ORIGINAL RESEARCH

The participation of community pharmacists in the case management of malaria in Enugu metropolis, Nigeria: a cross-sectional survey

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Abstract

Background

Nigeria accounts for approximately 25% of the global malaria burden. Malaria is a major cause of morbidity and mortality, especially in children and pregnant women. Pharmacists play vital roles in the fight against malaria. However, in Nigeria, the role of the community pharmacist in managing cases of malaria has received very little research attention. This study aimed to evaluate the level of participation of community pharmacists in the management of malaria cases in Enugu metropolis and to explore factors associated with such participation.

Methods

A cross-sectional survey was conducted among community pharmacists in Enugu metropolis using a modified and re-validated 16-item self-administered questionnaire. The questionnaire was distributed to participants in selected pharmacies for completion. Descriptive statistics and the chi-square test were used for statistical analysis.

Results

Out of the 103 participants, more than half (55.3%) were male. More than half of the pharmacists satisfactorily provided preventive (57.3%), pharmaceutical (62.1%), and curative (51.1%) services for patients with malaria. Overall, 57% of the pharmacists satisfactorily participated in the management of malaria cases. The number of years of practice was significantly associated with the pharmacists level of involvement in preventive (P=0.003) and curative (P=0.018) services. However, the provision of pharmaceutical care services for malaria patients was significantly associated with the sex of the respondents (P=0.023).

Conclusions

Our results suggest that more than half of the community pharmacists in Enugu metropolis were satisfactorily involved in the management of malaria cases. However, the number of years of practice and sex were factors associated with the extent of pharmacist involvement in the management of malaria cases.

Key Words; Malaria, case management, community pharmacists, participation, Nigeria

Introduction

In Nigeria, malaria is still an important cause of morbidity and mortality, especially in infants, children, and pregnant women. According to the World Health Organization (WHO), Nigeria accounts for approximately 25% of the world's malaria burden. An estimated 57.3 million cases and 100,700 malaria-related deaths were reported in West African countries in 2016[1]. Previous research showed that malaria is the primary reason for almost 60% of outpatient hospital visits and approximately 30% of hospitalized patients. Furthermore, approximately 50% of the Nigerian population is known to suffer at least one episode of malaria attack annually. In contrast, children less than 5 years old experienced an average of 2–4 attacks of malaria per year. Additionally, a large portion of the population, approximately 100 million people, are at risk of malaria on a yearly basis[1,2].

Community pharmacists appear to be the most accessible health care professionals, thus, making them the right partners for the prevention, control, and treatment of malaria. Pharmacists are experts in the use of medications. They possess the knowledge and skills required to ensure the safe and effective use of medicines. Community pharmacists are responsible for the supply of medicines and the counselling of patients and caregivers with regards to the rational use of drugs. Also, community pharmacists are becoming increasingly involved in health promotion and education[3-5]. These enhanced roles are targeted at helping patients (or clients) to achieve optimal outcomes from drug therapy and pharmaceutical services and to ensure that patients live a healthy life[6].

Presently, in many parts of the world, pharmacists are encouraged to deliver pharmaceutical services that are centred on the patient's health care needs[5,7,8]. Globally, in the past, community pharmacy practice was limited primarily to drug preparation, dispensing, and patient counseling[9]. However, in recent years, pharmacy practice has evolved from the traditional product-oriented profession to patient-focused practice worldwide, thus, giving rise to the development of the concept of pharmaceutical care (PC)[10]. PC is the direct, responsible provision of medication-related care to achieve definite outcomes that improve and maintain a patient's quality of life[10]. The pharmacist takes responsibility for meeting the drug needs of the patients while showing personal concern for his or her wellbeing. In the PC

https://dx.doi.org/10.4314/mmj.v32i4.7

practice model, the pharmacist works in collaboration with the patient, caregiver, and other health care professionals to achieve definite outcomes in the overall interest of the patient[10].

