

Original Research

Factors associated with quality of life among community pharmacists in Lebanon: results of a cross-sectional study

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Abstract

Objective: The objective of this study was to assess the quality of life and the factors associated with it among community pharmacists in Lebanon.

Methods: This cross-sectional study was carried out between March and July 2018, enrolling 435 pharmacists, using a proportionate random sample of community pharmacies from all districts of Lebanon. The validated Arabic translation of the Short-Form 12 (SF12v2) was used to derive 2 summary scores: physical and mental component summaries (PCS and MCS).

Results: Lebanese community pharmacists scored a mean PCS-12 and MCS-12 of 48.9 (SD 7.1) and 48.8 (SD 8.5), respectively. Higher age (Beta= -0.08), having a PhD degree (Beta= -4.54), higher depression score (Beta= -0.25), higher emotional work fatigue (Beta= -0.13) and higher physical work fatigue (Beta=-0.14) were significantly associated with lower physical QoL (lower PCS-12 scores).

Increased stress (Beta= -0.17), higher insomnia (Beta= -0.21), higher depression (Beta= -0.2) and working for over 40 hours per week (Beta= -0.2) were significantly associated with lower mental QoL (lower mental MCS-12 scores).

Conclusions: Our research has found a strong correlation between quality of life and psychological factors, including stress, burnout, insomnia, and depression among community pharmacists.

Keywords

Quality of Life; Burnout; Professional; Fatigue; Depression; Pharmacies; Pharmacists; Risk Factors; Multivariate Analysis; Surveys and Questionnaires; Lebanon

INTRODUCTION

The role of a community pharmacist expands beyond dispensing medication; it includes ensuring the proper use of medications and counseling patients to improve their quality of life.¹ In fact, the qualities of pharmacists most sought after by patients are: respect, empathy, friendliness, respect for privacy, quality time, attentive listening, and prompt response to their needs.² In addition, pharmacists have to manage the emotions of patients and the stress of

overwork, while avoiding making mistakes.

Lebanon is a small country in the Middle East with a population of around four million people and 2897 community pharmacies with a ratio of 66.06 pharmacies per 100,000 inhabitants.² Pharmacy students can graduate with a bachelor in pharmacy degree (5-year pharmacy program) or a PharmD degree (6-year pharmacy program), with the possibility of higher education to obtain a masters or a doctor of philosophy (PhD) degree. Community pharmacies are privately owned on profit basis, and they are the only legal provider of prescription and nonprescription drugs to the Lebanese community. According to the Lebanese Pharmacists Association (OPL) and the Ministry of Public Health (MOPH) laws, a MOPH-licensed and OPL-registered pharmacist should be present at all times during the pharmacy's opening hours. In addition, a technician can dispense a medication to the patient without consulting the pharmacist on duty. It is important to note that the Lebanese patients can buy any non-controlled medication as over the counter products, despite its classification as a prescription medication in other countries.³

Many studies have explored job-related stress and dissatisfaction of pharmacists. In the United States pharmacists experienced role overcharge, job-related stress, and work-home conflicts.^{4,5} In India and in Saudi Arabia, pharmacists showed high level of job dissatisfaction.^{6,7} Thus, the motivation and productivity of pharmacists could be affected by this high level of job-related stress and discontent.⁸

On the other hand, the body of research is smaller with respect to factors that affect the emotion and well-being of pharmacists. In 2012, an Iranian study found no correlation

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between job satisfaction and gender, although men worked more hours on average. Owning the pharmacy or working as an employee was not a predictive factor either.⁵ In France, a recent study on 1272 community pharmacists found that 30% (considered by the authors as a high percentage) were affected by work-related stress. Levels of stress did not vary among pharmacists, assistants or technicians although they had different causes of stress, with men more stressed than women, and age not being a significant factor. However, number of weekly working hours, anxiety and depression were significant predictors.⁹

In Lebanon, previous research had shown that pharmacists were dissatisfied psychologically and financially.^{10,11} More recent studies shed light on additional economic challenges facing community pharmacists. Indeed, over the past decade, the drop in selling prices of highly prescribed medications between 2014 and 2017 has significantly reduced the income of pharmacy owners and decreased the number of loyal customers, monthly sales and profits of retail pharmacies.^{12,13} This economic challenge may have many unfortunate consequences such as forcing pharmacists to work longer hours to achieve the same profit, lowering their job satisfaction, and promoting psychological distress, all of which can affect productivity and personal well-being.¹⁴

Consequently, one can only assume how highly affected the quality of life might be nowadays. To date, no local study has evaluated the quality of life of pharmacists in Lebanon and its determinants, and we believe in the importance of doing so, as this may affect the quality of the services provided by pharmacists to patients and to the community in general. Therefore, this study aims to assess the quality of life and the factors associated with it (such as work fatigue, empathy, depression, stress, insomnia, soft skills, work productivity and activity impairment) among community pharmacists in Lebanon.

