Knowledge, attitude and practice of pharmacists and pharmacy assistants toward COVID-19 Outbreak in Libya: an online based cross-sectional study

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Abstract

The COVID-19 was announced as pandemic by WHO on March 11th, 2020. Five days later, on March 16th, 2020 prevention measures to prevent the outbreaks had been taken by authorities in Libya. The health care institutes were working during the quarantine and until now. Pharmacists as health care professionals have a critical role in COVID-19 pandemic. This study aimed to access the levels of knowledge, attitude and practice (KAP) of community pharmacists, hospital pharmacists and pharmacy assistants toward COVID-19 in Libya. A cross-sectional online survey was conducted in period from November, 2020 to January, 2021. Data was analyzed using descriptive statistics and Chi-square to measure the differences and association within socio-demographic variables. Pearson correlation was used to measure the relationship between KAP of pharmacists. A total of 205 responses were received. The majority of respondents were from the eastern part of Libya. The percent of good knowledge score was 61.5%, the percent of adequate attitude score was 59% and the percent of sufficient practice score was 56.6%. There was an association between knowledge score and respondent's professional and educational level with $p = 0.008$ and 0.028, respectively. There was an association between score of attitudes and working setup, professional level and educational level with $p = 0.003$, 0.011 and 0.002, respectively. There was also an association between practice score with regard to gender, age educational level and work place with = 0.004, 0.017, 0.002 and 0.027, respectively. There was a positive relationship between knowledge and attitude ($p > 0.05$). In conclusion, the KAP of community pharmacists, hospital pharmacists and pharmacy assistants were low but acceptable. Therefore, KAP should be improved among pharmacists by implanting an effective health education programs in Libya.

Keywords: Attitude, COVID-19, knowledge, Libya, pharmacist, pharmacy assistant, practice.

Introduction

A new member of coronavirus family (COVID-19) has been identified to cause severe and acute respiratory syndrome among humans. The first infection with this virus was in Wuhan, China reported early in December, 2019. After that the virus spread very fast within China and many other countries through numerous ways such as travelling [1]. The pandemic of COVID-19 has been reached every single country and nobody in the world is considered safe and until now the COVID-19 still emerging and causing serious health issues as stated by the World Health Organization, WHO [2]. Globally, different characteristics of life including economic, social, political and even though ethical aspects were affected by the pandemic. The response to the COVID-19 was comprehensive but different according to different countries and health authorities. The different consequences of COVID-19 within or between countries depend on the control strategies accomplished and adopted by these countries. The developed and developing countries were both affected by the virus although the effect in developing counties was worse as the acts that has been taken was inappropriate and mainly affected by local understanding [3].

In Libya, the second largest country in Africa bordering the Mediterranean Sea with the longest coast facing Europe [4], the starting of COVID-19 disease was late in comparison to other neighborhood countries. This is can be owned to the low levels of traveling and international trading, which in turn due to international instability and armed conflict since 2011. All of this affect the services of health care systems [3]. The first case of COVID-19 was confirmed on March 25, 2020 in Tripoli. Two month later on May 2nd, 2020, the number of COVID-19 confirmed cases was only 69 [5]. Now, there are 128,348 confirmed cases, 2056 deaths and 312 new cases in Libya according to WHO dashed board on Feburary,18th 2020 [6]. While, globally on February 14, 2020, there have been more than a hundred and eight million confirmed cases off which more than two million and thirty-eight thousandth deaths reported to WHO [7].

It is generally noticed that COVID-19 suspected patients are usually request help from the nearest health care institutes including pharmacies, emergency units and other health care providers. So, health care workers and staffs working in these organizations should be at least prepared with the protocols and information to deal with and treat any suspected patients with COVID-19 infection. The pharmacists as part of health care professions can effectively contribute to fight against different types of diseases as they are available at first contact point with patients during previous viral outbreaks and pandemics. The role of pharmacists in these pandemics including COVID-19 are vaccine administration, health education and drug distribution [8]. Though, the role of pharmacists in Libya is still basic, but they are a critical part of health care system to guarantee that safe, correct and effective medicine has been reached by all patients [9].

