Original article

Lebanese community-based pharmacists' interest, practice, knowledge, and barriers towards pharmacy practice research: A cross-sectional study

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ABSTRACT

Objective: To assess the interest, knowledge, practice and barriers of Lebanese community-based pharmacists towards research, and to examine factors associated with interest.

Methods: A cross-sectional survey, conducted between January and May 2017, enrolled community pharmacists using a proportionate random sample of community pharmacies in the five districts of Lebanon, using the list of pharmacies provided by the Lebanese Order of Pharmacists. In the absence of validated questionnaires to answer our objectives, we created a questionnaire based on previous research. The questionnaire was modified based on the experiences and issues raised during focus groups with research active pharmacists and research oriented community pharmacists.

Results: A total of 399 pharmacists was enrolled. The results showed that 231 (72%) were conscious about the important role of research in the community pharmacy setting whereas only 5.6% considered it not important. Over two-thirds (68.5%) of the pharmacists declared being interested in participating in research. There was a statistical difference in the percentage of correct answers between auto-declared and corrected responses for all terms, with all p < 0.001.

The most reported barrier was lack of time during hours of work (90.9%), followed by the lack of pharmacy staff (73.7%), lack of financial resources (68.9%), patient's lack of education and resistance to participation (64.8%), and lack of support (63.8%). Age (aOR = 0.92), years of experience (aOR = 1.06), and having been involved in research (aOR = 3.17) were associated with higher interest in research. Having studied in Lebanon (aOR = 3.63), having received previous research courses (aOR = 11.12) and being interested in research (aOR = 2.74) were associated with having participated in research projects during their professional experience.

Conclusion: Lebanese pharmacists have the good will to conduct and participate in research, but are lacking knowledge; this issue needs to be addressed vividly. Addressing the identified barriers could improve the research output of Lebanese community pharmacists.

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1. Introduction

The scope of pharmacy practice has developed in the past 50 years to meet the expectations of patients and other healthcare providers (Hebert et al., 2013). The extended pharmacy responsibilities, also known non-traditional services, have been considered health education and counseling, disease prevention (O'Loughlin et al., 1999), primary care clinicians in the management of chronic diseases, and medication management expertise (Ibrahim et al., 2012). Sequentially, research has emerged as the tool to prove the effectiveness of the various roles of the pharmacist. Thus, the active

participation of pharmacist in research is essential. Along the same lines, the International Pharmaceutical Federation (FIP) and World Health Organization (WHO) developed the concept of "the Seven Star pharmacist", which stated that a well-rounded pharmacist should be a researcher along with other characteristics (International Pharmaceutical Federation (FIP) Statement of Policy, 2000; Wiedenmayer et al., 2006). Other pharmacy organizations from developed countries including but not limited to the American College of Clinical Pharmacy (ACCP) (Yee and Haas, 2014), the Agency for Health Care Research and Quality (AHRQ) (Marinac and Kuo, 2010), and The Canadian Society of hospital pharmacists (Canadian Society of Hospital Pharmacists Research and education Foundation, 2015) have advocated and strategically supported pharmacists to participate in practice based research through creating networks. In fact, pharmacy services research will optimize patient outcomes, and pharmacists' roles in medication management, and provide a wider view on patient care (Lowrie et al., 2015).

Previous studies (Hebert et al., 2013; Perreault et al., 2012) have showed that healthcare providers, including physicians, pharmacists and nurses may be aware of research; however, they are reluctant to participate in research activities. Curiously, in developing countries, studies in Thailand (Kanjanarach et al., 2012) have shown lower interest (32%) among community pharmacists in participating in research compared to studies from Canada(Hebert et al., 2013) (58.9%), Australia (66.7%) (Peterson et al., 2009) and the United Kingdom (75%) (Rosenbloom et al., 2000; Saini et al., 2006), versus studies in hospital setting where it shows higher interest ranging from 80% in Saudi Arabia (Sultana et al., 2016) and 85% in Qatar (Awaisu et al., 2015). Literature has also identified key factors that hinders pharmacists from participating in research. This includes lack of support(Fakeye et al., 2017), lack of time (Cvijovic et al., 2010), expertise (Perreault et al., 2012), monetary reimbursement (Peterson et al., 2009), prioritization and management support (Ogunrinde et al., 2013), unawareness of the opportunity and never been asked to partake in research (Sultana et al., 2016), physician resistance, lack of a private counselling area and increased responsibility to patients (Elkassem et al., 2013).

