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Assessment of Understanding and Practices of Community Pharmacy Personnel to Tackle COVID-19 Pandemic

Sitaram Khadka,[1,2] Gyata Neupane,[1,2], Gopal Kumar Yadav,[3] Arun Sharma,[1,2] Santoshi Giri,[4] Kapil Amgain,[5] Arjun Bhusal,[2] Bhaikaji Basnet[6]

[1]Shree Birendra Hospital, Kathmandu, Nepal, [2]Nepalese Army Institute of Health Sciences, Kathmandu, Nepal, [3]BP Koirala Institute of Health Sciences, Dharan, Nepal, [4]Nepal Public Health Research and Development Center, Kathmandu, Nepal, [5]Karnali Academy of Health Sciences, Jumla, Nepal,[6] School of Science, Kathmandu University, Dhulikhel, Nepal.

ABSTRACT

Background: The skill, accessibility, and knowledge of community pharmacists have been paramount in managing pandemics. This study was conducted to assess the knowledge, attitude, and practice of community pharmacy personnel towards tackling COVID-19 pandemic which might help concerned authorities to take effective actions to eliminate the gaps for the management of such pandemic in an efficient way.

Methods: A cross-sectional study was conducted among 428 community pharmacy personnel from different community pharmacies in Kathmandu, Nepal from December 2021 to February 2022. Statistical analysis was done through SPSS® v21 and MedCalc for Windows v12.3.0.

Results: Most of the participants (42.76%) had certificate-level degrees in their respective fields and one to five years of working experience (48.84%). Only 29.67% of the respondents had good knowledge towards tackling COVID-19, whereas good attitude and practice were demonstrated by 59.11% and 42.29% respectively. The participants with higher degrees and more working experience had better knowledge, attitude, and practice. Education level bachelor and above was independent predictor of good knowledge (OR 20.69, 95% CI 11.30-37.90). Knowledge and practice (Spearman's rho: 0.135; P ≤0.005) and attitude and practice (Spearman's rho: 0.095; P = 0.049) scores were positively correlated.

Conclusions: The significant association of community pharmacy personnel's educational level with knowledge, attitude, and practices demands the necessity of policy-making bodies' involvement for the mandatory presence of well-qualified pharmacists and regular training at the community pharmacy level. Furthermore, it is high time to reinforce the drug regulatory acts, regulations, and codes all over the nation.

Keywords: COVID-19; Nepal; pandemics; pharmacy; policy making.

INTRODUCTION

Since the breakthrough of the coronavirus disease (COVID-19), the lives of people have somersaulted globally. People usually seek suggestions from community pharmacy practitioners as they are easily accessible ffor medication counseling and providing possible treatment options which remains true in the case of COVID-19 as well.[1] Community pharmacy services remain uninterrupted even in the toughest situation like lockdowns or crises.[2] In countries with low-and middle-income economies like Nepal, people are more comfortable visiting a pharmacy for the treatment of various ailments. In this regard, evaluation of the understanding and practice of community pharmacy personnel to tackle the COVID-19 pandemic in Nepal is crucial. Therefore, this study was conducted with the objective to assess community pharmacy personnel's knowledge, attitude, and practice towards tackling the COVID-19 pandemic which might help concerned authorities to take effective actions to eliminate the gaps for the management of such pandemic in an efficient way.

METHODS

A cross-sectional study was carried out among community pharmacy personnel of Kathmandu, Nepal

Correspondence: Sitaram Khadka, Shree Birendra Hospital, Kathmandu, Nepal.
Email: sitaramkhadka5693@gmail.com, sitaram.khadka@naihs.edu.np.

from 1st December 2021 to 28th February 2022, principally targeting the community pharmacy personnel's knowledge, attitude, and practices on tackling the COVID-19 pandemic. It was conducted in accordance with the guidelines of Strengthening of the Reporting of Observational Studies in Epidemiology (STROBE).

A non-probability convenience sampling was used for recruiting the participants. Participants' inclusion criteria were licensed community pharmacy personnel; either owner of the pharmacy with the license or working as a pharmacist, assistant pharmacist, or dispenser in a pharmacy running on the days of data collection, and who were able to consent to participate in the study, and completed the assigned questionnaire.

