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RESEARCH ARTICLE

Pharmacists' perception about design and content of medicine labels on prescription services in community pharmacies

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Abstract

Background: Differences in perception among pharmacists and the absence of standards or regulations for labelling prescribed medicines in Indonesia make the labels patients receive have different designs and contents. Incomplete information and insufficient medicine label design can lead to medication errors. **Objective:** This study aimed to determine the pharmacists' perception of the design and content of prescribed medicine labels. **Method:** This study was conducted by survey using an online questionnaire developed based on the "FIP Guidelines for The Labels of Prescribed Medicines" and Regulation of the Minister of Health of the Republic of Indonesia number. 73 the year 2016 concerning Pharmaceutical Service Standards in Pharmacies. Questionnaires were distributed through personal chat and social media groups of community pharmacists. **Result**: A total of 925 pharmacists from 32 provinces of Indonesia participated in this study. Respondents considered the most important information on the label of prescribed drugs namely instructions for drug use (84.6%), patient name (81.6%), pharmacy name (76.1%), special instructions (71.5%), and pharmacist name (63.9%). For the label's design, most respondents preferred printed and handwritten labels (61.2%). **Conclusion:** It can be concluded that different pharmacists' perceptions affect the labelling of prescribed medicines. There is a need for regulations or standards of labelling prescribed medicines.

Introduction

"*A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer*" (National Coordinating Council for Medication Error Reporting and Prevention, 2022). Medication errors can occur at all drug service stages, from prescribing and dispensing to monitoring drugs (Aronson, 2009; Samsiah *et al.,* 2016). In Malaysia, from 2009 to 2012 the National Medication Error Reporting System (MERS) recorded 17,357 cases. There were 3.1% of 2,384 cases of medication errors caused by incorrect labels (Samsiah *et al.,* 2016).

In Indonesian pharmaceutical service standards in pharmacies, the labelling rules are only based on the colour of the label, namely white labels for drugs taken orally, blue labels for external and injectable drugs, and suspension dosage forms labelled "*shake*" (Kemenkes, 2016). Specific provisions regarding labelling in the Indonesian National Drug Informatory (Informatorium Obat Nasional Indonesia=IONI) state that the name of the drug, dosage form, dosage strength, dosage and frequency of use, method of use, patient name, date of drug preparation, identity and address of the pharmacy must be clearly visible and the name of the drug on the drug packaging should not be covered by the label (Badan POM RI, 2015).

Inappropriate drug labelling can harm the patient and cause patient non-compliance in taking the drug because the patient does not understand the instructions or messages on the label (Shrank *et al.,* 2007; Shrank *et al.,* 2010). The use of language and words that are appropriate to explain drug use and dosage instructions will cause misunderstanding in patients (Wolf *et al.,* 2007) and lead to medication errors (Berman, 2004). Therefore, the purpose of this study was to determine the pharmacist's perception of the design and contents of drug labels on prescription services at pharmacies.

Methods

This type of research was a cross-sectional descriptive study using quantitative methods. The samples in this study were pharmacists in Indonesia who practice and have a licence for practising in pharmacies. The sampling method was the purposive sampling technique. The indicators of labelling variables in this study were the design and content of label information. The questionnaire was developed based on the "*FIP Guidelines for The labels of prescribed medicines*" and the Regulation of Indonesian Minister of Health No.73 year 2016 concerning Standards of Pharmaceutical services in Pharmacies.

The data obtained in this study were analysed descriptively, and the results were presented in tables and graphs.

Results

Regarding the perception of label design (Tabel I), 50.6% of 925 respondents considered the ideal size of the label to be 8x5 cm. As much as 61.2% of respondents considered the ideal prescription drug labels to be printed. The majority of respondents who thought that printed label was ideal label chose the most appropriate font type Arial (41.7%). The ideal font size, according to the respondent, was 10 points (47.0). The majority of respondents thought that white for oral drugs and blue for external drugs were sufficient (91.5%). The colour difference of the label will be beneficial for patients using drugs that are prescribed by the label of the majority of respondents "*yes*" (97.3%). More than three-quarters of respondents (76.0%) think that the primary packaging of drugs is the ideal place to attach labels (76.0%).

