



Assessment of Training of Community Pharmacists towards the Prevention of COVID-19 in a North Central State of Nigeria

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ABSTRACT

Background: Community pharmacists (CPs) are key providers of basic healthcare in communities, and barriers that may hinder enormous results in their role during the COVID-19 pandemic should be addressed. We conducted a training on the strategies for strengthening the Infection Prevention and Control (IPC) among CPs.

Methods: Participants were 31 CPs in Ilorin, Kwara State. A quasi-experimental, before-and-after study was carried out. Data were captured using a self-administered questionnaire. The questionnaire had three sections; the first contained sociodemographic characteristics such as sex, age, and years of practice. The second section contained eight questions used to assess the knowledge of the respondents, each was assigned a score of "1" and the total obtainable score was "8". The third section identified the role of CPs in the prevention of COVID-19.

Results: The mean age of the 31 CPs who participated in the training was 49.5 ± 13.7 years, and 18 (58.1%) were males. The mean pre-test IPC training score was 4.968 ± 1.329 , while the mean post-test IPC training score was 5.323 ± 1.077 , ($t = -1.611$, $p = 0.118$). All respondents identified that CPs had roles in the prevention of COVID-19. Among them, 27 (87.1%) identified community health awareness campaigns as their main role in the prevention of COVID-19. Regarding years of practice, 6 (35.3%) respondents with less than 20 years had COVID-19 IPC knowledge gain compared to 10 (71.4%) others with more than 20 and above years of practice ($P = 0.04$).

Conclusion: The training achieved its short-term objective. There is a need to for supervisory visits on the CPs at their place of practice to ensure knowledge acquired is put to the best use.

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Introduction

The Coronavirus disease (COVID-19) is a public health problem ravaging the entire globe (1). COVID-19 was declared a global pandemic by the World Health Organization on 12th March 2020 (1). As of 19th November 2020, nearly 56 million cases of COVID-19 and 1,350,713 deaths have been recorded globally (2). The African region has also not been spared; in fact, the

infection toll has risen to 2,014,564 laboratory confirmed cases in the region (2). In Nigeria, 65,693 cases have been recorded after the country recorded her index case of COVID-19 as of the reference period (2). At the initial stage of the outbreak in Nigeria, the transmission of COVID-19 was limited to influential individuals, and this influenced the nomenclature accorded to COVID-19: "The disease of the rich and mighty" (3). Recently, community-wide

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transmission of COVID-19 has been recorded, and this has led to a spiraling in the number of confirmed COVID-19 cases (4). The present situation therefore necessitates a multi-disciplinary network of public health professionals with active engagement in communities for the provision of key public health services during the COVID-19 pandemic (5). In this regard, the training of community pharmacists (CPs) cannot be over-emphasized.

CPs are healthcare professionals who are responsible for the optimization of medication use and the improvement of patient outcome and quality of life (6). Due to the ease of approach and friendly atmosphere around them, CPs are frequently the first point of call for consultation or treatment of common ailments for patients (6). In rural communities with shortages of physicians and trained nurses, CPs constitute the only source of healthcare provision (6, 7). Due to their location in the heart of communities, CPs help bridge gaps in health programs and enhance delivery of disease-preventive services (7). They therefore serve as entry points and linkages for patients with the healthcare system. Evidence abounds regarding the contribution of CPs in the improvement of public health. These have included their roles in health promotion and education, patient counseling, self-training on the management of disease conditions, and emergency response during disasters (6, 7). Valid results have been presented in literatures on the substantial improvements in the number of vaccinated persons following the empowerment of CPs in community-based immunization programs. Such laudable results have been recorded in the reduction of the incidence of influenza, pneumococcal disease, and herpes zoster infection (8, 9).

