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Research Article

Doctor's perception of clinical pharmacy services at Universitas Sumatera Utara Hospital

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Abstract

Clinical Pharmacy Services (CPS) play important roles in the clinical setting. This study aims to evaluate CPS based on Doctors' perception at the Universitas Sumatera Utara Hospital, Medan, Indonesia. It was a mixed methods descriptive study that used the Importance–Performance Analysis (IPA). The quantitative and qualitative data were accessed simultaneously in a semi-structured interview using questionnaires as the guideline. The forty-three doctors as respondents were interviewed from October to December 2021. According to the findings, doctors have used the CPS in collaboration with clinical pharmacists in percentages ranging from 16% to 98%. Furthermore, information on drug regulatory aspects, reconciliation, and drug information services are in Quadrant II, which showed the CPS has performed well. Meanwhile, the information on pharmaceutical and clinical aspects, patient drug history, as well as recommendations and clinical pharmacy intervention, are in Quadrant III. This indicated the respondents did not consider this service to be important. Based on the interview note, increasing the capacity of CPS is important to be done.

Keywords

clinical pharmacy services, doctor, hospital, implementation, perception, pharmacist, importance-performance analysis (IPA)

Introduction

Clinical Pharmacy Services (CPS) play an important role in health services. The evidence regarding the important role of CPS is reducing hospital readmissions (Cavanaugh et al. 2015), avoiding medication errors (Abdulghani et al. 2018), and preventing Drug-Related Problems (Hailu et al. 2020). Hence, it is necessary to improve clinical pharmacy services. Factually, CPS is still in the early stages in developing countries, especially in densely populated nations (Bhagavathula and Sarkar 2014; Abousheishaa et al. 2020). Many studies examine doctors' perceptions of clinical pharmacy and then develop the services (Forinash et al. 2016; Vinterflod et al. 2018).

The Indonesian Ministry of Health regulates CPS on pharmaceutical service standards in hospitals, which numbered 72 in 2016. It consists of eleven standards. Previous studies evaluated CPS through patient and pharmacist perceptions. It found that drug information services, patient drug history, visite, and therapeutic drug monitoring were not well implemented and needed to be improved (Djamaluddin and Imbaruddin 2019; Amalia and Putri 2021). In order to provide health services, clinical pharmacists must work with doctors, nurses, and other health professionals. Doctors' comfort and acceptance of the CPS are essential for its effectiveness (Ven and Lim 2020).

Several methods can be used to evaluate service quality, such as Servqual, Customer Satisfaction Index (CSI),

and Importance Performance Analysis (IPA). IPA is a simple and useful method for evaluating service quality in the healthcare system (Miranda et al. 2010). Furthermore, it divides services into four quadrants by the y-axis (importance) and the x-axis (performance). Quadrant I is high importance/low performance, indicating the service is performing poorly and needs improvement. Meanwhile, Quadrant II is high importance/high performance, which indicates that the service has performed well to gain a competitive advantage. Quadrant III is low importance/low performance, indicating that respondents do not consider this service to be important. Quadrant IV is low importance/high performance, indicating that respondents are satisfied with the performance, but the service is relatively unimportant (Chen and Lin 2013). Evaluating CPS through doctors' perceptions using IPA has never been done. Therefore, this study aims to evaluate doctors' perception of CPS at Universitas Sumatera Utara Hospital Medan.

