Perception on clinical pharmacy services in a private hospital in Yogyakarta, Indonesia

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ABSTRACT
Clinical pharmacist in Indonesian hospitals has begun to be recognized as an essential part of the healthcare team along with physicians, nurses and other healthcare professionals. While recognition is still on the way, the implementation of clinical pharmacy services is still limited. This could occur because of various factors, one of which is the lack of interprofessional collaboration. Interprofessional collaborations with other healthcare provider are necessary for a pharmacist to implement their clinical services. Hence, health professionals’ perception of clinical pharmacy services would give a contribution to developing strategies for the service in the hospital. This study aims to determine perceptions of health professionals in a private hospital in Yogyakarta, Indonesia, on clinical pharmacy services. A total of 96 nurses and 17 physicians were given a questionnaire with items related to clinical pharmacy services. The result showed that health professionals had a positive perception of the role of the pharmacist in clinical pharmacy service with a total mean score of 0.83. Relationship between respondents’ characteristic and their perceptions showed that nurses’ workplace (ward) had a significant effect on their perceptions (p<0.05). In contrast, characteristics of age, gender, profession, length of work experience, and interaction intensity with the pharmacist did not reveal significant effect.

INTRODUCTION
Clinical pharmacy is a field in pharmacy concerning patient safety, especially regarding drug therapy, to optimize patient’s therapy and increase the quality of life. This field has been expanded to be a patient-centred care service, from the previous scope of pharmacy, where the role of a pharmacist was subjected only to end in the distribution phase. There is, nowadays, a higher demand for service providing by the pharmacist which is related to much more interpersonal skills as well as intellectual capabilities. The role of a pharmacist in the clinical aspect requires the pharmacist to have a responsibility in the rational use of medication to assure a safe, appropriate and cost-effective therapy of Clinical Pharmacy (Hepler, 2004; Shah et al., 2017).

Clinical pharmacy in Indonesia was first introduced in 2000 and continued to spread throughout the country. Both university and clinical settings have been doing innovations to introduce clinical services in pharmacy education as well as pharmacy services, particularly in hospitals. Universitas Surabaya (Ubaya) was one of the first universities to acquaint clinical pharmacy in Indonesia through the help of the British Council which resulted in the establish-
ment of a centre for drug information and pharmaceutical care (CDIPC) as well as clinical pharmacy training for Indonesian pharmacists. In the clinical settings, a collaboration between hospital pharmacists in Indonesia (led by Cipto Mangunkusumo Hospital pharmacists) with Australian hospital pharmacists has made a significant impact on the development of clinical pharmacy services mainly in hospital settings through various training and conferences in both countries. These innovations have become the basis for clinical pharmacy education in Indonesia (Mutiara, 2003; Prayitno, 2015; Ghozali and Abdissalam, 2020).

In providing clinical pharmacy services, there are several competencies and elements involved such as direct patient care, pharmacotherapy knowledge, system-based care and population health, communication, professionalism and continuing professional development. One of the key elements included in almost all of these competencies is the collaboration or relationship with other health professionals such as physicians and nurses. Medication use in patients is a complicated and complex matter which should be noticed by every healthcare provider. The success in delivering medication would depend on the interaction of these professionals based on their competencies (Saseen et al., 2017). Interprofessional collaboration practice in the healthcare system is an essential component to achieve patient-centred care in which each healthcare provider will optimize their role and collaborate with the patient to accomplish the goal in increasing patients’ quality of life (Čufar et al., 2014). Nevertheless, implementing interprofessional collaboration in healthcare providers, mainly pharmacists’ involvement has not been an easy pathway.

Perception of other health professionals towards clinical pharmacy services could be one of the early steps to develop clinical pharmacy services in a hospital as well as their attitude and personal experiences (Ramya and Vineetha, 2014).

This study aims to determine the perception of physicians and nurses in a private hospital in Yogyakarta on clinical pharmacy services as well as the effect of respondent characteristic towards their perception which will hopefully give an impact on the development of the service.

MATERIALS AND METHODS

Materials

Healthcare professionals recruited for the study were physicians and nurses from a private hospital in Yogyakarta. Physicians and nurses were enrolled in the study if they met the inclusion criteria, which were having experience in interacting with a clinical pharmacist, fully employed by the hospital and willing to fill in the questionnaire given. A questionnaire was adopted and modified from the tools used by two previous studies from the United Arab Emirates and Central Java, Indonesia (Abu-Gharbieh et al., 2010; Putra and Widayanti, 2013). The questionnaire was validated before preceding the research.

Methods

This study was a non-experimental study using a cross-sectional design. Subjects which consisted of physicians and nurses in one of the private hospitals in the Special District of Yogyakarta, Indonesia were recruited from August 2015 until March 2016. As much as 17 physicians and 96 nurses were able to fulfil the study where they were asked to fill in an 11 item questionnaire consisting of aspects in clinical pharmacy services. Scoring was done on the completed questionnaires to determine the perception towards clinical pharmacy.