In Nigeria, community pharmacies are usually the first point of contact within the health care system for the purchase of medications and the management of minor health problems, including malaria. Despite inherent challenges, pharmacy practice in Nigeria has also changed to mirror international best practices[11,12]. The community pharmacies are an integral aspect of the primary health care system in Nigeria. Because of the growing burden of diseases in Nigeria, the National Treatment Policy adopted from the WHO and published by the Ministry of Health allows community pharmacists to diagnose and treat minor ailments, such as malaria, typhoid, and the common cold[2,13-16]. Pharmacists prescribe and dispense over-the-counter medications, including anti-malarial drugs. Also, pharmacists conduct dipstick rapid diagnostic tests and clinical patient assessments for patients with a suspected case of malaria and anaemia[17]. Patients and other clients visit community pharmacies to access medications and medication-related services, and they pay for medications to be dispensed in the course of their treatment. Nevertheless, the medication-related services provided by community pharmacists, including malaria case management, are not remunerated either by the recipients or any third party[18]. At present, there is no specific legal framework to back these additional roles for the pharmacist, and the practice is not yet uniform across all regions of the country[19].

In malaria-endemic regions, community pharmacists are well positioned to assist in surmounting the problem of inappropriate anti-malarial drug use, irrational prescribing, and the anti-malarial drug resistance that impedes the attainment of desired malaria elimination. Pharmacists also carry out a range of other duties including health promotion and education aimed at addressing the inability to access preventive care facilities, the presence of stagnant water around homes, and the improper disposal of waste materials[20]. However, in Nigeria, the involvement of community pharmacists in the provision of primary health care in general and malaria-specific services, in particular, has received very little research attention. Therefore, the purpose of this study was to determine the level of participation of community pharmacists in the provision of preventative malaria services, PC for malaria patients, and curative services for malaria in Enugu metropolis, Nigeria, and to explore factors associated with this practice.

Methods

This research study was a cross-sectional study conducted among community pharmacists in Enugu metropolis, Nigeria. Enugu metropolis is the capital city of Enugu State, located in the Southeastern region of Nigeria. Geographically, the state is located within latitude 6°.00'N and 7°.00'N, and longitude of 7°.00'E and 7°.45'E. Overall, Enugu metropolis is mainly warm and wet, with annual heavy downpours from March to September. Thus, the climatic condition of Enugu metropolis is one that encourages the breeding of plasmodium-carrying vectors. Furthermore, the study location has a dense mixed population of over 3.2 million, comprising various ethnic groups in Nigeria. However, the Igbos are the predominant tribe.

There were 120 community pharmacies registered with the Pharmacists Council of Nigeria in Enugu State as at the time of the study. Out of the 120 community pharmacies in Enugu metropolis distributed across three zones, 60 community pharmacies were selected from across the zones; 30 new and 30 old pharmacies to ensure fair representation. Based on the Pharmacists Council of Nigeria Guidelines for the Registration of Premises, we considered pharmacies less than 5 years of existence as new pharmacies and those above as old pharmacies. Two pharmacists were recruited per community pharmacy outlet. Based on the records of the Pharmacists Council of Nigeria, there were 172 registered community pharmacists in Enugu metropolis at the time of the study. The convenience sampling technique was used for the recruitment of study participants. The inclusion criteria for recruiting participants were as follows: (1) pharmacists who are registered with the Pharmacists Council of Nigeria, and (2) those who gave informed consent to participate in the study. However, intern pharmacists, pharmacy trainees, and pharmacy technicians were excluded from the study.