In the COVID-19 context, it is therefore needful that CPs get actively engaged in the community-wide COVID-19 response, while removing barriers that may hinder enormous results. This necessitated the need to conduct formal infection prevention and control (IPC) training for the CPs in Ilorin, Kwara State as part of the COVID-19 response. The training was aimed at strengthening the knowledge of CPs on COVID-19 IPC to play their roles in the control of the ongoing pandemic of COVID-19. The IPC training enabled CPs to understand and appreciate the basics of COVID-19, infection prevention and control and standard precautions, hand hygiene, health care waste management and the COVID-19 outbreak response in Kwara State. The training was assessed to document the immediate impact of the IPC training on the knowledge of participants about their role in the COVID-19 surveillance process. The results of the effect of the IPC training on COVID-19 response are reported here. The association between some socio-demographic factors and the improvement in scores of post-tests following the training were also assessed.

Methods

The training on COVID-19 IPC was conducted at the Pharmacists' House, opposite Kwara Hotels, Ilorin, Kwara state, Nigeria.

The participants were 31 CPs, approximately 50% of CPs practicing in Ilorin, Kwara State. All CPs who had been registered and held current membership position with the Pharmaceutical Society of Nigeria, Kwara state chapter were eligible to participate in the IPC training.

A quasi-experimental, before-and-after study was carried out. The training agenda and materials were from the Nigeria Centre for Disease Control (NCDC) and were adapted for use. Resource persons included the State team members who had been trained in a training of trainers. The training lasted one day, consisted of didactic lectures, role plays, and interactive sessions. Information on participants' socio-demographic characteristics and relevant job experience were obtained. Pre- and post-tests were conducted using the questions supplied by the NCDC. A total population survey of all the CPs who attended the IPC training was done.

The training topics were made up of 5 sections. The first, Basics of COVID-19, covered lessons on the history of Coronaviruses, history of COVID-19, modes of spread, risk factors for COVID-19, COVID-19 vulnerable population groups, including the elderly and individuals with underlying complications. Also included in this section was an overview of COVID-19 self-protection recommendations as hand hygiene.

The second section, named "Standard infection prevention and control (IPC) precautions", comprised COVID-19 prevention and control measures. These included the decontamination of surfaces and environment, use of face masks, and the practice of physical distancing. Participants were reminded of the effectiveness of hand hygiene, a sure way to reduce the risks of COVID-19 infection. Donning and doffing of face masks and gloves were also taught.

The third section, named "Moments of hand hygiene" included lessons on the periods to practice hygiene, including before and after contact with COVID-19-infected persons, before and after handling contaminated waste, and before and after each use of face mask or hand glove. The methods of preparing 70% alcohol-based hand rubs were taught. The participants were also taught the steps in hand washing. Hand drying after each washing period with disposable tissues were also taught.

The fourth section, named "Methods of disposing COVID-19 waste" included the disposal methods for hand gloves and face masks which have been used. Disposal of such wastes should be in tight-fitted bins which are to be handled with utmost care. In addition, re-use of face masks can be achieved through disinfection in chlorine solution after every use.

The fifth section, "Intimation with the Kwara state COVID-19 outbreak response" highlighted the present

COVID-19 situation in Kwara state, as well as hot-spot communities where a large proportion of COVID-19 cases had been recorded. Information on the hierarchy involved in making COVID-19 reports were also made known to all CPs in attendance.

Data were collected by the investigators who acted as the facilitators for the IPC training. The data were collected at two times; before the training, and afterwards. The data were analyzed using SPSS, version 23. Data were captured using a self-administered questionnaire. The questionnaire had three sections; the first contained sociodemographic characteristics such as sex, age, and years of practice. The second section contained eight questions used to assess the knowledge of the respondents, each was assigned a score of “1” and the total obtainable score was “8”. The third section identified the role of CPs in the prevention of COVID-19. The primary outcome was the knowledge gain among CPs because of the IPC COVID-19 training. Participants’ scores at the pre and post-tests, as well as mean and the range were computed. The proportions of those with < 50% fail, and ≥ 50 pass were calculated for both pre- and post-tests. The paired t-test was used to test for significant differences between the mean scores at the pre- and posttests. The associations between selected socio-demographic variables and improvement in knowledge scores post-tests were also assessed. The level of significance for all statistical tests was set at p< 0.05.

