Exploring Medications for Hypertension Advertised Online: A Qualitative Study in Indonesia

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**Abstract**

**Introduction:** Patients with hypertension often self-medicate and are increasingly purchasing their medications online. This study aimed to identify the medications and products used for hypertension offered by Indonesian online marketplaces and the availability of prescription-only antihypertensive medication on these platforms. **Materials and Methods:** This qualitative document analysis comprehensively assessed three online marketplaces in Indonesia in May 2019. Five top products in each online marketplace were identified and reviewed. An in-depth analysis was performed to obtain detailed information about the products (e.g., ingredients), indications, and customers’ comments. Selected antihypertensive medications (captopril, amlodipine, and valsartan) were searched for. The data were analyzed thematically. **Results:** The search results showed that more than 5000 products were available in each online marketplace and that all of the top products offered in these platforms were traditional medicines. Some products specifically claimed to be effective for lowering blood pressure (e.g., “the solution for hypertension without complications”). *Morinda citrifolia* (noni) and *Allium sativum* (garlic) were ingredients found in all three platforms, mainly in combination with other herbal medicines. The prescription-only antihypertensive medications offered and could be purchased through online marketplaces reviewed. However, information about dosage forms, indications, side effects, and contraindications of these medications was rarely provided on these platforms. **Conclusion:** Indonesian online marketplaces provide a wide range of products for the treatment of hypertension, particularly traditional medicines. Given the increasing trends of online shopping, providing objective and adequate information for customers is essential. Regulations for the purchase of prescription-only medicines, such as antihypertensive medications, should be strengthened.

**Keywords:** Hypertension, Internet, online purchasing, traditional medicines, self-medication

**Introduction**

Hypertension is one of the most common primary diagnoses in Indonesia, and a recent national survey showed that hypertension affects more than one-third of the adult Indonesian population.[1] Previous studies have reported that hypertension and other chronic conditions are among the most frequent reasons for patients to self-medicate.[2,3]
The Internet provides quick and easy access to many medicinal products. The convenience and cost saving have been identified as important reasons for purchasing medications online; that is, the transaction can be made any time and at a lower price than in traditional drug stores or pharmacies. One survey in Indonesia showed that 64.8% of the total population (171 million of 264 million people) use the Internet.

Despite the increasing trend toward purchasing medication online, there is scarce information about the content of existing platforms in Indonesia. Given the high prevalence of hypertension in Indonesia, this study aimed to identify the products offered in online marketplaces for the treatment of hypertension and the availability of prescription-only medication for hypertension.

**Materials and Methods**

An Internet-based document analysis was undertaken in May 2019. Document analysis is a kind of qualitative study that comprehensively assesses the factual information and meaning around the topic of interest. The most popular online marketplaces in Indonesia were defined based on the number of visitors per month as published on the iPrice website (https://iprice.co.id/insights/mapofecommerce). Platform A had the most visitors (148.7 million visitors per month) followed by Platform B (95.31 million) and Platform C (95.05 million). The search tools provided in each platform were used to gather the data, and all information gathered in this study is accessible to the public.

A two-tier search strategy was used. First, the five top products in each online marketplace were identified. An in-depth document analysis was performed to obtain detailed information about the products such as the ingredients, indications, and customers' comments. Next, the availability of antihypertensive medications in the online marketplace was examined by searching for selected medications such as captopril, amlodipine, and valsartan, and information about these products offered in these platforms was reviewed.

The document analysis method included skimming, reading, and interpreting any relevant information. Thematic analysis was then applied. The author (RR) performed the first three steps: becoming familiar with the data, generating preliminary codes, and identifying initial themes. Further, RR along with an independent researcher with experience in qualitative research reviewed and defined the themes. Both researchers discussed any differences that arose and reached a consensus. The COREQ (Consolidated criteria for REporting Qualitative studies) checklist was applied [Table S1].