The Raosoft sample size calculator was used for calculating the sample size. To achieve a margin of error of 5%, a confidence level of 95%, a response distribution of 50%, and a population size of 10000 community pharmacy personnel, the sample size was 370. With the aim of increasing the generalizability and validity of this research, we approached as many community pharmacy personnel as possible to collect data. A total of 600 community pharmacy personnel were approached. The response rate was 71.33%. Therefore, a total of 428 community pharmacy personnel voluntarily answered the questionnaire.

A semi-structured questionnaire was developed for data collection based on the in-depth literature review and the current prevalent practices. The face and content validity of the questionnaire was carried out by three researchers at Shree Birendra Hospital, Kathmandu and Karnali Academy of Health Sciences, Jumla, Nepal. The reliability analysis yielded a Cronbach alpha value of 0.72.

The collected data were entered in Microsoft excel 2019 v16.0 and exported to IBM SPSS® v21, and MedCalc for Windows v 12.3.0 (MedCalc-Software, Mariakerke Belgium) for further analysis. The Chi-square test was used to test for group differences. For binary logistic regression analyses, odds ratios (OR) and 95% confidence interval (CI) were calculated at 95% CI. Box plots were drawn for the distribution of knowledge, attitude, and practice scores based on education level. Spearman rank correlation coefficient was used to calculate the correlation between the scores.

RESULTS

Most of the participants belonged to the age group 25-30 years (202, 47.19%). Almost half of the participants (183, 42.76%) had a certificate level degree followed by a bachelor's degree (135, 31.54%) in the relevant field, whereas around one-fourth of the participants were just trained to work in a pharmacy. Most of the participants had one to five years of working experience (209, 48.84%) **(Table 1).**

Table 1. Socio-Demographic Characteristics of the Participants (N=428).

SN	Characteristics		Frequency	Proportion (%)
1	Gender	Female	114	26.64
		Male	314	73.36
2	Age (years)	<25	180	42.06
		25-30	202	47.19
		>30	46	10.75
3	Education	Orientated/ Trained	78	18.22
		Certificate level	183	42.76
		Bachelor level	135	31.54
		Master level	32	7.48
4	Experience (years)	<1	152	35.51
		1-5	209	48.84
		>5	67	15.65
5	Working period per shift (hours)	<6	82	19.16
		6-8	240	56.07
		>8	106	24.77

The response to each question was reported in Supplementary Table **S1.**

The majority of participants agreed that hand-washing with soap and water is the best preventive method for COVID-19. Likewise, more than 90% of the participants agreed that preventive measures are the best way to manage COVID-19. Almost half of the participants agreed that there are no proven therapeutic agents to cure COVID-19. The older pharmacists admitted that they knew about the infection control measures and actions required at the beginning of the infection **(**Supplementary Table **S1).**

The median knowledge score was 9 (25th to 75th percentiles: 6-12). About one-third of the participants (127, 29.67%) had good knowledge. The age group of 25-30 and more than 30 years of the participants (OR 2.58, 95% CI 1.56-4.25 and OR 15.38, 95% CI 7.11-33.28 respectively) and education level bachelor and above (OR 20.69, 95% CI 11.30-37.90) compared to certificate level and more than five years of working experience (OR 2.04, 95% CI 1.10-3.79) were independent predictors of good knowledge **(Table 2).**

Table 2. Factors Affecting Knowledge of Community Pharmacy Personnel about the COVID-19 Pandemic.					
Characteristics	**Knowledge**		**Binary logistic regression**		
	Moderate to poor (%)	**Good (%)**	**OR**	**95% CI**	**P-value**
Gender					0.967
Female	80 (70.18)	34 (29.82)	1 (Ref)		
Male	221 (70.38)	93 (29.62)	0.99	0.62-1.58	0.967
Age (years)					**<0.001**
<25	152 (84.44)	28 (15.56)	1 (Ref)		
25-30	137 (67.82)	65 (32.18)	2.58	1.56-4.25	<0.001
>30	12 (26.09)	34 (73.91)	15.38	7.11-33.28	<0.001
Education					**<0.001**
Trained	78 (100.00)	0.00 (0.00)	-	-	-
Certificate level	167 (91.26)	16 (8.74)	1 (Ref)		
≥Bachelor level	56 (33.53)	111 (66.47)	20.69	11.30-37.90	<0.001
Experience (years)					0.064
<1	116 (76.32)	36 (23.68)	1 (Ref)		
1-5	144 (68.90)	65 (31.10)	1.45	0.91-2.34	0.122
>5	41 (61.19)	26 (38.81)	2.04	1.10-3.79	0.023
Working period/shift					0.808
<6	59 (71.95)	23 (28.05)	1 (Ref)		
6-8	170 (70.83)	70 (29.17)	1.06	0.61-1.84	0.847
>8	72 (67.92)	34 (32.08)	1.21	0.64-2.28	0.552

