JURNAL ILMU KEFARMASIAN INDONESIA
Indonesian Journal of Pharmaceutical Sciences
ISSN p-ISSN 1693-1831 (Print) e-ISSN 2614-6495 (Online) PUBLISHER : Faculty of Pharmacy Universitas Pancasila

Evaluation of drug services based on prescription indicators and patient care according to who at the hospital general practitioner (GP) outpatient clinic in Depok, Indonesia

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Received: 16 May 2024 / Accepted: 26 April 2025

ABSTRACT: The World Health Organization (WHO) has developed prescription and patient care indicators, accompanied by optimal benchmarks, aimed at promoting the rational and optimal medicine use. This study aims to evaluate drug services utilizing WHO prescription and patient care indicators at the hospital General Practitioner (GP) outpatient clinic. The research was conducted retrospectively for prescription indicators, consisting of 1505 prescriptions totaling 4647 medication items administered for 804 individuals between January and December 2022. Prospective data collection to evaluate patient care was conducted from April to May 2023. Evaluation of WHO prescription indicators yielded the following results: the average number of drugs prescribed per patient was 3.09 ± 2.00; the percentage of drug prescribed by generic drug names was 47.47%; the percentage of antibiotic prescriptions was 5.46%; the percentage of injectable drug prescriptions was 6.80%; and the percentage of prescriptions in accordance with the national formulary was 75.91%. The percentages of antibiotic and injectable drug prescriptions met the optimal WHO prescription values. In terms of patient care, the results showed that the average duration of a medical consultation was 12.44±8.1 minutes, the average duration of a drug dispensing was 45.65±28.8 minutes, 96.25% of the drugs were dispensed appropriately, 100% of the drugs were labeled adequately, and 78.78% of the patients were knowledgeable. Age (p=0.111) and gender (p=0.075) showed no significant correlation with patient knowledge. There was a significant relationship between education level (p=0.014) and patient knowledge. Prescription and patient care indicators are aspects of improvement to meet the optimal benchmarks according to WHO standards.

KEYWORDS: Hospital; medical consultation time; medication services; patient care indicators; prescription indicators.

INTRODUCTION

The rational use of drug means that the patient receives the drugs according to clinical needs, the indications within an adequate duration, and at the lowest cost [1]. On the other hand, when one or more of these aspects are not met, the use of the drug can be said to be irrational [2]. In healthcare services, irrational drug prescriptions and services can be provided by health workers. Some factors lead to irrational drug use include other patients, health workers, work environment, drug supply system, inadequate drug information, etc [3]. In fact, there are several evidence such as polypharmacy, use of inappropriate drug doses, excessive use of injectable drugs, or prescriptions that do not comply with clinical guidelines [4]. The form of error that often occurs is administering the wrong drug and treatment that removes it without clinical reasons [5]. Such practices will bring negative consequences including excessive spending and the emergence of drug side effects such as resistance and dangerous drug interactions which in turn can reduce the quality of health services [6]. Therefore, irrational use of drugs should become a concern because appropriate drug use is an essential element in achieving health quality of medical treatment for the patients and the public [7].

The potency for irrational drug use has become a large-scale challenge [2]. This notion has been supported by research conducted in China and Vietnam showing the incidence of polypharmacy, excessive use of antibiotics, and excessive use of injection drugs [8]. In addition, similar cases occurred in eleven African

How to cite this article: Syafhan NFS, Hindun Wilda Risni HWR, Salsabila AFS, Putri RJYPP, Prasetyaningrum MP. Evaluation of drug services based on prescription indicators and patient care according to who at the hospital General Practitioner (GP) outpatient clinic in Depok, Indonesia. JIFI. 2025; 23(1): 18-28.

https://doi.org/10.35814/jifi.v23i1.1609
ISSN: 2614-6495

countries with the results in primary health facilities of irrational use of antibiotics and injection drugs which were reviewed using WHO prescribing indicators [9]. In addition, according to the World Bank, around 10% to 40% of the public health budget is used for pharmaceutical needs and between 20% and 50% of total health care budget expenditure is used for medicines and medical equipment [10]. Based on these data, WHO believes that cases of irrational drug use throughout the world are 50% of prescriptions and sales of drugs incorrectly and 50% of patients consuming drugs incorrectly.