**Results**

Using the keyword obat hipertensi (Bahasa: hypertension medication), we found 5225 products offered on Platform A. The other two marketplaces reviewed did not provide exact numbers in the search results, but the search yielded 100 and 540 total pages (50 products per page) for Platforms B and C, respectively. Selected antihypertensive medications were searched using the specific names of drugs, such as “captopril,” “amlodipine,” and “valsartan,” as keywords. The search results showed that these medications were available online on all platforms reviewed. For instance, 52, 75, and 27 products for captopril, amlodipine, and valsartan, respectively, were found on Platform C.

**Popularity of traditional medicines**

In total, 11 traditional medicine product names appeared across the three platforms reviewed; four were found in two platforms. All of them are traditional herbal medicines. In their first view of the platform, customers could see the names and pictures of the products. Almost all products contained “hypertension” in the title of the offer, for example, “the solution for hypertension.” Some of them used the word tensi (Bahasa: tension) in the name of the product, for example, Fortensi. All offers contained picture(s) of the products. For instance, the top product in Platform A used the picture of a sphygmomanometer as the background and a picture figuring out of a person having their blood pressure measured. Both the pictures and name of the product explicitly directed customers to the product’s claimed effectiveness for lowering blood pressure.

Generally, customers could easily read about each product’s ingredients in a feature called “description of the product.” Single ingredients in products included soursop leaf extract (Annona muricata L.), black cumin (Nigella sativa), gold sea cucumber (golden Stichopus variegatus), and ant plant (Myrmecodia pendans). Allium sativum (garlic) and Morinda citrifolia (noni) were found in combination with other herbal medicines in all platforms. In one product, M. citrifolia was combined with Gynura segetum L., Sonchus arvensis, Persea gratissima L., and Centella asiatica.

Despite the importance of registering herbal products, some sellers did not explicitly present the registration status in their description of the product. The official website of the National Agency of Drug and Food Control in Indonesia was used to check the current registration status of each product. One of the unregistered products was an extract of A. muricata L. that claimed to have very strong anticancer
effects in addition to lowering blood pressure. The other unregistered product comprised garlic, ginger, citrus lemon, and apple cider vinegar. In addition to hypertension, this product was advertised as a herbal medicine for treating diabetes, hypercholesterolemia, vertigo, migraine, and heart diseases.

**Product claims and safety issues**

Each product provided statements and images claiming the efficacy of the products. The statement could be found in the product's name and/or description. The efficacy of the products in treating hypertension was described as in the following examples:

The microcluster in this product means that it enters the smallest arteries without breaking them. Because of the microcluster technology, this product is easily absorbed and has an immediate effect. (Platforms A and B)

This product has an antihypertensive effect by reducing blood pressure and works as a circulatory stimulant. This product minimizes the risk of stroke or heart attack caused by high blood pressure or clogged arteries. (Platforms B and C)

Most products reviewed in this study were indicated for hypertension as well as for other diseases or complaints. The following statements reflect the complex indications mentioned in the description of products:

Benefits: maintaining normal cholesterol, blood pressure and blood glucose level, reducing body weight gain, working as an anti-cancer agent, neutralizing any toxins, preventing Alzheimer’s disease, treating asthma and epilepsy, etc. (Platform B)

This product traditionally helps to treat any kind of cancer and tumor in the brain, breast, liver, lung, uterus, skin, prostate and blood; any virus diseases (e.g., toxoplasmosis); coronary heart disease; high blood glucose; stroke (mild to severe); lupus disease; high blood pressure; kidney and prostate disorders; tuberculosis; acute and chronic hemorrhoids; migraine; etc. (Platform C)

Testimonials from previous customers were shown as screenshots of conversations between sellers and customers, and reflected the customers' satisfaction after consuming the product. Some examples of these testimonials were “After I used this product, my hypertension is gone, the blood pressure (level) is normal and I have become healthier,” and “Thanks, my husband has taken one bottle of this product, and the latest examination showed that the blockage in his arteries was gone.”