The median attitude score was 57 (25th to 75th percentiles: 53-60). About three-fifths of the participants (253, 59.11%) had a good attitude. Working experience of more than five years (OR 2.03, 95% CI 1.07-3.84) was an independent predictor of a good attitude **(Table 3).**

Table 3. Factors Affecting the Attitude of Community Pharmacy Personnel about the COVID-19 Pandemic					
Characteristics	**Attitude**		**Binary logistic regression**		
	Moderate to poor (%)	**Good (%)**	**OR**	**95% CI**	**P-value**
Gender					0.451
Female	50 (43.86)	64 (56.14)	1 (Ref)		
Male	125 (39.81)	189 (60.19)	1.18	0.77-1.82	0.451
Age (years)					0.744
<25	72 (40.00)	108 (60.00)	1 (Ref)		
25-30	86 (42.57)	116 (57.43)	0.90	0.60-1.35	0.610
>30	17 (36.96)	29 (63.04)	1.13	0.58-2.22	0.706
Education					0.205
Trained	32 (41.03)	46 (58.97)	1 (Ref)		
Certificate level	81 (44.26)	102 (55.74)	0.88	0.51-1.50	0.629
≥Bachelor level	62 (37.13)	105 (62.87)	1.18	0.68-2.04	0.559
Experience (years)					**0.012**
<1	62 (40.79)	90 (59.21)	1 (Ref)		
1-5	96 (45.93)	113 (54.07)	0.81	0.53-1.24	0.331
>5	17 (25.37)	50 (74.63)	2.03	1.07-3.84	0.030
Working period/shift					0.181
<6	27 (32.93)	55 (67.07)	1 (Ref)		
6-8	99 (41.25)	141 (58.75)	0.70	0.41-1.19	0.184
>8	49 (46.23)	57 (53.77)	0.57	0.31-1.04	0.066

Table 4. Factors Affecting the Practice of Community Pharmacy Personnel during the COVID-19 Pandemic.

Characteristics	Practice		Binary logistic regression		
	Moderate to poor (%)	Good (%)	OR	95% CI	P-value
Gender					0.052
Female	57 (50.00)	57 (50.00)	1 (Ref)		
Male	190 (60.51)	124 (39.49)	0.65	0.42-1.01	0.052
Age (years)					**0.016**
<25	103 (57.22)	77 (42.78)	1 (Ref)		
25-30	126 (62.38)	76 (37.62)	0.81	0.54-1.22	0.305
>30	18 (39.13)	28 (60.87)	2.08	1.07-4.03	0.030
Education					**0.069**
Trained	47 (60.26)	31 (39.74)	1 (Ref)		
Certificate level	115 (62.84)	68 (37.16)	0.90	0.52-1.54	0.694
≥Bachelor level	85 (50.90)	82 (49.10)	1.46	0.85-2.52	0.172
Experience (years)					**0.002**
<1	98 (64.47)	54 (35.53)	1 (Ref)		
1-5	123 (58.85)	86 (41.15)	1.27	0.82-1.95	0.279
>5	26 (38.81)	41 (61.19)	2.86	1.58-5.18	0.001
Working period/shift					0.135
<6	45 (54.88)	37 (45.12)	1 (Ref)		
6-8	132 (55.00)	108 (45.00)	0.99	0.60-1.65	0.985
>8	70 (66.04)	36 (33.96)	0.63	0.35-1.13	0.120

Some of the pharmacy personnel (7.7%) were still found practicing non-prescription antibiotics dispensing (NPAD). Most of the pharmacy personnel (39.5%) agreed that they suggested an alternative therapy to COVID-19 suspected patients on their own. Some of the respondents (16.3%) revealed that even after having symptoms of flu or fever, staffs work at the pharmacy due to patients' load. Some of the respondents (21.5%) were found reluctant in making a line or installing a clear plastic in the patient contact area to provide barrier protection against coughs or sneezes as a way to prevent transmission of COVID-19. Though more than half of the respondents (62.7%) agreed that they wear masks and gloves continuously, the response from the rest of the people revealed the bad practice. Similarly, more than half (58.9%) of the respondents were either not wearing personal protective equipment (PPE) at all or were disinclined to wear it while staying at the pharmacy. Some of the community pharmacy personnel (4.7%) in this study were not aware of better hand hygiene practices (Supplementary Table **S1).**

