



Original article

The Health Status of Lebanese Community Pharmacists: Prevalence of Poor Lifestyle Behaviors and Chronic Conditions

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ABSTRACT

Background: Community pharmacists are drug therapy experts providing pharmaceutical care for various patients. Their stressful daily tasks can affect their lifestyle and wellbeing.

Objectives: To assess the health status of the Lebanese community pharmacists, to determine the prevalence of chronic conditions and unhealthy lifestyle behaviors, and their association with pharmacists' professional responsibilities.

Methods: A cross-sectional study was conducted on 300 randomly selected pharmacists between May and August 2017. A four-page questionnaire was carried out targeting their health characteristics, lifestyle factors, and job details.

Results: Thirty-seven percent of the studied sample were males, with a mean age of 30.9 ± 9.1 years and mean Body Mass Index (BMI) of 23.4 ± 3.71 kg/m². Twenty-six percent were smokers and smoking was significantly related to gender, BMI, workplace region, work shifts, educational level, number of patients/day, and transportation time to work ($p < 0.05$ for all). Twenty-one percent were alcohol consumers, 89.3% were caffeine consumers, and 41.7% were physically active. Moreover, 72% were fast food consumers, 89.7% consumed sweets, and 87.7% consumed salted food. Concerning chronic diseases, 6.3% were hypertensive and hypertension was significantly related to age, marital status, education level, working hours per day, working days per week, owning a pharmacy, work shift, and the number of patients per day ($p < 0.05$ for all).

Conclusion: Lebanese pharmacists might have a lower prevalence of chronic diseases compared to the general population. However, the prevalence of bad lifestyle behaviors such as low physical activity, smoking, consumption of salt, sweet, fast food, and caffeine is considered high among the study sample and this would raise a concern about pharmacists' awareness and role as healthcare providers.

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1. Introduction

Health care professionals (HCPs) including pharmacists play a significant role at various levels of patient health. Pharmacists have

intense knowledge about human health and diseases which makes them ideal for providing advice for the general population to keep healthy lifestyle behavior. Thus pharmacists and other HCPs are seen as role models. However, little is known about the health status of HCPs compared to the general population and how their professional role may affect their habits and accordingly their attitudes and daily activities (Abuissa et al., 2006; Dayoub and Jena, 2015; Helfand and Mukamal, 2013).

A research project developed by 12 European countries about community pharmacists' attitudes towards smoking and their activities in the field showed that the prevalence of smoking among pharmacists was lower than that in the respective country's population (varying from 6.5% to 24%). Moreover, smoking cessation services had become a part of daily activities for the majority

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of pharmacists (73%) (Teräsalmi et al., 2001). A similar study on the prevalence of smoking among community pharmacists was done in Saudi Arabia revealing a 19.9% prevalence rate where the majority believed they have a positive role in smoking cessation and patient counseling but they have to devote more time for anti-smoking cessation, especially that the percentage of smokers is increasing in the third world countries (Al-Arifi, 2004). Additionally, a study done in Jos, Nigeria, showed that hypertension prevalence among pharmacists was 8% which is low compared to the Nigerian national prevalence and hypertension risk factors were associated with their poor attitudes towards hypertension (saac Okoh Abah, Blessing Mary Dare, 2014).

Community pharmacists are directly accessible to the public, where they provide a wide range of interventions in multiple disciplinary issuances. Pharmacists serve as drug therapy experts providing pharmaceutical care for patients having various medical conditions and medications (George et al., 2010).

In such practice, pharmacists inform patients having chronic diseases about their risk factors and how to manage them by positively influencing the patients' ability to change lifestyle behaviors. Hence, adequate counseling is an important role for pharmacists in preventing and managing diseases ("Top 9 Pharmacist Duties and Responsibilities," n.d.).

Also, pharmacists deal with insurance companies to help patients get their medications especially those with chronic therapies. Moreover, many are responsible of administrative work such as orders preparation, stock management, purchase management, and communication with the salesmen ("Top 9 Pharmacist Duties and Responsibilities," n.d.). All of these tasks might overload the pharmacists and influence their lifestyle status and health behavior.

In Lebanon, community pharmacists' situation appears to be very difficult in this period due to socio-economic issues, increasing number of pharmacies and hence market saturation, increased services, low patient education, absence of appliance of some laws by some pharmacies (delivery, discounts, deals...) and competition between pharmacies. A cross-sectional pilot study carried out on community pharmacists in all Lebanese districts showed that monthly sales, profit, and loyal customers' numbers decreased significantly while the total number of monthly expenses and the number of patients that need counseling increased within the same time frame (Hallit et al., 2017). It is possible that these situational factors also may have an influence on their practice (Phipps et al., 2016).

The health status of Lebanese community pharmacists was not addressed in studies before so far, therefore, this study aimed to measure the prevalence of unhealthy lifestyle behaviors and chronic conditions among a sample of community pharmacists and their association with the pharmacists' professional role and responsibilities.

