JMPF Vol. 12 No. 1 : 40-54
ISSN-p : 2088-8139
ISSN-e : 2443-2946

Factors Affecting Pharmacists' Perceptions and Practices of Pharmacy Services during the Pandemic

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Submitted: 16-11-2021 *Revised: 08-01-2022* *Accepted: 12-01-2022*
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ABSTRACT

Since WHO announced that COVID-19 is a global pandemic, there had been various changes in health services, including pharmaceutical services. Pharmaceutical preparations, medical devices, and consumable medical materials are pharmaceutical products in which the management is performed by pharmacists, so they must be managed wisely during this pandemic. This study aims to analyze what factors influence pharmacists' perceptions in doing pharmaceutical service during the COVID-19 pandemic. The study was conducted using a cross-sectional survey in which researchers distributed online questionnaires. Respondents were selected by convenience sampling with inclusion criteria: pharmacists who had practiced pharmacy services in Pharmacies and/or in public health centers (*puskesmas*) and/or in clinics and/or in hospitals in the Riau Islands province; had not participated in qualitative research and were willing to become research respondents. One hundred and fifteen respondents filled out questionnaires. We analyzed descriptively and statistically with Mann Whitney, Spearman Rank, and Kruskal Wallis test in Jamovi version 2.0. The level of significance for all statistical tests was set at $p < 0,05$. The results showed that of the 6 independent variables: age, gender, place of practice, length of practice experience, experience attending training/seminar related to COVID-19, and external factors, none of them influenced or correlated with the dependent variable: the role of pharmacists in management, the role of pharmacists in clinical pharmacy services as well as the development of the role and capacity of pharmacists during the pandemic. It can be concluded that there are no certain factors that affect the perception of pharmacists in doing pharmaceutical practices and services during pandemics based on statistical tests that have been done.
Keywords: COVID-19; disaster; pharmacy; pharmacist practice; perception

INTRODUCTION

The World Health Organization (WHO) announced that Corona Virus Disease 2019 (COVID-19) is a global pandemic on March 11, 2020. Since then, WHO had issued a number of recommendations to the world community to avoid infection with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2). The recommendations issued were to maintain a minimum distance around 1 meter between people when in a crowd and to use a mask when in public places [1]. The Government of the Republic of Indonesia had also issued regulations through the Decree of the Minister of Health of the Republic of Indonesia No. HK. 01.07/MENKES/382/2020 concerning Health Protocols for the Community in Public Places and Facilities in the Context of Prevention and Control of COVID-19. This regulation aimed to prevent and control the spread of COVID-19 in public places and facilities by implementing the 5M program (wearing a mask, maintaining distance, washing hands, staying away from crowds and reducing mobility) and 3T (testing, tracing, and treatment)[2]. This policy certainly affected various areas of life, including pharmaceutical services. Pharmacists and pharmacy teams had to make a number of service adaptations during this pandemic in an effort to take care of themselves and also the patients. Medicines and medical masks are pharmaceutical products whose management is carried out by pharmacists, so the role of pharmacists in maintaining the stability of pharmaceutical stocks during the COVID-19 pandemic is very much needed. Every pharmacist is expected to be able to prepare themselves and participate together with other health workers to face the disaster[4].

The role of pharmacy in disaster management is approved by the international health disaster community as a guarantor of the security of the logistics chain of medicines and clinical pharmacy services when a disaster occurs[5]. A pharmacist's preparedness is influenced by their perception of the events experienced. Many factors that can influence the pharmacist' perception in carrying out the role and practice of pharmaceutical services are age, gender, ethnicity, mental and physical health on a workplace[6]; the influence of pressure at work plus economic pressure can also affect the role of the pharmacists[7]. Practical experience for ≥5 years and attending training or workshops related to COVID-19 also have influence[8]. The media also has an influence on the way pharmacists view COVID-19[9].

