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Doctors' Readiness to Enter the Era of Mandatory Halal Drug Certification; Knowledge, Perception and Attitude

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Abstract

The halal lifestyle is now widely adopted in Muslims' lives, including medical practice. The study aims to determine the level and correlation of knowledge, perception, and attitude of doctors toward readiness to enter the era of mandatory halal certification of drugs and the demographic factors that influence it. A cross-sectional study was conducted online using a questionnaire validated by experts and previous validation and reliability tests. This study was attended by 400 respondents from five provinces in Java, using purposive sampling. The results of the study showed that doctors had sufficient knowledge (mean 38.50 ± 2.293), sufficient perception (mean 40.92 ± 5.076), and sufficient attitude (mean 39.14 ± 4.523) towards halal drugs. There is a weak correlation between knowledge perception ($r=0.306$, $p<0.05$), a very weak correlation between knowledge attitude ($r=0.297$, $p<0.05$), and a robust correlation between perception attitude ($r=0.828$, $p<0.05$). Doctors' knowledge, perception, and attitudes about halal medicine influence each other (p value<0.05). Factors such as workplace, position, and length of service influence knowledge (p value<0.05), and age, workplace, position, and length of service influence perception and attitude (p value<0.05.) of doctors about halal medicine. It is concluded that doctors have sufficient knowledge, perception, and attitude and influence each other; the correlation between knowledge-perception is weak, knowledge-attitude is very weak, and perception-attitude is very strong. Age has a relationship with knowledge, perception, and attitude, education has a relationship with knowledge, and the workplace has a relationship with doctors' perception of halal medicine.

Keywords: Doctor, knowledge-perception-attitude, medicine, halal.

INTRODUCTION

Medical practice is a series of activities carried out by doctors and dentists on patients in carrying out health efforts (Ikhsan & Wahab, 2021). Health efforts are every activity and/or series of activities carried out in an integrated, integrated, and sustainable manner to maintain and improve the health of the community in the form of disease prevention, health improvement, disease treatment, and health recovery by the government and community (Ferdiansyah, 2019).

Doctors or dentists who have a registration certificate have the authority to practice medicine through their education and competence, which consists of interviewing patients, examining the patient's physical and mental state, determining supporting examinations, establishing a diagnosis, determining patient management and treatment, performing medical or dental procedures; writing prescriptions for drugs and medical devices; issuing doctor's or dentist's certificates; storing drugs in permitted quantities and types; and dispensing and dispensing medications to patients, for those practicing in remote areas where there are no pharmacies. Every medical or dental procedure to be performed by a doctor or dentist on a patient must receive approval (Kementerian Kesehatan Republik Indonesia, 2019).

The process or procedure for obtaining consent for medical procedures is not detailed in the Medical Practice Act (Pebrina *et al*., 2022). However, implicitly in the provisions of Article 45 of the Medical Law, a process or procedure can be constructed in obtaining consent for medical action from patients or their families as follows; starting with a legal relationship in a therapeutic agreement between a doctor and a patient, there is a balanced two-way interpersonal therapeutic

communication, namely between a doctor who will perform medical action without being represented and to a patient who is capable according to the provisions of the law or his family who is entitled according to the provisions of the law, the therapeutic communication that is built is the provision of information and explanations from the doctor to the patient using language that is easily understood by the patient and vice versa the patient provides information to the doctor altogether, honestly and correctly regarding the complaints or illnesses he is experiencing, including asking openly and freely about things that are not understood from the explanation given by the doctor, the information or explanation given by the doctor to the patient at least concerns the diagnosis and procedures for carrying out medical actions, regarding the diagnosis of the disease, the purpose of the medical action taken; alternative actions and their risks; risks and complications that may occur; and the prognosis for the action taken, the patient makes a decision to give consent or rejection to the medical action to be taken independently, without pressure or coercion that must be respected by the doctor (Wardhani, 2014).

The increasing awareness of carrying out religious orders and the increasing number of people finding peace by carrying out Islamic rules make halal a lifestyle (KNKS, 2024). The halal lifestyle is now widely adopted in the lives of Muslims in Indonesia and worldwide. In Islam, halal is something that can be consumed and done by a Muslim (Aji, 2018). If previously halal was more related to food, drinks, and everything consumed by the body, now this understanding has been expanded and is increasingly developing (Akim *et al*., 2020). Halal has been implemented in all aspects of a Muslim's life, not limited to what is consumed in the body but also in halal tourism and fashion. People have also begun to seek halal medicine to implement religious rules (Abduh, 2017).