Table I: Respondents' perception of label design (n = 925)

Label design	n (%)
The ideal label size	
7x4 cm	286 (30.9)
8x5 cm	468 (50.6)
10x5 cm	124 (13.4)
Others	47 (5.1)
Medicine label writing method	
Printed	341 (36.9)
Either printed or handwritten	566 (61.2)
Handwritten	18 (1.9)
Type of font	
Arial	378 (41.7)
Tahoma	100 (11.0)
Calibri	89 (9.8)
Times New Roman	340 (37.5)
Font size for printed label	
10 pt	426 (47.0)
12 pt	412 (45.4)
14 pt	69 (7.6)
Keep using white and blue colours to differentiate oral and non-oral medicines	
Yes	846 (91.5)
No	79 (8.5)
Differences in the colour of the labels are beneficial for the patient in using their medicine	
Yes	900 (97.3)
No	25 (2.7)
The best place to put the label	
Primary packaging	703 (76.0)
Secondary packaging (additional packaging)	222 (24.0)

Table II shows respondents' perceptions of the information contents of the label. The five most important components in prescribed medicine labels according to the respondents were instructions for drug use/rules for use (84.6%), patient names (81.6%), pharmacy names (76, 1%), special instructions (71.5%), and pharmacist's name (63.9%). From the results of the study, the five least important contents on the label were the pharmacist's initials (5.0%), pharmacy name (4.0%), instructions for the use of drugs/rules of use (3.9%), form dosage (4.4%), pharmacist name, patient name and drug name with the same percentage (3.8%).

Table II: Respondents' perception of the information contents of label (n = 925)

Information contents of label	Respondents response			
	Very important n (%)	Important n (%)	Not important n (%)	Very unimportant n (%)
Pharmacy name	704 (76.1)	183 (19.8)	1 (0.1)	37 (4.0)
Pharmacist name	591 (63.9)	268 (29.0)	31 (3.4)	35 (3.8)
Pharmacist initials	327 (35.4)	349 (37.7)	203 (21.9)	46 (5.0)
Patient name	755 (81.6)	135 (14.6)	0 (0.0)	35 (3.8)
Instructions for drug use/rules for use	783 (84.6)	105 (11.4)	1 (0.1)	36 (3.9)
Medicine name	548 (59.2)	279 (32.1)	45 (4.9)	35 (3.8)
Dosage form	409 (44.2)	391 (42.3)	84 (9.1)	41 (4.4)
Drug indications	489 (52.9)	351 (37.8)	53 (5.7)	32 (3.5)
Shelf life (expired date, beyond used date, period after opening)	506 (54.7)	350 (37.8)	39 (4.2)	30 (3.2)
Medicinal strength	365 (39.5)	380 (41.1)	146 (15.8)	34 (3.7)
Drug dispensing date	462 (49.9)	366 (39.6)	66 (7.1)	31 (3.4)
Special instructions (example: taken with meals)	661 (71.5)	230 (24.9)	3 (0.3)	31 (3.4)

Discussion

Preparation of drug labels properly is an important step before dispensing the drug to the patient. The improper appearance of the label leads to patients assuming that the medicines are also prepared poorly. This can cause a loss of patients' trust in pharmacists (Adejare, 2016). The drug label must match the size of the package, be neatly affixed to the package, and still contain the components of the information needed by the patient. In Indonesia, the identity of pharmacies and community pharmacists on prescription drug labels is usually printed on the labels. Other information, such as drug use instructions and patient identity, are written by hand. Unreadable handwriting can endanger patients because they get the wrong drug information. The FIP guidelines for prescription drug labels must be printed to eliminate this problem (International Pharmaceutical Federation, 2001). The font type should be chosen a familiar font such as Arial or Times New Roman with a font size that matches the label size and is clearly legible by the patients (Leat *et al.,* 2014). Colour labels are useful for patients with healthy vision, but for colour-blindness patients who have limitations in interpreting certain colours (e.g. green-red), it may actually make it difficult for them to read the label (Government of Canada, 2019).

Pharmacist initial, pharmacy name, instructions of drug use, dosage form, pharmacist name, patient name and drug name are very important to include on the labels. The pharmacist's initials on the label are a form of responsibility for the professional activities carried out by the pharmacist. During the preparation of the drug, a double check will be carried out in dispensing the drug to ensure that the prepared drug and label are in accordance with the prescription so that the initials are a sign that a double check has been carried out (Adejare, 2016). Medication errors and even failure of therapy can occur because patients do not know how to use the drug if the instructions for using the drug are not clearly stated on the label. The name of the drug is useful to facilitate identification in the event of an accidental or intentional drug overdose by the patient and make it easier for the patient to identify if the label is detached from the drug packaging (Adejare, 2016).

The limitations of this study were that the respondents who filled out the questionnaire came from 32 out of 34 provinces in Indonesia. In addition, the sampling method in this study was non-random sampling, so the results of this study cannot be generalised to the population of Indonesian pharmacists who practice in pharmacies.

Conclusion

The most important contents of the drug label in the prescription service at the pharmacy were the pharmacy name, pharmacist name, pharmacist initials, patient name, instructions for drug use, drug name, dosage form of the drug, drug indication, shelf life (expired date, beyond used date, period after opening), drug strength, drug dispensing date, and special instructions (example: taken with meals). The ideal label design was printed, handwritten labels with

a paper size of 8x5 cm and using Arial font with a font size of 10 points, blue labels for external drugs and white labels for internal drugs, and the labels were attached to the primary packaging.

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