Research related to the perception of pharmacists and their role during the COVID-19 pandemic has been carried out by researchers from various countries including Indonesia[8–12]. What distinguishes this research from previous research is that there had been no research that analyzes the factors that influence pharmacists' perceptions of the role and practice of pharmaceutical services during a pandemic using the questionnaire made by the researcher themselves. Through this research, researchers provide an overview of what factors influencing pharmacists' perceptions in carrying out pharmaceutical service practices during the COVID-19 pandemic. The results of this study are expected to be an input for policy makers and related parties so that every decision making by the policy makers will pay attention to the lowest elements or implementers.

METHOD

The study was conducted using a cross-sectional survey in which researchers distributed online questionnaires. Respondents were selected by convenience sampling with the inclusion criteria: pharmacists who practice pharmacy services in the pharmacies and/or in public health centers and/or in clinics and/or in hospitals in the Riau Islands region; had not participated in qualitative research and were willing to become research respondents. Research respondents who had not participated in qualitative research were respondents who had participated in preliminary research in the form of Focus Group Discussion, where the results of qualitative research became the basis for developing research questionnaires[13]. The questionnaire, which were made by the researcher themselves, had been validated and tested for reliability[13].

The research questionnaire consisted of 38 question items which were divided into 6 domains, namely sociodemographic which was filled with choices or short answers; the role of pharmacists in the management of pharmaceutical preparations, medical devices (*alat kesehatan*/alkes) and Consumable Medical Materials (CMM) during a pandemic filled with favorable statements on a Likert scale of 1-5; the role of pharmacists in clinical pharmacy services during the pandemic filled with favorable statements on a Likert scale of 1-5; public consumption behavior towards pharmaceutical preparations during the pandemic filled with Yes or No options; development of the role and capacity of pharmacists during the pandemic filled with favorable statements on a Likert scale of 1-5; and external factors that affected the role and practice of pharmacists during the pandemic which were filled with favorable statements on a 1-4 Likert scale.

The process of distributing the questionnaire link was carried out from September 11 to October 1, 2021 through the WhatsApp application message service after obtaining ethical approval from the Ethics Commission of the Faculty of Medicine, Public Health and Nursing (FKKMK) UGM No. KE/FK/0610/EC/2021. A total of 115 respondents filled out research questionnaires and were analyzed descriptively and statistically. Questionnaires filled out by the research respondents were then processed with the help of Jamovi version 2.0 software[14].

The statistical test carried out was the normality test of the data with the Shapiro Wilk test as well as the test of the relationship between variables. The independent variables of the study were age, gender, length of practice experience, place of practice, number of training/seminars related to COVID-19 attended, and also external factors that influenced the role and practice of pharmacists during the pandemic, while the dependent variables were the role of pharmacists in drug management, medical devices and CMM during the pandemic, the role of pharmacists in clinical pharmacy services during the pandemic, as well as the domain of developing the role and capacity of pharmacists during the pandemic. The statistical tests carried out were Mann Whitney, Spearman Rank and Kruskal Wallis. The level of significance for all statistical tests was set at $p < 0.05$.

RESULT AND DISCUSSION

Sociodemographic

The sociodemographic data for one hundred and fifteen respondents can be seen in Table I, where the average age of research respondents is 34-year-old with the oldest being 55-year-old and the youngest being 24-year-old. There are more female respondents (71.3%) than male respondents (28.7%). The respondent's place of practice has represented each health care facility and is dominated by respondents from hospitals (47%).

Respondents' length of practice experience also varies, ranging from fresh graduates (less than a year of practice) to having more than 5 years of practice experience. The respondents also have different experiences when attending training/seminars related to COVID-19; some has never attended at all and some has attended more than 3 times. The order of information sources most frequently used by respondents to seek information related to COVID-19 is national and international news, social media, scientific journals, and the WHO website, in which in line with the results of the previous studies[8]. The research respondents also have a similar frequency of seeking information related to COVID-19, that is weekly (38%), daily (34%) and monthly (28%). The behavior of seeking information when a disaster occurs is more likely to use official government channels than other channels. The behavior of information seeking during a disaster is also directly influenced by the relevance of the information channel, the adequacy of the information provided, and the perceived hazard characteristics as an effort to protect oneself [15].