Halal assurance in Indonesia is officially recognized and supported by the state with the issuance of Law No. 33 of 2014 concerning Halal Product Assurance (HPA) (Faridah, 2019). The issuance of this law implies that the state officially recognizes and guarantees Islamic law in the form of an obligation to consume halal and thoyib food. The implementation of this law is regulated in Government Regulation No. 31 of 2019 concerning the Implementing Regulations of Law Number 33 of 2014 concerning Halal Product Assurance, and its technicalities are regulated in Government Regulation No. 39 of 2021 concerning the Implementation of the Halal Product Assurance Sector where goods and services related to food, beverages, medicines, cosmetics, chemical products, biological products, genetically engineered products, and goods used, utilized, or utilized by the public must be halal certified (Charity, 2017). Phase 1 of the halal mandate applies October 17, 2019 (food products, slaughtering drinks, and slaughtering services), and phase 2 applies October 17, 2021, for all products.

The term halal is known in Islamic teachings and originates from the Qur'an and hadith, which means something that is permitted according to Islamic law, covering various aspects of life, such as behavior, how to obtain sustenance, how to dress, and the food or drink consumed (Ab Halim *et al*., 2014). Islam views health as a significant factor in human life. Therefore, the Prophet taught about how to live a healthy life (Sholeh, 2015). The Prophet Muhammad S.A.W. specifically emphasized seeking medical treatment while warning against seeking treatment with that which is forbidden, as he said: "Allah has sent down the disease and the cure, and has made a cure for every disease; therefore, seek medical treatment and do not seek treatment with things that are forbidden." Narrated by Abu Daud (Yenti, 2018). Halal medicines are medicinal products from permitted sources, namely animals, plants, and organic or inorganic materials that follow the preparation, manufacturing, and extraction methods that follow the rules in Islam (Norazmi & Lim, 2015). Halal medicine must not only be accessible from haram substances but must also be they. In general, thoyib refers to clean, pure, and produced products based on standard processes and procedures (Rojabiah *et al*., 2023). So, pharmaceutical products must be halal and clean according to Islamic law.

METHODS

This study is a cross-sectional study conducted online (Hakim *et al*., 2022) using a questionnaire of knowledge, perception, doctors' attitudes towards understanding halal products, doctors' ability to apply halal haram law, doctor's knowledge of halal product assurance regulations, doctors' knowledge of halal drugs, doctor's understanding of critical points of the halal drug, and doctor's ability to choose alternative halal medicines. The study was conducted in January - April 2023 with 400 respondents spread across five provinces of Java, taken by purposive sampling and evenly with the inclusion criteria of having a competency certificate, Doctor's Registration Certificate, and practicing medicine.

Knowledge questionnaire using the Guttman scale (Xuan *et al*., 2022) where, respondents were asked to choose the option "Yes (value 2)" or "No (value 1)" for 20 statements, statements of perception and attitude, using a four-point Likert scale ranging from "strongly agree (value 4)", "agree (value 3)", "disagree (value 2)", "strongly disagree (value 1)", perception 12 statements and attitude nine statements (Saha *et al*., 2019). Respondents' demographic data includes gender, last education, place of work, length of service, and position. Experts and their validation and reliability validated the questionnaire were tested before being distributed to respondents. Experts and validity tests validated the knowledge, perception, and attitude questionnaires were

carried out using Point Biserial for knowledge, Pearson Product Moment for perception and attitude (Yusup, 2018). The reliability test of the knowledge questionnaire used the Split-Half technique with a Guttman Split Half coefficient ≥ 0.6, the perception and attitude questionnaire used a Cronbach's Alpha value ≥ 0.6.

The results of content validation by pharmaceutical experts, halal product experts, and psychology experts obtained 20 knowledge questions, 12 perception statements, and nine statements about doctors' attitudes toward halal drugs. The knowledge domain questionnaire validation results were all valid because r count > r table (0.201-0.630 > 0.195). The validation results of the perception domain questionnaire have r count (0.547-0.726 > r table (0.195) so that all statements of the perception domain are declared valid. The validation results of the attitude domain questionnaire have r count (0.598-1) > r table (0.195) so that all statements of the attitude domain are declared valid. The results of the reliability test of the knowledge questionnaire obtained an Alpha Cronbach value of 0.669, the perception questionnaire obtained an Alpha Cronbach value of 0.875, and the attitude questionnaire obtained an Alpha Cronbach value of 0.917, meaning that the questionnaire of knowledge, perception, and attitude of doctors towards halal drugs is reliable because the Alpha Cronbach value is > 0.6.