Results

Table 1 shows the sociodemographic characteristics of CPs. Among the CPs, the mean age of was 49.5 ± 13.7 years. Among them, 18 (58.1%) were males, and 10 (32.3%) were below 40 years. Also, 17 (54.8%) had spent less than 20 years in practice. Only 6 (19.4%) respondents had previous received IPC training.

Table 1. Sociodemographic characteristics of pharmacists.

Variable	Frequency	%
Sex		
Male	18	58.1
Female	13	41.9
Age Group (years)		
<40	10	32.3
40-59	10	32.3
≥60	11	35.5
Years of Practice		
≤20	17	54.8
>20	14	45.2
Average daily customers*		
≤50	17	54.8
>50	11	35.5

*Total number of respondents=28

In the pretest, the minimum score was 1 and maximum 7, and only 3 (9.7%) participants failed the pre-test. In the post-test, the minimum score was 2 and maximum 7, only 2 (6.5%) failed the post-test. The mean pre-test IPC training score was 4.968±1.329, while the mean post-test IPC training score was 5.323±1.077, (t=-1.611, p=0.118). In all, 16 (51.6%) scored higher in post-test. A moderate positive correlation was found between the pre and post-IPC training tests scores (r=0.497, p=0.004, N=31).

Table 2 shows the pre-test and post-test knowledge scores of CPs at the COVID-19 IPC training. Among them, 7 (22.6%) scored “4”, and 11 (35.5%) had a score of “5” in the pre-test. In the post-test, 10 (32.3%) scored “5” and 14 (45.2%) scored “6” in the post-test.

Table 2. Pre-test and post-test knowledge scores of community pharmacists at the COVID-19 IPC training.

Scores	Pre-test		Post-test	
	N	%	N	%
1	1	3.2	0	0
2	0	0	1	3.2
3	2	6.5	1	3.2
4	7	22.6	3	9.7
5	11	35.5	10	32.3
6	6	19.4	14	45.2
7	4	12.9	2	6.5

Table 3 shows the association between sociodemographic characteristics and COVID-19 IPC training knowledge gain. Among them, 9 (50%) males had COVID-19 IPC knowledge gain compared to 7 (53.8%) females. Regarding years of practice, 6 (35.3%) respondents with less than 20 years had COVID-19 IPC knowledge gain compared to 10 (71.4%) others with more than 20 and above years of practice (P=0.045).

Regarding the roles of CPs in the COVID-19 response, all 31 (100%) respondents identified that CPs had roles to play in the prevention of COVID-19. Among them, 27 (87.1%) identified community health awareness campaigns on the prevention and control of COVID-19, while 4 (2.9%) stated that health education for community stakeholders and community-based opinion leaders as the role of CPs in the prevention of COVID-19.

Table 3. Association between sociodemographic characteristics and COVID-19 IPC training improvement in score.

Variable	Improvement in score N (%)	No improvement in score N (%)	Chi-square	p-value
Sex				
Male	9(50)	9(50)	0.045	0.833
Female	7 (53.8)	6(46.2)		
Age Group (years)				
<40	4(40)	6(60)	1.187	0.552
40-59	5(50)	5(50)		
≥60	7(63.6)	4(36.4)		
Years of Practice				
≤20	6(35.3)	11(64.7)	4.014	0.045
>20	10 (71.4)	4(28.6)		
Average daily customers*				
≤50	7(41.2)	10(58.8)	2.673	0.102
>50	8(72.7)	3 (27.3)		
Had previous IPC training				
Yes	2(33.3)	4(66.7)	0.995	0.318
No	14(56)	11(44)		

