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RESEARCH ARTICLE

# Evaluation of clinical pharmacy services in community health centres to support Indonesian health programme in West Java Indonesia

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## Abstract

**Background:** The implementation of clinical pharmacy services is critical in Indonesia's community health centres (CHCs). However, there is a paucity of studies evaluating the implementation of such services. This study aimed to evaluate clinical pharmacy services by CHCs in West Java, Indonesia. **Methods:** This cross-sectional study used a self-completed questionnaire, including several indicators of the standard pharmacy services, to evaluate the implementation of clinical pharmacy services by CHCs in West Java, Indonesia. **Results:** In total, 39 CHCs participated in this study. The home visits, drug therapy and adverse monitoring, counselling services, and drug use evaluation were not well performed as determined. In contrast, drug information services, rational use of medicine, and prescription have been well performed. There was no app or IoT (internet of things) system to support the clinical pharmacy services in Indonesia's CHCs. **Conclusions:** The performance of the clinical pharmacy services of accredited CHCs should be improved to support Community Health Centers in Indonesia.

## Introduction

Community health centres (CHCs) are the backbones of the Indonesian public health service system. CHCs provide comprehensive health services for populations on a subdistrict level, including curative, promotive, and preventive treatments. Furthermore, the number of CHCs has increased to 10,134 units around the country (Kemenkes, 2016a, 2016b). In 2015, the Indonesian Ministry of Health launched The Health Indonesia Programme (*Program Indonesia Sehat*) to enhance the quality of public health.

This programme implemented two main activities, i.e., drug supply management and clinical pharmacy, by assigning CHCs to perform home visits in their working area (Kemenkes, 2016c, 2017b). The government has

established 12 main indicators to determine family health status (Kemenkes, 2014, p. 75).

Well-implemented clinical pharmacy services have been demonstrated to improve overall patient health and decrease the rate of adverse effects, thus reducing health expenditure and improving the country's socio-economic situation. Community-based facilities could be improved through e-health implementation to become more integral to the transformation of the health services system, which can impact the access, quality, efficiency, and equity at the community healthcare level (Mackeigan & Nissen, 2008; Desse *et al.*, 2021).

There are no comprehensive assessments for the effectiveness of CHC pharmaceutical services, especially clinical pharmacy services, even though the

Health Indonesia Programme has been running for more than five years. Therefore, this study aimed to evaluate the effectiveness of the clinical pharmacy services performed by CHCs, especially in West Java, Indonesia.

## Methods

### Study design

This cross-sectional observational study on clinical pharmacy services following the description of the Health Indonesia programme used a self-completed questionnaire (Supplement 1) to evaluate several indicators. It included the availability of pharmacists or pharmacy technicians, drug supply management, clinical pharmacy services, and the availability of drugs. These indicators represented the Standard Pharmacy Services published by the Ministry of Health (Kemenkes, 2014, p. 74), to be applied by CHCs.

### Questionnaire development

One discussion group was formed to develop the questionnaire used in this study. It consisted of representatives from CHCs and public health offices throughout Bogor, Depok, Tangerang, Jakarta, Jakarta Health Centre, and the National Health Training Centre. The questions were prepared based on the pharmaceutical service standards of the Ministry of Health regulations No 74 of the year 2016 versus the real needs in CHCs. Before the commencement of the study, the questionnaire was tested on CHCs in Depok, Tangerang, and South Jakarta, and the results were validated through a workshop conducted in the Ministry of Health Training Centre, Jakarta.

### Respondents recruitments

The inclusion criteria in this study were CHCs in West Java, Indonesia, accredited and trained in the Health Indonesia Programme and permitted to be involved in this study. Permission was granted by the CHC and the local public health office. A total of 39 CHCs from Majalengka, Indramayu, Tasikmalaya, Cianjur, Sukabumi districts, and Sukabumi city met the criteria and were involved in this study.

### Data collection

The data collection was conducted in February 2018 in the Bandung Health Training Centre. The questionnaires were answered by the respondents responsible for the clinical pharmacy service of each CHC. These include the pharmacist, pharmacy technician, human resources personnel, or other CHC

staff. Furthermore, each CHC unit sent a representative that is either a pharmacist or pharmacy technician to fill in the questionnaire and join the Focus Group Discussion.

### Focus Group Discussion

After respondents completed the questionnaire, a group discussion was conducted, focusing on the pharmaceutical services problems found in their CHCs, digging the root causes and obstacles, and planning the possible solutions.

### Statistical analysis

Data were analysed using the Statistical Package for Social Scientists (SPSS) version 22 (IBM Corporation, Armonk, NY, USA). The frequency analysis was performed, and the data were presented in n (%).

## Results

### General characteristics of subjects

A CHC was excluded from the 40 units due to the accreditation criteria. Table I shows the general characteristics of CHC respondents. Most of those in West Java were accredited as intermediate (59%), while the others were accredited as basic (33%) and primary (7%). Inpatient and outpatient CHCs were mostly located in rural (38%) and urban (33%) areas, respectively. None of the CHCs was located in remote and very remote areas.