2. Methodology

2.1. Study design

This is a cross-sectional study conducted among Lebanese community pharmacists all over Lebanon between May and August 2017.

2.2. Selection criteria

Graduated pharmacists (pharmacy owners or employees) were included in the study. Students that were training, those that refused to give oral consent to participate in the survey, and those who did not complete the questionnaire were excluded. We cov-

ered all Lebanese regions (Beirut, Mount Lebanon, South, Nabataea, North, and Beqaa) where one pharmacist per pharmacy was included in the study

2.3. Sampling method

The list of pharmacies was obtained from the Order of Pharmacists of Lebanon. Three hundred pharmacies out of 3000 were then randomly selected with a proportional allocation over Lebanese governorates.

2.4. Ethical issues

The study questionnaires were handled directly to the pharmacists in their workplaces and then collected after one week, each in a closed envelope for total anonymity. Data were kept confidential and destroyed at the end of the study. The Lebanese University waived the need for an ethical approval considering the study objectives and design.

2.5. Data collection

The tool used in this study was a paper questionnaire of four pages with eight sections. The questionnaire was prepared based on standardized questionnaires previously validated in other studies ("CDC Global School-based Student Health Survey (GSHS)," n.d., CHRONIC DISEASE SELF-MANAGEMENT PROGRAM QUESTIONNAIRE CODE BOOK, 2007, "General Health Questionnaire | Global Healing," n.d., "SmartSurvey: Online Survey Software & Questionnaire Tool," n.d.). The questionnaire was distributed in English and French since they are both the official teaching languages in the schools of pharmacy in Lebanon and then collected back one week later. Translation to French and back-translation to English were achieved by two independent translators.

Pharmacists were asked for their oral consent after explaining the study's objective and questionnaire, and after ensuring the total confidentiality and anonymity of the study.

Section one of the questionnaire included sociodemographic data: age, weight, height, gender, marital status, education, and region of the workplace.

Section two described the job details as transportation time to work, working days and hours, number of employees, number of patients/day, patient social class, and pharmacist's role.

Section three included smoking status including the smoking type, frequency, and duration.

Section four demonstrated the food habits that include alcohol intake, caffeine consumption, sweets and sweet drinks consumption, fast food intake, salt consumption, breakfast intake, and the number of meals per day.

Section five stated the physical activity including the type of exercise, frequency, and duration.

Section six addressed the social lifestyle data that include family satisfaction, voluntary association, and organization satisfaction.

Section seven stated chronic diseases and symptoms, medication intake, and regular lab tests.

The last section was related to job stress, workload, and communication between pharmacists, patients, and physicians.

2.6. Statistical analysis

Data were entered and analyzed on SPSS (Statistical Package for the Social Science) version 21. Descriptive analysis was first conducted reporting frequencies (%) for qualitative variables and means (SD) for quantitative variables. Bivariate analysis was con-

ducted to evaluate factors associated with hypertension, smoking status, physical activities, and food habits. Independent variables were sociodemographic and job characteristics.

A “Food index” was further created. The total score for each pharmacist was summed with a maximum score of 10. The score was then dichotomized based on its median to allow bivariate analysis: A score > median representing good habits “1” and a score < median representing bad habits “0”.

Pearson Chi-square test (or Fisher’s Exact when applicable) was used to compare Frequencies. Student T-test was used to compare means. A p-value < 0.05 was considered statistically significant.

3. Results

The 300 randomly selected pharmacists filled the personally submitted questionnaires and the findings were as follows:

4. Sociodemographic Characteristics of the Studied Sample

Participants (62.3% females) were aged between 23 and 65 years with a mean age of 30.9 ± 9.1 years. The average BMI of participants was 23.4 ± 3.7 Kg/m² being classified as 5% obese and 25.3% overweight. More details were illustrated in Table 1.

4.1. The job description of the studied sample

Most of the pharmacists took less than 30 min as transportation time to work (62.3%) and the majority worked 6 days per week with 8 hours daily (56% and 44% respectively). Further details were listed in Table 2.

4.2. Smoking, drinks, and food habits among pharmacist’s sample

The majority of the pharmacists in the studied sample were nonsmokers (69.7%) and non-alcohol drinkers (74.7%) but 14% of them were occasional drinkers with an average of 4 ± 3 cups per month. Coffee was the most caffeine including beverages consumed by pharmacists (58.2%). The average cups of coffee consumed per day were around 2 ± 1.5 cups. Concerning Sweet drinks consumption, half of the pharmacists were consuming 1 cup or less per day (46.3%).

Table 1
Sociodemographic Characteristics of Pharmacists in the Studied Sample.