Descriptive Analysis

The results of the descriptive statistical analysis of each domain can be seen in Table II. The results showed that the standard deviation value of each domain was smaller than the resulting average value, so it means that the average value could be a representation of the entire data. The average value is also close to the maximum value of each domain except for the external factor domain, this means that the majority of respondents agree with the statements in each domain. The domain of external factors that affect the role and practice of pharmacists during the pandemic has an average value that is smaller than the maximum value, meaning that not all or the majority of respondents have answered Always or Frequently to the questions. There are also respondents who choose the answer Rarely or Sometimes, so that this external factor domain gives an average value that is smaller than the maximum value.

Table III to Table VII present data on the results of respondents' answers per statement item in each domain. The domain of the pharmacist's role in the management of pharmaceutical preparations, medical equipment, and CMM during the pandemic; the domain of the pharmacist's role in clinical pharmacy services during the pandemic; as well as the domain of developing the role and capacity of pharmacists during the pandemic, show that the majority of answers Strongly Agree and Agree. This shows respondents' agreement on the role of pharmacists in pharmaceutical management during the

Table I. Sociodemographic Characters

Characteristic		Amount	%
Average Age	33.7-year-old		
Max age	55-year-old		
Min age	24-year-old		
Sex	Male	33	28.7
	Female	82	71.3
Place of practice	Hospital	54	47
	Public Health Center	8	7
	Clinic	10	8.7
	Pharmacy	43	37.4
Length of practice experience	< 1 year-old	3	2.6
	1-< 5 years	34	39.6
	5 years or more	78	67.8
Experience attending training or seminars related to COVID-19	no experience	26	22.6
	1	17	14.8
	2	21	18.3
	3	22	19.1
	>3	29	25.2
Sources of information used by pharmacists	National and international news	66	66
	Scientific journal	39	39.20
	WHO Website	36	36.18
	Others (social media)	58	58.29
Frequency of pharmacists seeking information related to COVID-19	Daily	39	33.9
	Weekly	44	38.2
	Monthly	32	27.9

pandemic, the role of pharmacists in clinical pharmacy services during the pandemic, and also the development of the role and capacity of pharmacists that are deemed necessary during the pandemic (Tables III, IV and VI). The perception of the role and practice of pharmaceutical services during the pandemic by pharmacists is in accordance with the guidelines provided by the international pharmaceutical federation (FIP). According to these guidelines, pharmacists in the community and hospitals have responsibility for the availability of pharmaceutical preparations, medical equipment and CMM, providing education and information, providing counseling, all of which are in accordance with the questions in the questionnaire[16]. Pharmacists also have an important role in preventing the spread of fake news related to COVID-19 in the community[17,18] by preparing and disseminating information that has real evidence to the public[19].

The behavioral domain of public consumption towards pharmaceutical preparations during the pandemic is a domain that was created with the aim of exploring facts that occur in the community from the pharmacist's point of view (Table V). The result shows that the majority of the answers given are Yes. This result means that there is a change in people's consumption behavior towards pharmaceutical preparations during the pandemic according to the research respondents, one of which is the purchase of drugs independently (self-medication).