WHO has established indicators for drug prescription, patient care and health facility to determine the level of rational drug use to determine to what extent drug use corresponds to the appropriateness of drug prescription. In this paper, a review of rational drug use was conducted using prescribing and patient care indicators. The review was conducted in line with the optimum value that has been determined as a reference. This aims to increase the quality of pharmacy unit services from health facilities such as health centres, hospitals, or pharmacies [11]. The previous study conducted in Ethiopia in 2021 indicated the lowest value for the average number of drugs prescribed with 0.98, the lowest value for the average percentage of antibiotic use with 85%[12] while the optimum value recommended by WHO on the aspect of patient care was not achieved [2],[13]. Furthermore, in another study in Indonesia, the average number of drugs prescribed was 3.1, the average percentage of generic drugs in the prescription was 74.89%, the average percentage of antibiotics used in the prescription was 45.52%, the percentage of conformity between the drugs in the prescription and the hospital formulary was found to be 99.17% and only the drug labelling aspect was fulfilled in the patient care indicators [14]. In the Indonesian case, research is still rarely conducted in hospitals such as the UI Hospital that provides general practitioner outpatient clinic services with a variety of disease cases. Apart from that, based on the Depok City Health Profile Data for 2020-2021, that outpatient data at the Hospital GP outpatient clinic increased significantly such that it recorded the highest number with 250.000 patients. This study aims to evaluate drug services at the hospital GP outpatient clinic using prescribing and patient care indicators according to WHO (World Health Organization). It was expected that drug services based on prescription and patient care indicators at the hospital GP outpatient clinic met the optimal values according to WHO standards.

▪ METHODS

Research design

This research was an observational study, employing both retrospective and prospective study design with descriptive-analytic research. A quantitative approach was used with a retrospective study design on prescribing indicators and a prospective study on patient care indicators. The research was conducted retrospectively for prescription indicators evaluation, covering all prescriptions issued from 1st January to 31st December 2022 using total sampling method. Evaluation of patient care was carried out prospectively using consecutive sampling method to from April to May 2023. The study received approval from the UIH ethics review boards (S-013/KETLIT/RSUI/III/2023 and S-017/KETLIT/RSUI/III/2023).

Data collection

Data collection for prescribing and patient care indicators was conducted based on specific research inclusion and exclusion criteria. Inclusion criteria for prescribing indicators encompassed prescriptions intended for patients aged 18-65 years, while exclusion criteria comprised prescriptions with incomplete administrative data and those containing only vaccinations and/or Consumable Medical Materials (BMHP). Regarding patient care indicators, which prioritize patient orientation, inclusion criteria involved patients aged ≥ 18 years, patients treated at the hospital's general clinic, and willing family members for interviews. Exclusion criteria included patients solely visiting for vaccinations, those with copies of prescriptions from a general practitioner, and patients treated by a general dentist during the study period.

Total sampling method was used to evaluate prescribing indicators, including the average number of drugs prescribed per patient, the percentage of drug prescribed with generic names, the percentage of antibiotic prescription, the percentage of injectable drug prescription, and the percentage of prescription in accordance with the national formulary. Additionally, a minimum sample calculation was conducted for patient care indicators using the following formula, with a proportion value of 0.25 sourced from previous research [2]:

$$N = \frac{Z\alpha^2 P(1-P)}{d^2} = \frac{(1,96)^2 x 0,25 x (1-0,25)}{0,1^2} = 72$$

In the data collection process, it was found that the total sample exceeded the calculated minimum sample. By consecutive sampling, 199 samples were obtained, with 100 samples to observe the average time for medical consultations and 99 respondents to observe the average time for drug preparation, adequate drug labeling, suitability of drug dispensed and prescriptions, and patient knowledge regarding drug use.