The most important mental key in public health promotion and prevention is knowledge, attitude and practice (KAP). The different aspects of any diseases include a range of opinions about worsening factors, symptoms identifications, disease causes and consequences and the accessible treatment options. As the available source of information about the COVID-19 are different including official sources, nonofficial sources, social media and internet and personal previous experience, medical sources. Therefore, the correctness of information and beliefs may affect the behaviors of population in different way towards the disease [3]. The aim of this study was to assess and evaluate and the levels of COVID-19 KAP among community pharmacists, hospital pharmacists and pharmacy assistants in Libya during this COVID-19 pandemic.

Materials and method

Study design and procedure: An anonymous cross-sectional online survey was conducted among community pharmacists, hospital pharmacists and pharmacy assistants in private and public sectors in Libya. The anonymity was maintained to eliminate the bias responses that might affect the respondents' opinions and ensure the honest answers by respondents. The survey was conducted in the period from November 7th, 2020 to January 9th, 2021, directly after the peak of infections and deaths in Libya was reached [10]. The questionnaire was structured by reviewing other articles and previous works [11 - 15]. The questionnaire semi-structured and designed for Google Docs Forms (Google survey tool), then the questionnaire link was shared to the community pharmacists, hospital pharmacists and pharmacy assistants on social media platforms mainly Facebook. Data was collected through an online link as it is impossible to conduct a paper-based questioner and expose the researchers to the high risk of infections with COVID-19 virus through direct contact with the pharmacists in hospital and community pharmacies.

Sample size: As there is no any data available on the number of community pharmacists, hospital pharmacists and pharmacy assistants working in different institutes in Libya. The samples were selected by suitability sampling as the frame of sampling cannot be produced. All community pharmacists and pharmacy assistants working in private and public pharmacies, hospital and polyclinic accept to participate in the study were included.

Data collection: A survey was started on November 7th, 2020 and the acceptance of responses from the respondents was ended on January 9th, 2021 when the appropriate size of sample was achieved. The link was posted and/or reposted either individually or in specific groups of pharmacists (pharmacists syndicate group), the members of these groups have only been the registered pharmacists. The questionnaire started with a brief description of the purpose and context statements; the respondents approved participating in the study by answering the questionnaire automatically.

Study questionnaire: The study questionnaire was pretested on 10 pharmacists for illegibility. The questionnaire consisted mainly of five parts. The first part is the demographic data of respondents includes the following variables; gender, age, working setup, professional level and educational level. The second part is the job description of the respondents includes job position, years of working and work place of respondents (all regions of Libya). The third part is the knowledge of respondents including the source of information about COVID-19 and three knowledge-based questions had 20 points. One point was assigned for each correct answer, zero point for incorrect and "I don't know" answers. The simple repetitive knowledge questions were excluded as the first infections with COVID-19 in Libya was reported on March 25th, 2020 in Tripoli, Libya [16]. Four months after the announcement of first infection with COVID-19 virus in China [17]. The first question in knowledge part was regarding the COVID-19 risk groups, the second question was about the COVID-19 treatment options and the third question was regard the transmission and infectious facts of COVID-19. The total score is 20 points and respondents with more than 50% of total score (≥ 10) indicated good knowledge, while scores of less than 50% of total score (≤ 9) indicted poor knowledge about COVID-19. The fourth part is the attitude consisted of eight questions. The respondent's response to the eight questions was recorded on a five-point Likert scale as strongly agree = 5, agree = 4, neutral = 3, disagree = 2 and strongly disagree = 1. The total score of attitudes ranges from 1 - 40. In which, a score of more than 60% of total score (≥ 24) demonstrated an adequate attitude score. While, a score of less than 60% of total score (≤ 24) demonstrated as inadequate attitude score. The last part of the questionnaire is the practice consisted of six questions related to the practice of respondents in the work place during the pandemic of COVID-19 virus. Each question scored as never = 0, rarely = 1, often = 2 and always = 3. The total score ranges from 1 - 18, a score of more than 67% (≥ 12) indicates a sufficient attitude and a score of less than 67% (≤ 11) is set for an insufficient attitude.