METHODS

Study design

This cross-sectional study was carried out between March and July 2018, using a proportionate random sample of community pharmacies from all districts of Lebanon (North, Beirut, Bekaa, Mount Lebanon and South). First, we contacted the OPL (the official association of pharmacists in Lebanon) to obtain the exhaustive list of pharmacies from which we chose a simple random sample using an online randomizing software (www.randomizer.org). Second, we visited each pharmacy to recruit one pharmacist; the pharmacist (employee or owner of the pharmacy) present at the time of data collection was approached. Excluded were students and pharmacy assistants. Excluded were pharmacists who refused to participate in this study.

Ethical aspects

The Ethics committee at the Psychiatric Hospital of the Cross approved the study protocol (HPC-006-2019). A written informed consent was obtained from each pharmacist.

Sample size calculation

In Lebanon, a total of 3762 community pharmacists (employers and employees) practice in 3157 community pharmacies distributed across all regions. A sample of 350 community pharmacists was evaluated to provide adequate power for bivariate and multivariable analyses. Sample size calculation was performed on Epi info, with an expected frequency of 50% of pharmacists with low quality of life (in the absence of similar studies in the country), and a confidence interval of 95%.

Questionnaire and variables

The closed-ended self-administered questionnaire, was available in French or English (the teaching languages in schools of pharmacy in Lebanon) and distributed to pharmacists by well-trained interviewers. Each interviewer explained the objectives of the study to the participant and obtained the written informed consent. To ensure optimal objectivity, the pharmacist had to fill out the questionnaire without the interviewer giving any guidance on any of the questions. The time to complete the questionnaire was between 15 and 20 minutes on average. Completed questionnaires were collected back by the interviewers, and sent for data entry in closed boxed to preserve the anonymity of the pharmacists.

The questionnaire consisted of 2 sections. The first one was about socio-demographic and practice characteristics including: age, gender, level of education, demographic area, location of the pharmacy, approximate number of patients per day, years of practice, working hours per week, job position information. The social status of the majority of patients was also obtained through a subjective, self-reported answer by each pharmacist. Also, a house crowding index was computed by dividing the total number of individuals living in the house by the total number of rooms (excluding kitchen and bathrooms) in the house. The second section included the following scales:

Quality of life (SF12)

The validated Arabic translation of the Short-Form 12 (SF12v2) developed by the WHO (World Health Organization) was used to derive 2 summary scores: physical and mental component summaries (PCS and MCS).¹⁵ These two subscales provide glimpses into mental and physical functioning and overall health-related-quality of life. PCS and MCS are computed using the scores of twelve questions and range from 0 to 100, where 0 indicates the lowest level of health measured by the scales and 100 indicates the highest level of health.

The Three-Dimensional Work Fatigue Inventory (3D-WFI)

It is constituted of 18 questions divided into 3 packs of 6 questions each, measuring respectively physical (e.g. feeling physical exhaustion at the end of the workday?), mental (e.g. face difficulty in thinking and concentration at the end of the workday?) and emotional (e.g. face difficulty to show and deal with emotions at the end of the workday?) work fatigue.¹⁶ The score ranged from 0 (never) to 4 (every day). In all 3 dimensions, higher scores indicated higher fatigue. The Cronbach's alpha was 0.880 for physical work fatigue, 0.710 for mental work fatigue and 0.848 for emotional work fatigue.

Toronto Empathy Questionnaire

This questionnaire consists of 16 items, each rated on a five-point scale ranging between 'never' and 'often'. It conceptualizes empathy primarily as an emotional process. The scoring of responses is done according to the following: for positively worded items 1, 3, 5, 6, 8, 9, 13, and 16: 0 (Never); 1 (Rarely); 2 (Sometimes); 3 (Often); 4 (Always). Negatively worded items: 2, 4, 7, 10, 11, 12, 14 and 15 are reverse scored. The total empathy score was derived by adding up all the scores, with higher scores indicating higher empathy. The Cronbach's alpha value was 0.729.