*Total number of respondents=28

Discussion

This study found that increased years of practice improved COVID-19 IPC training scores among CPs. This finding therefore posits that the longer the years invested in the community pharmacy profession, the better the ability of CPs to tackle the COVID-19 pandemic in their communities. This finding corroborates the ideology that knowledge is key to prevention of any illness, and is a major component for an enabled response of CPs for the COVID-19 context. CPs are frequently the first point of call on health-related matters in the community, and as such are at high risk for contracting COVID-19 (10). Therefore, improved knowledge of COVID-19 IPC is especially required for them. Findings from existing literature have reported the need for reinforcement of COVID-19 control measures such as social distancing, hand hygiene, and home stay where possible. The similarities of our findings with the reference literature therefore suggest that COVID-19 control measures could be reinforced through the application of the Health Belief Model (3, 12). In this regard, CPS could help ensure a regular stock and supply of hygiene products such as disposable napkins, alcohol-based hand rubs, and face masks for purchase by community members amid the COVID-19 pandemic. Based on the awareness of their potential roles during the COVID-19 pandemic, CPs should be strengthened in the collaborative fight against COVID-19.

It is well documented that CPs are well-suited to influence

lifestyle modification in ailing individuals (13). Further evidence has reiterated the insufficiency of a single professional health group in inciting change to ingrained behaviors such as smoking, and diet modification (13). This therefore approves of the involvement of all health teams in lifestyle modification efforts. Studies conducted across the globe on diabetes management have reported a reduction in cost burden on patients as well as an improved in patients' outcome and satisfaction following CPs' involvement (7). During the 2014 Ebola outbreak, CPs in Nigeria were empowered to render health education services, assist with infection prevention and control, and enhance referrals when needed (14). A recent consensus identified different roles to be undertaken by CPs during pandemics across four phases, namely: prevention, preparedness, response, and recovery (14). The International Pharmaceutical Federation recently published interim guidelines outlining key roles of pharmacists' professional responsibility during the ongoing COVID-19 pandemic.

Building on the foregoing, the engagement of CPs presents a promising strategy for tackling the COVID-19 pandemic. CPs could promote the rational use of prescribed medications of antimalarials such as hydroxychloroquine to mildly symptomatic COVID-19 patients on home-based management (14, 15). They could also provide point-of-care testing services, and link suspected COVID-19 cases to the nearest COVID-19 testing centre (12, 13). In

addition, CPs could serve as community focal persons or surveillance officers in the accurate reporting of COVID-19 cases and related fatalities (14). However, some challenges have limited the involvement of community pharmacists in public health activities over the years, key among which is the lack of interprofessional collaborative care (14, 16). Interprofessional collaborative care has however been proposed as essentials for the involvement of CPs in public health activities (16). Interprofessional collaboration should therefore be enhanced to assure of an improved COVID-19 response both in communities and nationwide.

The main strengths in this training included the availability of training materials and agenda from NCDC, and the use of experienced resource persons the have themselves undergone training previously. The participants' rating of the training was good, lunch was provided and the venue was conducive. To the best of our knowledge, this is the first attempt to conduct research among CPs amid the COVID-19 pandemic in Nigeria. In addition, the study built on the roles played by CPs to identify the critical roles played by CPs during the COVID-19 pandemic. The study was also conducted among licensed CPs in Nigeria.

This study was conducted in only one state. Hence, the findings may lack generalizability across the entire CPs in Nigeria.

It is expected that findings from this study are made use of in enabling the joint COVID-19 response among health workers, including CPs. Also, CPs occupy central points in communities, and should be strengthened for improved screening, case detection and notification, as well as linkage of suspected COVID-19 cases to the national health system. Further research should be conducted on the involvement of the government in improving the COVID-19 response among CPs.

In conclusion, the training was relevant at the time it was conducted, and the conduct was successful. Evidence from the pre- and post-test scores showed an improvement in the knowledge score of CPs. However, the improvement in knowledge is not a guarantee of improved practices. Regular assessment of COVID-19 preventive practices among CPs should be conducted to provide adequate information on knowledge-practices disparity regarding COVID-19 among CPs. Also, scheduled trainings among community pharmacies should be organized on a regular basis.

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