The study instrument used was a modified re-validated self-administered questionnaire adopted from Osemene and colleagues and the WHO's operational manual on malaria case management[21,22]. Face validity, content validity, and reliability tests, were performed after drafting the questionnaire items. The Cronbach's alpha (α=0.73) of the survey instrument was within an acceptable limit. Generally, the questionnaire had two sections. The first section contained information on the respondents' demographic and practice characteristics that comprised sex, age, years of practice, the previous area of practice, highest qualification, position of the pharmacist, ownership of the pharmacy, and type of community pharmacy. The second section consisted of a 16-item questionnaire, divided into three domains. The domains were as follows: (1) malaria preventive services (5 items), (2) PC services for malaria patients (5 items), and (3) malaria curative services (6 items). Each item was measured on a 5-point Likert scale (not at all = 1, less frequent = 2, not sure = 3, frequent = 4, and very frequent = 5). The summation of scores represents the level of performance since all the items on the instrument were positively worded and in one direction. The extent of pharmacist involvement in the management of malaria cases was classified as either high or low based on whether the sum score was above or below the population mean score. Thus, a high variable score correlates with a high level of performance and an invariably high level of community pharmacist involvement in malaria prevention, PC, and curative services, and vice versa.

Data collection

The self-administered questionnaire was distributed to community pharmacists in selected pharmacies by the researchers and three trained research assistants. The completed questionnaires were retrieved immediately after completion in the pharmacy premises. Questionnaires from respondents who were unable to complete the questionnaire instantly were retrieved on a follow-up visit within 1 week. Overall, the questionnaires were completed in approximately 15 minutes. The period of data collection lasted from 18 May 2018 to 27 July 2018.

Data analysis

The variables were coded and entered into Microsoft Excel 2010, where the data were cleaned and checked for

https://dx.doi.org/10.4314/mmj.v32i4.7

appropriateness. In coding the variables, a sequential number was given to the variables. The highest score on the 5-point Likert scale was assigned '5', while the lowest score was assigned '1'. For the 5-item domains, the lowest possible score would be 5 while the highest possible score would be 25. However, for the 6-item domain, the lowest possible score would be 6, while the highest possible score would be 30. Descriptive statistics (frequency, percentage, mean, and standard deviation) was used to present demographic variables, practice characteristics, and item responses. The chi-square test was used to examine the association between dependent variables (the level of involvement in malaria prevention, PC, and curative services) and independent variables (demographic and practice characteristics). The percentage performance was the proportion of respondents that scored above the mean population. Thus, the level of involvement was categorized into high extent (scores > mean population) and low extent (scores < mean population). All statistical analyses were performed using IBM Statistical Product and Service Solution (SPSS) for Windows, version 21.0 (IBM Corp, version 21.0, Armonk, NY, USA). The level of statistical significance (α) was set at $P<0.05$.

Ethical considerations

Ethical approval for this study was obtained from the National Health Research and Ethical Committee of the University of Nigeria Teaching Hospital, Ituku-Ozalla, Enugu State on 16 May 2018, with the approval number NHREC/05/01/2008B-FWA00002458-IRB00002323. Prior to study initiation, written informed consent was obtained from all eligible participants. The participants were assured of strict confidentiality in handling all of the responses provided.

Results

Demographic and practice characteristics

Table 1 shows the demographic and practice characteristics of the pharmacists. Out of the 120 pharmacists recruited for the study, 103 questionnaires were returned completed, giving a response rate of 85.8%. The sex distribution of the respondents revealed that more than half (55.3%) were male. Nearly half of the respondents (46.6%) were aged 31–45 years and had at least 16 years of practice experience. The majority of the respondents were superintendent pharmacists (71.8%) and had a bachelor's degree in pharmacy (78.8%) as their highest qualification. Most of the pharmacists (92.2%) practiced in independent community pharmacies.

Level of involvement in the case management of malaria

Table 2 shows the item analysis for the level of involvement in malaria case management in terms of malaria preventive services, PC services, and curative services. More than half of the pharmacists were satisfactorily involved in providing malaria preventive services (57.3%), PC services to malaria patients (62.1%), and malaria curative services (51.5%). Overall, approximately 57.0% of the pharmacists in this study had a satisfactory level of participation in managing malaria cases.

Association of demographic and practice characteristics with the level of participation in preventive malaria services

Table 3 illustrates the relationship between the level of participation of community pharmacists in preventive malaria services and the demographic and practice characteristics of the respondents. The results showed a significant association between the level of participation in preventive malaria services and the number of years of practice ($\chi^2=15.739$, $P=0.003$).