Assessment of the level of knowledge, perception, and attitude is divided into three categories, including the excellent category (X ≥ mean + 1. S.D.), moderate category (mean - 1. S.D. ≤ X ≤ mean + 1. S.D.), and lousy category (X < mean – 1.SD) (Adiputra *et al*., 2021). The Spearman test carried out the correlation of knowledge-perception, knowledge-attitude, and perception-attitude, and the ANOVA test carried out the correlation of knowledge-perception-attitude. The correlation of demographic data with knowledge, attitude, and perception scores was determined using the Chi-square test. This study has received an Ethical Appropriateness Certificate from the Faculty of Medicine, Swadaya Gunung Jati University No. 163/EC/FKUGJ/XI/2022.

RESULTS

A. Source Respondent Demographics

The respondents were 400 doctors spread across five provinces in Java. The inclusion criteria were having a competency certificate, a Doctor's Registration Certificate, and practicing medicine. Respondent demographic data include age group, gender, place of work, length of service, and position.

Table 1: Respondent demographic data

Characteristics	Demographic Characteristics	Frequency (%)
Age	< 25 years	119 (30)
	26 - 35 years	151 (37.7)
	36 - 45 years	61 (15)
	46 - 55 years	57 (14.2)
	>56 years	12 (3.1)
Gender	Man	184 (46)
	Woman	216 (54)
Workplace	Government Hospital	100 (25)
	Private Hospital	96 (24)
	Health Center	64 (16)
	Private Practice	105 (26.3)
	Clinic	35 (8.7)
Last education	Doctor	328
	Specialist	60
	Consultant	12
Position	Head of Hospital/Health Centre/Clinic	331 (82.7)
	Functional Doctor	67 (16.8)
	Committee Chairperson	2 (0.5)
Length of Practice	< 4 years	182 (45.5)
	4-8 years	160 (40)
	>8 years	58 (14.5)

B. Respondents' Knowledge About Halal Medicines

The questionnaire was filled out via Google Drive and distributed using the WhatsApp application. After agreeing, the respondents filled out the knowledge questionnaire about halal medicine by answering 20 Guttman scale questions and choosing "yes or no." The results of the knowledge questionnaire can be seen in the following table;

Table 2: Results of the Respondents' Knowledge Questionnaire on Halal Medicines (n=400)

No	Question	Results	
		Yes	No
1	Halal is something that is "permitted", while haram is something that is "forbidden".	398	2
2	Najis is anything that is considered dirty by Islamic law, such as corpses, blood, and animal waste.	396	4
3	Do you know the "halal" logo?	390	10
4	Medicines derived from haram materials may be used in emergencies with an MUI fatwa.	353	47
5	Do you know Law No. 33 of 2014 concerning the Halal Product Guarantee?	321	79
6	Are medicines among the products whose halal status must be guaranteed by the government?	360	40
7	Will all medicines gradually have to be halal-certified?	379	21
8	Do you know the Halal Product Guarantee Organizing Agency (BPJPH) as an institution that issues halal certificates?	372	28
9	The active and additional ingredients of halal drugs must come from halal materials.	395	5
10	The production of halal drugs must not be mixed or encounter haram and impure goods.	394	6
11	Halal drug production must have a halal guarantee system	397	3
12	Animals that are slaughtered not by Islamic law, then all parts of them may not be eaten, including as raw materials for medicine.	365	35
13	Cow's blood is used as a medium for making medicine, which makes the medicine haram.	338	62
14	Pork fat used in the process of making medicine makes the medicine haram.	380	20
15	Alcohol from the petrochemical industry and fermentation products may be used for the drug production process.	364	26
16	Did you know that some gelatin capsules are made from pork?	364	26
17	Did you know that Elixir medicine contains alcohol?	353	37
18	Brushes made of pig bristles may not be used in the production process of halal medicines.	377	23
19	Do you know the sources and ingredients (active ingredients and excipients) of the drugs you prescribe to patients?	347	53
20	Do you have the knowledge to choose halal alternative medicines?	358	42

C. Respondents' Perceptions About Halal Medicines

The perception questionnaire uses a four-point Likert scale ranging from “strongly agree (value 4)”, “agree (value 3)”, “disagree (value 2)”, and “strongly disagree (value 1)”, there are 12 statements asked to 400 respondents, the data is in the following table.