Hamilton depression rating scale (HDRS)

The validated Arabic version of HDRS was used in this study.¹⁷ This 17-item scale measures the severity of depressive symptoms (e.g. depressed mood, feelings of guilt, suicide, etc.).¹⁸ The score was obtained by summing up answers to these 17 questions, higher scores indicating higher levels of depression. Scores below 10 indicate no depressive symptoms, whereas scores between 10-13, 14-17 and more than 17 indicate mild, mild to moderate and moderate to severe depressive symptoms respectively. The Cronbach's alpha for this study was 0.870.

Beirut Distress Scale (BDS-22 scale)

This scale validated in Lebanon, is used to measure the level of stress among pharmacists.¹⁹ It consists of 22 questions, reflecting six factors in older adults: depressive symptoms, demotivation, mood deterioration, psychosomatic symptoms, anxiety and intellectual inhibition. Symptoms of stress were assessed after asking participants how often they had experienced each symptom over the past week. The score was calculated on a Likert-scale ranging from 0 (not at all) to 3 (all of the time), higher score indicating higher levels of stress. The Cronbach's alpha of this scale was 0.935.

Lebanese Insomnia Scale (LIS-18)

This 18-item scale is used for the diagnosis of insomnia on the basis of several validated/universally applicable self-report scales. Answers were graded on a 5-point Likert scale (1=Never to 5=Always), and items 4, 18 and 22 reversed, with higher scores indicating higher insomnia. The Cronbach's alpha of this scale was 0.811.

Soft skills scale

This questionnaire consists of 24 questions, and corresponds to the shorter version of the SENNA 1.0 (Social and Emotional Nationwide Assessment) inventory. This self-report-based inventory evaluates socio-emotional skills and determines a six-factor structure: neuroticism, conscientiousness, openness to experience, agreeableness, extraversion, and external locus of control. Answers are graded on a 5-point Likert scale ranging from 1 (nothing) to 5 (totally). It also provides moderate correlations with the ER5FP (Reduced Scale of the Big 5 Personality Factors).²⁰ The Cronbach's alpha of this scale was 0.757.

The Work Productivity and Activity Impairment (WPAI)

This tool is used to measure impairments in paid and unpaid work, and consists of 6 questions: 1 (currently employed); 2 (hours missed due to health problems); 3

(hours missed other reasons); 4 (hours actually worked); 5 (the extent to which health problems affected productivity while working); 6 (the extent to which health problems affected daily activities other than work at a job). The recall period for questions 2 to 6 is seven days. The percentage of missed working time due to health problems was calculated as follows: $Q2/(Q2 + Q4)$. The percentage of activity impairment due to health problems was calculated by dividing Q6 by 10 ($Q6/10$), with higher scores indicating higher work impairment.²¹

Forward and back translation procedure

The forward translation (from English to French) was performed by a translator and verified by an expert committee of healthcare professionals and a language professional. A native English-speaking translator, unfamiliar with the concepts of the scales and fluent in French, performed a backward translation. The expert committee compared the back-translated English questionnaire with the original English questionnaire to discern discrepancies and solve inconsistencies between the two versions. The forward-backward translation procedure was repeated to eliminate all ambiguities.²²⁻²⁸ Prior to starting data collection, both versions were tested on a pilot sample of 20 pharmacists; results of the pilot sample were not included in the final data sheet.

Statistical analysis

Data entry was done by a person not involved in the data collection process, and data statistical analysis was performed on SPSS version 23. Factors associated with QoL needed to be assessed; for this purpose, a bivariate analysis was conducted using the Student t-test to check for associations between QoL and dichotomous variables (i.e. gender), and the ANOVA test to compare means of 3 or more groups (i.e. education level). The Pearson correlation test was used to evaluate the association between two continuous variables (i.e. QoL subscales scores and age). After this step, a multivariable analysis was conducted; two stepwise linear regressions were computed by taking the SF-12 Mental Component Summary (MCS) and SF-12 Physical Component Summary (PCS) scales as dependent variables respectively. Variables showing a significant association in the bivariate analysis were taken as independent variables in both models. Unstandardized Beta values were calculated, which are raw coefficients produced by the linear regression analysis when the analysis is performed on original, unstandardized variables. Standardized Beta values were also obtained, indicating normalized unit-less coefficients. A value of $p < 0.05$ was considered statistically significant.