### Clinical pharmacy assessment

Human resources numbers and competencies are essential to support the CHC clinical pharmacy services. Table II shows CHC human resources and clinical pharmacy service quality.

In this study, 67% of the CHCs did not have the required minimum number of pharmacists and pharmacy technicians since the training has only been attended by 20%. This training is a strategy used to empower the pharmacist competencies and improve pharmacy service quality.

The determined indicators of clinical pharmacy services, such as family planning, vaccination for babies, toddler's growth monitoring, tuberculosis, hypertensive patient treatments, and mental disorders treatments, involve pharmacists and pharmacy technicians. The results showed that about 76% of pharmacists and pharmacy technicians were involved in the implementation of the programme.

**Table I: The general characterisation of CHCs and their representative**

Respondent's characteristic	N	%
Gender		
Male	10	26
Female	29	74
Educational background		
Pharmacy high school	4	10
Highschool	1	2
Pharmacy Diploma	14	36
Bachelor in Pharmacy	19	49
Magister in Pharmacy	2	3
CHC area		
Cianjur district	4	10
Tasikmalaya district	3	8
Majalengka district	11	28
Sukabumi city	7	18
Indramayu district	6	15
Sukabumi district	8	21
CHC accreditation		
Plenary	0	0
Primary	4	8
Intermediate	23	59
Basic	12	33
Unaccredited	0	0
CHC Treatment Type		
Inpatient CHC for urban area	3	8
Inpatient CHC for rural area	15	39
Inpatient CHC for remote and very remote area	0	0
Outpatient CHC for urban area	13	33
Outpatient CHC for rural area	8	21
Outpatient CHC for remote and very remote area	0	0
<b>Total</b>	<b>39</b>	<b>100</b>

**Table II: CHC's human resources and clinical pharmacy service quality in supporting the PIS-PK program (based on self-assessment questionnaire).**

Indicators	Yes		No	
	N	%	N	%
<b>Human resources and competencies</b>				
• There is a minimum of 2 pharmacy technicians for inpatients CHC for urban areas and a minimum of 1 pharmacy technician for other CHCs.	13	33	26	67
• The pharmacist and pharmacy technicians received competency improvement training.	8	20	31	80
• The pharmacist and pharmacy technicians performed clinical pharmacy services in the CHC.	30	77	9	23
<b>Clinical pharmacy services</b>				
• Prescription assessed before the drugs dispensed.	28	72	11	28
• The CHCs prepare the prescription.	38	97	1	3
• Counselling services performed.	9	23	30	77
• Duration of counselling services:				
5 Minute	4	45	5	55
10 Minute	2	22	7	78
15 Minute	3	33	6	67
• Home visit performed.	3	8	36	92
• Implement the Rational Use of Medicines.	35	90	4	10
• Drug Information Services performed.	39	100	0	0
• Drug Therapy Monitoring performed.	4	10	35	90
• Drug usage evaluated.	10	26	29	74
• Drug Adverse Monitoring performed.	4	10	35	90
• Time for preparing the medicines:				
10 Minutes	25	64	14	36
20 Minutes	13	33	26	67
30 Minutes	1	2	38	98
• Any IoT (app) implementation to support clinical Pharmacy services.	0	0	39	100

Overall, clinical pharmacy services were not well performed by the CHCs in meeting the clinical pharmacy programme. As such, home visits were only carried out by 3 (8%) CHCs, Drug Therapy and Adverse Monitoring were carried out only by 4 (10%) CHCs, counselling services were performed by 9 (23%) CHCs, and drug use evaluation was provided by 10 (26%) CHCs. Meanwhile, all CHCs provided drug information services, while rational use of medicine was implemented by 35 (90%) and prescription assessment by pharmacists or pharmacy technicians by 28 (71.2%). Almost all CHCs (97%) prepared drugs in accordance with the prescriptions and delivered information on the regimens to the patients. It is of note that no app or IoT (internet of things) system was implemented to support the clinical pharmacy services.

## Discussion

West Java is the most populous province in Indonesia, with the highest number of accredited CHCs. Most of the 10,134 CHCs are located in the West Java Province, which has about 1,069 units (Kemenkes, 2019). As the support system for the Health Indonesian Programme, CHCs need to improve their performance, especially in the number and competencies of human resources and clinical pharmacy service system.

Most of the CHCs in the sampling area were accredited to guarantee the quality of their services. Inpatient and outpatient CHCs were located in rural (39%) and urban (33%) areas, respectively. CHCs became the primary services for inpatients due to the limited number of hospitals in rural areas.

The competencies of pharmacists and pharmacy technicians affect CHC pharmacy services significantly (Embrey & Management Sciences for Health (Firm), 2013; Kemenkes, 2017a). However, it was shown that only 33% of the CHCs were qualified with the minimum number of pharmacy technicians. This lack of human resources was due to financial limitations. Qualified human resources should be available to provide good pharmaceutical and clinical pharmacy services. One strategy to achieve this is increasing competency through training (Jonathan *et al.*, 2014). The data showed that only 21% of pharmacists were included in the training. Furthermore, the amount of in-house training should be added as the solution for human resource problems, while webinars and e-learning can be utilised as well. Staff exchange between health centres and internship programmes is also recommended. The lack of training programmes

will affect pharmacist levels of competency and the inadequate number of credits for the Pharmacist Registration Certificate (Kemenkes, 2009). Furthermore, the use of IoT or app to support competencies and technical pharmacists is necessary when the number of staff is limited (Embrey & Management Sciences for Health (Firm), 2013).