Characteristic	Frequency	Percentage
<i>Gender, n = 300</i>		
Male	113	37.7%
Female	187	62.3%
<i>BMI (Kg/m²), n = 300</i>		
<18.5	21	7%
[18.5–25]	188	62.7%
[25–30]	76	25.3%
>30	15	5%
<i>Marital status, n = 300</i>		
Single	192	64%
Married without children	29	9.7%
Married with children	79	26.3%
<i>Working region, n = 300</i>		
Mount Lebanon	110	36.7%
Beirut	52	17.3%
Beqaa	32	10.7%
North	60	20%
South	22	7.3%
Nabataea	24	8%
<i>Education level, n = 300</i>		
BS pharmacy	175	58.3%
Masters / pharm D	106	35.3%
Doctorate	19	6.3%

Table 2
Job Description of Pharmacists in the Studied Sample.

Description	Frequency	Percentage
<i>Transportation time, n = 300</i>		
< 30 min	187	62.3%
30–60 min	91	30.3%
1–2 hrs.	14	4.7%
> 2 hrs.	8	2.7%
<i>Working days/week, n = 300</i>		
≤ 6 days	242	80.7%
> 6 days	58	19.3%
<i>Working hrs. daily, n = 300</i>		
< 8 hrs.	52	17.3%
8 hrs.	132	44%
> 8 hrs.	116	38.7%
<i>Number of employees, n = 300</i>		
≤ 3	205	68.3%
> 3	95	31.7%
<i>Shift, n = 300</i>		
Day	153	51%
Night	77	25.7%
Both	70	23.3%
<i>Pharmacy owner, n = 300</i>		
Owner	78	26%
Non owner	222	74%
<i>Number of patients/day, n = 300</i>		
< 50	51	17%
50–100	139	46.3%
> 100	110	36.7%
<i>Social class, n = 300</i>		
Lower	8	2.7%
Middle	49	16.3%
Upper	3	1%
Mixed	240	80%

Salted food consumption was 40.3% for those who consumed less than once per week and 38% for those who consumed 2–3 times per week. Pharmacists rarely added salt to food.

A considerable number of pharmacists declared having a regular breakfast intake and three meals per day (60% and 48.7% respectively).

Tables 3 and 4, illustrated description of smoking, drinks, and food consumption among participants

Table 3
Smoking and Drinks Consumption among Pharmacists in the Studied Sample.

Characteristic	Frequency	Percentage
<i>Smoking status = 300</i>		
Non Smokers	209	69.7%
Smokers	79	26.3%
Ex-smokers	12	4%
<i>Alcohol consumption, n = 300</i>		
Never	224	74.7%
Rare	32	10.7%
Occasional	42	14%
Regular	2	0.6%
<i>Caffeine consumption, n = 300</i>		
Coffee	203	67.6%
Tea	17	5.7%
Others	48	16%
Never	32	10.7%
<i>Sweet drink consumption, n = 300</i>		
Never	74	24.7%
Rare	4	1.3%
≤ 1 cup/day	139	46.3%
1–2 cups/day	63	21%
> 2 cups/day	20	6.7%

Table 4
Food Habits among Pharmacists in the Studied Sample.

Characteristic	Frequency	Percentage
<i>Salted food intake, n = 300</i>		
once/week	121	40.4%
2–3 times/week	114	38%
> 4 times/week	28	9.3%
Rare	19	6.3%
Never	18	6%
<i>Addition of salt, n=300</i>		
Usual	32	10.7
Often	84	28
Rare	144	48
Never	40	13.3
<i>Breakfast intake, n = 300</i>		
Always	180	60%
Sometimes	75	25%
Rare	32	10.7%
Never	13	4.3%
<i>Number of meals/day, n = 300</i>		
1–2 meals	118	39.3%
3 meals	146	48.7%
> 3 meals	36	12%
<i>Fast food intake, n = 300</i>		
Never	84	28%
Once/month	64	21.3%
2–4/month	82	27.3%
2–3/week	45	15%
> 3/week	25	8.4%
<i>Sweets intake, n = 300</i>		
≤ 3 times/week	123	41%
4–5 times/week	74	24.7%
4 times/week	72	24%
Rare	14	4.7%
Never	17	5.6%
<i>Eating between meals, n=300</i>		
Regular	47	15.7
Often	92	30.7
Sometimes	26	8.6
Rare	114	38
Never	21	7

4.3. Physical activities of the studied sample

Forty-two percent of the pharmacists reported being physically active out of which 32% exercised several times per week. Among those who exercised, 56.8% declared to do aerobic activities where 5.6% did strength exercises, 4% did stretching such as Yoga, and 33.6% did combined exercises. The majority of the physically active

Table 5
Physical Activity of Pharmacists in the Studied Sample

Characteristic	Frequency	Percentage
<i>Frequency of exercise, n=300</i>		
Several weekly	96	32%
Once weekly	29	9.7%
Never	175	58.3%
<i>Tired to exercise, n=125</i>		
Always	21	16.8
Often	74	59.2
Sometimes	21	16.8
Rare	3	2.4
Never	6	4.8
<i>Duration of session, n=125</i>		
< 30 min	16	12.8%
30–60	46	36.8%
< 15	54	43.2%
> 60	9	7.2%
<i>Type of exercise, n=125</i>		
Aerobic	71	56.8%
Strength	7	5.6%
Stretching	5	4%
combined	42	33.6%

pharmacists (43.2%) exercised less than 15 min per day. These findings were illustrated in Table 5.