RESULTS

The Cronbach's alpha values were calculated for all the scales used in the study. The results came as follows: Three-Dimensional Work Fatigue Inventory (3D-WFI) (0.880 for physical work fatigue, 0.710 for mental work fatigue and 0.848 for emotional work fatigue), Toronto Empathy Questionnaire (0.729), Hamilton depression rating scale (0.870), Beirut Distress Scale (0.935), Lebanese Insomnia Scale (0.811) and Soft skills scale (0.757).

Out of the 500 questionnaires distributed, 435 (87%) were completely filled and collected back. The mean age of participants was 39 (SD 11) years, with 223 (52.0%) males. The socio-demographic characteristics are summarized in Table 1.

Health-related scores are summarized in Table 2. Lebanese community pharmacists scored a mean PCS-12 and MCS-12

of 48.9 and 48.8, respectively (both means were lower than the theoretical average in both scores).

The results of the bivariate analysis of categorical and continuous variables associated with the PCS-12 and MCS-12 subscales scores are summarized in Table 3 and Table 4. Female pharmacists scored slightly but significantly higher PCS-12 score compared to their counterpart male

Factor	N (%) or Mean (SD)
Age (in years)	38.97 ± 11.13
Gender	Male 223 (52.0%)
Mohafaza	Beirut 77 (18.0%) Mount Lebanon 150 (35.1%) North 66 (15.5%) South 48 (11.2%) Bekaa 48 (11.2%)
Educational level	Bachelor of science 250 (58.4%) Pharm.D. 106 (24.8%) Masters 60 (14.0%) PhD 12 (2.8%)
Professional status	Employer 299 (68.7%) Employee 128 (30.0%)
Experience	Less than 6 months 24 (5.6%) 6 months to 1 year 20 (4.6%) 1 year to less than 3 years 36 (8.4%) 3 years to less than 6 years 64 (14.8%) 6 years to less than 12 years 118 (27.4%) More than 12 years 169 (39.2%)
Approximate number of patients seen per day in the pharmacy	< 10 3 (0.7%) 10-50 131 (30.8%) 50-100 188 (44.2%) > 100 103 (24.2%)
Working hours per week	1-16 hours per week 27 (6.3%) 17-31 hours per week 48 (11.2%) 32-40 hours per week 96 (22.3%) More than 40 hours per week 259 (60.2%)
Social status of the majority of patients	Poor 26 (6.1%) Middle 193 (45.6%) High 16 (3.8%) Do not know 185 (43.7%)
Family income per month	<1000 USD 35 (8.9%) 1000-2000 USD 90 (20.7%) 2000-3000 USD 129 (32.7%) >3000 USD 140 (35.5%)
Depression categories	No depression 307 (72.6%) Mild depression 61 (14.4%) Mild to moderate depression 18 (4.3%) Moderate to severe depression 37 (8.7%) House crowding index 0.89 (SD 0.44) Empathy score (Toronto Empathy Questionnaire) 59.02 (SD 7.32) Stress score Beirut Distress Scale (BDS-22 scale) 42.37 (SD 13.49) Insomnia score (Lebanese Insomnia Scale) 37.53 (SD 8.44) Depression score (Hamilton depression rating scale) 6.90 (SD 7.01) Emotional work fatigue score (The Three-Dimensional Work Fatigue Inventory) 17.38 (SD 10.42) Mental work fatigue score (The Three-Dimensional Work Fatigue Inventory) 8.36 (SD 6.50) Physical work fatigue score (The Three-Dimensional Work Fatigue Inventory) 7.63 (SD 8.29) Soft skills score (Social and Emotional Nationwide Assessment) 75.80 (SD 10.88)
Some variables might not add to the total number of pharmacists enrolled because of missing values.	

