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Knowledge, Attitude and Perception of University of Ibadan Pharmacy Students on Veterinary Pharmacy Practice

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ABSTRACT

Background: Pharmacists have acknowledged roles as medicine experts facilitating human healthcare, such expertise is also essential in pharmaceutical treatments of animals. In view of current realities with the COVID-19 pandemic, the interplay between human and animal health cannot be overemphasized. This study aimed at assessing the knowledge, attitude, and perception of study participants on veterinary pharmacy practice.

Methods: A cross-sectional study was carried out among final year students of the Faculty of Pharmacy, University of Ibadan. A semi-structured questionnaire was utilized for data collection. Total sampling method was used to recruit participants who gave their informed consent. Data was summarized with descriptive statistics.

Results: The response rate was 93.5% (86/92). Sixty (69.8%) study participants agreed that health and medical treatment of animals and humans are closely linked. Out of the 86 participants, 26 (30.2%) disagreed that animals can suffer from diabetes mellitus, while 16 (18.6%) were undecided. Study participants rated themselves poorly on their knowledge on veterinary courses. For instance, 33 (38.4%) and 43 (50.0%) rated themselves as "very poor" in their counseling and compounding, respectively. A total of 45 (52.4%) participants were willing to learn more about veterinary practice in different areas, 6 (7%) compounding of veterinary drugs, 19 (22.1%) pharmacology of veterinary medicines, 11(12.8%) counselling and 9(10.5%) dispensing of veterinary drugs. The others 41(47.6%) signified they had no interest in learning more about any of the aforementioned areas. Most (56; 65.1%) of the study participants strongly agreed in their perception that veterinary medications should be dispensed by pharmacists and 59 (68.6%) strongly agreed in their perception that collaborations between veterinarians and pharmacists would be beneficial. As much as 46 (53.3%) agreed and 27 (31.4%) strongly agreed that they would consider a special training to perform their roles as veterinary pharmacists.

Conclusions: The knowledge of the participants on veterinary pharmacy practice was good. Study participants displayed good attitude and perception on veterinary pharmacy practice.

1. Introduction

Medications are administered with the implicit trust that they are harmless, effective, and therapeutically beneficial. However, if inappropriately produced or handled, medications can cause much harm.[1] Pharmacists play an important role as medication experts in healthcare delivery to animal patients, and this role is accomplished through a collaborative effort between pharmacists and veterinary doctors.[2]

The challenge with multidrug resistant organisms calls for cautious administration of veterinary medicines.[3] This has focused attention on pharmaceutical care of animals and the appreciation that both humans and animals receive treatment with identical medicines from medical and veterinary practitioners, respectively. Effective professional interaction and consultation between medical practitioners and veterinary surgeons on prescribing protocols for licensed medicines for both animal and human treatment remain to be developed. Pharmacists and

medics have developed mutually beneficial roles in the practice of human medicine and similar inter-professional development could be fostered between veterinary surgeons and pharmacists. Pharmacists are uniquely placed to promote the future possibility of all medicine use and development without differentiation in species treatment.

It has been established that infectious diseases can get transferred from animals to humans.[4] The interdependence between the health of humans and that of animals has led to the development of the concept of One Health initiative. This international initiative aims for a holistic approach to improving health that incorporates humans, animals, and their shared environment.[5] Interdisciplinary collaboration between veterinarians, doctors and ecologists can find solutions to global health challenges. The knowledge and training pharmacists have and their accessibility in communities means that pharmacists are ideally placed to contribute to the One Health Initiative.[6]

While majority of pet owners fill prescription medications from pharmacies, pharmacists are yet to position themselves for pharmaceutical care for four-legged patients.[7] Although community pharmacies are well positioned in their respective communities to service pet owners' veterinary prescriptions, the space is yet to be effectively exploited in Nigeria. A study carried out in Jos, Nigeria reported that only 1 (2.2%) community pharmacy provided veterinary services.[2]

The poor level of patronage on veterinary medicines and information for its use could be because of insufficient veterinary pharmacy coverage in the current undergraduate pharmacy curriculum, inadequate knowledge on veterinary medicines displayed by community pharmacists, little postgraduate training on veterinary pharmacy practice, and lack of interest shown by pharmacists in veterinary medicine practice.[8]

This study therefore aimed to evaluate final year pharmacy students' knowledge, attitude, and perception on veterinary pharmacy practice.

2. Methods

2.1 Study Design and Setting: A cross-sectional study design was utilized. The study was carried out among final year pharmacy students in the Faculty of Pharmacy, University of Ibadan.

2.2 Sample Size Determination: Only final year Faculty of Pharmacy students were recruited for the study, having completed their courses for Veterinary Pharmacy. Sample size was 75. It was calculated using Raosoft® online calculator for a study population of 92 final year students, with margin of error of 5% and confidence interval being 95%. Adjustment for 10% non-response was made, making the adjusted sample size to be 83.