Statistical analysis: The categorical variables were measured using descriptive statistics including frequencies, percentage and median score. The statistical analysis was accomplished using statistical package for social science (SPSS. version 21). The difference in knowledge, attitude and practice of the respondents was examined using Chi-square tests. The correlation between knowledge, attitude and practice parts were tested using Pearson correlation test. The level of significant with a p-value of less than 0.05 was considered statistically significant.

Results

The demographics and job description of respondents: A total of 215 responses have been received from the pharmacists and pharmacy assistants. The respondents were Libyan inhabitants from different cities. 205 responses have been included in the final analysis of the survey as 10 responses were excluded for incomplete and/or missing data, more than half of the respondents were female (n = 119, 58%) and the rest were male (n = 86, 42%). About half of the respondents (n = 101, 49.3%) were in the age group (26 - 35 years) and the smallest number of the respondents (n = 27, 13.17%) were in age group (> 36 years). Few above three quarters of the respondents were community pharmacists (n = 156, 76.1%) and nearly three quarters of the respondents had a pharmacist's professional level (n = 151, 73.7%) and two thirds of the respondents had Bachelor of pharmaceutical science (BSc) (n = 136, 66.3%). While, 15 respondents representing 7.3% had Master or Doctoral degree. The majority of respondents were working as dispensers (n = 166, 81%) and only 19 (9.3%) were a store owner. The respondents were nearly had comparable experience of less than one year and from one to five years representing (n = 67, 32.7%) and (77, 37.6%), respectively. The highest response and majority of respondents were from Benghazi (n = 89, 43.4%), followed by Tripoli (n = 52, 25.4%) and the rest of respondents were from 20 different Libyan cities. The work place divided into eastern and western parts of Libya as shown in **Table 1**.

The respondents Source of information and Knowledge related to COVID-19

The source of information regarding COVID-19: Nearly three quarter of the respondents (n = 149, 73.40%) got the information about the COVID-19 from the social media and internet, followed by taking the advice of physicians (n = 106, 52.22%). The television and official sits were nearly equally used by the respondents as source of information (n = 90, 44.33%) and (n = 100, 49.26%), respectively. While, the least used source of information was the unofficial sites (9, 4.43%), **Table 2**.

The knowledge related COVID-19 of respondents: The mixed responses of the three-knowledge related COVID-19 questions were received. Majority of the respondents (n = 184, 89.8%) aware that people having respiratory diseases including asthma and chronic obstructive pulmonary disease are at high risk to get infected with COVID-19, followed by elderly patients (n = 147, 71.7%), people having cardiovascular diseases (n = 132, 64.4%) and people having diabetes (n = 109, 53.2%). Only few respondents (n = 20, 9.8%) stated that being pediatric is at risk to get infected with COVID-19. Acetaminophen were identified by majority of respondents (n = 160, 78.0%) as part of COVID-19 treatments option, followed by symptomatic respiratory relief (inhalers) (n = 143, 96.85). While, the least recognized medication for COVID-19 by respondents (n = 12, 5.9%) were Tocilizumab. 20 respondents (9.8%) were able to recognize chlorhexidine as disinfectants to sterilize the surfaces from COVID-19 in hospital and pharmacies. The majority of respondents (n = 171, 83.4%) reported that COVID-19 can be transmitted from an infected person that does not show symptoms and less than half of respondents (n = 92, 44.9%) knew the official announced name for COVID-19 is SARS-CoV-II. Almost equal proportion of respondents that are nearly quarter of respondents knew that a recovered patient from infection with COVID-19 become infected again and seasonal flu vaccination dose not protects against infection with COVID-19 representing 147 respondents (71.7%) and 145 respondents (70.7%), respectively, **Table 2**.