Table II. Research Domain Descriptive Statistics Result

Domain	Total of respondent	Mean	Deviation Standard	Min	Max
The role of pharmacists in the management of pharmaceutical preparations, medical devices and CMM during the pandemic	115	4.70	0.45	3	5
The role of pharmacists in clinical pharmacy services during the pandemic	115	4.53	0.43	2.75	5
Public consumption behavior towards pharmaceutical preparations during the pandemic	115	1.86	0.17	1.14	2
The role development and capacity of pharmacists during the pandemic	115	4.44	0.52	2	5
The external factors influencing the role and practice of pharmacists during the pandemic	115	2.08	0.69	1	4

Table III. The Domain Role of Pharmacists in Pharmacy Preparation Management, Medical Devices and CMM during the Pandemic

Answers (%)	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
Question 1: Pharmacists are in charge of ensuring the availability of pharmaceutical preparations, medical devices and CMM during the COVID-19 pandemic	81.74	1.39	0.00	0.87	0.00
Question 2: Pharmacists are involved in the process of managing PPE in pharmaceutical service facilities	65.35	34.78	0.00	0.87	0.00
Question 3: Pharmacists are involved in the COVID-19 vaccine management	67.83	30.43	0.87	0.87	0.00

The main factor that causes high self-medication in the community facing the pandemic is the fear of being ostracized by the surrounding community, the fear of being quarantined by the government, the fear of contracting COVID-19 by others,[20] and the fear of running out of product stock[21]. The pandemic also encourages a healthier lifestyle in the community as an effort to prevent infection during the pandemic[22]. Therefore, there has been a change in people's consumption behavior towards pharmaceutical preparations in the midst of this pandemic.

The domain of the influence of external factors that affect the role and practice of pharmacists during the pandemic (Table VII) was created by researchers with the aim of exploring the respondents' opinions regarding the influence of the management team,

Table IV. The Domain Role of Pharmacists in Clinical Pharmacy Services during the Pandemic

Answers (%)	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
Question 1: Pharmacists play a role in educating the public regarding the disease, the spread, and the symptoms of COVID-19	54.78	39.13	4.35	1.74	0.00
Question 2: Pharmacists play a role in educating patients and the public regarding the use of antivirals and antibiotics as supportive therapy for COVID-19	74.78	24.35	0.00	0.87	0.00
Question 3: Pharmacists play a role in educating the public regarding vaccination and vaccination process	52.17	29.57	1.74	0.87	0.00
Question 4: Pharmacists play a role in educating the public regarding the importance of complying with health protocols	58.26	39.13	0.87	1.74	0.00
Question 5: Pharmacists play a role in preventing the spread of hoaxes in the community, especially those related to COVID-19	46.96	48.70	4.35	0.00	0.00
Question 6: Pharmacists play a role in the vaccination team and the COVID-19 Task Force	49.57	45.22	5.22	0.00	0.00
Question 7: Pharmacists play a role in providing confidence to the public to participate in vaccinations	51.30	45.22	2.61	0.87	0.00
Question 8: Pharmacists have a role to ensure rational use of drugs, especially for community self-medication during the pandemic	73.04	26.96	0.00	0.00	0.00

pharmacist professional organizations, and the government in supporting the role of pharmacists during the pandemic. The COVID-19 pandemic itself has a direct impact on health workers such as increased workloads, psychological pressure, and isolation by the community[23], so external factor support is also needed. The answers given by the respondents in this domain are quite diverse. These various results can give the meaning that there are different behaviors or personal (subjective) judgments.

Table V. The Domain of Public Consumption Behavior on Inventory Pharmacy during the Pandemic

Answers (%)	Yes	No
Question 1: There has been an increase in efforts to self-medicate by the community during the pandemic	98.26	1.74
Question 2: People are looking for drugs excessively (panic buying) during the pandemic	86.96	13.04
Question 3: There has been an increase in the search for medical materials such as medical masks and hand sanitizers during the pandemic	98.26	1.74
Question 4: People are trying to find potent drugs without a prescription, which are related to COVID-19 therapy during the pandemic	85.22	14.78
Question 5: There is distrust among some people regarding the manipulation of positive COVID-19 confirmations by health facilities	82.61	17.39
Question 6: There has been an increase in the use/purchase of vitamins, supplements, cold medicines, fever medicines or anything related to COVID-19	97.39	2.61
Question 7: There has been a decrease in the use/purchase of pharmaceutical preparations that are not related to COVID-19	53.91	46.09