The Order of Pharmacists of Lebanon (OPL), official body responsible to accredit continuing education hours for practicing pharmacists, initiated a set of surveys, based on knowledge, attitudes, and practices towards various aspects of the pharmacy profession. These surveys aimed to identify the needs in order to develop safety programs (Hajj et al., 2018; Ramia et al., 2017), design continuing educations credits, or develop assessment-based recommendations to the Ministry of Public Health (Iskandar et al., 2018; Hallit et al., 2017). In the absence of published literature, the OPL was evaluating the possibility of establishing a Lebanese network of community pharmacists who are interested in research.

In order to motivate community pharmacists to be involved in research and to increase their interest, there is a need to investigate factors associated with interest and participation. Also, in order to facilitate their involvement, potential barriers must be uncovered. Thus, the objectives of this study were to ascertain the willingness of Lebanese community-based pharmacists to participate in research, to assess their knowledge, to investigate factors associated with their interest in research, and to investigate the barriers to participation.

2. Methods

2.1. General study design

A cross-sectional survey was carried out between January and May 2017, using a proportionate random sample of community pharmacies in the five districts of Lebanon (Beirut, Mount Lebanon,

North, South and Bekaa), using the list of pharmacies provided by the Lebanese Order of Pharmacists (OPL). The Research Randomizer program (https://www.randomizer.org/) was used to choose the pharmacies from each district. All pharmacists present during the shift were asked to fill the questionnaire. A total of 430 pharmacists were offered to participate in the study, with an acceptance rate of 89.53% (385 pharmacists).

2.2. Minimal sample size calculation

A minimal sample size was calculated with an assumption that there would be one pharmacist working in each pharmacy. According to the Epi info sample size calculations, providing a population size of 3032 pharmacies (OPL, 2017), a confidence level of 95%, a margin of error of 5%, and assuming 50% of pharmacists are interested, a minimal sample of 384 pharmacists was targeted.

2.3. Ethical aspect

The Lebanese University ethics committee waived the need for approval as the study was observational and respected participants' confidentiality.

2.4. Survey development

In the absence of validated questionnaires to answer our objectives, we created a questionnaire based on previous research (Lowrie et al., 2015; Fakeye et al., 2017; Crilly et al., 2017). The questionnaire was modified based on the experiences and issues raised during focus groups with research active pharmacists and research oriented community pharmacists organized by the Research Scientific sub-committee of the Lebanese Order of Pharmacists. The face and content validity of the survey instrument was evaluated by ten experienced academics and community pharmacy practitioners. The survey instrument was then piloted on a sample of 10 community pharmacists prior to its finalization and distribution. The pilot study revealed no need for modification; its results were thus included in the study.

The questionnaire comprised five distinct sections. Section 1 (7 questions) clarified socio-demographic characteristics including years of experience in community pharmacy practice and the highest degree achieved. Section 2 (23 questions) examined pharmacists' prior involvement in research, during graduate or post-graduate studies, courses received, and involvement in research projects in their professional experience. Their attitude towards research was then measured by asking about their opinion on the importance of the role of research practice in the community pharmacy field. In the same section, their research-related knowledge was also examined by asking them whether they knew the meaning of research-related key terms, and asking them to define them if they gave a positive answer. The definitions were cross-checked to classify them into correct or false. A Cronbach alpha of 0.871 was obtained, indicating the good reliability of the knowledge score. In Section 3 (12 questions), respondents' potential barriers to conduct research in their practice were noted. Section 4 (23 questions) examined the topics of interest for doing research, divided into pharmacy services, population of patients, and diseases. The last section (15 questions) explored the participant's place of practice characteristics.