4.4. Diseases and symptoms of the studied sample

Participants were asked if they suffer from any chronic diseases and related symptoms. The percentages of the reported symptoms were listed in Table 6.

Six percent of the participants were hypertensive, 4% suffered from dyslipidemia, 3.7% had asthma, 4.7% had a peptic ulcer, and 2% had Crohn's disease. Data are listed below in Table 7.

About 16% of the pharmacists reported taking chronic medications. Besides, 34.3% of them were doing regular lab tests every 6–12 months.

The majority of the pharmacists perceived their health as being good (71.3%) and most of them reported remaining in the same health status in the last 5 years (78.8%). However, 9.3% rated their health as somewhat worse.

4.5. Job stress description of the studied sample

Concerning the pharmacist job stress description, most of the pharmacists reported dealing with patients complains in a non-stressful way (39.2%) and patients received health and medical advice from the pharmacists in a non-stressful way (45.2%).

Pharmacists had to work hard (64.8% of pharmacists). They had to be attentive and responsible (84.4%). Most of them reported having good relationships with their colleagues and pharmacy staff (80.4%) but many were worried about their salary (41.6%). A high percentage of pharmacists were not satisfied with the job conditions and did not take regular breaks (51.6% and 46.4% respectively).

4.6. Bivariate analysis

4.6.1. Hypertension

According to sociodemographic characteristics; age, marital status, and education level were significantly associated with hypertension. Hypertensive patients (44.63 ± 13.08 years) were older than non-hypertensive individuals (29.97 ± 7.97 years) (p < 0.001). Also, 20.3% of the married pharmacists (with children) were hypertensive compared to 1.6% of the single (p < 0.001). In addition, hypertension was prevalent in 9.7% of pharmacists with a diploma degree, 1.9% in those with a master's degree, and was absent in those with doctorate education level (p < 0.05).

Moreover, the prevalence of hypertension was greater in those who worked 7 days per week compared to those who worked 6 days or less (17.2% and 3.7% respectively, p < 0.001).

Table 6
Symptoms Reported by Pharmacists in the Studied Sample

Symptom	Frequency	Percentage
Chest pain	7	2.3%
Constipation	23	7.7%
Fatigue	72	24%
Weight loss	24	8%
Varicose veins	48	16%
Anxiety	74	24.7%
Loss of concentration	19	6.3%
Loss of interest	43	14.3%
Weight gain	33	11%
Sleep problems	16	5.3%
Cramps	24	8%
Depression	20	6.7%
Forgetfulness	68	22.7%
Persistent headache	26	8.7%

Table 7
Chronic Diseases Frequency among Pharmacists in the Studied Sample

Disease	Frequency	Percentage
Hypertension	19	6.3%
Dyslipidemia	12	4%
Myocardial infarction	2	0.7%
Dysrhythmia	1	0.3%
Osteoporosis	2	0.7%
Diabetes	8	2.7%
Arthritis	8	2.7%
Hyperthyroidism	1	0.3%
Hypothyroidism	2	0.7%
Asthma	11	3.7%
COPD	2	0.7%
GERD	3	1%
Crohn	6	2%
Ulcer	14	4.7%

COPD for Chronic Obstructive Pulmonary Disorder; GERD for Gastroesophageal Reflux Disease.

Concerning the working hours per day, 12.9% of those who worked > 8 hours/day were hypertensive compared to only 3% of those who worked 8 hours/day, (p -value < 0.001). Those who worked both shifts had a higher prevalence of hypertension than those having just a day or night shift (17.1% > 3.3% and 2.6, p < 0.001). Owning a pharmacy was significantly related to hypertension where 20.5% of pharmacy owners were hypertensive compared to 1.4% of those who do not own a pharmacy (p < 0.001). Besides, for pharmacists having >100 patients per day, 10% of them were hypertensive compared to 5.8%, and 0% of those dealing with 50–100 patients/day and < 50 patients/day respectively, (p = 0.049). Table 8 shows the above details.

4.6.2. Smoking

Smoking was significantly related to gender as 38.1% of the males were smokers compared to 19.3% of the females (p < 0.001).

Table 8
Factors Associated with Hypertension among Pharmacists in the Studied Sample.