	Mean (SD)	Minimum	Maximum
Stress score Beirut Distress Scale (BDS-22 scale)	42.37 (13.50)	21	82
Insomnia score (Lebanese Insomnia Scale)	37.53 (8.45)	1	66
Depression score (Hamilton depression rating scale)	6.90 (7.00)	0	34
SF12-MCS (mental quality of life)	48.9 (7.1)	21.87	62.73
SF12-PCS (physical quality of life)	48.8 (8.5)	23.01	62.54
Soft skills score (Social and Emotional Nationwide Assessment)	75.8 (10.9)	16	115
Empathy score (Toronto Empathy Questionnaire)	59.02 (7.32)	32	80
Emotional work fatigue score (The Three-Dimensional Work Fatigue Inventory)	17.38 (10.42)	0	48
Mental work fatigue score (The Three-Dimensional Work Fatigue Inventory)	8.36 (6.50)	0	42
Physical work fatigue score (The Three-Dimensional Work Fatigue Inventory)	7.63 (8.29)	0	46

pharmacists ($p=0.01$). Pharmacists with a PharmD degree had higher mean PCS-12 score compared to pharmacists with a PhD degree ($p=0.01$). In addition, age ($r= -0.08$), increased depression (Hamilton depression score; $r =-0.3$) stress (BDS-22; $r= -0.15$), insomnia ($r= -0.18$) and finally burnout (emotional component $r= -0.20$; physical component $r= -0.17$; mental component $r= -0.15$) were found to be significantly correlated to a lower physical QoL score (PCS-12).

On another hand, a significantly lower mean MCS-12 score was reported by pharmacists working between 17 and 31 hours per week as compared to those working >40 hours per week ($p=0.035$). Increased depression (Hamilton depression score; $r= -0.3$) stress (BDS-22; $r= -0.39$), insomnia ($r=-0.36$) and burnout (emotional component $r= -0.16$; physical component $r= -0.14$; mental component $r= -0.23$) were drastically correlated to lower mental QoL score (MCS-12). However, age was correlated with higher MCS-12 score ($r= 0.1$).

PCS-12 score was considered as dependent variable for the first stepwise linear regression. It showed that higher age (Beta= -0.08), having a PhD degree compared to a bachelor

in science one (Beta=-4.54), higher depression score (Beta= -0.25), higher emotional work fatigue (Beta= -0.13) and higher physical work fatigue (Beta= -0.14) were significantly associated with lower physical QoL (lower PCS-12 scores) (Table 5, Model 1).

MCS-12 score was taken as the dependent variable of the first stepwise linear regression, showing that increased stress (Beta= -0.17), higher insomnia (Beta= -0.21), higher depression (Beta= -0.2) and working per week for over 40 hours vs. <16 hours (Beta= -0.2) were significantly associated with lower mental QoL (lower mental MCS-12 scores) (Table 5, Model 2).

DISCUSSION

This study was carried out to shed the light on the QoL of Lebanese community pharmacists and factors associated with it. Understanding these different correlations is essential to ensure effective quality of life programs that can improve the sense of efficacy and well-being and enable pharmacists to provide quality care. Results of our study showed that being older, having a PhD degree, a

Variable	PCS-12 Mean (SD)	F/t values	p-value	MCS-12 Mean (SD)	F/t values	p-value
Gender		4.34/ -2.510	0.012		0.017/0.902	0.37
	Female 49.82 (6.60)			48.42 (8.67)		
	Male 47.98 (7.41)			49.22 (8.48)		
Education		3.674	0.012		0.376	0.77
	BS 48.83 (7.48)			48.82 (8.72)		
	PharmD 50.22 (5.81)			48.93 (8.13)		
	Master 47.83 (6.58)			49.21 (1.15)		
	PhD 43.14 (7.66)			46.10 (10.07)		
Years of experience		1.154	0.33		0.764	0.576
	Less than 1 year 48.94 (6.37)			49.13 (10.58)		
	Between 1 and less than 3 years 49.68 (5.99)			47.93 (9.51)		
	Between 3 and less than 6 years 50.12 (7.22)			47.23 (8.01)		
	Between 6 and less than 12 years 47.96 (7.38)			49.36 (8.09)		
	12 years and above 48.44 (7.27)			49.53 (8.40)		
Number of working hours		2.293	0.07		2.910	0.035
	≤ 16 hours 47.34 (6.60)			47.63 (9.15)		
	Between 17 and 31 hours 51.26 (5.85)			45.87 (10.38)		
	Between 32 and 40 hours 48.84 (7.50)			48.30 (8.46)		
	> 40 hours 48.48 (7.14)			49.74 (7.98)		
Patients' load per day		0.481	0.56		1.389	0.25
	< 50 49.32 (7.03)			48.67 (8.49)		
	50-100 48.47 (7.32)			48.39 (8.57)		
	>100 49.20 (7.11)			50.20 (8.47)		

The Student t-test was used to check for associations between QoL and dichotomous variables (i.e. gender); the ANOVA test was used to compare means of 3 or more groups (i.e. education level; education level, years of experience, number of working hours, patients load per day). The Pearson correlation test was used to evaluate the association between two continuous variables (i.e. QoL subscales scores and age, house crowding index, BDS22 score, soft skills score depression score, burnout subscales scores, empathy score). F=F-value; t= t value; PCS= Physical quality of life subscale score; MCS= Mental quality of life subscale score; SD= Standard Deviation.