The median practice score was 58 (25th to 75th percentiles: 52-63). About two-fifth of the participants (181, 42.29%) had good practice. The age group of more than 30 years (OR 2.08, 95% CI 1.07-4.03) and working experience of more than 5 years (OR 2.86, 95% CI 1.58-5.18) were independent predictors of good practice **(Table 4).**

Those participants with bachelor's and above educational level had significantly higher median knowledge scores compared to those with lower educational levels (Trained and certificate levels). However, the median attitude and practice scores were comparable across the three groups based on educational level **(Figure 1).**

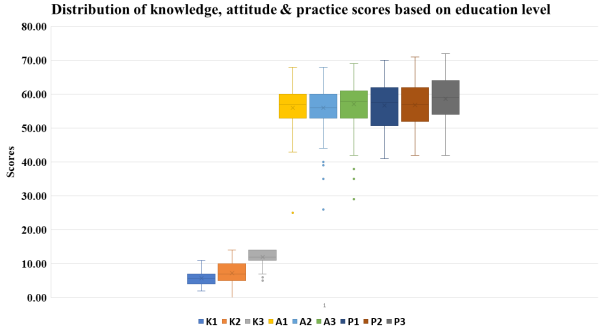

Figure 1. Box Plots of the distribution of knowledge, attitude, and practice scores based on education level.

[K1, K2 & K3: Knowledge, A1, A2 & A3: Attitude, and P1, P2 & P3: Practice; 1=Trained, 2=Certificate level, and 3=≥Bachelor level]

There was no correlation between knowledge and attitude scores (Spearman's rho: 0.080; P-value = 0.096). However, the knowledge and practice scores (Spearman's rho: 0.135; P-value ≤0.005), and attitude and practice scores were positively correlated (Spearman's rho: 0.095; P-value = 0.049).

DISCUSSION

Community pharmacy personnel have an active role in the management of disasters like the COVID-19 pandemic. They play a crucial role in providing drug information, counseling, and related recommendation to the public. In Nepal three levels of pharmacy personnel exist who are authorized to run a pharmacy: Pharmacists with a bachelor's/master's level degree in a relevant field after 12 years of schooling, assistant pharmacists with a certificate level degree (three years) in a relevant field after 10 years of schooling, and professionalists (*"Byabasai"* in the Nepali language with three months orientation training or even three days orientation training) who don't possess any academic/professional degree in the relevant field.[3] However, the provision of training for a certain duration for license distribution to open pharmacies has been discontinued nowadays, the professionalists run most of the registered pharmacies in Nepal with the previously obtained license. Even there are many community pharmacy personnel without any sort of medicine and pharmacy-related degrees, nor they have undergone orientation training.[4]

In this study, more than half of the community pharmacy personnel were male (73.36%) which was contrary to the findings from the various studies done in different parts of the world.[5-8] Although the majority of the participants were male, there was no significant difference in the knowledge score between genders in our study. Similarly, only about one-third of the participants (29.67%) had good knowledge regarding tackling the COVID-19 pandemic. However, findings from different studies conducted in Vietnam (93.4%), Pakistan (71.5%), and Ethiopia (63%) contrast this result.[6,9,10] In various studies conducted in Ethiopia and Egypt, more than half of the participants had adequate knowledge regarding the COVID-19 pandemic.[11,12] More than half of the participants were certified pharmacists in such studies which might be the reason that they had very good knowledge scores. This represents the fact that most of the participants of our study did not have substantial knowledge regarding COVID-19, pharmacy practice, and current developments. The majority of the respondents in the study were assistant pharmacists, and almost one-fifth of the respondents were only professionalists. It makes clear that we need more qualified staff with higher education in the community pharmacy sector so as to provide appropriate information and prompt professional services to the public. It was revealed that the respondents aged above 25 years had good knowledge regarding COVID-19 which was in line with the study conducted by Kambayashi *et al* in Japan, where older participants had good knowledge scores.[13] The knowledge of the older pharmacists about the infection control measures and actions required at the beginning of the infection explains that the knowledge also differs with age and can also reflect the work experience, which can directly affect the knowledge score. In the same way, the participants who had working experience above 5 years had good knowledge scores which were in line with the study conducted among healthcare workers in China.[14] This shows that with age and work experience one retains and exhibits proper knowledge which may further reflect in attitudes and practices.