The attitude of respondents towards COVID-19: About all of the respondents agreed that they and their family members are at risk to get infected with COVID-19 virus due to the direct contact with patients at the work place during the pandemics. Most of respondents (n = 84, 41%) accept isolation at home rather than in health facilities (n = 54, 26.3%). About one third of the respondents (34.6%) have neural attitude toward having COVID-19 vaccine. While, nearly half of the respondents (n = 95, 46.4%) agreed and strongly agreed to have the vaccine. Approximately 60 of respondents (60%) agreed and strongly agreed that following WHO recommendations helps to reduce the transmission of COVID-19 and the few above the half of the respondents (56.6%) also agreed and strongly agreed that the impact of COVID-19 outbreak can be minimized by the proactive measures taken by healthcare authorities. Also, two third of the respondents (64.9%) disagreed and strongly disagreed that there is adequate preparedness at national level to deal with COVID-19 outbreak. Whereas, about majority of the respondents (76.6%) disagreed and strongly disagreed that the healthcare facilities in the Libya have enough resources to provide care to coronavirus patients, **Table 3.**

The practice regarding COVID-19

The practice with regard to personal behavior of respondents: About half of the respondents (n = 93, 45.4%) were able to wash their hand during the work shift. About forty of the respondents often able to maintain social distancing of at least 1.5 m from work colleagues and about half of the respondents often able to avoid touching eyes, nose, and mouth. Only 21.5% of the respondents were put gloves during the work shift. Whereas, half of them (n = 106, 51.7%) were always able to wear mask during your work shift, **Table 4.**

The responses of participants regarding the inadequacy of precautionary measures and pharmacies services during the COVID-19 pandemic: The reasons for inadequate precautionary measure as stated by respondents were equally distributed between the lack of attention - motivation by decision makers and lack of attention - motivation by workers 129 (29.5%) and 131 (29.9%), respectively. Also, the shortage of resources was mentioned by about comparable number of respondents 105 (24.0%). In addition, the reasons behind the inadequacy of services during the COVID-19 pandemic was mainly due to inadequate preparedness as stated by about half of the respondents 166 (48.1%), also, the limited supply of equipment or pharmaceuticals was reported by one third of the respondents 111 (32.2%), **Table 5.**

The association between respondent's characteristics and their knowledge, attitude and practice scores: The scores and association between the knowledge, attitude and practice of respondents and their characteristics were illustrated in **Table 6**. The median of respondent's knowledge score was 10. An about sixty percent of respondents (126, 61.5%) had good knowledge. There was no significant different in the score of knowledge between respondents with regard to gender, age, working setup, job position, year of working and work place. While, there was statistically significant difference in knowledge score of the respondents based on respondent's professional level and educational level and with p = 0.008 and 0.028, respectively. In which, the percent of pharmacists with good knowledge score (66.6%) is two times higher than the percent of poor knowledge score (33.3%). Whereas, the percent of pharmacy assistants with good score is nearly comparable with percent of pharmacy assistants with poor score. On other hand, the percent of knowledge score of pharmacists with BSc, Master or PhD degree is higher than those with poor knowledge score by nearly two times while those with diploma degree the percent of poor knowledge score is higher than the percent of respondents with good score knowledge.

Almost a sixty percent of respondents exhibit a positive attitude toward COVID-19 (n = 121, 59%). There was no statistically significant different in the attitude score between respondents with regard to gender, age, year of working and work place. Whereas, there was statistically significant difference in the score of attitudes between respondents based on working setup, professional level and educational level with p = 0.003, 0.011 and 0.002, respectively. In which, the adequate attitude score for respondents with community pharmacy setup is two times higher than those with

inadequate attitude score and the opposite for others working setup. The percent of adequate attitude score of respondents with pharmacists' professional level is higher than the percent of those with inadequate attitude score and the opposite for pharmacy assistant's professional level. The majority of respondents with Master or PhD educational levels had adequate attitude sore. Also, the percent of adequate attitude score of respondents with BSc educational level is higher than the percent of those with inadequate attitude score and the opposite for respondents with diploma educational level.