Data Analysis

Perception of health professionals was analyzed by scoring the result of the questionnaires (score 1 for positive perception, and score 0 for negative perception). The positive perception was indicated by a mean perception score of ≥ 0.5 while a mean score of < 0.5 showed a negative perception of the given item. One way ANOVA and Independent Sample T-test was used to identify the effect of respondents’ characteristic towards their perception on clinical pharmacy services. Characteristics analyzed in this study consisted of age, gender, profession, length of work, nurses workplace (ward) and interaction with the pharmacist.

RESULTS AND DISCUSSION

Characteristics of Respondents

This study was able to recruit 113 respondents which consisted of 17 physicians and 96 nurses who were fully employed in the hospital. Characteristic was analyzed for age, gender, work experience, interaction with the pharmacist as well as a work station (for nurses). Distribution of the respondents for these characteristics can be seen in Table 1.

Based on the table, the characteristic of respondents was mostly aged 35 – 44 years old, female, nurse, more than five years of work experience, and often had interaction with pharmacists. For the nurse respondents, they were varied based on their work station with a total of 12 work stations included in the study. These characteristics will not only describe the distribution of respondents but will also contribute to analyzing the influence of each
Table 1: Characteristic of Study Respondent

| Characteristics of Study Respondents | Value (n) |
|-------------------------------------|-----------|
| Age                                 |           |
| < 25                                | 12        |
| 25 – 34                             | 39        |
| 35 – 44                             | 51        |
| ≥ 45                                | 11        |
| Gender                              |           |
| Male                                | 31        |
| Female                              | 82        |
| Profession                          |           |
| Physician                           | 17        |
| Nurse                               | 96        |
| Work Experience                     |           |
| 1 year                              | 9         |
| 1 - 5 years                         | 15        |
| > 5 years                           | 89        |
| Interaction with Pharmacist          |           |
| Often                               | 85        |
| Seldom                              | 28        |
| Work Station                        |           |
| Work station 1                       | 9         |
| Work station 2                       | 1         |
| Work station 3                       | 7         |
| Work station 4                       | 11        |
| Work station 5                       | 13        |
| Work station 6                       | 10        |
| Work station 7                       | 7         |
| Work station 8                       | 10        |
| Work station 9                       | 9         |
| Work station 10                      | 1         |
| Work station 11                      | 7         |
| Work station 12                      | 11        |

character towards the perception score resulted in the study. Several factors that are known to affect medical and nurses’ acceptance toward clinical pharmacy services include frequency of communication, professional culture, high workload, high turnover, strong compliance or support with medical chiefs’ prescription patterns, lack of awareness on medication errors, the resistance for interprofessional collaboration as well as lack of knowledge about clinical pharmacists’ roles (de León-Castañeda et al., 2019; Li et al., 2014).

Perception of Health Professionals

Perception of health professionals, which includes perception from physicians and nurses, towards clinical pharmacy services in the hospital was analyzed using the questionnaire provided by this research. Items in the questionnaire were formulated to acknowledge how physicians and nurses perceive the service of clinical pharmacists in the hospital. The result of the questionnaire is shown in Table 2.

The result from the table shows that overall total perception from physician and nurses indicated a positive perception on all items regarding clinical pharmacy services in the hospital (mean score > 0.5). This may mark a potential opportunity for the clinical pharmacist to provide optimal service in the hospital on a team-based care system, especially with physicians and nurses. A review in the United States regarding pharmacists’ effect on patient care has shown that including a pharmacist in a healthcare team was able to result in a positive impact on various patient outcomes such as therapeutic and safety outcomes as well as humanistic outcomes, for example, medication compliance, patient knowledge and quality of life. This favourable perception
Table 2: Perception Score of Health Professionals

| No. | Questionnaire Item                                                                 | Perception Score | Physician | Nurse | Total |
|-----|-----------------------------------------------------------------------------------|------------------|-----------|-------|-------|
| 1.  | Clinical Pharmacist in the therapy committee as well as ward visits are welcomed  | 1                | 0.94      | 0.95  | 0.95  |
| 2.  | Clinical pharmacist has a role in educating patients regarding their therapy       | 1                | 0.91      | 0.92  | 0.92  |
| 3.  | Clinical pharmacist has shown full role in the hospital                           | 0.35             | 0.52      | 0.5   | 0.5   |
| 4.  | Clinical pharmacist provide information on cost-effective alternative medicines for the patient | 0.29             | 0.56      | 0.52  | 0.52  |
| 5.  | Clinical pharmacist should know patients’ clinical data and disease                | 1                | 0.93      | 0.94  | 0.94  |
| 6.  | Clinical pharmacist observe potential drug interaction                             | 1                | 0.85      | 0.88  | 0.88  |
| 7.  | Clinical pharmacist conduct monitoring of side effects                             | 0.94             | 0.77      | 0.8   | 0.8   |
| 8.  | Clinical pharmacist has ability to communicate effectively with other health professionals to support rational and effective drug therapy | 0.82             | 0.88      | 0.87  | 0.87  |
| 9.  | Clinical pharmacist become drug information center in the hospital for other health professionals | 0.71             | 0.93      | 0.89  | 0.89  |
| 10. | Clinical pharmacist should conduct a study or research regarding therapy to support rational drug therapy | 1                | 0.97      | 0.97  | 0.97  |
| 11. | Clinical pharmacist participate in emergency treatment (emergency department)      | 0.65             | 0.96      | 0.91  | 0.91  |