Methods

This study was conducted from October to December 2021. The Universitas Sumatera Utara Hospital is under the auspices of the Ministry of Education, Culture, Research, and Technology. Furthermore, the respondents were 43 doctors who had been verified through their practice licenses and purposively selected with the provision of at least one person per section/specialty. Following a thorough explanation, all respondents agreed to take part and signed an informed consent. The data were obtained through semi-structured interviews. The CPS is based on Indonesian technical guidelines for pharmaceutical service standards in hospitals. The seven evaluated clinical pharmacy services are: (1) information of pharmaceutical aspects; (2) information of clinical aspects; (3) information of drug regulatory aspect; (4) patient's drug history; (5) reconciliation; (6) drug information services; (7) recommendation and clinical pharmacy intervention aspects. The question began with identifying whether the respondent has experienced CPS, and it continued with performance 5-point Likert scales (very satisfied: 4; satisfied: 3; quite satisfied: 2; less satisfied: 1; not satisfied: 0) and importance 5-point Likert scales (very important: 4; important: 3; moderately important: 2; less important: 1; not important: 0). Additionally, the data were statistically analyzed using SPSS (Statistical Package for Social Sciences). The validation test was carried out by calculating the Pearson Correlation and comparing it to the table value. The seven questions have the r-count value greater than the r-table which shows that all of the question items are valid. Reliability testing is done by calculating Cronbach's Alpha. The value obtained is greater than 0.7 indicating a reliable questionnaire. The mean values of performance and importance were extrapolated into the IPA cartesian diagram. The comment related to the performance was noted as complementary data. The interview flowchart was described in Fig. 1.

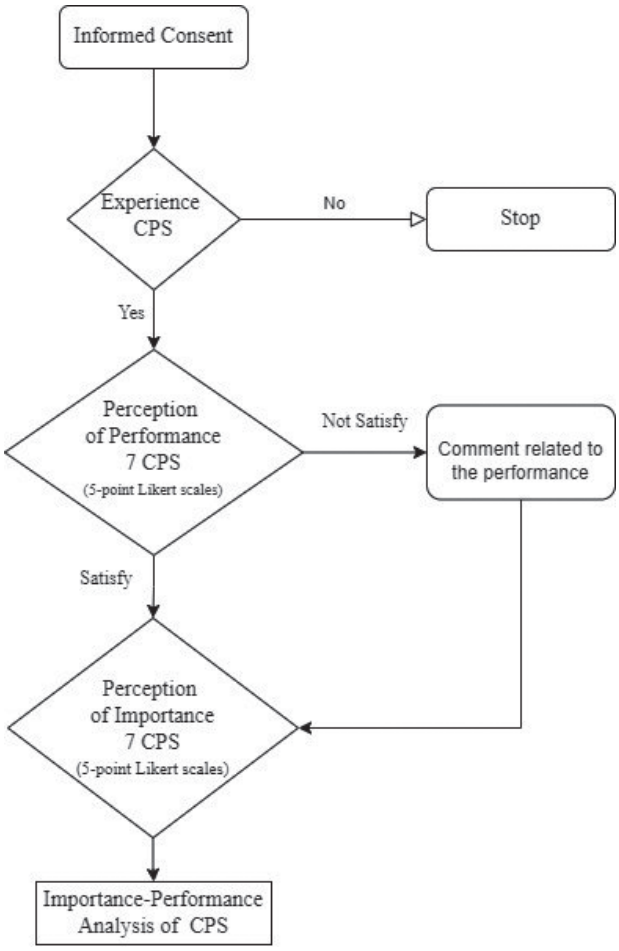

Figure 1. Interview Flow Chart.

Results

The 43 respondents were distributed in 12 sections/specialties consisting of General Practitioner, Pediatrics, Anesthesiologist, Surgerist, Cardiologist, Dermatologist, Obstetrics and Gynecologist, Internist, Pulmonologist, Psychiatrist, Neurologist, and Ophthalmologist. The results showed doctors have experienced the CPS in collaboration with the clinical pharmacist with percentages ranging from 16% up to 98%. The detailed data are described in Table 1.

Respondents who had experienced clinical pharmacy services were then identified with their level of satisfaction and importance on the Likert scale as shown in Table 2.

The data of performance and importance were tabulated and statistically analyzed using the IPA method. The total mean of performance ($\bar{x}$:1,748) and importance ($\bar{y}$:2,085)are used as the intersections of the axes in the cartesian diagram. This causes the cartesian diagram to be divided into four quadrants where the average value of each CPS is placed, as seen in Fig. 2.

Referring to the results, (3) information of drug regulatory aspects, (5) reconciliation, and (6)drug information services are in Quadrant II. Their performances met the doctors' expectations. On the other hand, (1) information

Table 1. Identification of doctor's experiences of CPS.