More than half of the respondents (n = 116, 56.6%) have a sufficient practice at work during the pandemics. There was no significant different in the practice score between respondents with regard to working setup, professional level, year of working, year of services. While, there was statistically significant difference in practice score with regard to gender, age educational level and work place with p = 0.004, 0.017, 0.002 and 0.027, respectively. Female had higher sufficient practice percent than male. The age groups from 18 - 25 years and more than 36 had twice higher percent of sufficient practice score. Also, respondents with master or PhD educational level had higher percent of sufficient practice score than other educational level. In addition, respondents from the western part of Libya had higher sufficient attitude score than those from eastern part of Libya.

The correlation between knowledge, attitude, and practice about COVID-19: Testing the correlation between pharmacists' Knowledge, practice and attitude scores using Pearson correlation, showing that the correlation coefficient and p - value as follows: for knowledge - attitude (r = 0.239, p = 0.001), knowledge - practice (r = 0.076, p = 0.281), attitude-practice (r = 0.183, p = 0.009), **Table 7**.

Discussion

The major duties tasks of all pharmacists in public and private sector are providing the necessary information about medications to patients and other health care professionals [18]. The front-line responders for patients with COVID-19 during pandemic are the pharmacists [19]. Pharmacists as members of healthcare workers is considered as an essential part of defense response against COVID-19 outbreak [20]. There were numbers of studies in Libya conducted among health care workers (HCWs) in general about COVID-19 [21 - 23]. In particular, the studies regarding KAP of pharmacists toward COVID-19 pandemics were very few. This study targeted the community pharmacists, hospital pharmacists and pharmacy assistants in private and public sector in Libya. The socio-demographic data showed that the respondents were mainly female and high proportion of the respondents were from the eastern part of Libya that are opposite to the published findings [23], study that has been done among health HCWs in Libya, where the male respondents were higher than female. This is can be explained that female pharmacists are the main graduates from pharmacies faculties in Eastern part of Libya. While, in study that has been took place in Turkey among hospital pharmacists [24]. In which, the female pharmacists were more dominant than male that are consistent with our results. The social media/internet was the commonly used source of information during the pandemic that come in accordance with previous studies in Nigeria [25] among HCWs, in Ethiopia [26] among hospital and community pharmacists and in Pakistan [27] among HCWs. Whereas, our findings differ from the findings of [13], in which the main used source of information among Jordanian pharmacists was the WHO, the International Pharmaceutical Federation (FIP) or Centers for Disease Control (CDC). The second used source of information by our respondents was the physicians (Libyan). Where, the Libyan HCWs including physicians used social media as source of information by 30% as mentioned [21]. In turn, this indicates that the social media and internet has a direct effect on the knowledge of HCWs in Libya in general and pharmacists in particular.

Regarding the knowledge, there are many previous studies had been conducted among HCWs in Libya in general and they were evaluated the knowledge regarding COVID-19 including transmission, symptoms, prognosis, signs and mortality rate. The knowledge score in these studies was good within more than 80% of the respondents [21 - 23], therefore, our study targeted pharmacists in particular and excluded the simple repetitive questions. In our study, about half of respondents had good knowledge score. The difference in knowledge percent could be attributed to differences in target populations, research method, type of questions and time of data collection. The time of study is critical as a new information regard COVID-19 transmission, symptoms, prognosis, signs and mortality rate comes out on daily basis [26]. Our results showed that in each part of knowledge questions, there were a high percent of correct answers, but overall percent of knowledge is low that indicates nearly more than one third of respondents had wrong information about one or more aspects of COVID-19. It is highly recommended that the pharmacists should have a good knowledge score as they are in the front line against the disease [26]. Also, the main source of information used by respondents were social media/internet. Yet, the carefulness should be taken when using social media as a source of information about medical conditions or diseases such COVID-19. As, the social media contains misleading and overloaded information and the absence of peer reviewed articles [25]. As well as previous studies during former pandemics showed that the pharmacists with regard to knowledge score is ranked lower than other health care workers that might be due to less participations in patients care units in hospitals and other health care centers [8].