Table VI. The Domain of the Role Development and Capacity of Pharmacists during the Pandemics

Answers (%)	Strongly Agree	Agree	Doubtful	Disagree	Strongly Disagree
Question 1: I make adaptations related to planning the need for pharmaceutical preparations, medical devices, and CMM	54.78	41.74	2.61	0.87	0.00
Question 2: I make adjustments to standard patient care procedures, for example by using PPE, keeping a distance, and limiting meeting times.	60.00	37.39	1.74	0.87	0.00
Question 3: I update knowledge regarding COVID-19	55.65	41.74	1.74	0.87	0.00
Question 4: I innovate services during the pandemic such as telepharmacy, delivering drugs to addresses, etc.	38.26	39.13	19.13	3.48	0.00
Question 5: I need a special seminar/training to deal with COVID-19	54.78	40.87	3.48	0.87	0.00

Table VII. The Domain of the External Factors Influencing the Role and Practice of Pharmacists during the Pandemics

Answers (%)	Always	Often	Rarely	Occasionally
Question 1: The management provides moral (mental) support to pharmacists during the pandemic	12.17	24.35	26.96	36.52
Question 2: The management provides material support (goods/products) to pharmacists during the pandemic	8.70	25.22	25.22	40.87
Question 3: The government (central or regional) provides moral (mental) support to pharmacists during the pandemic	6.09	21.74	33.91	38.26
Question 4: The government (central or regional) provides material support (goods/products) to pharmacists during the pandemic	6.96	13.91	46.96	32.17
Question 5: The Indonesian Pharmacist Association provides moral (mental) support to pharmacists during the pandemic	18.26	30.43	13.04	38.26
Question 6: The Indonesian Pharmacist Association provides material support (goods/products) to pharmacists during the pandemic	9.57	14.78	42.61	33.04

Table VIII. Spearman Rank Test Result: Age with Dependent Variable

Spearman Rank Test Result	The role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic	The role of pharmacists in clinical pharmacy services during the pandemic	The role development and capacity of pharmacists during the pandemic
Age	-0.055	-0.09	-0.028

Note. * p < 0,05, ** p < 0,01, *** p < 0,001

The government and professional organizations have tried to provide support in the form of technical instructions for health workers during the pandemic[24] and online seminars[25] but they still have not given the same impression among the respondents. This pandemic period might cause health workers to experience depression and severe anxiety as well as feelings of pressure while carrying out their duties[26]. This condition certainly requires strong support from other parties, no matter how small it is. Therefore, the government, the management team, and professional organizations need to ensure the mental health and welfare of the pharmacists[27].

The Correlation between Variables

The statistical tests on each research variable were carried out using Jamovi 2.0[14]. The first test performed was the normality test using the Shapiro-Wilk test. The test results showed that the distribution of data for each

Table IX. Mann Whitney Test Result: Gender with Dependent Variable

Mann Whitney Test result	The role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic	The role of pharmacists in clinical pharmacy services during the pandemic	The role development and capacity of pharmacists during the pandemic
Sex	0.814	0.930	0.920

variable was not normal (p-count < 0.001) so that the next statistical test was carried out using a non-parametric test.

The relationship between age and the role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic; the role of pharmacists in clinical pharmacy services during the pandemic; and the domain of developing the role and capacity of pharmacists during the pandemic

The results of the statistical test using the Spearman Rank showed that there was no relationship between the age factor and the pharmacists' role in pharmaceutical management, clinical pharmacy services, and the development of the role and capacity of pharmacists during the pandemic.

Previous research has stated that age is one of the factors that affect pharmacist performance, but the relationship between the two remains unclear[6]. The researchers want to find out the correlation between the age factor and the dependent variable in this study. The test results show that the age factor does not affect the role of pharmacists in pharmaceutical management, clinical pharmacy services, or the development of pharmacists' roles and capacities during the pandemic. This can be interpreted that at any age respondents have the same perception of the role and practice of their pharmaceutical services during the pandemic.