No.	CPS	Experiences CPS	
		Number of respondents (Person)	Percentages
1.	Information of pharmaceutical aspects	7	16%
2.	Information of clinical aspects	13	30%
3.	Information of drug regulatory aspect	42	98%
4.	Patient's drug history	11	26%
5.	Reconciliation	27	63%
6.	Drug information services	37	86%
7.	Recommendation and clinical pharmacy intervention	19	44%

Table 2. Level of performance and importance.

CPS	Respons of Performance (5-Point-Likert Scale)					Respons of Importance (5-Point-Likert Scale)				
	4	3	2	1	0	4	3	2	1	0
Information of pharmaceutical aspects	0	4	2	1	0	1	6	0	0	0
Information of clinical aspects	0	7	5	1	0	2	11	0	0	0
Information of drug regulatory aspect	0	22	13	7	0	4	33	4	1	0
Patient's drug history	0	5	4	2	0	0	9	2	0	0
Reconciliation	0	15	7	3	2	2	23	2	0	0
Drug information services	1	28	6	2	0	1	28	6	2	0
Recommendation and clinical pharmacy intervention	0	5	6	6	2	1	18	0	0	0
Likert Scale	4:very important					4:very important				
	3:important					3:important				
	2:moderately important					2:moderately important				
	1:less important					1:less important				
	0:not important					0:not important				

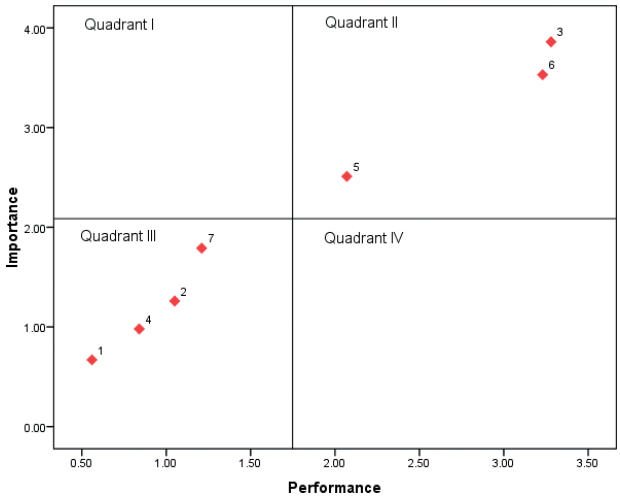

Figure 2. IPA diagram of CPS in doctor's perception.

of pharmaceutical aspects, (2) clinical aspects, (4) patient drug history, and (7) recommendations and clinical pharmacy intervention are in Quadrant III. The doctors' perception of these four activities is not very important. The reasons that lead to the low perception of doctors on the performance and importance of CPS can be identified through the interview note in Table 3.

The interview notes describe the low perception mostly because they rarely experience the CPS.

Table 3. Interview note.

CPS	Interview's note	Numbers of respond
Information of pharmaceutical aspects	I've had it but rarely.	1
Information of clinical aspects	I've had it but rarely.	1
Information of drug regulatory aspect	Drug regulation is known at the time of prescribing, and it is difficult to adjust therapy.	6
Patient's drug history	I've had it but rarely. Sometimes, I do it myself.	1
Reconciliation	Reconciliation data are written on the medical record. I expect it, followed by verbal communication.	2
Drug information services	The clinical pharmacist did not respond to the need for drug information immediately. It takes too long.	2
Recommendation and clinical pharmacy intervention	I've had it but rarely.	6

Discussion

The doctor's experience shows that a high level of CPS is information of regulatory aspects. Whereas it is low on the pharmaceutical aspect, clinical aspects, and patient drug history (<30%). It's related to the Doctors-Clinical pharmacist interaction. The more advanced the CPS, the higher interaction within the clinical team is felt (Ven and Lim 2020).

IPA's results showed that (3) information of drug regulatory aspects, (5) reconciliation, and (6) drug information services are in Quadrant II. Their performances met the doctors' expectations. Based on the interview notes in Table 3, improvements can be made by periodic socialization about drug regulation to adjust therapy early. The reconciliation process is expected to be carried out routinely for all patients and is not only written in the medical record but also verbally communicated to the doctor. Verbal communication was more likely to resolved any discrepancies (Porcelli et al. 2010).