Data analysis

Data analysis was conducted using Microsoft Excel and IBM SPSS version 25. The study involved univariate analysis of prescribing indicators, along with both univariate and bivariate analysis of patient care indicators. Univariate analysis, also known as descriptive statistics, was employed to ascertain percentage values and mean ± standard deviation or median (minimum-maximum), illustrating the overall data variation of the variables under investigation [15]. Subsequently, a normality test was performed using the Kolmogorov-Smirnov method due to the sample size exceeding >50 [16]. For bivariate analysis, the Spearman Correlation test was used between the variable of age and patient knowledge and the Mann-Whitney U Test between the variables gender and education level and patient knowledge. If the p value is <0.05, the relationship test results are said to be significant, but if it is >0.05, it indicates that the variables are not significant [15].

▪ RESULTS AND DISCUSSION

Patient characteristics

A total of 1505 prescriptions comprising 4647 drug items for 804 patients as study sample was obtained for evaluation of drug prescribing. Patient demographic characteristics for evaluation of drug prescribing based on WHO ındicators were shown on the Table 1.

A total sample of 99 patients who attended GP outpatient clinic were recruited to evaluate patient care. Patient demographic characteristics for evaluation of patient care based on WHO ındicators were shown on the Table 2

Table 1. Patient demographic characteristics for evaluation of drug prescribing based on WHO ındicators.

Characteristics		Number of Patients (N=804)	Percentage (%)
Gender	Male	261	32.46
	Female	543	67.54
Age (years old)	17-25	238	29.60
	26-35	376	46.80
	36-45	93	11.60
	46-55	59	7.30
	56-65	38	4.70

Table 2. Patient characteristics for evaluation of patient care based on WHO ındicators.

Characteristics		Number of Patients (N=99)	Percentage (%)
Gender	Male	24	24.2%
	Female	75	75.8%
Age (years old)	17-25	33	33.33%
	26-35	44	44.44%
	36-45	10	10.10%
	46-55	8	8.10%
	56-65	4	4.04%
Level of education	Elementary school	0	0%
	Junior High School	0	0%
	Senior High School	13	13.1%
	University	86	86.9%

WHO's drug indicators

A hospital outpatient pharmacy unit run the service to patients from Monday to Saturday, excluding holidays and public holidays, with service hours typically commencing at 07:30 and concluding as early as 19:00. Hospital GP outpatient clinic services run between 09:00 and 15:00, with one general practitioner assigned daily through a random scheduling system, facilitating seamless coverage in case of physician unavailability. This study predominantly adheres to the optimal values recommended by WHO. The prescribing assessment entails evaluating the average number of drugs prescribed per patient (optimal value: ≤2), along with the percentage of drug prescribed by generic names, antibiotic prescription, injectable drug prescription, and adherence to the formulary (targeting 100%). Subsequently, patient care assessment parameters include adherence to WHO optimal values and hospital service standards aligned with Ministry of Health regulations. Evaluated parameters encompass the average medical consultation time (optimal value: ≥ 10 minutes), percentage of suitability for drug dispensed, adequate drug labeling; patient knowledge with an optimum value of 100%, and the average time for drug preparation which refers to the provisions at Hospital namely ≤ 30 for non-compounded drugs and ≤60 minutes for compounded drugs. The results of patients care and precription indicators were shown on Table 3.

Table 3. Indicators of prescription and patient care.