For decades, pharmacists have broadened their scope beyond traditional distributive and dispensing roles. The interventions and good interaction between pharmacists, physicians, and patients, known as clinical pharmacy services, can optimise the quality of medication and disease management (Rotta *et al.*, 2015). Currently, these services have expanded both in terms of skills and areas. They are conducted in hospitals to reduce the length of stay and mortality, and a home-visit service is recognised for outpatient settings, especially those with chronic diseases that require long-term monitoring (Mackeigan & Nissen, 2008; Flanagan & Barns, 2018).

As per clinical pharmacy services, CHCs should conduct pharmacy home services, especially for patients who receive long-term treatments for diseases such as tuberculosis, hypertension, and mental health disorders. The data showed that only a few CHCs performed home visits due to the administrative task load for the pharmacists, so they don't have enough time for home visits. These patients need regular counselling to assure their compliance with treatments, monitor side effects, and prevent disease transmission in tuberculosis cases (Kemenkes, 2016c). This study also found that the availability of drugs for tuberculosis, hypertension, and mental health diseases was low and not fulfilled by the public health office. Therefore, CHCs strive to guarantee the continuity of these medicines independently. The availability of medications, especially for tuberculosis, is critical to avoid drug resistance. Having an adequate drug supply for a year can reduce the risk of drug resistance for patients with tuberculosis (Karuniawati *et al.*, 2019)

Many factors should be considered to achieve standard clinical pharmacy services, such as human resources competencies and IoT availability. Furthermore, improvements in training, education, and qualification for pharmacists and pharmacy technicians should be considered. A good collaboration between pharmacists and other healthcare professionals supported with qualified technology should be expected (Mackeigan & Nissen, 2008; Flanagan & Barns, 2018).

This study is limited by focusing the minimal sampling area only on West Java using self-reported observation data. In future studies, the representation

data should be improved and validated to generalise the findings.

## Conclusion

CHCs in West Java did not meet the criteria of standard clinical pharmacy services even after their accreditation. Furthermore, the effectiveness of CHCs in performing clinical pharmacy services should be improved to support the Health Indonesia programme. The minimum requirement for human resources in numbers and competencies should also be fulfilled, by increasing the training opportunities to improve the quality of clinical pharmacy standard services, especially in counselling services, home visits, Drug Therapy Monitoring, drug use evaluation, and Drug Adverse Monitoring. Meanwhile, e-learning and internship programmes at CHCs should be considered with government support.

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**Supplement 1: Questionnaire - Drug Management and Clinical Pharmacy Services in CHCs**

General data		
CHC name:		
CHC type: inpatient / outpatient		
Accreditation status: Plenary / Primary / Intermediate / Basic / Unaccredited		
Area location: urban / rural / remote / very remote		
District:		
Sub-district:		
City:		
Province:		
Indicators	Yes	No
<u>Human Resources and Competencies</u>		
There are minimum of 2 pharmacy technicians for inpatients CHC for urban area, and minimum 1 pharmacy technicians for other CHCs.		
The pharmacist and pharmacy technicians get any competency improvement training.		
The pharmacist and pharmacy technicians performed PIS-PK in the CHC.		
<u>Drugs supply management</u>		
CHC use Healthy Family Index Data from PIS-PK in their logistic data plan.		
Stock planning was determined by the previous data record for the number and type of diseases, or both.		
The drug selection based on National Formulary and National Essential Medicine List published by the Ministry of Health.		
The stakeholders were involved in logistic data planning.		
The CHC performs document checking on drugs receiving.		
The CHCs perform organoleptic quality check on received drugs.		
The CHC has procedures for filing the objection if there any differences in the quantity and quality of drugs received.		
The need for drugs is not fully met by the Public Health Office.		
The CHC received the drugs regularly.		
The CHC received the drugs from Public Health Office.		
CHC understand the standard pharmaceuticals storage requirements.		
The CHC has qualified pharmaceuticals storage.		
CHC distributes the drugs to their sub-units		
CHC distributes the drugs to the external sub-units based on floor-stock		
CHC use DURRS form to report to the District Pharmacy Installation.		
The sub-unit use DURRS for to report to CHC.		
Pharmaceutical supply was reported regularly.		
The CHC has a team who is responsible for drug removal.		
CHC understands the regulation for drug removal.		
CHC understands the regulation of lost or damaged drugs.		
CHC performs the drugs inventory management.		
<u>Clinical Pharmacy Services</u>		
Prescription assessed before the drugs dispensed.		
The prescription was made by physicians or dentists.		
Counselling services		
Home visit		

\*DURRS: Drug Usage Report and Request Sheet