Table 1. Demographic and practice characteristics of pharmacists (*n*=103)

Characteristics	Frequency	Percentage
Sex		
Male	57	55.3
Female	46	44.7
Age (years)		
25–30	14	13.6
31–45	48	46.6
46–60	27	26.2
>60	14	13.6
Years of practice		
0-5	23	22.3
6–10	16	15.5
11–15	14	13.6
16–20	24	23.3
>20	26	25.3
Previous area of practice		
Academia	2	1.9
Hospital	36	35.0
Administrative	6	5.8
Sales representative	26	25.2
Industry	1	1.0
None	32	31.1
Highest qualification		
B.Pharm	77	74.8
Pharm.D	8	7.7
M.Pharm	18	17.5
Position of pharmacist		
Superintendent	74	71.8
Part-time	29	28.2
Ownership		
Employer	63	61.2
Employee	40	38.8
Type of pharmacy		
Chain	8	7.8
Independent	95	92.2

The association of demographic and practice characteristics with the level of participation in the provision of pharmaceutical care for malaria patients

Table 4 shows the association between the level of participation of pharmacists in the provision of PC for malaria patients and their demographic and practice variables. The results indicate a significant association between sex and the level of pharmacist participation in offering PC services

https://dx.doi.org/10.4314/mmj.v32i4.7

for malaria patients (χ^2=5.204, P=0.023). However, the involvement of pharmacists in PC services was independent of other demographic and practice variables (Table 4).

Table 2. Item analysis of the level of pharmacist participation in in malaria case management

Items	Mean score	Standard deviation	Performance score (%)
Preventive services			
(1) Creates awareness of malaria disease	3.74	1.05	74.8
(2) Gives advice on the protective measures against malaria	4.20	0.73	33.0
(3) Advices on drug of choice for preventing malaria in pregnant women	4.07	0.88	30.1
(4) Promotes ways of detecting early signs and symptoms of malaria attack	3.79	0.87	73.8
(5) Promotes the use of insecticides treated nets	3.68	0.99	74.8
Mean total	3.90	0.90	57.3
Pharmaceutical care services			
(1) Prompt services to malaria patients	4.19	0.78	55.4
(2) Provision of anti-malarial medication use information	4.08	0.81	56.1
(3) Ability to identify and resolve potential drug therapy problems	3.81	0.82	82.5
(4) Anti-malarial drug monitoring and follow up	3.69	0.97	69.9
(5) Rate of feedback from patients	3.09	1.12	46.6
Mean total	3.77	0.90	62.1
Curative services			
(1) Prompt diagnosis of malaria	4.28	0.81	63.7
(2) Prompt diagnosis of malaria-associated anaemia	3.06	1.16	63.7
(3) Promotes rational use of anti-malarial drugs	4.22	0.88	41.7
(4) Prompt and effective treatment of malaria and anaemia	2.42	0.99	56.4
(5) Reports anti-malarial drug resistance	2.42	0.92	39.8
(6) Reports adverse drug reactions experienced by patients on anti-malarial (pharmacovigilance)	2.48	1.06	43.7
Mean total	3.15	0.97	51.5
Grand mean total	3.61	0.92	57.0

Table 3. The association of the level of involvement of community pharmacists in preventative malaria services and sociodemographic and practice characteristics