Prescription and patient care indicators	Observation results
Average number of drugs prescribed per patient	3.09±2.00 items
Percentage of drug prescribed by generic names	47.47%
Percentage of antibiotic prescriptions	5.46%
Percentage of injectable drug prescriptions	5.40%
Percentage of prescription in accordance with national formulary	75.91%
Average consultation time	12.44±8.10 minutes
Average drug dispensing time	45.65±28.8 minutes
Percentage of appropriate drug dispensed	96.25%
Percentage of adequate drug labeling	100%
Percentage of adequate patient knowledge	78.78%

Average number of drugs prescribed per patient

The average number of drugs prescribed by WHO indicators is optimal with less than (≤2). Based on the results obtained, the average number of prescribed drugs per patient was 3.09±2.00. This figure exceeds the optimal value set by WHO, indicating that GP prescribed more than 3 drugs per patient. The prescription of the largest number of drugs at the GP outpatient clinic in 2022 was 19 drugs per patient, with the most prescribed items being analgesic drugs such as paracetamol (178), gastric ulcer drugs such as omeprazole (150), and multivitamins and supplements such as vitamin D (140) and vitamin C (113). In addition, cetirizine was also prescribed (108 items) atorvastatin (58), and amlodipine (53). If the prescription of drugs exceeds the stipulated amount (>5), it may be categorized as polypharmacy [17]. Polypharmacy can lead to several risks, such as the emergence of excessive side effects [18]. In Indonesia, the classification of data into polypharmacy tends to involve more than 5 types of drugs. Based on the obtained data, there were 163 prescriptions with more than 5 types of drugs. There are several conditions that lead to patients receiving prescriptions for more than 5 types of drugs, including the number of diseases or multimorbidity, and specific chronic conditions such as chronic obstructive pulmonary disease, hypertension, and diabetes mellitus [17].

Percentage of drug prescribed by generic names

The data on the acquisition of drug prescribed by generic names is adjusted according to the provisions listed in the national formulary (Fornas) for the year 2021, with updates for the year 2022. Based on the data obtained from the outpatient general clinic at the Hospital GP clinic in 2022, it indicates that the prescription of drugs with WHO generic names amounts to 47.47%. This figure is attributed to the fact that the prescription and stock of drugs at the Hospital GP clinic consist not only of generic drugs but also predominantly of patented drugs. Additionally, the outpatient general clinic at the Hospital GP clinic does not serve patients with BPJS (Indonesian national health insurance), but rather caters to those covered by general and private insurance. Typically, patients with general and private insurance have higher expectations regarding prescribed drugs, preferring branded medications. The expectations of patients at the outpatient general clinic with general and private insurance coverage state that branded drugs are superior to generic drugs. This aligns

with research comparing generic drugs to branded drugs, which suggests that generic drugs are still underutilized due to their perceived lower quality and cheaper price [19].

Percentage of antibiotic prescriptions

The optimal value for the percentage of antibiotic prescription according to WHO is <30%. However, in this present study, the percentage of antibiotic prescription is 5.46%. Therefore, the prescription of antibiotics at the general clinic met the requirements set by WHO. This finding is consistent with research conducted at hospitals in South India, which yielded a result of 7.3%, indicating compliance with the optimal value established by WHO [20]. The appropriateness of antibiotic drugs used at the general clinic is aligned with the national formulary drug list for 2021, updated for 2022, specifically focusing on the antibiotic section. Among the collected drug data, several antibiotics are noted for their combination therapies, such as Co-Amoxiclav, which combines amoxicillin and clavulanic acid. Additionally, there are antibiotics containing a combination of framycetin sulfate and gramicidin. Cefixime holds the top position as the most frequently prescribed antibiotic, renowned for its efficacy in treating urinary tract infections [21]. Furthermore, antibiotic medications containing a combination of framycetin sulfate and gramicidin rank second among the most commonly prescribed antibiotics at the Hospital GP outpatient clinic in 2022. This is due to their recognized effectiveness in relieving throat inflammation. Additionally, this medication is utilized for preventing postoperative infections following dental procedures, as well as for treating tonsillitis and gingivitis [22]. The use of antibiotic drugs was relatively low, in line with the optimal value of the antibiotic prescription indicator set by WHO. Several factors contribute to the low prescription of antibiotics at the hospital GP outpatient clinic, including considerations made in prescribing antibiotics without conducting culture tests.