In addition to the description of each product, the platforms provided features called “Review of products” and “Discussion.” An in-depth analysis of these features showed that the comments and questions from the customers were related more to technical matters than substantial information. For example, the questions from customers were about the current availability of the product (“is this in stock?”), expiry date, and delivery costs. The comments were mainly the sellers’ responses (“fast response, recommended seller!”), packaging and delivery (“wrapped safely, well done”), or time for delivery (“satisfied, I received the product on the same day of order”). Comments about the efficacy of products were few.

Information about the product safety was lacking, and the possible side effects of the products were rarely listed. Typical statements about this issue were the following: “This herbal [medicine is] 100% safe for treating hypertension symptoms,” “This product is made from herbal materials so it is safe to be used over the long term,” and “This product will not cause dependence.” A brief statement “There are no side effects,” written in uppercase letters, was found in the description of a product advertised in Platforms B and C.

**Over-the-counter antihypertensive medications**

Captopril, amlodipine, and valsartan were found easily on the three platforms reviewed. Using the keyword “amlodipine,” we found 190, 251, and 299 products in Platforms A, B, and C, respectively.

The review of five offers per platform showed that general information about the medications was lacking. The description of the products usually included only the dosage forms and the number of medications per package, as in the following examples: “Amlodipine 5 mg strip @10 tablets (Platform A), “Price per box 50 pills, expiry date 2022” (Platform B), and “Limited stock. The price is for 1 box @10 strips @10 tablets. No complaints, no returns, purchasing this item means that you agree with these conditions” (Platform C).

A feature named “specification” was found in Platforms A and B. In Platform A, this feature contained information about the medication ingredients, dosage, drug interactions, directions for use, indications, adverse side effects, special consideration (e.g., use during pregnancy), and storage methods. Interestingly, the specification also mentioned that the medication is categorized as prescription-only medication and the need to follow instructions from a physician or pharmacist. However, only a few sellers in Platform A applied this feature for their offers. The specification
feature in Platform B explained the brand, expiry date, and stock availability, but did not provide information about the indications, dosage, and directions for use.

**DISCUSSION**

This study revealed that traditional herbal medicines used to prevent and treat hypertension are commonly advertised online. Customers could easily find several kinds of herbal products offered in the marketplaces. A previous review has reported that using traditional medicines is the most common self-medication practice among patients with hypertension.\(^{11}\)

Herbal products are often assumed to be a safer option than conventional medicines,\(^{12}\) although safety is also a reason why people do not purchase some medications online.\(^{13}\) Our study highlights the imbalance of information between the efficacy and safety of the use of herbal medicines. The bombastic claims, testimonials, and the absence of information about possible side effects do not inform customers about the potential negative effects of using some herbal products. The World Health Organization has launched the term “responsible self-medication” to encourage people to be cautious about purchasing medications without prescription.\(^{14}\) Studies have noted effects such as disease masking, delay in treatment, and potential adverse effects related to the inappropriate use of self-medication.\(^{15,16}\) Customers should be supported to be more careful when choosing self-care including when they purchase medications online. Further, the National Agency of Drug and Food Control should include regulations to ensure any medicinal products offered through online marketplaces provide adequate information for customers.

Prescription-only medicines, such as antihypertensive medication, should not be available for purchase without instructions from a health-care professional. However, the advertisements for antihypertensive medications, as found in this study, are not surprising. Previous studies have revealed the extent of the purchase of prescription-only medicines by Indonesians.\(^{17,18}\) Given the extent to which Indonesians purchase such medications, the lack of information about the indications, dosage, and possible side effects of antihypertensive medication identified in our study are concerning. The dosage regimen for these medications is often individualized, and the inappropriate dosing in patients with hypertension might lead to ineffective therapy or overdose.\(^{19}\) Purchasing medication online often means that the customer does not receive medical advice from a health professional about the most suitable medication(s) and dosage adjustment to reach the individual target blood pressure.\(^{2,20}\)

Although this study focused on medications for hypertension, several findings such as the trend toward the use of traditional medicines (including unregistered herbal products), lack of information about safety issue, and easy access to prescription-only medicines online may also reflect trends in medications for other common diseases such as diabetes, hypercholesterolemia, or osteoarthritis. Both conventional and traditional medicines have potential risks when used inappropriately. Further studies focusing more on policy and regulation of the advertising of medicinal products on the Internet are required.