2.3 Data Collection Tool and Data Collection: A semi-structured questionnaire was designed for the study after extensive literature search on the topic. Face validation of the questionnaire was done by pretesting among twelve penultimate level pharmacy students. Content validity was done by two faculties of the Department of Clinical Pharmacy and Pharmacy Administration, University of Ibadan. The questionnaire was divided into three sections. Section A was for data on socio-demographic characteristics of the participants. Section D assessed their knowledge on veterinary pharmacy practice, while Section C addressed participants' attitude and perception on veterinary pharmacy practice. The questionnaire was administered to the consented participants and retrieved immediately after completion.

2.4 Data Analysis: Data was analysed using SPSS version 20.0. Descriptive statistics such as frequency, percentage, mean and standard deviation were used to summarize the results.

2.5 Ethical Consideration: Approval was granted the study by the University of Ibadan/University College Hospital Ethics Committee (UI/EC/18/0497).

3. Results

3.1 Socio-demographic characteristics

The response rate was 93.5%: eighty-six students consented to participate in the study out of the entire 92 final year pharmacy students. Forty-six (53.5%) of the participants were females. The mean age of the participants was 22 ± 1.93 years, with the age range being 20 - 31 years. Among the 86 participants 73 (84.9%) were Christians while 13 (15.1%) were Muslims.

3.2 Knowledge on veterinary pharmacy practice

The study participants displayed good knowledge on veterinary pharmacy practice as most of them provided accurate answers to the questions asked on veterinary pharmacy practice. Majority (60; 69.8%) agreed that health and medical treatment of animals and humans are closely linked. Out of the 86 participants, 26 (30.2%) disagreed that animals can suffer from diabetes mellitus, while 16 (18.6%) were undecided (Table 3.1).

Study participants rated themselves poorly on their knowledge on veterinary courses. For instance, 33 (38.4%) and 43 (50.0%) rated themselves as "very poor" in their counseling and compounding, respectively (Table 3.2).

3.3 Participants attitude and perception on veterinary pharmacy practice

Most (56; 65.1%) of the study participants strongly agreed in their perception that veterinary medications should be dispensed by pharmacists and 59 (68.6%) strongly agreed in their perception that collaborations between veterinarians and pharmacists would be beneficial. As much as 46 (53.3%) agreed and 27 (31.4%) strongly agreed that they would consider a special training to perform their roles as veterinary pharmacists. The detailed results on participants' attitude and perception on veterinary pharmacy practice is as shown in Table 3.3.

3.4 Veterinary courses participants would want to learn more about

A total of 45 (52.4%) participants were willing to learn more about veterinary practice in different areas, 6 (7%) compounding of veterinary drugs, 19 (22.1%) pharmacology of veterinary medicines, 11(12.8%) counselling and 9(10.5%) dispensing of veterinary drugs. The others 41(47.6%) signified they had no interest in learning more about any of the aforementioned areas.

Table 3.1: Knowledge of Participants on Veterinary Pharmacy Practice

Questions	Frequency (Percent)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The health and medical treatments of animals and humans are closely linked	0 (0)	3 (3.5)	0 (0)	60 (69.8)	23 (26.7)
Animals share some commonalities in health conditions as the human population	0 (0)	4(4.7)	0 (0)	60 (69.8)	22 (25.6)
Animal patients comprises; companion animals, livestock, captive animals, and wildlife	1 (1.2)	1 (1.2)	6 (7.0)	48 (55.8)	30 (34.9)
Animals can suffer osteoarthritis	0 (0)	5 (5.8)	12 (14.0)	57 (66.3)	12 (14.0)
Animals can suffer diabetes mellitus	0 (0)	26 (30.2)	16 (18.6)	37 (43.0)	7 (8.1)
Diseases can be transferred from animals to humans via zoonotic infections	0 (0)	0 (0)	0 (0)	22 (25.6)	64 (74.4)
There can be reverse zoonosis where humans transmit pathogens to animals	0 (0)	10 (11.6)	16 (18.6)	44 (51.2)	16 (18.6)
There is interdependence between the health of animals and that of humans	1 (1.2)	9 (10.5)	5 (5.8)	44 (51.2)	27 (31.4)
There is increasing use of common human medicines in animal care	0	3 (3.5)	3 (3.5)	55 (64.0)	25 (29.1)
Have you been taught materials related to veterinary pharmacy	0	3 (3.5)	3 (3.5)	39 (45.3)	41 (47.7)

Table 3.2: Self-Reported Knowledge of Participants on Veterinary Courses

Veterinary courses	Frequency (Percent)				
	Very Poor	Poor	Fair	Good	Excellent
Pharmacology	12 (14.0)	27 (31.4)	30 (34.9)	12 (14.0)	5 (5.8)
Dispensing	24 (27.9)	31 (36.0)	18 (20.9)	7 (8.1)	6 (7.0)
Counselling	33 (38.4)	31 (36.0)	14 (16.3)	6 (7.0)	2 (2.3)
Compounding	43 (50.0)	25 (29.1)	9 (10.5)	5 (5.8)	4 (4.7)

Table 3.3: Attitude and Perception of Participants on Veterinary Pharmacy Practice