Characteristic	Hypertensive n = 19	Non hypertensive n = 281	P-value
Age	44.63 ± 13.08	29.97 ± 7.97	<0.001
Marital status			
Single	3 (1.6%)	189 (98.4%)	<0.001
Married (no children)	0 (0%)	29 (100%)	
Married (have children)	16 (20.3%)	63 (79.7%)	
Education level			
Diploma	17 (9.7%)	158 (90.3%)	0.017
Master	2 (1.9%)	104 (98.1%)	
Doctorate	0 (0%)	19 (100%)	
Working days/week			
≤ 6 days	9 (3.7%)	233 (96.3%)	0.001
> 6 days	10 (17.2%)	48 (82.8%)	
Working hours/day			
<8	0 (0%)	52 (100%)	
8	4 (3%)	128 (97%)	0.001
>8	15 (12.9%)	101 (87.1%)	
Work Shift			
Day	5 (3.3%)	148 (96.7%)	<0.001
Night	2 (2.6%)	75 (97.4%)	
Both	12 (17.1%)	58 (82.9%)	
Pharmacy owner			
Yes	16 (20.5%)	3 (1.4%)	<0.001
No	62 (79.5%)	219 (98.6%)	
Patients number/day			
<50	0 (0%)	51 (100%)	0.049
50–100	8 (5.8%)	131 (94.2%)	
>100	11 (10%)	99 (90%)	

Age and BMI were significantly related to smoking status. Smoker pharmacists (29.24 ± 6.51 years) were younger than non-smoker pharmacists (31.5 ± 9.79 years), (p = 0.05). BMI of the smokers (24.57 ± 3.58 Kg/m²) was significantly greater than non-smokers (22.99 ± 3.67 Kg/m²), (p = 0.001).

Moreover, 54.5% of south living pharmacists were smokers compared to 28.8% in Beirut, 28.1% in Beqaa, 24.5% in Mount Lebanon, 21.7% in North, and 12.5% in Nabataea (p = 0.029).

With regards to the transportation time to work, 61.9% of those taking > 1 hour to work were smokers compared to 26.2% of those taking < 30 minutes, and 18.5% of those taking 30–60 minutes (p < 0.001). Concerning the job description, pharmacists having more than 100 patients/day were more exposed to smoking than those having 50–100 patients/day or <50 patients/day (35.5%, 25.9% and 7.8% respectively, p = 0.001). More details were shown in Table 9.

4.6.3. Exercise

Transportation time to work was significantly associated with exercise time per week, where 38.5% of those who need < 30 minutes. transportation time, exercised several times per week compared to 20.7% of those who take 30–60 minutes transportation time to work (p = 0.036). Moreover, 48.6% of those with both shifts exercised several times per week compared to 28.6% with night shift and 26.1% with day shift (p = 0.003). Details were listed in Table 10.

4.6.4. Food index

The age of those with bad habits was significantly lower than those having good habits (29.38 and 32.58 years respectively, p = 0.002). Fifty-five percent of master's degree holders followed bad habits compared to 54.3% of BS pharmacy holders and 15.8%

Table 9
Factors Associated with Smoking among Pharmacists in the Studied Sample.

Characteristic	Smokers n = 79	Non-smokers n = 221	P-value
Region			
Mount Lebanon	27 (24.5%)	83 (75.5%)	
Beirut	15 (28.8%)	37 (71.2%)	
Beqaa	9 (28.1%)	23 (71.9%)	0.029
North	13 (21.7%)	47 (78.3%)	
South	12 (54.5%)	10 (45.5%)	
Nabataea	3 (12.5%)	21 (87.5%)	
Gender			
Male	43 (38.1%)	70 (61.9%)	<0.001
Female	36 (19.3%)	151 (80.7%)	
Number of patients/day			
<50	4 (7.8%)	47 (92.2%)	0.001
50–100	36 (25.9%)	103 (74.1%)	
>100	39 (35.5%)	71 (64.5%)	
Transportation time (min)			
<30	49 (26.2%)	138 (73.8%)	<0.001
30–60	17 (18.5%)	75 (81.5%)	
>60	13 (61.9%)	8 (38.1%)	
Education			
Diploma	53 (30.3%)	122 (69.7%)	0.046
Masters	25 (23.6%)	81 (76.4%)	
Doctorate	1 (5.3%)	18 (94.7%)	
Caffeine consumption			
Yes	75 (28%)	193 (72%)	0.06
No	4 (12.5%)	28 (87.5%)	
BMI	24.57 ± 3.58	22.99 ± 3.67	0.001
Age	29.24 ± 6.51	31.5 ± 9.79%	0.05
Work shift			
Day	35 (22.9%)	118 (77.1%)	0.032
Night	29 (37.7%)	48 (62.3%)	
Both	15 (21.4%)	55 (78.6%)	

BMI for Body Mass Index (height and weight self-reported by the participant).

Table 10
Factors Associated with Physical Activity among Pharmacists in the Studied Sample.