The interest in participating in research projects was evaluated using the question: "Are you interested in conducting/participating in health-related research?" using a 5-point Likert scale response option with 1 reflecting not interested at all, and 5 is extremely interested. Responses were dichotomized to interested ("somewhat interested", "very interested", or "extremely interested") versus not interested (not interested at all, and not very interested).

2.5. Survey distribution

Data collection was done by a team of pharmacists who were trained for this purpose. Interviewers received interview skills training. In advance of the interview, they explained the study objectives to the pharmacist. After obtaining informed oral consent, the participant was handed the self-administered questionnaire. Participation in this study was voluntary and no incentive was given to the participants. The investigator remained at the disposition of the participant for any clarification needed. Each questionnaire took approximately 10 min to complete.

2.6. Data analysis

Statistical analyses were performed using Statistical Package for Social Science (SPSS) version 21 (IBM SPSS Software, Chicago, IL, USA). Descriptive statistics were calculated using mean and standard deviation for continuous measures, counts and percentages for categorical variables.

The chi-square test and the exact Fisher test were used to assess the association between each categorical independent variable and the outcome statuses (interest and participation in research). The Mann-Whitney *U* test was used for the quantitative independent variables. The McNemar's test was used to compare differences in self-declared and correct knowledge of research terms. Also, a kappa agreement (k) was measured to examine the level of agreement between both measures.

Multivariate logistic regression models were conducted to examine factors associated with interest in research and with participation in research projects. Backward technique was utilized. The significance level for variables entering in the logistic regression models was set at 0.2. Adjusted odds ratio (aORs) with 95% confidence intervals (CIs) were calculated. A two-sided p-value < 0.05 indicated statistical significance.

3. Results

3.1. Participants' characteristics

A total of 399 questionnaires were completed. The characteristics of the respondents are summarized in Table 1. The sample were mostly female (63.2%) with an average age of 38.1 and an average 11.3 years of experience as community pharmacists. 77.8% of participants recruited were the pharmacy owners.

3.2. Previous research work

Half of the sample (50.6%) had previously received research courses or training, but only 25.3% had been involved in research projects in their professional experience. 7.8% of the pharmacists had been data analysts or investigators in their professional experience, while the others were only involved in research as data collectors or respondents themselves.

3.3. Attitude

In addition, Table 1 highlights the community pharmacist attitude towards practice research. 231 (72%) were conscious about the important role of research in the community pharmacy setting whereas only 5.6% considered it not important.

3.4. Willingness to participate in research

Over two-thirds (68.5%) of the pharmacists declared being interested in participating in research (10% were extremely

Table 1
Characteristics of the sample, and their attitude towards research.

Variables	n (%)
Age (m ± SD)	38.1 ± 11.2
Gender	
Male	147 (36.8%)
Female	252 (63.2%)
University	
Studied abroad	116 (29.7%)
Studied in Lebanon	275 (70.3%)
Highest degree	
Bachelor of pharmacy	199 (52.8%)
PharmD	124 (32.9%)
Master Degree/PhD	54 (14.3%)
Years since graduation (m ± SD)	14.1 ± 10.4
Years of experience as community pharmacist (m ± SD)	11.3 ± 9.4
Pharmacist position	
Owner	301 (77.8%)
Employee	86 (22.2%)
Research-Related characteristics	
Having received previous research practice courses or training	200 (50.6%)
Involvement in previous research projects in their professional experience	101 (25.3%)
Attitude towards research	
Opinion about the role of research practice in the community pharmacy field	
Not important at all	18 (5.6%)
Moderate role but with no effect on pharmacy practice or patients outcome	72 (22.4%)
Important role and improves the pharmacy and patients outcome	231 (72.0%)

interested; 24% were very interested; 34% were somewhat interested), while 31.5% were not (20% were not very interested; 12% were not interested at all).