Table 3: Respondents' Perceptions of Halal Medicines (n = 400)

NO	QUESTION	Results			
		SS	S	TS	STS
1	All halal-certified products have excellent quality	231	157	11	1
2	Halal-certified products are more expensive than comparable products because they are of better quality.	163	166	60	11
3	Halal-certified products are easy to get	185	170	39	6
4	Medicines are among the products that must be halal-certified.	241	135	22	2
5	Halal certification of drugs is the responsibility of the government	241	148	10	1
6	Medicines containing haram ingredients are permitted if there is an MUI fatwa	156	179	48	17
7	Patients have the right to ask their doctor for information about the halal status of the drugs they prescribe.	218	173	9	0
8	Pharmaceutical companies have provided information about the halal status of the drugs they produce.	205	172	23	0
9	The patient's religious beliefs have become a consideration for doctors in prescribing medication.	183	176	37	4
10	Pharmacists provide information on the halal status of drugs to doctors	201	174	23	2
11	I have asked for patient consent when prescribing drugs containing illicit substances.	171	198	27	4
12	The government has been responsible for educating the public about halal medicine.	202	172	26	0

SA=strongly agree; A=agree; D=disagree; SD=strongly disagree

D. Respondents' Attitudes About Halal Medicines

The attitude questionnaire uses a four-point Likert scale ranging from “strongly agree (value 4)”, “agree (value 3)”, “disagree (value 2)”, and “strongly disagree (value 1)”, there are 9 statements asked to 400 respondents, the data is in the following table;

Table 4: Respondents' Attitudes about Halal Medicines (n = 400)

NO	QUESTION	Results			
		SS	S	TS	STS
1	Every time I prescribe medicine, I make sure that the medicine is halal-certified.	184	178	38	0
2	Every time I prescribe a drug, I explain the halal status of the drug to the patient.	171	182	44	3
3	Every time I prescribe medicine, I make sure that the ingredients used to make the medicine are halal.	176	179	43	2
4	Every time I prescribe medicine, I make sure that the additional ingredients in the medicine are halal.	162	204	31	3
5	I ask for approval if I am going to prescribe medication that contains illicit substances.	184	199	16	1
6	I have asked the pharmacist about the halal status of the medicine	174	194	32	0
7	I am trying to get information about the halal status of drugs.	186	195	16	3
8	The patient's religion is a consideration in prescribing medication.	165	185	43	7
9	I follow the MUI fatwa which allows the use of haram drugs in emergencies	182	193	22	3

E. Respondents' Level of Knowledge, Perception, and Attitude Regarding Halal Medicines

Assessment of the level of knowledge, perception, and attitude is divided into three categories including the good category ($X \geq$ mean + 1.SD), moderate category (mean - 1.SD $\leq X \leq$ mean + 1.SD), and bad category ($X <$ mean – 1.SD) (Adiputra *et al*., 2021). The calculation results and categories can be seen in the following table;

Table 5: Respondents' Knowledge, Perception, and Attitude Values Regarding Halal Medicines (n=400)

Domain	Mark	Amount	Criteria
Knowledge	$X \geq 40$	31	Good
	$36.21 \leq X < 40$	306	Enough
	$X < 36.21$	63	Bad
Average	38.50± 2,293		Enough
Perception	$X > 45.99$	96	Good
	$35.25 \leq X \leq 45.99$	247	Enough
	$X < 35.25$	57	Bad
Average	**40.92**±5.076		Enough
Attitude	$X > 34.65$	105	Good
	$25.61 \leq X \leq 34.65$	255	Currently
	$X < 25.61$	40	Bad
Average	**30.14**±4,523		

F. Correlation of Respondents' Knowledge, Attitudes, and Perceptions

The correlation of knowledge-perception, knowledge-attitude, and perception-attitude was tested using Spearman's test, and the correlation of knowledge-perception-attitude was tested using ANOVA; the test results can be seen in the table below;

Table 6: Correlation between Doctor Domains Regarding Halal Medicines

Domain	Domain	P value	Correlation
Knowledge	Perception	.306	Weak
Knowledge	Attitude	.297	Very weak
Perception	Attitude	.828	Very strong

G. Relationship between Knowledge, Perception, and Attitude with Respondent Characteristics

Table 7: Relationship between Respondent Characteristics and Halal Medicines

Domain	Characteristics	P value	Information
Knowledge	Age	0.018	Relate
	Gender	0.328	Not related
	last education	0.012	Relate
	Workplace	0.663	Not related
	Position	1	Not related
	Length of working	0.094	Not related
Perception	Age	0.016	Relate

Domain	Characteristics	P value	Information
	Gender	0.984	Not related
	last education	0.065	Not related
	Workplace	0.045	Relate
	Position	0.884	Not related
	Length of working	0.051	Not related
Attitude	Age	0.024	Relate
	Gender	0.240	Not related
	Last education	0.151	Not related
	Workplace	0.690	Not related
	Position	0.817	Not related
	Length of working	0.206	Not related

DISCUSSION

In this study, 400 respondents participated and filled out the questionnaire.

