailed than that provided by pharmacists*	Disagree	39	100	22	56.4	17	43.6	0.001
	Neutral	30	100	8	26.7	22	73.3	
	Agree	26	100	20	76.9	6	23.1	
Availability of various kinds of medicinal products*	Disagree	8	100	2	25.0	6	75.0	0.003
	Neutral	24	100	8	33.3	16	66.7	
	Agree	63	100	40	63.5	23	36.5	
Service at the pharmacy is not satisfactory	Disagree	56	100	33	58.9	23	41.1	0.052
	Neutral	25	100	8	32.0	17	68.0	
	Agree	14	100	9	64.3	5	35.7	
It's easier to compare drug prices on the marketplace	Disagree	10	100	4	40.0	6	60.0	0.101
	Neutral	20	100	8	40.0	12	60.0	
	Agree	65	100	38	58.5	27	41.5	
Total		95	100	50	52.6	45	47.4	

*The bold texts mean significant correlation; **GPA = Grade Point Average

Discussion

According to the findings on online drug purchasing, more than half of the respondents (52.6%) admitted to obtaining their drugs through the marketplace. It is crucial to ensure that drug distribution practices comply with BPOM regulation no. 8 in the year 2020, specifically concerning the sale of drugs that require a doctor's prescription (National Food and Drug Agency (BPOM), 2020). Also, there is a need to ensure that pharmaceutical services are running correctly and in compliance with BPOM regulations. This includes the need for the following features: electronic prescription submission, electronic prescription copy, appropriate drug labelling, real-time communication between patient and pharmacist, and drug delivery that ensures drug stability. (National Food and Drug Agency (BPOM), 2020). A systematic review showed that inappropriate drug labelling is one of the main issues associated with online drug purchasing (Orizio *et al*., 2011).

This study found more respondents purchased supplements and over-the-counter drugs than prescription-required ones. However, not all respondents were asked to provide a doctor's prescription. These results are similar to a systematic review which found that many websites offer drugs without requiring a doctor's prescription (Orizio *et al*., 2011). This implies that the safety of drug distribution is at risk. Another study showed that as many as 90.3% of drugstores sell prescription-required drugs without asking for a doctor's prescription, both offline and online (Elfarabi *et al*., 2021). Moreover, there were no rules regarding online business licenses in the marketplace (Ahmadi *et al*., 2018). The impacts of the 4.0 industrial revolution era could jeopardise the efficient distribution of drugs, leading to an increased risk of distributing drugs that do not meet standards, including unauthorized drugs.

Purchasing drugs in a marketplace was found to correlate significantly to age, detailing drug information and availability of various kinds of drugs. The age factor results align with other cross-sectional studies (n=643) in Saudi Arabia, which evaluated consumers' perceptions of online health products (Alwhaibi *et al*., 2021). A survey involving 1,055 outpatients in Hungary found that younger people were much more active in purchasing online medications (Fittler *et al*., 2018), and this result is contradictory to this study. However, this study was limited to only students with a narrow range of age. This implies that further study with a broader age range of Indonesian students is needed to confirm the results.

Most respondents disagreed that the marketplace provided more detailed drug information than pharmacies. Nevertheless, the majority of respondents made online drug transactions in the marketplace. This occurred probably due to the availability of other related information. For example, shoppers can find ratings and reviews by other customers, as well as general product information, without asking a pharmacist. These reviews could help customers to make an informed decision (Katawetawaraks & Wang, 2011).

Most respondents agreed that various kinds of drugs are readily available in the marketplace, which could potentially lead to transactions. The decision was probably due to the help of the search feature provided by the marketplace, which made it easier for consumers to find specific drugs, including prescription-required drugs, without the need to go to the pharmacy. A systematic review including 27 articles studying online pharmacies indicated that one of the reasons for obtaining drugs online is the ease with which opioids and benzodiazepines can be obtained without a doctor's prescription (Long *et al*., 2022). This again shows the criticality of implementing strict regulation and supervision by authorities.

Conclusion

The purchase of drugs in the Indonesian marketplace is a common practice among healthcare students, including purchasing prescription-required drugs. To ensure that patients receive rational drugs through the marketplace, strict regulations and supervisory functions with clear sanctions are needed.

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