Percentage of injectable drug prescriptions

In the study on injectable drug prescriptions, it is noted that the optimal percentage of injectable drug prescriptions, according to WHO, is <20%. This corresponds with the data obtained from the hospital GP outpatient clinic, indicating an injectable drug usage rate of 6.80% in prescriptions. These findings meet the WHO's criteria for rational drug prescription indicators. Similarly, previous research conducted at hospitals in South India reported a usage rate of 10.5%, also aligning with the optimal WHO prescription indicator value [20]. The highest usage of injections at the hospital GP outpatient clinic in 2022 namely , Iron sucrose, and vitamin B complex. Iron sucrose is typically used as the first-line treatment for iron deficiency anemia. Vitamin B complex is commonly prescribed to patients at the hospital GP outpatient clinic to fulfill their nutritional needs. This administration is carried out because the illnesses of patients visiting the hospital GP outpatient clinic tend not to be too severe, thus these medications are deemed sufficient. There are several factors contributing to the low usage of injectable drugs at the hospital GP outpatient clinic, one of which is the preference for oral routes as the first choice for patients in taking medication compared to other routes. Additionally, the administration of injectable drugs is considered based on the drug's therapeutic need, as injectables are required for potent and rapid drug action.

Percentage of prescriptions in accordance with the national formulary

During data collection at the hospital GP outpatient clinic in 2022, the number of drugs prescibed in accordance with the national formulary was assessed. The national formulary used as a reference was for the year 2021, updated for 2022. Based on the obtained results, the compatibility of prescription with the national formulary was found to be 75.91%, whereas the optimal value according to WHO is 100%. Therefore, the compatibility of prescription with the national formulary has not yet reached the optimal value set by WHO. Several factors contribute to the lack of achievement in the compatibility of prescription with the national formulary. These include the absence of some drugs in the national formulary, as well as personal experience indicating that non-formulary drugs with their respective brand names may have better efficacy. Additionally, factors such as the tendency of doctors to prescribe certain drugs and the availability of drugs in accordance with the hospital stock availaibility also influence this [23]. Furthermore, prescriptions at the outpatient clinic are also influenced by health insurance coverage, which only serves patients with public and private insurance. Therefore, prescriptions at the hospital GP outpatient clinic in 2022 may not reach a proportion of 100%. This is because the types of drugs prescribed to patients at the outpatient general clinic are more diverse, as they are not obligated to prescribe drugs according to the national formulary as required for patients with BPJS insurance coverage.

Average medical consultation time

The average medical consultation time is computed by dividing the total duration of medical consultations by the number of individual consultations for each patient. Observation commences as patients enter the doctor's examination room and concludes as they exit. Researchers record the entry and exit times of each patient. In cases where there are multiple patients, observations can be conducted within the examination room. The average obtained is 12.44±8.1 minutes or a median of 9.69 (ranging from 2.95 to 39.95) minutes. These findings demonstrate superior performance compared to data reported by the WHO for several countries, which range from 2.3 to 3.5 minutes [12]. Indonesia records an average consultation time of 3 minutes, which remains higher compared to India (2.3 minutes), Ethiopia (2.9 minutes), and Kuwait (2.8 minutes). Additionally, research conducted in hospitals in Indonesia shows an average consultation time of 7 minutes and 49 seconds, and 4 minutes and 32 seconds [6][14]. With the fulfilment of the optimal value recommended by WHO, it is deemed that both physical examination and considerations in medication prescribing services have been met [2].

Average drug dispensing time

Observation began from the prescription was verified to the medication were given to the patient. However, the waiting time for prescription verification is not included in the observation. Regarding drug preparation, respondents were patients who agreed to be interviewed. The observation reveals 3 patients with compounded medication prescriptions and 96 patients with non-compounded medication prescriptions. The compounded medication provided includes only one type: a topical analgesic containing diclofenac sodium + methyl salicylate + eugenol + menthol, along with a gandapura mixture. The average preparation time is 45.65 ± 28.8 minutes (or 46 minutes and 48 seconds). This duration is notably longer compared to average times in Latin America and Europe (20.5 seconds) and South Asia (86.1 seconds) [24]. As for the results, the average times in Bangladesh (23 seconds), Nepal (86.1 seconds), Saudi Arabia (99.6 seconds), and China (25 seconds) [3].