The relationship between genders and the role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic; the role of pharmacists in clinical pharmacy services during the pandemic; and the domain of developing the role and capacity of pharmacists during the pandemic

The purpose of the Mann Whitney test is to see if there is a difference in perception between the sexes of men and women on the dependent variable. The test results show that there is no difference in perception between male and female respondents regarding the role of pharmacists in pharmaceutical preparation management, the role of clinical pharmacy services, and the development of the role and capacity of pharmacists during the pandemic, as evidenced by p-value > 0.05.

A Pharmacist's performance can be influenced by personal characteristics, one of which is the gender factor[6].The purpose of comparing gender with the dependent variable in this study was to see how the perceptions of the roles and practices between male and female pharmacists carried out the role of pharmaceutical preparation management, the role of clinical pharmacy services during the pandemic, as well as the development of their roles and capacities during this pandemic. The results provided are in line with previous studies[28] which stated that there was no difference in the perception of pharmacists regarding their role during the pandemic by gender.

The correlation between long-standing practice experience and the pharmacists' role in drug management, medical devices, and CMM during the pandemic; the role of pharmacists in clinical pharmacy services during the pandemic; and the domain of developing the role and capacity of pharmacists during the pandemic

Table X. Kruskal Wallis Test Result: The Length of Practice vs Dependent Variable

Kruskal Wallis Test Result	The role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic	The role of pharmacists in clinical pharmacy services during the pandemic	The role development and capacity of pharmacists during the pandemic
Length of practice experience	0.073	0.383	0.295

The results of the static test with Kruskal Wallis showed that there was no difference in perception between pharmacists who practiced less than 1 year with those who practiced 1-4 years and those who had practiced 5 to more than 5 years on their role in pharmaceutical preparation management, the role of pharmacists in clinical pharmacy services, as well as the development of roles and capacities during the pandemic, as evidenced by the p-value > 0.05.

Previous research had found that length of work experience had a statistically significant effect on pharmacist knowledge, attitudes, and practices[29]. In contrast to the results of the previous studies, the length of practice experience does not result in differences in pharmacist perceptions of their role in the management of pharmaceutical preparations and clinical pharmacy services as well as the development of the pharmacists' roles and capacities during the pandemic. Therefore, based on the length of practice experience, all respondents have the same perception of their role during the pandemic, because this pandemic is indeed an event that is completely new to all pharmacists[30,31].

The relationship between the place of practice and the role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic; the role of pharmacists in clinical pharmacy services during the pandemic; and the domain of developing the role and capacity of the pharmacists during the pandemic

The Kruskal Wallis test aims to see the differences in perceptions between pharmacists who practice in hospitals, health centers, clinics, the pharmacies, on their role in pharmaceutical preparation management, the role of clinical pharmacy services, and the development of the role and capacity of pharmacists during a pandemic. The results show that there is no difference in perception between the pharmacists who have practices in various places of practice with the role of pharmaceutical preparations management, clinical pharmacy services, and the development of the role and capacity of pharmacists during the pandemic, as evidenced by the p-count > 0.05.

There is no difference in perception between the pharmacists who practice in hospitals, health centers, clinics, and the pharmacists with the role and practice of pharmacists during the pandemic, proving that the role of pharmaceutical preparations management, the role of clinical pharmacy services, and the development of the role and capacity of pharmacists during a pandemic are seen by pharmacists as the same wherever they practice. It is not better implemented in certain health care facilities. Pharmacists are part of the health team who are fighting on the front line during the pandemic, both in the community and in the hospital[32].