A. Respondent Demographics

The doctors who became respondents were dominated by the 25-35 age group, as much as 37.7%, under 25 years, as much as 30%, and work experience under 4 years, as much as 53%, between 4-8 years, as much as 40%. These results show that many respondents are young doctors who have not been practicing medicine for long; this is influenced by the busyness and responsibilities of doctors, who are linear with age and experience; even senior doctors have difficulty being available to communicate with patients because of their busyness (Budianti *et al*., 2018). In addition to the respondents' busyness, the factor of distributing questionnaires online matches the character of the current generation (Budianti *et al*., 2018). Research conducted by Abdul Manan (2019) in Banyumas also describes the same pharmacist profile (Manan *et al*., 2021). This is also supported by the questionnaire distribution method, where those under 40 years old are included in the generation that is familiar with mobile phones (Budianti *et al*., 2018). Most of the doctors work in hospitals, this is influenced by the pattern of Indonesian society which has not implemented prevention so that they see a doctor when they are already suffering from a disease (Masitha *et al*., 2021). The demographic characteristics of the doctors who were respondents in this study were the same as the study conducted by Sadeeqa in Malaysia with 243 respondents (Sadeeqa & Sarriff, 2014) and Alfiyaturrohmaniyah Trisnawati from Indonesia with a more limited number of samples (Trisnawati, 2017).

B. Respondents' Knowledge About Halal Medicines

Respondents' knowledge of the definitions of halal and haram is excellent, with only 0.5% stating that they do not know. Halal and haram have been introduced in schools from the elementary school level and have become a culture in society (Fathonah, 2015). Indonesia, with its Muslim majority Population, is also a dominant factor, so halal and haram are no longer strange in all circles (Nur *et al*., 2023). Four respondents did not know Najis is anything that is considered dirty by Islamic law, such as corpses, blood, and animal waste. However, in the application of drug manufacturing, there were still 62 respondents who stated that cow's blood used as a medium for making medicine means that the medicine is not haram. The same applies to other critical points in making medicine. Research on doctors' knowledge of halal medicines is rarely conducted independently; many studies have been undertaken with doctors as the respondents and the health workers being studied (Trisnawati, 2017).

Respondents agreed that halal medicine must have a halal guarantee system; as a profession, all health efforts must be based on regulations, and it is relevant if doctors need a guarantee on the medicine that will be given to their patients. The use of additional ingredients, such as alcohol, which is not the result of industry and fermentation, elixir content, and gelatin-making materials, needs to be known by doctors. Doctors are a profession that deals directly with the community, so all information on the halalness of drugs needs to be known because doctors are a profession that is at the forefront and heard by the community. Therefore, increasing knowledge about this halal drug product is necessary through informal events where doctors often hold health symposiums.

Respondents should increase their knowledge about halal drug alternatives because buyers will increasingly seek halal products. This should be a matter of concern, especially in the education system, where the professional responsible for the use of halal drugs is a doctor (Siregar, 2016). Many respondents need to learn the legal regulations regarding halal product guarantees and institutions that issue halal certification. Seventy-nine respondents need to know that Law No. 33 of 2014 is about Halal Product Guarantees; considering that it was passed ten years ago, the Government must further socialize this law. Likewise, respondents are familiar with the Halal Product Guarantee Organizing Agency (HPGOA) as an institution issuing halal certificates.

C. Respondents' Perceptions About Halal Medicines

The perception of respondents who disagree and strongly disagree with the fatwa of the Indonesian Ulema Council (MUI), which allows the use of drugs containing haram ingredients, is the largest of all

statements (16%); this needs to get a positive response from the pharmaceutical profession because it is a challenge to make drugs with halal ingredients. Likewise, for the MUI, as an institution with the legitimacy of "ulama," it needs to increase its credibility so that all people accept it. The response of respondents' disagreement with the price of halal-certified drugs, which is more expensive than similar drugs, is 17.8%; halal medications in terms of production cost are the same as similar drugs because Halal medicine is produced by good drug manufacturing practices (CPOB) and by Islamic law, so the product is the same in terms of quality and brings more blessings because it is halal (Ab Halim *et al*., 2014; Sayekti, 2014).