Characteristics	Performance, n (%)		χ^2	P value
	High extent	Low extent		
Sex				
Male	32 (31.1)	25 (24.3)	0.068	0.794
Female	27 (26.2)	19 (18.4)		
Age (years)				
25–30	5 (4.9)	9 (8.7)	5.358	0.147
31–45	30 (29.1)	18 (17.5)		
46–60	18 (17.5)	9 (8.7)		
>60	6 (5.8)	8 (7.8)		
Years of practice				
0–5	7 (6.8)	16 (15.5)	15.739	0.003*
6–10	14 (13.6)	2 (1.9)		
11–15	6 (5.8)	8 (7.8)		
16–20	17 (16.5)	7 (6.8)		
>20	15 (14.6)	11 (10.7)		
Previous area of practice				
Academia	0 (0.0)	2 (1.9)	5.701	0.336
Hospital	19 (18.4)	17 (16.5)		
Administrative	3 (2.9)	3 (2.9)		
Sales representative	14 (13.6)	12 (11.7)		
Industry	1 (1.0)	0 (0.0)		
None	22 (21.4)	10 (9.7)		
Highest qualification				
B.Pharm	42 (40.8)	35 (34.0)	1.370	0.504
Pharm.D	6 (5.8)	2 (1.9)		
M.Pharm	11 (10.7)	7 (6.8)		
Position of pharmacist				
Superintendent	42 (41.2)	32 (31.4)	0.001	0.972
Part-time	17 (15.7)	12 (11.7)		
Ownership				
Employer	37 (35.9)	26 (25.2)	0.139	0.709
Employee	22 (21.4)	18 (17.5)		
Type of pharmacy				
Chain	5 (4.9)	3 (2.9)	0.097	0.756
Independent	54 (52.4)	41 (39.8)		

*Significant at P<0.05.

Association of demographic and practice characteristics with the level of participation in malaria curative services

Table 5 shows the association between the level of participation of pharmacists in curative malaria services and their demographic and practice characteristics. The number

https://dx.doi.org/10.4314/mmj.v32i4.7

of years of practice was significantly associated with the level of involvement in the provision of curative malaria services (χ^2=11.883, P=0.018).

Table 4. Association of the level of involvement of community pharmacists in pharmaceutical care services and sociodemographic and practice characteristics

Characteristics	Performance, n (%)		χ^2	P value
	High extent	Low extent		
Sex				
Male	41 (39.8)	16 (15.5)	5.204	0.023*
Female	23 (22.3)	23 (22.3)		
Age (years)				
25–30	9 (8.7)	5 (4.9)	2.350	0.503
31–45	27 (26.2)	21 (20.4)		
46–60	17 (16.5)	10 (9.7)		
>60	11 (10.7)	3 (2.9)		
Years of practice				
0–5	13 (12.6)	10 (9.7)	0.897	0.925
6–10	9 (8.7)	7 (6.8)		
11–15	9 (8.7)	5 (4.9)		
16–20	16 (15.5)	8 (7.8)		
>20	17 (16.6)	9 (8.7)		
Previous area of practice				
Academia	1 (1.0)	1 (1.0)	6.285	0.279
Hospital	23 (22.3)	13 (12.6)		
Administrative	4 (3.9)	2 (1.9)		
Sales representative	20 (19.4)	6 (5.8)		
Industry	0 (0.0)	1 (1.0)		
None	16 (15.5)	16 (15.5)		
Highest qualification				
B.Pharm	48 (46.6)	29 (28.2)	0.659	0.719
Pharm.D	4 (3.9)	4 (3.9)		
M.Pharm	12 (11.7)	6 (5.8)		
Position of pharmacist				
Superintendent	48 (47.1)	26 (25.5)	1.097	0.295
Part-time	16 (14.7)	13 (12.7)		
Ownership				
Employer	38 (36.9)	25 (24.3)	0.228	0.633
Employee	26 (25.2)	14 (13.6)		
Type of pharmacy				
Chain	6 (5.8)	2 (1.9)	0.610	0.435
Independent	58 (56.3)	37 (35.9)		

*Significant at P<0.05.