Table 3: Analysis of Characteristic Effect on Perception

| No. | Characteristic           | P-value |
|-----|--------------------------|---------|
| 1.  | Age                      | 0.697   |
| 2.  | Gender                   | 0.158   |
| 3.  | Profession               | 0.322   |
| 4.  | Work experience          | 0.080   |
| 5.  | Interaction with pharmacist | 0.094  |
| 6.  | Work station (for nurses) | 0.02*   |

*statistically significant
was also seen in other countries such as Sweden, Brazil, China, Malaysia etc., which also revealed a positive effect on the economic aspects (Graabæk and Kjeldsen, 2013; Vinterflood et al., 2018).

A negative perception was seen from the physicians’ aspect where several doctors could not see the full role of clinical pharmacist in the hospital (perception score 0.35) and the lack of information given by the clinical pharmacist regarding cost-effective alternative medicines for the patients (perception score 0.29). In providing clinical pharmacy services, pharmacists are required to show updated and reliable services, especially regarding drug information and expertise. This standard service could only be maintained by continuous professional development through training, seminars, or workshops. Based on several study results, limitation in human resources was identified as one of the main problems in developing clinical pharmacy services in the hospital, whether related to the number of pharmacists applying clinical pharmacy services as well as the quality of the service. Other barriers were related to time and lack of policy. The lack of knowledge on what the clinical pharmacist do specific roles could also be a problem in developing this service (dos S. Alcântara et al., 2018; Lemay et al., 2018; Vinterflood et al., 2018).

As for the low perception related to information on cost-effective medication, clinical pharmacists may need further training and continuously updated information access to give a recommendation that could help prescribers choose the best medication for the patient in terms of economic value. A systematic review of economic evaluations from clinical pharmacist interventions concluded that these interventions continue to provide cost savings for the hospital, including interventions in complex and high-cost healthcare facilities. The clinical pharmacy services provided were varied from essential clinical pharmacy services such as medication reviews, patient counselling and discharge to services and many hospital areas of services including paediatric programs, renal specialist, pharmacotherapeutic optimization, intensive care programs, and neurosurgery (Chisholm-Burns et al., 2010; Gallagher et al., 2014).

**Influence of Characteristics toward Perception on Clinical Pharmacy Services**

Perception of the services provided by clinical pharmacists could be influenced by many factors which can be either internal factors from the respondents as well as external factors such as the pharmacist themselves, the environment, etc. The study analyzed the effect of physicians’ and nurses’ characteristics towards their perception on clinical pharmacy service in the hospital. The result is, as shown in Table 3.

Based on respondents’ characteristics, it can be seen that there were no significant differences in perception towards clinical pharmacy services in the hospital utilizing age, gender, profession, length of work experience, as well as the intensity in interacting with the pharmacist (p-value > 0.05). This result should be able to give support to hospital pharmacists in gaining trust and reliability for their competency as a drug specialist to a wide range of healthcare providers. Several studies have mentioned a gap between healthcare providers’ expectation with their experience during collaborating with a pharmacist. A study in five private hospitals in Pakistan revealed that the expectation for the pharmacist as a drug expert was not in line with the real condition where most interaction with the pharmacist was only related to drug availability and alternatives. The lack of knowledge of a clinical pharmacy role from other health professionals can also contribute to the weak collaboration with the pharmacist (de León-Castañeda et al., 2019; Khan et al., 2014). Therefore, as mentioned above, continuous professional development which consists of not only pharmaceutical expertise but also communication skills are essential for developing significant professional relationship and collaboration for the sake of the patients.

A significant result was shown in the nurses’ work station aspect, which indicates that difference in location of where the nurses work could influence their perception of clinical pharmacy service (p-value < 0.05). Environmental aspects can contribute to building one’s perception. Therefore, perception can differ in different societies which in this term can be related to different nursing stations. While demographic and cultural background can affect the nurses’ perception, the dynamic of each workplace could also play a role in forming their perception of clinical pharmacy services. Nurses working in the emergency department as well as in the intensive care unit are usually faced with complex and/or time-dependent issues of patients. The burden carried by nurses in these kinds of working area would possibly be different compared to those working in regular nursing stations. The area of collaboration where pharmacists and nurses interact would also differ between the stations. This may add to how they perceive clinical pharmacist role in their workplace (Bobar et al., 2017). Furthermore, healthcare collaboration is a complicated matter where many skills are required to facilitate and optimize this practice (Indra, 2019).
CONCLUSIONS

It can be concluded from this study that health professionals, such as physicians and nurses, have positive perception toward clinical pharmacy services in the hospital. Nurses' work station had a significant effect on how they perceive clinical pharmacy services. These findings may indicate the importance of clinical pharmacist to give an optimal performance to develop a well-maintained interprofessional collaboration with other healthcare providers.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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