Characteristic	Several times/week n= 96	Once/week n= 29	Never n= 175	P-value
<i>Work shift</i>				
Day	40 (26.1%)	11 (7.2%)	102 (66.7%)	0.003
Night	22 (28.6%)	11 (14.3%)	44 (57.1%)	
Both	34 (48.6%)	7 (10%)	29 (41.4%)	
<i>Fast food intake</i>				
Never	39 (46.4%)	2 (2.4%)	43 (51.2%)	<0.001
Once monthly	17 (26.6%)	8 (12.5%)	39 (60.9%)	
2–4 month	24 (29.3%)	5 (6.1%)	53 (64.6%)	
2–3 weekly	13 (28.9%)	13 (28.9%)	19 (42.2%)	
>3 weekly	3 (12%)	1 (4%)	21 (84%)	
<i>Education</i>				
Diploma	48 (27.4%)	19 (10.9%)	108 (61.7%)	0.022
Masters	36 (34%)	8 (7.5%)	62 (58.5%)	
Doctorate	12 (63.2%)	2 (10.5%)	5 (26.3%)	
<i>Working days/ week</i>				
≤ 6 days	68 (28.1%)	24 (9.9%)	150 (62%)	0.012
> 6 days	28 (48.3%)	5 (8.6%)	25 (43.1%)	
<i>Transportation time (minutes)</i>				
<30				0.036
30–60	72 (38.5%)	17 (9.1%)	98 (52.4%)	
>60	19 (20.7%)	9 (9.8%)	64 (69.6%)	
	5 (23.8%)	3 (14.3%)	13 (61.9%)	

of doctorate holders (p = 0.004). Moreover, 57.8% of single pharmacists followed bad habits compared to 44.3% of married with a child and 37.9% married having no child, (p = 0.034). Most of the employees (56.3%) followed bad habits compared to pharmacy owners, (p = 0.02). Details were listed in Table 11.

5. Discussion

This study evaluated the health status and lifestyle behaviors of community pharmacists in Lebanon. The prevalence of chronic diseases reported by community pharmacists in the studied sample was lower than the general population with hypertension being the most encountered condition (6.3%) followed by ulcer (4.7%), dyslipidemia (4%), asthma (3.7%), diabetes and arthritis (2.7%). It was noted that despite the good health status of the pharmacists, unhealthy lifestyle behaviors were prominent. As such, about one-third of pharmacists in the studied sample were above the normal BMI. Moreover, approximately one-quarter of community pharmacists were smokers (26.3%) and the majority of them followed poor dietary habits such as eating sweets (94.4%), salty food (94%), and fast food (72%). In addition, more than half (58.3%) of

the pharmacists in the sample did not report performing any type of physical activity and hence had a sedentary lifestyle.

Regarding pharmacist characteristics, it was noted that 5% of the pharmacists were obese whereas 25.3% were overweight. Hence, the prevalence of obesity and overweight among community pharmacists is lower than that in the general Lebanese population. A cross-sectional study conducted in Lebanon found that the prevalence of overweight was 57.7% in men and 49.4% in women while obesity prevalence was 14.3% in men and 18.8% in women (Sibai et al., 2003). As in our studied pharmacist sample, 40.7% of males and 16% of females were overweight, also 9.7% of males and 2.1% of females were obese (p-value < 0.0001). Another survey conducted in Lebanon showed that the prevalence of obesity and overweight among adults in 2009 were 28.2% and 36.8% respectively, (Nasreddine et al., 2012), which were higher than those of our study. These findings can be related to the pharmacists' awareness of obesity complications such as cardiovascular diseases and metabolic syndrome as well as their capability to practice physical exercises. Moreover, most of them have regular meal intake and regular breakfast (48.7% and 60% respectively), few numbers of them consume fast-food less than or equal 2–4 times per month (27.3%), and the majority of them never drink or drink less than or equal 1 cup of sweet per day (71%).

Most of the pharmacists in the studied sample were not pharmacy owners (74%) and had day-shift work (51%). The majority of Lebanese pharmacists work 8 hours per day (44%) and a more than one-third (38.7%) of them work even more than 8 hours per day. Based on research conducted by Midwest Pharmacy Workforce Research Consortium in 1999 and 2000, U.S. Pharmacists work 44 hours during a typical week (“Pharmacist workload and time management | Drug Topics,” n.d.), which verifies that Lebanese Pharmacists have more working hours per week than other countries. However, 80% of the community pharmacists in UAE work for 8–10 hours per day which is comparable to Lebanon (Hasan et al., 2012). Most of the Lebanese pharmacists have 50–100 patients per day (46.3%). A survey that concerns Canadian community pharmacists estimating the patients number per day showed that 45% of the pharmacies had 101–200 patients per day while 25% had <100 patients per day (Leung et al., 2016). Hence, Lebanese pharmacists patient visits per day were lower than that of Canadian visits and this can be explained by the lower

Table 11
Bivariate analysis of food habit Factors Associated with Food Habits among Pharmacists in the Studied Sample