With longer preparation times exceeding the recommended duration, it can be stated that in the drug preparation or dispensing process, a hospital GP outpatient clinic met the completeness of drug labeling, ensuring adequate labels and providing comprehensive information about the drug regimen. However, when separate calculations were made, the average time for patients receiving compounded medication is 96 minutes, while non-compounded medication takes 44 minutes. These results indicate that both compounded and non-compounded medications do not meet the requirements set by a hospital GP clinic, which comply with the provisions of Minister of Health Regulation No. 129 of 2008, namely ≤ 60 minutes for compounded medication and ≤ 30 minutes for non-compounded medication. The non-fulfillment of drug preparation time according to a hospital GP clinic's regulations may be due to the pharmacy's drug preparation system still relying on the arrival time of patients at the pharmacy installation, leading to possible patient queues and prescription accumulation at one time. Moreover, the high number of medications exceeding five items is observed. The most common prescription consists of 7 medication items. This is consistent with previous research, which indicates that as the number of medication items increases, the preparation time also takes more time [25]. Furthermore, the unavailability of prescribed medications necessitates pharmacists to confirm with general practitioners beforehand.

Percentage of appropriate drug dispensed

Observations were conducted by cross-referencing the medications received by patients with those prescribed by the general practitioner. The aspects matched include the medication's name, dosage, and quantity. Apropriateness percentage is calculated by dividing the number of medications prepared by the Hospital Pharmacy by those prescribed by the doctor, then multiplying by 100%. Out of 99 patients, 7 received a copy of their prescriptions for multiple medications. However, as other medications were also dispensed at the Pharmacy Installation, patients still received education for all prescribed medications. The total number of medications prescribed by general practitioners to patients during the research period was 240 prescriptions, of which 231 were prepared by the hospital outpatient pharmacy. Thus, the obtained percentage is 96.25% for medications served and 3.75% for medications not served, totaling 9 medications. This percentage is higher compared to research conducted in Pakistan, which reported a compliance rate of 90.9% [3]. Additionally, in Central Sulawesi Hospital, the compliance rate was reported at 94.54%.14. The unavailability of medications is due to stock shortages in the hospital [6]. During the prescription review process, if a medication is unavailable at a hospital GP clinic's pharmacy, the pharmacy staff will suggest replacing it with a similar

medication or adjusting the dosage, subject to the doctor's approval. Regarding depleted stock, if a similar medication is also unavailable, a hospital GP clinic will verify with the patient regarding the creation of a prescription copy.

Percentage of adequate drug labeling

The aspect of drug labeling is used to measure the performance of pharmacy personnel regarding the completeness of recording medication information on the drug packaging provided to patients [24]. According to WHO (1993), drug labeling should include at least the patient's name, the name of the medication, and when the medication should be taken. The medication labeling issued by the Pharmacy Installation already contains the name and dosage strength of the medication, the patient's name, and the dosage instructions (time and frequency of medication use). Sometimes, if the patient is elderly, the staff will also include the purpose of the medication on the label. Medication labeling by the pharmacy staff at a hospital GP clinical ready meets the WHO's optimum value of 100% [11]. Based on a systematic review report globally, the compliance rate is 96.9% in South Asia and 38.4% in the Middle East and North Africa region [26].