Table 2 shows the factors associated to interest in a bivariate analysis. The results allowed for the selection of variables to be introduced in the multivariate models. The model 1 in Table 4 showed that younger respondents (aOR = 0.92; 95%CI = 0.88–0.96) were more likely to be interested in research. Also, having already been involved in a research project in their professional experience (aOR = 3.17; 95%CI = 1.59–6.32) and having more years of experience in community pharmacy (aOR = 1.06; 95%CI = 1.01–1.12) increased the odds of interest.

3.5. Factors associated with participation in research in professional experience

Table 3 shows the factors associated in a bivariate analysis with participation in research projects during the pharmacists' professional experience. In Table 4, model 2, we noticed that pharmacists having graduated from Lebanese universities (aOR = 3.63; 95% CI = 1.64–8.04), pharmacists who had previously received researched courses (aOR = 11.12; 95%CI = 5.23–23.66) and those showing an interest in research (aOR = 2.74; 95%CI = 1.32–5.68) were more likely to having participated in research projects.

3.6. Knowledge

Fig. 1 shows the difference between auto-declared knowledge of research terms, and the real knowledge based of the correction of the definitions given by the participants. There was a statistical difference in the percentage of correct answers between auto-declared and corrected responses for all terms, with all p < 0.001. Results showed no agreement for "validity" (**κ** = 0.190),

Table 2
Factors associated with interest in research.

Variables	Not interested 121 (31.5%) n (%)	Interested 263 (68.5%) n (%)	p
Age (m ± SD) (in years)	41.3 ± 12.5	36.9 ± 10.3	0.003[*]
Gender			0.375[**]
Male	48 (34.3%)	92 (65.7%)	
Female	73 (29.9%)	171 (70.1%)	
University			0.090[**]
Studied abroad	42 (37.8%)	69 (62.2%)	
Studied in Lebanon	77 (28.9%)	189 (71.1%)	
Highest degree			0.132[**]
Bachelor of pharmacy	64 (33.2%)	129 (66.8%)	
PharmD	42 (34.4%)	80 (65.6%)	
Master Degree/PhD	10 (19.6%)	41 (80.4%)	
Years since graduation (m ± SD)	16.4 ± 11.5	13.2 ± 9.7	0.017[*]
Years of experience as community pharmacist (m ± SD)	13.1 ± 10.8	10.7 ± 8.6	0.127[*]
Pharmacist position			0.022[**]
Owner	101 (34.6%)	191 (65.4%)	
Employee	18 (21.4%)	66 (78.6%)	
Research-Related characteristics			
Having received previous research practice courses or training			0.006[**]
No	71 (38.4%)	114 (61.6%)	
Yes	50 (25.4%)	147 (74.6%)	
Involvement in previous research projects in their professional experience			<0.001[**]
No	106 (37.1%)	180 (62.9%)	
Yes	15 (15.3%)	83 (84.7%)	
Number of barriers (m ± SD)	6.15 ± 3.03	6.35 ± 2.68	0.530[*]

Notes: [*]P-value by Mann-Whitney *U* test; [**]P-value by Pearson chi-square test or Fisher's exact test when the cell expectation was less than five.

Table 3
Factors associated with participation in research projects during their profession.

Variables	Not participated 298 (74.7%) n (%)	Participated 101 (25.3%) n (%)	p[*]
Age (in years)	39.2 ± 11.2	35.2 ± 10.7	0.002[*]
Gender			0.015[**]
Male	120 (81.6%)	27 (18.4%)	
Female	178 (70.6%)	74 (29.4%)	
University			<0.001[**]
Studied abroad	102 (87.9%)	14 (12.1%)	
Studied in Lebanon	191 (69.5%)	84 (30.5%)	
Highest degree			0.003[**]
Bachelor of pharmacy	164 (82.4%)	35 (17.6%)	
Pharm.D	83 (66.9%)	41 (33.1%)	
Master Degree/PhD	37 (68.5%)	17 (31.5%)	
Years since graduation (m ± SD)	15.0 ± 10.3	11.5 ± 10.1	0.003[*]
Years of experience as community pharmacist (m ± SD)	12.0 ± 9.8	9.1 ± 7.6	0.003[*]
Pharmacist position			0.005[**]
Owner	234 (77.7%)	67 (22.3%)	
Employee	54 (62.8%)	32 (37.2%)	
Research-Related characteristics			
Having received previous research practice courses or training			<0.001[**]
No	184 (94.4%)	11 (5.6%)	
Yes	111 (55.5%)	89 (44.5%)	
Interested in conducting health-related research			<0.001[**]
No	106 (87.6%)	15 (12.4%)	
Yes	180 (68.4%)	83 (31.6%)	
Number of barriers (m ± SD)	6.1 ± 2.8	6.7 ± 2.7	0.058[*]