Table 5. The association of the level of involvement of community pharmacists in malaria curative services and sociodemographic and practice characteristics

Characteristics	Performance, n (%)		χ^2	P value
	High extent	Low extent		
Sex				
Male	32 (31.1)	25 (24.3)	1.121	0.290
Female	21 (20.4)	25 (24.3)		
Age (years)				
25–30	4 (3.9)	10 (9.7)	3.782	0.286
31–45	25 (24.3)	23 (22.3)		
46–60	16 (15.5)	11 (10.7)		
>60	8 (7.8)	6 (5.8)		
Years of practice				
0–5	6 (5.8)	17 (16.5)	11.883	0.018*
6–10	10 (9.7)	6 (5.8)		
11–15	10 (9.7)	4 (3.9)		
16–20	10 (9.7)	14 (13.6)		
>20	17 (16.5)	9 (8.7)		
Previous area of practice				
Academia	1 (1.0)	1 (1.0)	3.425	0.635
Hospital	15 (14.6)	21 (20.4)		
Administrative	3 (2.9)	3 (2.9)		
Sales representative	16 (15.5)	10 (9.7)		
Industry	1 (1.0)	0 (0.0)		
None	17 (16.5)	15 (14.6)		
Highest qualification				
B.Pharm	37 (35.9)	40 (38.8)	4.089	0.129
Pharm.D	3 (2.9)	5 (4.9)		
M.Pharm	13 (12.6)	5 (4.9)		
Position of pharmacist				
Superintendent	40 (39.2)	34 (33.3)	1.019	0.313
Part-time	13 (11.8)	16 (15.7)		
Ownership				
Employer	30 (29.1)	33 (32.0)	0.956	0.328
Employee	23 (22.3)	17 (16.5)		
Type of pharmacy				
Chain	4 (3.9)	4 (3.9)	0.007	0.932
Independent	49 (47.6)	46 (44.7)		

*Significant at P<0.05.

Discussion

The findings of the present study demonstrated that more than half of the community pharmacists satisfactorily provided preventive care services in their pharmacy premises. Generally, the community pharmacists are seen as a quick source of advice, referral, medicines, and information, by patients and other clients[23]. Pharmacists are expected to

https://dx.doi.org/10.4314/mmj.v32i4.7

provide preventive care services that include the promotion of personal and environmental hygiene, malaria awareness, the detection of early signs and symptoms of malaria, the provision of intermittent preventive treatment services for pregnant women, and the use of insecticide-treated nets as a protective measure against malaria vectors[22]. The involvement of community pharmacists in preventive care services in the present study was better compared to a related study conducted in Nigeria by Oparah and Arigbe-Osula[24]. In this earlier study, it was reported that less than one-third of the pharmacists (31%) surveyed in Benin city were involved in preventive services[24]. Likewise, a study in the United Kingdom reported poor involvement of community pharmacists in activities related to disease prevention and health promotion[25]. However, a higher proportion of community pharmacists (77%) participated in the provision of preventive services directed against malaria in Jalingo, North-east Nigeria[21]. Also, a study in Lagos, South-west Nigeria reported high levels of participation from pharmacists in health promotion and disease prevention. In the study, for instance, approximately 89% of the community pharmacists were involved in health education and leaflet provision[26]. The possible explanation for the findings of the current study could be that community pharmacists in the study location have not truly understood the relevance of malaria preventive services in the health care delivery system. Many pharmacists in the present study might have shown apathy towards the provision of preventative malaria services because they do not get reimbursed for such services by the patients, caregivers, community leaders, third-party payers, or the government. However, there is still hope for the future as a previous study reported that most community pharmacists (84%) in two Nigerian cities have favourable attitudes towards health promotion[27]. Therefore, policies and initiatives geared towards encouraging community pharmacists to provide preventative malaria services in Nigeria should be promoted by health policymakers and other stakeholders in the health sector.

We also found that approximately 62% of the pharmacists satisfactorily provide PC for malaria patients. In contrast to the findings of the current study, however, previous research in Nigeria reported poor and grossly inadequate levels of pharmacist participation and the quality of PC rendered to malaria patients[21]. Nevertheless, other studies reported positive attitudes and appreciably high levels of involvement for community pharmacists in rendering PC to patients in general[28,29]. Globally, in recent years, the focus of pharmacy practice has changed from a product-oriented profession to a patient-oriented profession. The community pharmacists, in particular, are profoundly involved in the patient care process. They provide drug-related services that directly enable patients to obtain optimal benefit from prescribed medications. In doing so, pharmacists take responsibility for their actions within the stipulated limits of the laws of the land where they practice[30]. The practice of PC in community pharmacies is well established in developed countries such as the United Kingdom, the United States, and Canada. However, a shortage of pharmacists, and a lack of reimbursement remain a barrier for its full implementation[31]. PC practice by community pharmacists has been demonstrated to result in improved medication adherence, quality of life, and cost savings[32]. In Nigeria, the existing laws are yet to recognize the added roles of community pharmacists in the health care system[33]. Hence, pharmacists are restricted in the roles they can actually perform to assist patients with minor ill-health from the legal perspective[19].