About three-fifths of the participants (59.11%) had a good attitude which was in the line with various studies conducted globally.[11,15] However, in contrast, a study conducted in Pakistan displayed a good attitude in less than half (44%) of the respondents.[9] The participants with more than five years of experience had a good attitude toward tackling the COVID-19 pandemic. Experience plays a vital role in the attitude of any individual since it shows the ability to tackle the situation and the skills they have attained through their experience. Some of the respondent's denial of considering the responsibilities of the community awareness about COVID-19 management and in need for COVID-19-related training for pharmacy personnel at the community level showed poor attitudes in this study. A study conducted by AlRasheed *et al* showed working experience and education predicted the positive attitude and practice toward COVID-19.[16] Likewise, a study conducted among healthcare professionals by Limbu *et al* showed that positive attitude improved with increasing age.[17] Findings from this study support these results.

About two-fifth of the participants (42.29%) had good practice, which is not up to the mark as it is still less than half of the study participants. Different studies conducted among community pharmacy personnel around the globe demonstrate an adequate level of practice scores.[9,18] The results from the majority of the respondents regarding NPAD, a suggestion of alternative therapy, working in pharmacy even after having flu-like symptoms, and reluctance in making barrier protection demonstrated the example of poor practice. Similarly, some respondents were not wearing masks and gloves

and performing bad hand hygiene practices. The majority of the respondents were disinclined to wear PPE which depicted the poor practice that makes them prone to the COVID-19 infection that, in turn, impacts the community. Such results were comparable to the findings of a study conducted by Yimenu *et al* in Ethiopia, where around one-fourth of the participants showed good practice and a substantial gap was indicated regarding the practice of community pharmacists during COVID-19 pandemic.[10] This shows a gap in practices that directly affect the transmission and spread of the infection. This fact urges proper training and frequent refresher courses to be conducted among the group. The participants aged more than 30 years, education level more than or equal to Bachelor, and more than 5 years of experience had good practices which are in the line with the study conducted by Koni *et al* where participants with higher education had significantly better practices. The vast majority of the participants followed cough etiquettes, covered their noses and mouth with masks, and washed their hands with soap and water or sanitizer. This shows greater experience and age, and the greater the education level, the better the practices.[18]

The positive correlation of knowledge with practice and attitude with practice depicts the need for well-qualified pharmacists for better professional practice. A study conducted by Yimenu *et al* also supports this finding.[10]

The role of health authorities is crucial in such a context for better healthcare management; the Government of Nepal ought to highlight the issues of community pharmacy practices, escalating healthcare burden thereof, and articulate its containment strategies, however, there have not been sufficient resources allocated so far for this. Efforts should be made to establish a rule for a mandatory presence of a licensed pharmacist with an academic degree in the relevant field and provide training, seminar, mock drills, and regular checks and balances as well. Moreover, pharmacists should be present in the pharmacies and should provide proper patient counseling services as well. The lack of enforcement of already existing laws is responsible for such a poor result and has led to serious health issues in countries with lower- and middle-income economies like Nepal where adequate resources for healthcare facilities are still a far cry.[19]

The response failure and social desirability bias are inherent limitations in such types of studies. As only pharmacy personnel from the Kathmandu valley were included in the study, the findings may not generalize the scenario of the world. However, the results obtained from this study may not vary significantly from the findings from other parts of the similar world.

CONCLUSIONS

As community pharmacy personnel are front-liners, their knowledge, attitude, and practices are very much crucial factors for the management of pandemics. The significant association of their educational level with knowledge, attitude, and practices demands the necessity of well-qualified pharmacists at the community pharmacy level. Similarly, better service according to the experience and age factor also recommends more training on the practice of profession and professionalism. For the confinement of such an issue, efficient legislature and an appropriate implementation plan are necessary. Therefore, the policy-making bodies should prepare a guideline to assure the mandatory presence of well-qualified pharmacists at all pharmacies and regular training for the pharmacy personnel to enhance their performance for the betterment of the health care system of the nation. Moreover, the strict enforcement of drug regulatory acts, regulations, and codes is essential.

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CONFLICT OF INTERESTS

The authors declare that there are no competing interests.

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