Characteristic	Good n= 143	Bad n=157	P-value
<i>Exercise/week</i>			
Several	58 (60.4%)	38 (39.6%)	0.009
Once	11 (37.9%)	18 (62.1%)	
Never	74 (42.3%)	101 (57.7%)	
Age	32.58 ± 10.66	29.38 ± 7.07	0.002
<i>Education</i>			
Diploma	80 (45.7%)	95 (54.3%)	0.004
Masters	47 (44.3%)	59 (55.7%)	
Doctorate	16 (84.2%)	3 (15.8%)	
<i>Marital status</i>			0.034
Single	81 (42.2%)	111 (57.8%)	
Married without children	18 (62.1%)	11 (37.9%)	
Married with children	44 (55.7%)	35 (44.3%)	
<i>Owning pharmacy</i>			0.02
Yes	46 (59%)	32 (41%)	
No	97 (43.7%)	125 (56.3%)	

population number in Lebanon (3.6 million), small areas of pharmacies and a high number of pharmacies in Lebanon which reduce the number of visits per day but doesn't exclude the workload over pharmacists since the number of employees per each pharmacy is low in general (68.3% of the pharmacies have 3 or less employees/pharmacy) and holds a pressure over each pharmacy with > 50 patients visits per day.

Concerning the job stress-related situation, 46.4% of Lebanese pharmacists had no regular breaks. A study that was conducted in British Columbia to evaluate the pharmacist workloads and work conditions (2013), illustrated that most of the pharmacist respondents (48%) disagreed that they had enough time for breaks, thus similar to our findings (Tsao et al., 2016).

According to the lifestyle characteristics among pharmacists in our study, smoking prevalence was 26.3%, out of which 5.9% were cigarette smokers and 20.4% were water pipe users. A survey conducted in Nigeria found that the prevalence of cigarette smoking among pharmacy students was 12.9%. (Owonaro Peter and Eniojukan Joshua, 2015). Therefore, the prevalence of cigarette smoking is less among our sample. However, in Saudi Arabia, the prevalence of cigarette smoking among community pharmacists was 19.9% which is greater than our study (Al-Arif, 2004). Additionally, a cross-sectional study in four major universities of Karachi, Pakistan demonstrated that 9.6% of the pharmacy students and 4.8% of the medical students smoke shisha occasionally (Kumar et al., 2016).

Smoking among community pharmacists in the study and the general population was related significantly to the region, where smoking represented the highest prevalence in South Lebanon among (54.5% and 38.0% respectively) with a p-value of 0.037 (Sibai et al., 2016). Smoking in pharmacists was higher among those who take more than one-hour transportation time to work (61.9%, P-value Fisher-exact < 0.001), and among those who work night shifts (37.7%, P-value 0.032). Pharmacists smoking habits were also higher in those having >100 patients per day (35.5%, P-value Pearson chi-square test = 0.0). The prevalence of smoking among Lebanese pharmacists in our study can be related to the job stresses at night shift works, high workload, long transportation-time to work, and low job satisfaction. Concerning alcohol consumption, 27.2% of Lebanese pharmacists were alcohol consumers. A study conducted at nine schools of pharmacy in the USA found that 86.4% of pharmacy students consume alcohol (English et al., 2011). Compared to the general population, 41% of the total population were alcohol consumers in the past 12-month period (Sibai and Hwalla, 2009), Lebanese Pharmacists are fewer alcohol consumers and even the highest proportion of them are occasional drinkers with low intake of alcohol per week.

Caffeine-containing products were highly consumed by pharmacists (67.6 % of pharmacists consume coffee) which could be referred to the high workload over the pharmacists, not getting enough break times, and multiple work responsibilities (management, advertisement, dispensing, counseling...). All these factors increase the stress for each pharmacist to consume caffeine beverages. A cross-sectional study was conducted on three local universities in North Lebanon showed that 65.1% of third and fourth-year university students were caffeine consumers and 34.9% of second-year students were caffeine consumers too (Tannous and Kalash, 2014). Thus, Lebanese pharmacists in our studied sample consume more caffeine (89.3% are caffeine consumers).

Our study showed that 41.7% of pharmacists were physically active and this was significantly associated with pharmacist shift and transportation time to work. Therefore, pharmacists are physically active approximately like the general population as they have time to do mainly aerobic exercises such as walking, swimming, and running (Al-Tannir et al., 2009). However, differences in physical activity among pharmacists may be attributed to their

full-time job that reduces their frequent physical activities. Pharmacists who work both shifts have a higher prevalence of physical activities (48.6%, P = 0.007). This is because such pharmacists may have two part-time jobs with one as am-shift and the other as a pm-shift that doesn't exceed 4 hrs and this allows them to have a break in between to practice aerobic activities. Additionally, pharmacists who take 30 min transportation time to work have the highest prevalence of physical activities which could be explained by their short time to reach work so that they have time to do exercises or availability of practicing walk to work for such short distance separation...