Respondents strongly agree and agree with halal drugs as much as 94%; this is an excellent opportunity for pharmacies to produce halal drugs because, with current regulations, all hard drugs except those on the list of certain medications, the authority to provide them lies with doctors. This is also a challenge because most raw materials for drugs are still exported, where halal certification of raw materials is one of the requirements for halal drug certification. Data on halal drug sales in Indonesia in 2017 only showed 8% of the Indonesian drug market share. Respondents also agreed that halal certification matters are the authority of the Government. Before the formation of the Halal Product Assurance Organizing Agency (HPAOA) as an institution that issues halal certificates and before the Halal Product Guarantee Law, the leading role in certification was carried out by the MUI, through LPPOM (Indonesian Ulema Council for Food, Drugs, and Cosmetics Assessment Institute). Certification was carried out voluntarily at the business actors' request for a halal certificate. The MUI also monitored products in circulation. However, when the halal label was misused, the MUI could not impose sanctions on business actors. The MUI could only give warnings and reprimands. With the establishment of HPAOA, it is hoped that protection and legal certainty will guarantee the halalness of products circulating in Indonesia. Certification is no longer voluntary but has become mandatory to support efforts to increase the production and consumption of halal products (Qoni'ah, 2022).

Respondents perceive that pharmacists will provide information on the halal status of drugs as much as 93.8%. This requires pharmacists to also know about halal drugs, from production to distribution and service. This should be a matter of concern, especially in the education system, where the pharmacist is the professional responsible for halal medicines (Salamadin, 2021).

D. Respondents' Attitudes About Halal Medicines

Respondents' attitudes following the MUI fatwa that allows the use of haram drugs in emergencies by 93.8%; this is different from the respondent's perception statement for similar statements. The issue of drug halalness can be complicated to explain to specific patients, so the fatwa of the ulama will be the right step in an emergency. The attitude of respondents in asking for approval when prescribing drugs containing haram ingredients is 95.8%; this attitude is very appropriate because the use of halal medications has become a lifestyle to carry out Islamic teachings and the professional attitude of doctors to provide health services to explain and provide information about the actions taken.

E. Respondents' Level of Knowledge, Perception, and Attitude Regarding Halal Medicines

The results of the calculation of the level of knowledge, perception, and attitude of doctors towards halal drugs are sufficient: average knowledge is 38.50 out of a maximum value of 40, average perception is 40.92 out of a maximum value of 48, and average attitude is 30.14 out of a maximum value of 36. The results of this study are better than those of the survey conducted by Sadeeqa in Malaysia in 2015. Malaysia became the first country to rank in the top for ten consecutive years, followed by Saudi Arabia in second place. Indonesia rose to third place in 2022 in the global halal ecosystem. In the field of Pharmacy and cosmetics, Malaysia also ranked first, followed by Singapore and Indonesia in third place.

F. Correlation of Respondents' Knowledge, Attitudes, and Perceptions

The Spearman test results show a robust correlation between perception and attitude, a weak correlation between knowledge and perception, and a weak correlation between knowledge and attitude. Doctors' knowledge must continue to be improved in all indicators, starting from understanding halal, implementing halal haram laws, applicable regulations, halal drugs that are already available, critical points for halal medicines, choosing alternative halal drugs, and providing halal drug information to the public or other health workers (Paramitha & Ressandy, 2021). The results of the ANOVA test show that there is a correlation between knowledge, perception, and attitude, sig value < 0.05 (0.02 < 0.05). This reflects that the better the respondents' understanding of halal medicine, the better their attitudes and perceptions of it. Similar findings were also obtained in Sadeeqa's research.

G. Relationship between Knowledge, Perception, and Attitude with Respondent Characteristics

The results of the Chi-square test showed that age and last education are correlated with knowledge, age, and place of work are associated with perception, and age is associated with doctors' attitudes about halal drugs (Agiviana, 2015). Age is a factor that influences the knowledge, perception, and attitude of doctors towards halal drugs. Halal haram is closely related to a person's understanding and faith,

CONCLUSION

Doctors have sufficient knowledge, perception, and attitude to influence each other. The correlation of knowledge-perception is weak, knowledge-attitude is very weak, and perception-attitude has a powerful correlation. Age has a relationship to knowledge, perception, and attitude. Last education relates to knowledge, and place of work relates to doctors' perception of halal medicine.

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