The relationship between the number of trainings/seminars related to COVID-19 followed by the role of pharmacists in the management of drugs, medical devices and CMM during the pandemic;

Table XI. Kruskal Wallis Test Result: Place of Practice with Dependent Variable

Kruskal Wallis Test Result	The role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic	The role of pharmacists in clinical pharmacy services during the pandemic	The role development and capacity of pharmacists during the pandemic
Place of Practice	0.789	0.116	0.502

Table XII. Kruskal Wallis Test Result: Number of Trainings/Seminars related to COVID-19 attended vs Dependent Variables

Kruskal Wallis Test Result	The role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic	The role of pharmacists in clinical pharmacy services during the pandemic	The role development and capacity of pharmacists during the pandemic
Number of Trainings/Seminars related to COVID-19 attended	0.070	0.952	0.443

the role of pharmacists in clinical pharmacy services during the pandemic; and the domain of developing the role and capacity of pharmacists during the pandemic

The Kruskal Wallis test aims to see if there are differences in the perspective of pharmacists who have attended a number of trainings/seminars related to COVID-19 several times with the role and practice of pharmaceutical services during the pandemic. The statistical test results show that there is no difference in perception between pharmacists who have not attended training/seminars and those who have attended training/seminars 1 or 2 times or 3 times or even more than 3 times on their role in pharmaceutical preparations management, clinical pharmacy services and the role of development and capacity as a pharmacist during the pandemic, as evidenced by the p-count > 0.05.

Pharmacists who have attended training >3 times related to COVID-19 are more significant in treating patients[8]. Several other studies have also shown that training has an impact on the pharmacists' practice[33,34] but in this study, the impact of training and seminars attended by pharmacists did not provide a difference in the pharmacist perceptions of the role and practice of pharmaceutical services during the pandemic. This can be caused by many factors, one of which is the online learning method itself. Online learning causes fatigue to the respondents since the system is still considered foreign and it is difficult to carry out examples in the form of direct practice[35,36].

The relationship between the external factors that affect the role and the practice of pharmaceutical services during the pandemic with the role of pharmacists in the management of drugs, medical devices and CMM during the pandemic; the role of pharmacists in clinical pharmacy services during the pandemic; and the domain of developing the role and capacity of pharmacists during the pandemic

The results of the static test with the Spearman Rank showed a very weak and insignificant relationship between external factors and the role of pharmacists

Table XIII. Spearman Rank Test Result: External Factors vs Dependent Variable

Spearman Rank Test Result	The role of pharmacists in the management of drugs, medical devices, and CMM during the pandemic	The role of pharmacists in clinical pharmacy services during the pandemic	The role development and capacity of pharmacists during the pandemic
External Factors	0.041	0.094	0.027

Note. * p < 0,05, ** p < 0,01, *** p < 0,001

in pharmaceutical management, clinical pharmacy services, and the development of pharmacists' roles and capacities during the pandemic.

Based on the existing results, it can be said that the assistance, both material and moral, that has been provided by the government, professional pharmacist organizations and the management team at the health care facility where the respondent is located, does not have a statistical correlation with the pharmacists' perception in carrying out their role in the management of pharmaceutical preparations, services in clinical pharmacy, as well as the development of the role and capacity of pharmacists during the pandemic. Other studies have found that several external factors that can affect the performance of health workers during the pandemic are the leadership attitude of the team leader, commitment from the organization where the health worker is located, and the environmental conditions in the workplace[37].

CONCLUSION

The results showed that of the 6 independent variables, namely age, gender, place of practice, length of practice experience, experience attending training/seminar related to COVID-19, and the external factors, none of them was influenced or had a correlation with the dependent variable, namely the role of pharmacists in pharmaceutical preparations management, medical equipment and CMM, the role of pharmacists in clinical pharmacy services, as well as the development of the role and capacity of pharmacists during the pandemic. The final conclusion from this study is that there are no certain factors that affect pharmacists' perceptions in carrying out pharmaceutical practices and services during the pandemic based on statistical tests that have been carried out.

ACKNOWLEDGEMENT

The researcher would like to thank the members of the Indonesian Pharmacists Association in the Riau Islands region for their cooperation and the Directorate General of Higher Education of the Ministry of Education, Culture, Research, and Technology for the funding provided to researchers to complete this research.

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