The clinical pharmacist well known as a good drug informant. Improving clinical pharmacists' ability to immediately answer drug information can maintain satisfaction (Ghaibi et al. 2015). This can be achieved through training, continuing education programs (Goldberg 2015), and using artificial intelligence (Del et al. 2020).

On the other hand, (1) information of pharmaceutical aspects, (2) clinical aspects, (4) patient drug history, and (7) recommendations and clinical pharmacy intervention are in Quadrant III. The doctors' perception of these four activities is not very important. The information of pharmaceutical aspects was rarely perceived based on Table 1. Pharmaceutical aspects in Indonesian regulations included interventions on drug names, dosage forms, strengths, drug amount, stability, and direction of use. It proved to reduce prescription errors. Unfortunately, the lack of clinical pharmacists' competency and productivity contributes to this perception.

The perception of clinical pharmacists' role in patient drug history is low (Ahmed et al. 2017). This is because

they have not felt the benefits yet. Even though it can reduce the workload of doctors and prevent medication errors (Shahid et al. 2020). Patient drug history is not only carried out by clinical pharmacists but also by doctors and nurses. Generally, they do not record all the drugs such as over-the-counter products, vitamins, or herbal products (Barnsteiner 2008). Therefore, pharmacists can take this part to improve the health service process.

Based on the interview notes in Table 3, doctors are less satisfied with CPS because they rarely experience them. It indicates that CPS has not been well implemented by pharmacists. One of the obstacles is balancing clinical and logistical activities. Reducing the workload of pharmacists can be done by delegating several logistics activities to the assistant pharmacist so that they can focus on clinical pharmacy services (Garcia-Cardenas et al. 2018). *Visite* with doctors, nurses, and other health workers can increase the awareness of the health care teams towards the work of clinical pharmacists (Ramos et al. 2018). The capacity and number of human resources must be increased in proportion to the workload so that productivity can be felt.

Conclusion

Doctors have experienced CPS by clinical pharmacists. Based on the IPA method, the performance of 3 CPS, information of drug regulatory aspects, reconciliation, and drug information services have met their expectations. Meanwhile, information on pharmaceutical and clinical aspects, patient drug history, as well as recommendations and clinical pharmacy intervention have not been considered important. Therefore, several improvements based on interview notes need to be made to enhance CPS to produce optimal health services.

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References

Abdulghani KH, Aseeri MA, Mahmoud A, Abulezz R (2018) The impact of pharmacist-led medication reconciliation during admission at tertiary care hospital. International Journal of Clinical Pharmacy 40: 196–201. https://doi.org/10.1007/s11096-017-0568-6

Abousheishaa AA, Sulaiman AH, Huri HZ, Zaini S, Othman NA, Bin Aladdin Z, Guan NC (2020) Global scope of hospital pharmacy practice: A scoping review. Healthcare (Basel, Switzerland) 8(2): e143. https://doi.org/10.3390/healthcare8020143

Ahmed NO, Abdulghani MAM, Alrebdi SF, Baobaid MF (2017) Perceptions of physicians about clinical pharmacist's role in al qassim's hospitals in saudi arabia. Malaysian Journal of Public Health Medicine 17: 109–116. https://doi.org/10.37268/mjphm/vol.17/no.3/art.220

Amalia T, Putri TU (2021) Implementasi peraturan menteri kesehatan No 72, tahun 2016 terhadap pelayanan farmasi klinis di rumah sakit A. Jurnal Inkofar 5: 1–5. https://doi.org/10.46846/jurnalinkofar.v5i1.188

Barnsteiner JH (2008) An evidence-based handbook for nurses. Handbook for nurses. 1–14 Patient Safety and Quality: An Evidence-Based.