Notes: [*]P-value by Mann-Whitney *U* test; [**]P-value by Pearson chi-square test or Fisher's exact test when the cell expectation was less than five.

"reliability" ($\kappa = 0.072$), "confounding" ($\kappa = 0.127$), and "bias" ($\kappa = 0.159$); minimal agreement for the terms "95% confidence interval" ($\kappa = 0.386$), "p-value" ($\kappa = 0.315$) and "intervention study" ($\kappa = 0.278$), and weak agreement for "observational study" ($\kappa = 0.408$) and "outcome" ($\kappa = 0.516$).

3.7. Barriers

Fig. 2 describes the barriers limiting pharmacists' participation in research in their practice. The most reported barrier was lack of time during hours of work (90.9%), followed by the lack of pharmacy staff (73.7%), lack of financial resources (68.9%), patient's lack of education and resistance to participation (64.8%), and lack of support (63.8%).

A barrier score was created by adding the number of barriers each pharmacist had. The mean number of barriers reported was of 6.3 ± 2.8, with a median of 6.

3.8. Topics of interest

Respondents were asked to rate their interest in different topics. The diseases that retained the highest percentage of interest was infectious diseases (71%) followed by gastrointestinal diseases (64%). According to the respondents, chronic disease patients needed research the most to improve their health status (71%). Finally, pharmacists were interested in participating in pharmacy services studies related to activities focusing on patients (65%) (Fig. 3).

4. Discussion

In order for community pharmacy practice to continue to evolve in response to changing health care needs and marketplace competition, pharmacy practice research on the effectiveness and economic viability of new services is essential. This research cannot be accomplished without the active participation of community pharmacists. This study has provided a source of data on the attitudes of community pharmacists towards research, their participation in research, and what hinders their participation. Contrary to the anecdotal belief that pharmacists from Middle East are not interested in research, the findings of this study demonstrated that community pharmacists recognize the importance of research in developing pharmacy practice and are willing to participate in it.

Only 25% of the pharmacists had participated previously in a research project during their professional experience, which is a lower percentage than the ones found in two studies conducted in Qatar that showed that 40.4% (Elkassem et al., 2013) and 30.8% (Awaisu et al., 2015) of the pharmacists had previously participated in research work. This might be due to the fact that research among pharmacists wasn't spread in Lebanon until recently. A possible explanation for such a difference may be the presence of a small number of pharmacists with postgraduate qualifications (master's degree, PhD degree or other postgraduate studies). This implies that pharmacists with a graduate level maybe do not consider research as an important part of their career, or that they do not feel confident enough (since lack of confidence and lack of proper education were two cited barriers). Also,

Table 4
Multivariate regression analysis of factors associated with pharmacists' interest in research and research practice during their professional experience.