COVID-19 risk groups patients were recognized by majority of respondents that is comparable with [28, 29], survey studies in Vietnam and The United Arab Emirates respectively, showed that the majority of HCWs were able to recognize the elderly patients with chronic diseases who are at high risk of severe illness - death from infections with COVID-19. Regarding COVID-19 treatments options, until this time there is no specific antiviral medication to treat COVID-19. The available drugs options are to reduce the symptoms and severity of infection [19]. In our study, the acetaminophen, symptomatic respiratory relief (inhalers) and Chloroquine - remdesivir in combination were nearly

identified by the similar percentage of Lebanese pharmacists [19]. While, in our study, 18 persons comprising of respondents were aware that the antiretroviral drug named Kaletra® containing (Lopinavir / Ritonavir) in combination approved 20 years ago by FDA to treat HIV can be used in the treatment protocol of COVID-19 infected patient especially in early stage [30]. However, as stated by [24], much more of respondents were aware that retroviral medication can be used as an option to treat COVID-19. In our study, only few respondents were able to identify that non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids can be used as treatments options and this means that the respondents lack the up-to-date information regarding different aspects of COVID-19. That is compatible with a study by [29], in which a few percent of respondents believe that NSAIDs could decrease the risk of COVID-19 complications, as well as a few percent thought that using corticosteroids does not increase the vulnerability to COVID-19 infection [29]. However, both drugs could be used safely as treatments options for COVID-19 [31, 32].

Other findings in this study, 10% were able to identify chlorhexidine as a disinfectant to sterilize the surfaces from COVID-19 in hospital and pharmacies that are considered higher than the percent of Jordanian pharmacists that recognize the same fact in published study [13]. Majority of respondents aware that COVID-19 can be transmitted from an infected person that does not show any symptoms, these results are similar to the results of [33] study in which majority of Syrian pharmacists recognize the same fact. Also, the percent of respondents that recognize COVID-19 as vaccine preventable disease were nearly comparable with the percent of respondents that recognize the same fact in the study of [24]. In the beginning of our study there were no COVID-19 vaccine available for use on market, but by the end of December 2020, the WHO organization registered the Comirnaty COVID-19 mRNA vaccine to be the first vaccine to get validation for emergency use, this vaccine was manufactured by Pfizer/BioNTech [34]. Also, WHO validated two versions of the AstraZeneca/Oxford COVID-19 vaccine for an emergency use on February 15th 2020. These two vaccines manufactured by Serum Institute of India and AstraZeneca-SKBio (Republic of Korea). In addition, WHO is going to list other vaccines for emergency use by June [35]. Our respondents were aware that seasonal flu vaccination does not protect against infection with the COVID-19 that came in consistent with the previous findings [15], done among HCWs globally, in which majority of respondents recognized the same fact.

So, CDC and the Libyan Ministry of Health of Libya should in some way consider a method to provide the health care workers with an up-to-date information about COVID-19 to increase the understanding and care among the HCWs in general and pharmacists in particular, two examples to raise the awareness provided by [21] were sharing recently released researches and up to date electronic reports about COVID-19 on both the websites of national CDC and Libyan ministry of health. Many previous studies warn from the possibility of existence of dual pandemic, pandemic of misinformation and pandemic of COVID-19 [26]. In addition, the WHO officials and scientists warned from using the unofficial sites and unreliable sources to seek information about the COVID-19 leading to another pandemic of misinformation about the disease and misguide the HCWs [15, 27]. On other hand, our findings regard the knowledge were slightly higher than the percent score of knowledge among hospital and community pharmacists in study of [26], that has been took place in Addis Ababa, Ethiopia. Also, our findings regard the knowledge were nearly comparable with the percent of respondents stated in [1] done in Iran among nurses that half of the respondents had a good knowledge score regard different aspects of COVID-19.