Bhagavathula AS, Sarkar BR (2014) Clinical pharmacy practice in developing countries: Focus on India and Pakistan 5. https://doi.org/10.4103/2045-080X.132661

Cavanaugh JJ, Lindsey KN, Shilliday BB, Ratner SP (2015) Pharmacist-coordinated multidisciplinary hospital follow-up visits improve patient outcomes. Journal of Managed Care & Specialty Pharmacy 21: 256–260. https://doi.org/10.18553/jmcp.2015.21.3.256

Chen Y-C, Lin S (2013) Applying importance-performance analysis for improving internal marketing of hospital management in Taiwan. International Business Research 6: 45–54. https://doi.org/10.5539/ibr.v6n4p45

Del C, Bermudez R, Medrano IH, Yebes L, Poveda JL (2020) Towards a symbiotic relationship between big data, artificial intelligence, and hospital pharmacy. Journal of Pharmaceutical Policy and Practice: 13: e75. https://doi.org/10.1186/s40545-020-00276-6

Djamaluddin F, Imbaruddin A (2019) Kepatuhan pelayanan farmasi di klinik di rumah sakit Dr Wahidin Sudirohusodo. Jurnal Administrasi Negara 25: 176–193. https://doi.org/10.33509/jan.v25i3.923

Forinash AB, Chamness D, Yancey A, Mathews K, Miller C, Thompson J, Myles T (2016) Physician satisfaction with clinical pharmacist services in an obstetrics and gynecology teaching clinic. Journal of Pharmacy Technology 32: 191–195. https://doi.org/10.1177/8755122516658767

Garcia-Cardenas V, Perez-Escamilla B, Fernandez-Llimos F, Benrimoj SI (2018) The complexity of implementation factors in professional pharmacy services. Research in Social and Administrative Pharmacy 14: 498–500. https://doi.org/10.1016/j.sapharm.2017.05.016

Ghaibi S, Ipema H, Gabay M (2015) ASHP guidelines on the pharmacist's role in providing drug information. American Journal of Health-System Pharmacy 72: 573–577. https://doi.org/10.2146/sp150002

Goldberg J (2015) ProQuest LLC Pharmacist collaborative pactice ang the development and implementation of team-based care in outpatient health care settings: A case study at El Rio Community Health Center.

Hailu BY, Berhe DF, Gudina EK, Gidey K, Getachew M (2020) Drug related problems in admitted geriatric patients: the impact of clinical pharmacist interventions. BMC geriatrics 20: 1–13. https://doi.org/10.1186/s12877-020-1413-7

Miranda FJ, Chamoro A, Murillo LR, Vega J (2010) An importance-performance analysis of primary health care services: managers vs. patients perceptions. Journal of Service Science and Management 03: 218–226. https://doi.org/10.4236/jssm.2010.32027

Porcelli PJ, Waitman LR, Brown SH (2010) A review of medication reconciliation issues and experiences with clinical staff and information systems. Applied Clinical Informatics 1: 442–461. https://doi.org/10.4338/ACI-2010-02-R-0010

Ramos SF, Santos Júnior GA Dos, Pereira AM, Dosea AS, Rocha KSS, Pimentel DMM, Lyra-Jr DP De (2018) Facilitators and strategies to implement clinical pharmacy services in a metropolis in Northeast

Brazil: A qualitative approach. BMC Health Services Research 18: 1–12. https://doi.org/10.1186/s12913-018-3403-4

Shahid MR, Muhammad AR, Shireen A (2020) Clinical pharmacist intervention in improving health outcomes by reducing physician's burden and medication errors: A proposed model. International Journal of Pharmaceutical Sciences and Clinical Pharmacy 2: 1–5. https://doi.org/10.47890/IJPSCP/ShahidMasoodRaza/2020/24148306

Ven M, Lim C (2020) Perceptions and expectations of doctors and nurses towards clinical pharmacy services in Tawau hospital. Malaysian Journal of Pharmaceutical Sciences 18(1): 1–14 https://doi.org/10.21315/mjps2020.18.1.1

Vinterflod C, Gustafsson M, Mattsson S, Gallego G (2018) Physicians' perspectives on clinical pharmacy services in Northern Sweden: A qualitative study. BMC Health Services Research 18: 1–9. https://doi.org/10.1186/s12913-018-2841-3