Furthermore, the current study demonstrated that approximately 51% of community pharmacists offered curative services to patients with malaria. This finding might appear worrisome, considering that community pharmacists are the most accessible and readily available health care professionals in the neighbourhood. Many patients seek treatment for minor ill-health in community pharmacies. However, the findings of the current study differed considerably with those of two previously published studies that reported 80% and 100% involvement of community pharmacists in curative services to malaria patients[21,24]. The WHO recognizes the critical role of community pharmacists in the provision of treatment services for malaria patients. Virtually all anti-malarial drugs used for the treatment of malaria are over-the-counter medications. In addition, the approval of the use of a rapid diagnostic test by WHO in community pharmacies to confirm the diagnosis of malaria before treatment eased the challenge of providing curative services in such facilities. Hence, community pharmacists are permitted within the ambit of the law to diagnose, initiate treatment, and monitor the outcome of therapy for patients suffering from malaria.

Moreover, we found that level of pharmacist involvement in the provision of preventative and pharmaceutical malaria care services were associated with the number of years of practice. On the other hand, sex was associated with the participation of the respondents in curative services to malaria patients. The findings of the present study were consistent with those of previous studies in the literature. For example, a previous Nigerian study among pharmacists reported that years of practice after graduation significantly influenced the quality of PC practice[33]. Similarly, Asmelashe and colleagues, in Ethiopia, reported that sex was a significant determinant of the involvement of community pharmacists in certain pharmacy services. In this previous study, female pharmacists performed better than male pharmacists[34]. It is generally expected that pharmacists who possess many years of experience in community pharmacy practice would perform better in the provision of cognitive pharmacy services. With exposure to varied case scenarios in practice, pharmacists are well placed to provide extensive and quality medication-related services for the good of their patients or clients. Therefore, our findings underscore the need for a concerted effort by the government, health policymakers, and community pharmacists to improve the participation of pharmacists in the management of malaria cases. Nigeria remains a malaria-endemic country; hence urgent action is required to address this menace from all avenues. Routine training and update courses are recommended for community pharmacists in Nigeria in order to enhance their knowledge and skills in handling malaria and other related cases. With the official launch of the Doctor of Pharmacy program in Nigeria, it is recommended that primary health care course work and experiential activities through vigorous clinical clerkship and hands-on training be included as part of the curriculum in its schools of pharmacy.

Study limitations

This study had some limitations that should be considered while interpreting its findings. First, this study was conducted in one of the thirty-six states in Nigeria. Thus, its findings

might not represent the general views of community pharmacists in Nigeria, although Enugu state, the former capital of the Eastern region, has a mixed population of community pharmacists from various ethnic groups, social statuses, and educational backgrounds. Secondly, because of the cross-sectional study design, the current study could only determine factors associated with the level of involvement of community pharmacists in the management of malaria cases.

Conclusion

Overall, more than half of the community pharmacists assessed in this study were satisfactorily involved in the management of malaria cases. However, the number of years of practice and sex were factors associated with the extent of participation in malaria case management. Improved awareness and knowledge of the significance of malaria case management among community pharmacists could be achieved by continuing education and training, public workshops, seminars, conferences, and short refresher courses.

Acknowledgements

The authors are grateful to all of the Community Pharmacists in Enugu metropolis who voluntarily participated in this study.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflicts of interest

None of the authors have any conflicts of interest to declare

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