About six percent of the studied pharmacist sample were hypertensive. Hypertension prevalence was related to age, increased working days per week, night-work shift, owning a pharmacy, number of patients/day, and their marital status. Hypertension prevalence in the general Lebanese population was 36.9% in the previous study (Matar et al., 2015). Hypertension in this national population and the selected pharmacist sample increased with age, where the prevalence of hypertension was 34.1% (general population) and 18.9% (pharmacist of our study) in those aged 35–49 years, compared to 57.6% (general population) and 30% (pharmacists in our study) in those aged 50–64 years (p-value < 0.001). Moreover, 20.3% of the hypertensive pharmacists in our study were married compared to 43.6% in the general population (p-value < 0.001) (Matar et al., 2015). Therefore, we can see that the prevalence of hypertension among pharmacists is lower than the general population but it is higher according to age as the general population and to the marital status of the pharmacists.

Hypertension in our study was higher in those who work 7 days/week (17.2%, p-value = 0.001), in those who work > 8 h/d ay (12.9%, p-value = 0.001), among pharmacy owners (20.5%, P-value < 0.001), in those working both shifts (Day and night) (17.1%, p-value < 0.001), and in those having more than 100 patients/day (10%, P = 0.049). Therefore, hypertension increases based on the presence of common reasons, but its prevalence was lower than the general population which could be due to the pharmacist's knowledge about all risks related to hypertension (smoking, sports, caffeine intake, salt intake...), their ability to control their health and to evaluate their health by regular lab tests (34.3%) (Matar et al., 2015).

According to the prevalence of dyslipidemia, an observational cross-sectional study conducted

in all districts of Lebanon between March and June 2014, revealed that 24.8% of Lebanese adults had dyslipidemia (Farhat et al., 2016). However, 4% of the Lebanese pharmacists in our study had dyslipidemia which is lower than the general population. This could be explained by their awareness of the complication of such disease, the importance of food and lifestyle adaptations that prevent such disorder and it could be due to the difference of age between the two studies.

5.1. Limitations and Future Directions

The study has some limitations such as a selection bias where most of the pharmacists in the sample were young and hence the prevalence of chronic diseases might be higher if the selected sample included more of the elderly population. Moreover, confounding factors that are associated with hypertension and the studied lifestyle habits were not controlled by using multivariate analysis, thus subjecting the study to sort of confounding bias

Moreover, variables that concern the consumption of alcohol, caffeine, and sweet drinks were considered bad if exceeds a certain range of cups/day (which was not defined due to the absence of a definite range). The food index was created by median separation and cannot hold an overall view of pharmacists' habits, it is done

to allow ease of bivariate analysis with sociodemographic and job characteristics.

Additionally, information bias might exist since pharmacists might not report true or valid data for social desirability. This might underestimate true prevalence rates.

Finally, being a cross-sectional study, we can't determine the causal relationship between the different variables and we can't measure risks.

5.2. Conclusion and Recommendations

Lebanese pharmacists are part of the General Lebanese population and have a lower prevalence of obesity, dyslipidemia, hypertension, and other diseases. They are also exposed to multiple risk factors that are linked to the presence of such disorders. Their knowledge about these diseases could help them avoid the risk factors related to these disorders. Physical activities are practiced among pharmacists but at a lower frequency compared to the population. Smoking is also prevalent among pharmacists, mainly for water pipe smoke, exposing pharmacists to diseases related to smoking. Thus pharmacists must be more aware of smoking and advise others not to smoke to reduce the disadvantages among primary and secondary smokers. Similarly with caffeine, salt, sweet and fast food consumption being also prevalent among studied pharmacists. However, alcohol consumption was low among pharmacists holding them at low risk of alcohol-related side effects.

Pharmacists, especially in Lebanon, are exposed to much of job-related stresses that include low salary, low job satisfaction, irregular break time, high workload, low number of employees per pharmacy, patient price complains, competition between pharmacies, discounts and offers, illegal issues as pharmacy-delivery and sales promotions, a high number of pharmacies, and low distances separations between pharmacies. All these factors expose the pharmacists to stresses that encourage the practice of bad habits like smoking, caffeine and alcohol intake, low physical activities, and low interest in the job. Therefore, stress might affect the pharmacists' health-related behaviors which in turn affects the pharmacists' advice to patients as a cycle that leads to a low quality of life.

This will raise an important question, 'Are pharmacists providing health-related recommendations to patients appropriately if they are not themselves following a healthy lifestyle?'

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Contributions of Authors

Samer Barake collected and analysed data and contributed to the manuscript.

Rayan Tofaha collected and analysed data.

Nathalie Lahoud contributed to the study protocol, data analysis and manuscript.

Deema Rahme contributed to manuscript writing and review for submission

Ethical Approval

The study did not receive an IRB approval because the Lebanese University ethical committee waived the need for IRB approval for this study since it's an observational study. The study does not include any harm to the participants or any personal identifiers either.

The study maintains the total anonymity of the pharmacists by which the questionnaires were handled directly to the pharmacists in their workplace and then collected after one week each in a closed envelope for total anonymity and confidentiality.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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