Model 1: Factors associated with interest in research		
Variables	aOR (95% CI)	p
Age (in years)	**0.92 (0.88–0.96)**	**<0.001**
Highest degree	1	0.298
Bachelor of Pharmacy	0.75 (0.45–1.28)	0.097
Pharm D	2.01 (0.88–4.55)	
Master degree/PhD		
Research in profession	**1**	**0.001**
No	**3.17 (1.59–6.32)**	
Yes		
Years of community pharmacy experience	**1.06 (1.01–1.12)**	**0.015**

| Model 2: Factors associated with participation in research projects during their profession		
Variables	aOR (95% CI)	p
University location		
Abroad	**1**	
Lebanon	**3.63 (1.64–8.04)**	**0.001**
Previous research courses		
No	**1**	
Yes	**11.12 (5.23–23.66)**	**<0.001**
Interest in research		
No	**1**	
Yes	**2.74 (1.32–5.68)**	**0.007**
Number of barriers	**1.11 (0.99–1.24)**	**0.065**

aOR = adjusted Odds Ratio; CI = confidence interval.
Model 1: Dependent variable: Interested in participating in research (vs. not interested in participating in research); Independent variables: age, university, highest degree, number of years since graduation, number of years of experience as community pharmacist, pharmacist position, having received previous research practice courses/training, involvement in previous research works in their professional experience.
Model 2: Dependent variable: Having participated in research projects during their professional experience (vs. not having participated in research projects during their professional experience); Independent variables: age, gender, university location, highest degree, owner/employee, previous research courses, interest in research, number of years since graduation, community pharmacy experience, number of barriers.

5.6% of pharmacists considered research unimportant, whereas 31.5% of them were not interested in participating in research. This might be due to include a lack of time (Kanjanarach et al., 2012; Peterson et al., 2009; Saini et al., 2006), expertise (Richardson and Pollock, 2010; Roberts and Kennington, 2010), monetary reimbursement (Newton, 2013), prioritization and management support (Ogunrinde et al., 2013).

Around 68% of the community pharmacists are interested in working in health-related research, a higher percentage than those found in previous studies from the United Kingdom (Ellerby et al., 1993; Liddell, 1996). This is probably due to the fact that there is a particularly important need for improvement in the research field and pharmacists are now aware of that as in most developing countries. The research culture is starting to grow, with community pharmacists in Lebanon being motivated to participate in health-related research where the desire to improve the profession, opportunity to learn more about disease management, provide enhanced services to patient care and personal satisfaction. Community pharmacists are better placed to engage in research that will ultimately have an impact on practice (Bhagavathula et al., 2017).