Percentage of adequate patient knowledge

Patient knowledge aspect serves to measure the effectiveness of information provided by pharmacists to patients regarding the drug use [27]. This information is provided by pharmacists during the medication information or education process before dispensing medication. According to WHO guidelines (1993), patient knowledge is assessed for each medication received. Patient knowledge can be evaluated when the medication dose is indicated on the drug packaging, so if the medication information is already complete on the packaging, patient knowledge can be evaluated. Patient knowledge could be evaluated if important information about medication (name, indication, and how to take the medication) had been stated on the medication label. Structured questionnaire were prepared to explore patient knowledge on their medication namely number of medication received, purpose of medication, frequency and how to take the medication, and other related information. To avoid subjectivity and bias, all answers were referred to what pharmacist stated on the label. The correct answer was scored with one point, while the incorrect answer was score with zero. Level of knowledge for each patient was calculated as percentages of the correct answer. Questions to be asked by researchers should at least cover when and how the medication is used [11]. The percentage of patients in the hospital GP outpatient clinic with adequate knowledge is 78.78%, which does not meet the optimum indicator value of 100%. According to summarized data from a 2022 study on patient care conducted in hospitals in Ethiopia, the percentage obtained was 70% [24]. Previous research, which also measured the patients' highest level of education, found a percentage of 74.80% [27]. The hospital in India reported a percentage of 75% [28], One of the hospitals in Indonesia reported a percentage of 48.12% [14] which means the percentage of a hospital GP outpatient clinic is still higher. However, in the other hospitals, a percentage of 85.42% was obtained [6], The average results from Bangladesh (82%); Nigeria (93%); and Egypt (94%) indicate a lower percentage compared to secondary hospital. The lower percentage of patient knowledge in secondary hospital could be attributed to the lengthy medication preparation time, potentially leading patients to be in a hurry to leave during the interview sessions. This aligns with previous research findings suggesting that hurried patients may not fully concentrate on the medication information provided by pharmacists. Additionally, another reason could be the presence of medication usage information on the label, which might distract patients from focusing on the information provided by pharmacists during the educational process [29].

Table 4. Relationship between sociodemographic data and patient knowledge.

Sociodemographic data		Knowledge score (Median (min-max))	Knowledge score (Mean)	*P* value	r
Age	Median (min-max) = 27 (18-65)	100 (75-100)	97.58%	0.111[a]	0.161
Gender	Male (n=24)	100 (87.5-100)	99%	0.075[b]	
	Female (n=75)	100 (75-100)	97%		
Education level	Senior High School (n=13)	100 (75-100)	95%	0.014*[b]	
	College (n=86)	100 (75-100)	98%		

Notes: *P* value = significance value; a = Spearman correlation test; b = Mann-Whitney U Test; * = significance value <0.05.

The results from bivariate analysis were presented in Table 4. The relationship between age and patient knowledge yielded a significance value (p)>0.05, indicating insignificance. The correlation coefficient was 0.161 with a positive direction, signifying a very weak and positive correlation [30]. These findings align with previous research, indicating no significant relationship between age and respondents' knowledge, with a p-value of 0.819 [31]. Furthermore, in the study regarding the relationship between elderly patients and medication adherence in 2021, it was also found that age did not significantly affect medication adherence [32]. Similarly, the analysis examining the relationship between gender and patient knowledge yielded a result with sig. (p)>0.05, specifically 0.075, indicating no significant difference between the two variables. This finding aligns with prior research, which also observed a higher proportion of female respondents and found no significant correlation between gender and patient knowledge [31]. Furthermore, regarding the analysis of the relationship between educational level and patient knowledge, a result with sig. (p)<0.05 was obtained, specifically 0.014, indicating a notable difference between the High School and University groups in terms of patient knowledge. The analysis revealed a mean score of 95% for high school and 98% for university, suggesting that the university group achieved a higher mean score. This study's findings are consistent with previous research conducted in 2018 in the Toraja region, which identified a significant and meaningful correlation between educational attainment and patient knowledge following information dissemination on drug use [33].

▪ CONCLUSION

Based on the results of this study, not all aspects of drug services at the hospital GP outpatient clinic met the optimal values according to WHO standards, thereby implying on the necessary follow-up actions and improvements on indicators that do not meet these recommendations.

Acknowledgements: The authors would like to express gratitude to the General Clinic, Pharmacy Unit, CSSD, healthcare professionals, and patients of a hospital GP clinic for their invaluable support throughout the research endeavor.

Funding: None to declare.

Conflict of interest statement: The author declares that there is no conflict of interest in conducting this study or presenting the data in this manuscript.

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