Regarding attitude, our findings showed that nearly sixty percent of respondents held positive adequate attitude toward COVID-19 that are differ from the results of [25], study done in Nigeria among HCWs. In which the majority of respondents held positive attitude. Whereas, our adequate attitude percent is comparable with the percent of good attitude of Bangladesh residents [11]. Also, few above half of the respondents in our study showed positive attitude (strongly agree and agree) that they and their families will get infected by COVID-19 which are consistent with the findings of [19], while this attitude percent is less than the percent of Vietnamese HCWs who's stated that they and their families will get infected [28]. Less than half of our respondents expressed positive attitude (strongly agree and agree)

to have the COVID-19 vaccine when it is available which are much less than the percent of HCWs who stated to have the vaccine as reported [33], a study among Syrians pharmacists. The negative attitude can be attributed to the available vaccines approved to an emergency use only and their safety is not fully approved [36]. Few less than two third of respondents showed positive attitude (strongly agree and agree) to accept the isolation at home rather than in health facilities which is reported by only almost one third. These results are different in compare to [28] findings, in which the majority accept the isolation at health facilities in case they got infected with COVID-19. Mainly sixty percent and almost two third of respondents, respectively held positive attitude toward following the recommendations of WHO and national health authorities regarding the protective measures that can helps to minimize the infection with COVID-19 and reduce the effect of COVID-19 outbreak. This attitude is much less than the attitude of Ethiopian' hospital and community pharmacists HCWs toward following WHO recommendations and nearly comparable attitude toward following the recommendations of national health authorities [26]. In our study, the quite inadequate attitude in this survey can be attributed to highly negative response of respondents toward adequacy and preparedness at national level to deal with COVID-19 outbreak and the ability of healthcare facilities in Libya to provide health care to patients with coronavirus, that are consistent with the results of [26]. While, these findings differ from the findings of [25], as the majority of Nigerians HCWs trusted in the national authorities to win the battle against the COVID-19 as they won the battle earlier against the Ebola.

Regard the pharmacists' practice, about half of our respondents reported a positive sufficient practice toward COVID-19 that are comparable with the findings of [19] study done in Lebanon, in which two third of hospital pharmacists exhibited positive practice toward the COVID-19. Also, our practice result is consistent with the overall practice percentage of Bangladesh residents [11]. The majority of our respondents reported the ability to wash hands, keep social distancing of at least 1.5 m from work colleagues and avoid touching face frequently at shift. These findings showed that the respondents in our study had lower practice than the Lebanese pharmacists as reported in [19] study for doing the same acts. While, the percent of respondents able to stay home when get infected and wearing mask are comparable with the percent of respondents doing the same acts as reported in the same study. Studies by [37, 26] showed more better practice in compare to ours as the majority of the pharmacists washing hands with soap or sanitizer adopted a social distance and wearing personal protective equipment [26, 37]. Another cross-sectional study by [38], examine KAP among pharmacy students in Saudi Arabia and high respondents kept a distance from crowded and half of respondents reported wearing a mask when leaving home [38]. Regarding the practice of health institutes, our study showed that reasons for inadequacy precautionary measures in work place is the lack of motivation by decision makers, lack of attention by workers and shortage of resource. Also, the reasons for inadequacy of service that are provided to public and related to COVID-19 is mainly due to inadequate preparedness that are comparable with the reasons mentioned in study [26]. The correlation between KAP variables was analyzed. A weak positive correlation was observed between knowledge and attitude and it seemed to be very significant. Also, a weak positive correlation was observed between attitudes and practice and it seemed to be very significant. However, no correlation appeared to exist between knowledge and practice. Cross sectional survey conducted by [27, 39] showed a linear statistically significant positive correlation between knowledge, attitude and practice scores [27, 39]. However, according to [40], a weak positive correlation was observed between attitude and practice and no correlation seemed to be found between knowledge and attitudes or knowledge and practice [40].

Conclusion

The levels of KAP of Libyan community pharmacists, hospital pharmacists and pharmacy assistants are low but acceptable in country like Libya in which the health care system is weak. The percent of KAP is comparable with each other and consistent. This study showed that actions should be taken by Libyan health care authorities to provide the pharmacists with up-to-date reliable source of information and should organize educational programs to improve the knowledge of pharmacists in order to improve the attitude and practice.

Competing interests

There are no competing interests to declare.

Authors' contributions

Shaboun S. and Alzunni F. together designed the questionnaire, collected, uploaded the data and analyzed them by SPSS. Alzunni F. wrote the introduction and methodology. While, Shaboun S. wrote the results, discussion and the rest of work in manuscrpt. Both authors reviewed and edited the final form of manuscript.

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