Previous works showed that exposure of students to research during undergraduate education may be associated with more positive attitudes and greater confidence in undertaking practice research later on in their career (Kritikos et al., 2015). This was also noted in our study which revealed that pharmacists having studied in Lebanon (vs. other countries) and having received research courses were at higher odds of participating in research projects during their professional experience. In fact, pharmacy education is evolving rapidly worldwide (Marriott et al., 2008; Brazeau et al., 2009; Blouin et al., 2009), with significant changes to the education curricula, strategies and modes of delivery being implemented in Lebanon. Academic programs are held accountable for preparing graduates to conduct research and scholarly activity (Bradberry et al., 2007). Nowadays, pharmacy students of Lebanese universities are required to complete a thesis related to a research topic and are encouraged to publish their work. Moreover, pharmacists having conducted previous research in their professional experience were more interested in research, showing that participation in research was a positive experience for most. Younger age was associated with an increased interest in research, result also
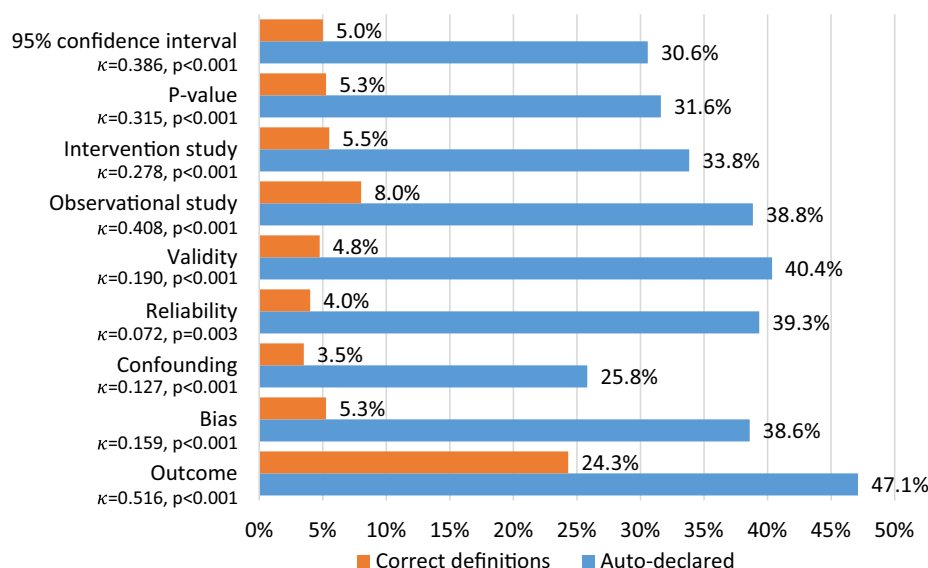
Fig. 1. Comparison of self-reported knowledge in research-related key terms and effective knowledge McNemar's test was significant (p < 0.001) in all definitions.
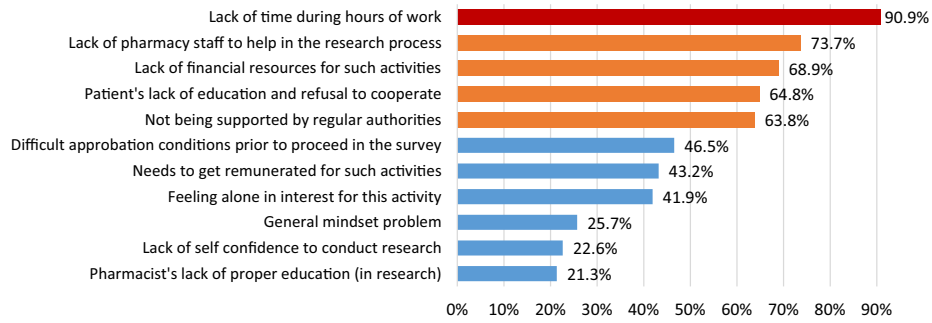
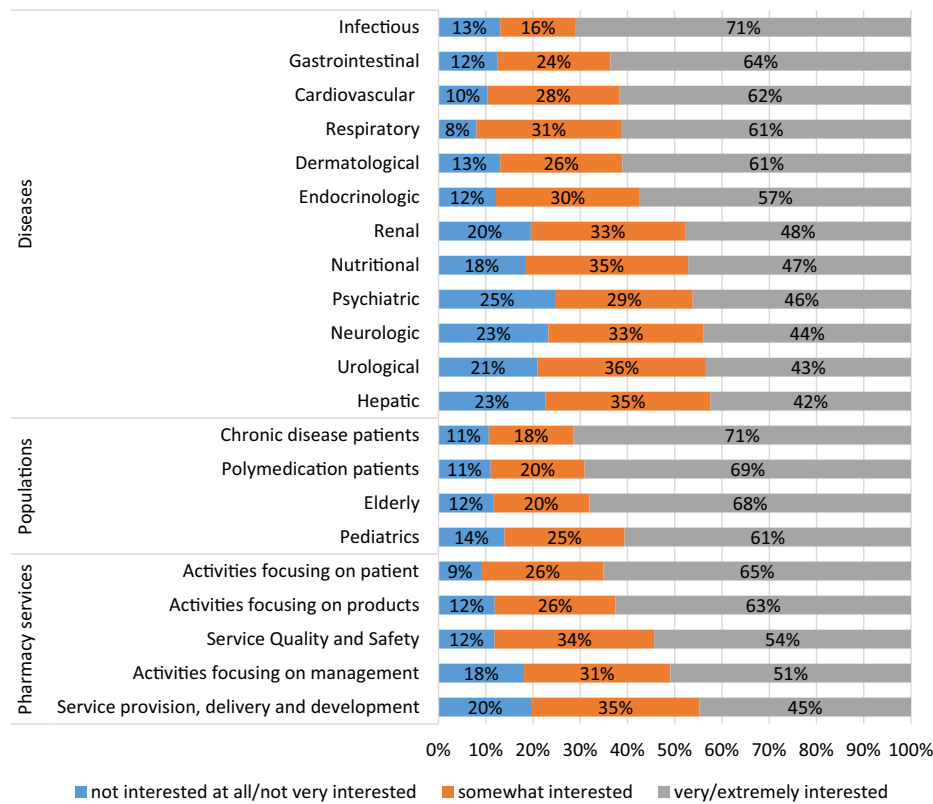**Fig. 2.** Reported barriers to participation in research.