**CONCLUSION**

Indonesian online marketplaces provide a wide range of hypertension medication products, particularly traditional medicines. Given the increasing trends of online shopping, providing objective and adequate information for customers is essential. Regulations for the purchase of prescription-only medicines, such as antihypertensive medications, should be strengthened.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

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| No. | Item | Guide questions/description | Note/ Reported on Page |
|-----|------|-----------------------------|------------------------|
| 1   | Inter viewer/ facilitator | Which author/s conducted the interview or focus group? | NA |
| 2   | Credentials | What were the researcher’s credentials? e.g. PhD, MD | PhD |
| 3   | Occupation | What was their occupation at the time of the study? | Senior lecturer-Universitas Islam Indonesia |
| 4   | Gender | Was the researcher male or female? | F |
| 5   | Experience and training | What experience or training did the researcher have? | Research methodology |
| 6   | Relationship established | Was a relationship established prior to study commencement? | NA |
| 7   | Participant knowledge of the interviewer | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research | NA |
| 8   | Interviewer characteristics | What characteristics were reported about the interviewer/facilitator? e.g. bias, assumptions, reasons and interests in the research topic | NA |
| 9   | Theoretical framework | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | Methods, the 1st paragraph |
| 10  | Participant selection | How were participants selected? e.g. purposive, convenience, consecutive, snowball | Methods, the 1st paragraph |
| 11  | Method of approach | How were participants approached? e.g. face-to-face, telephone, mail, email | NA |
| 12  | Sample size | How many participants were in the study? | Methods, the 1st paragraph |
| 13  | Non-participation | How many people refused to participate or dropped out? Reasons? | NA |
| 14  | Setting | Where was the data collected? e.g. home, clinic, workplace | Methods, the 1st paragraph |
| 15  | Presence of non-participants | Was anyone else present besides the participants and researchers? | NA |
| 16  | Description of sample | What are the important characteristics of the sample? e.g. demographic data, date | Methods, the 2nd paragraph |
| 17  | Interview guide | Were questions, prompts, guides provided by the authors? Was it pilot tested? | NA |
| 18  | Repeat interviews | Were repeat interviews carried out? If yes, how many? | NA |
| 19  | Audio/visual recording | Did the research use audio or visual recording to collect the data? | Methods, the 3rd paragraph |
| 20  | Field notes | Were field notes made during and/or after the interview or focus group? | Methods, the 3rd paragraph |
| 21  | Duration | What was the duration of the interview or focus group? | NA |
| 22  | Data saturation | Was data saturation discussed? | NA |
| 23  | Transcripts returned | Were transcripts returned to participants for comment and/or correction? | NA |
| 24  | Number of data coders | How many data coders coded the data? | Methods, the 3rd paragraph |
| 25  | Description of the coding tree | Did authors provide a description of the coding tree? | NA |
### Table S1: Continued

| No. Item | Guide questions/description | Note/ Reported on Page |
|----------|-----------------------------|------------------------|
| 26. Derivation of themes | Were themes identified in advance or derived from the data? | Methods, the 3rd paragraph |
| 27. Software | What software, if applicable, was used to manage the data? | NA |
| 28. Participant checking | Did participants provide feedback on the findings? | NA |
| Reporting | **29. Quotations presented** | Results |
| | Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number | Results |
| | **30. Data and findings consistent** | Results |
| | Was there consistency between the data presented and the findings? | Results |
| 31. Clarity of major themes | Were major themes clearly presented in the findings? | Results |
| 32. Clarity of minor themes | Is there a description of diverse cases or discussion of minor themes? | Results and Discussion. |

Adapted from Tong et al.\[^9\]