Questions	Frequency (Percent)				
	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Perception					
Do you think veterinary drugs should be dispensed by pharmacists	0 (0)	1 (1.2)	0 (0)	29 (33.7)	56 (65.1)
Do you think extemporaneous preparations for veterinary use should be prepared by pharmacists	0 (0)	1 (1.2)	3 (3.5)	27 (31.4)	55 (64.0)
Do you believe you can perform the roles of a veterinary pharmacists after graduation	1 (1.2)	12 (14.0)	3 (3.5)	41 (47.4)	29 (33.7)
Do you think it will be beneficial to have good communication between veterinarians and pharmacists regarding care of animal patients	0 (0)	2 (2.3)	0 (0)	25 (29.1)	59 (68.6)
Do you think you need more education on medicines for animal patients	0 (0)	6 (7.0)	0 (0)	34 (39.5)	46 (53.5)
Do you think you have learnt enough about medicines for animals in the current curriculum	18 (20.9)	42 (48.8)	4 (4.7)	19 (22.1)	3 (3.5)
Attitude					
Would you welcome more information on veterinary pharmacy	0 (0)	2 (2.3)	2 (2.3)	29 (33.7)	53 (61.6)
Would you select veterinary pharmacy as a course if provided as elective	3 (3.5)	13 (15.1)	2 (2.3)	43 (50.0)	25 (29.1)
Do you consider that veterinary pharmacy could expand your career opportunities	0 (0)	2 (2.3)	2 (2.3)	46 (53.5)	36 (41.9)
Would you be interested in gaining expertise in veterinary pharmacy	0 (0)	10 (11.6)	3 (3.5)	43 (50.0)	30 (34.9)
Would you consider a special training to perform the roles of a veterinary pharmacist	1 (1.2)	10 (11.6)	2 (2.3)	46 (53.5)	27 (31.4)

4. Discussion

Majority of the participants agreed with the need for collaborations between veterinary doctors and pharmacists. Interprofessional relationship is a sine qua non to a healthy cohabitation between humans and veterinary animals. This interdependence has led to the development of the One Health Initiative which aims for a holistic approach to improving health that incorporates humans, animals, and their shared environment.[5,9]

A large percentage of the participants agreed that animals share some commonalities in health conditions as the human population and that animals can suffer from osteoarthritis, However, about half of the participants lack the knowledge that animals can suffer from diabetes mellitus. This points to a deficit in the volume of knowledge taught to undergraduate pharmacy students on veterinary. This deficit is not peculiar to Nigerian pharmacy schools as observed by a survey of third year and final year pharmacy students where it was observed that the scope of tuition delivered in a School of Pharmacy in the UK on the topic of veterinary pharmacy appears to be centered on legislation and medicine supply.[8]

All the participants agreed that diseases can be transferred from animals to humans via zoonotic infections which is in line with the findings of Epstein and colleagues which estimated that 61% of human diseases are caused by zoonotic pathogens.[10] One-third of the participants were not in agreement that there can be reverse zoonosis where humans transmit pathogens to animals. It is not impossible that participants who disagreed may have forgotten some of the details received during lectures since two-third of the participants agreed that reverse zoonosis is indeed possible.

Over 90% of the participants agreed there is increasing use of common human medicines in animal care. This makes it even more pertinent that pharmacy students receive adequate knowledge on veterinary pharmacy to ensure effective participation in animal care. The findings of a research showed that human medicines are increasingly prescribed for animals.[6,11] Aside from improving the quality of undergraduate curriculum on veterinary medicines, a sound postgraduate program should be in place to foster adequate practice update for pharmacists who decide to specialize in the field of veterinary medicines.

When asked if they believed that veterinary pharmacy would expand their career opportunities, majority of the study participants agreed that it would. A similar result was reported where 80% of fourth year pharmacy students thought knowledge of veterinary pharmacy would offer them wider career opportunities as pharmacists.[8] Despite the inadequacy of the current academic curriculum to equip pharmacists for their expanding function as veterinary pharmacists, the expanded career opportunities could serve as a motivation for postgraduate certification to build competence for the pharmaceutical care of the unique four-legged patients.

The self-reported knowledge ratings by participants on various aspects of veterinary pharmacy courses was poor and this points to a deficit in the quality of taught courses in the current curriculum. An earlier study described a deficiency in the curriculum of pharmacy schools.[2] Half of the participants were willing to learn more on various aspects of veterinary pharmacy. Considering the demands of the current curriculum, veterinary courses could be offered as electives and taught remotely for interested students.

Despite the belief of majority of the respondents that they could perform the roles of a veterinary pharmacists after graduation they also think they need special training to perform the roles of a veterinary pharmacist. More than three quarters of the participants would be interested in gaining expertise in veterinary pharmacy.

A major limitation to this study is the fact that it was carried out in just a school of pharmacy in Nigeria. The results cannot be generalized to the entire pharmacy students in Nigeria.

5. Conclusions

The study revealed a good knowledge displayed by study participants on veterinary pharmacy practice. Also, the attitude and perception of the study participants towards veterinary pharmacy practice was good. However, the need for further training in veterinary pharmacy courses was stated by the participants to equip them sufficiently to practice as veterinary pharmacists.

Conflicts of Interest: None declared by the authors.

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