Fig. 3. Topics of interest (diseases that most deserve research to improve health outcomes, populations that most need research to improve their health outcomes, and pharmacy services).

found in previous findings (Crilly et al., 2017). This could be partly due to their more recent aforementioned participation in academic research project. Langley et al. (2007) found that most pharmacy students considered their final-year research project to be important, giving them a positive attitude towards research during their early career.

As for barriers, lack of time was cited as the first reason for not conducting research, followed by the lack of sufficient pharmacy staff to help in the research process; this was similar to previous findings (Sultana et al., 2016; Elkassem et al., 2013; Bhagavathula et al., 2017). Many community pharmacists are self-employed, with their main objective is to ensure their livelihood through the business. A recent study conducted in Lebanon revealed that community pharmacists are not satisfied financially and are struggling to keep their business alive (Hallit et al., 2017). That same study demonstrated a decrease in the number of staff pharmacists and technicians over the last decade due to the financial crisis the profession is going through (Hallit et al., 2017). Two of the entities

responsible for the patient's health in the country, the Ministry of Public Health and the OPL, should cooperate together to resolve this problem. Our results showed that a lack of financial support was also another barrier to conduct research, in agreement with the findings of previous research (Elkassem et al., 2013; Armour et al., 2007).

Our results demonstrated that having more years of experience in the community pharmacy was associated with an increased interest in research, which consolidate the findings from previous studies that showed that a lack of knowledge, awareness, experience, skills, and understanding as some of the barriers to practicing evidence-based medicine (Hebert et al., 2013; Kanjanarach et al., 2012; Elkassem et al., 2013). The lack of knowledge in our pharmacists was also proven by the major discrepancy between self-reported knowledge and the actual correct knowledge. Research courses incorporated in the pharmacy curriculum and continuous education lectures about research and its importance in the pharmacy field are definitely warranted.

Finally, in terms of knowledge, our results showed that community pharmacists in Lebanon overestimate their knowledge in research, with major gaps shown compared to what should actually be known. We did not find any international studies that tackled this issue in community pharmacists to compare our results with. The OPL should work on scheduling innovative continuing education sessions, with learning objectives targeted towards a better understanding and implementation of research in the community pharmacy domain. OPL should organize workshops and continuing learning sessions to develop research skills and knowledge of community pharmacists, targeting the older generations. Also, research courses being taught at the university level should be reinforced. Finally, addressing the barriers that were identified in this study could potentially improve the research output of Lebanese community pharmacists.

4.1. Limitations

The study has some limitations that should be considered while interpreting the results. The questionnaire was not specifically validated in Arabic, the official language of the country; however community pharmacists are knowledgeable in English and French since pharmacy schools teach in these two languages. Also, investigators were available for any clarifications if needed. Moreover, the responses may be subjected to social desirability bias, however, this should be minimal as their anonymity was assured. An information bias could also be present due to the type of the study and the use of a self-administered questionnaire. Our results cannot infer causality whatsoever due to the cross-sectional design.

5. Conclusion

In conclusion, this is the first study to evaluate the interest in research of community pharmacists in Lebanon. Our results showed that Lebanese pharmacists have the good will to conduct and participate in research, but are lacking knowledge; this issue needs to be addressed vividly. It also highlighted the factors associated with an increased interest, described the profile of pharmacists having participated in previous research projects, and the potential barriers to conduct research.

Conflicts of interest

The authors have nothing to disclose.

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