Table 4. Bivariate analysis of continuous variables associated with the PCS-12 and MCS-12 scores

	PCS-12 score		MCS-12 score	
	Correlation coefficient	p-value	Correlation coefficient	p-value
Age	-0.08	0.07	0.1	0.03
House crowding index	0.04	0.25	-0.07	0.1
Stress score Beirut Distress Scale (BDS-22 scale)	-0.15	0.002	-0.39	<0.001
Insomnia score (Lebanese Insomnia Scale)	-0.18	<0.001	-0.36	<0.001
Soft skills score (Social and Emotional Nationwide Assessment)	-0.03	0.27	-0.01	0.46
Depression score (Hamilton depression rating scale)	-0.30	<0.001	-0.31	<0.001
Emotional work fatigue score (The Three-Dimensional Work Fatigue Inventory)	-0.20	<0.001	-0.16	0.001
Physical work fatigue score (The Three-Dimensional Work Fatigue Inventory)	-0.17	<0.001	-0.14	0.004
Mental work fatigue score (The Three-Dimensional Work Fatigue Inventory)	-0.15	0.002	-0.23	<0.001
Empathy score (Toronto Empathy Questionnaire)	0.157	0.002	-0.023	0.660

Numbers in bold indicate significant p-values; PCS= Physical quality of life subscale score; MCS= Mental quality of life subscale score

higher depression score, a higher emotional work fatigue and a higher physical work fatigue were significantly associated with lower physical QoL. Furthermore, higher stress, higher insomnia, higher depression, and higher load of work (more than 40 hours per week) were significantly associated with lower mental QoL.

The results of our study revealed that older age is significantly associated with lower QoL, in line with other findings.²⁹ It is important to understand the conditions associated with a positive ageing process to improve physical health, pleasure, well-being and quality of life during that phase.³⁰

However, in some studies, age has been found to be one of the predictors of a decline in the physical QoL, possibly resulting from chronic diseases and fatigue following burnout, whereas this relationship has not been confirmed by other findings.³¹⁻³³ More particularly, a study showed that severe distance vision problems had significant negative impact on the quality of life, essentially confirming the results of previous research; this is also applicable to hearing loss, but not to near vision.³⁴⁻³⁷ On another hand, a study showed that the physical QoL of health professionals cannot be determined by a single factor at older age.³⁸ Factors that negatively impact physical quality of life include precarious financial status, functional limitations due to long-term illness, depression and decreased daily activities, while living in comfortable neighborhood, satisfactory interpersonal relationships with children, family and friends, and high socio-economic status can improve physical QoL.³⁸⁻⁴¹

Results of our study also revealed that having a PhD was significantly associated with lower physical QoL, contrary to the literature where evidence show that higher level of

education improves QoL because it increases access to sufficiently remunerated work and economic resources.⁴² Possible explanation for the inverse association we obtained could be a higher expectation among PhD holders, revealing that they are potentially under-employed and on a lower salary than average.

Furthermore, the results of our study showed that higher depression score was significantly associated to lower physical and mental QoL. The incidence of self-reported depression is relatively high (40%) among pharmacists.⁴³ Also, most of the pharmacists surveyed were financially dissatisfied resulting in decrease in job satisfaction, compared to that of the last decade, and thus a consequent lower QoL.^{5,13} Our results showed that 27.4% of the participants had depressive symptoms, a number that is higher than those of other health professionals.^{44,45} Reasons leading to depression are reported as exhaustion and fatigue due to an unhealthy work environment, huge workload, lack of independence and direct obligatory care for patients having various needs and complications.^{45,46} All these factors contribute to creating and maintaining an increased level of depression and stress, and generating a vicious cycle that affects the activity of these individuals and their QoL.⁴⁷

The results of this study also showed that insomnia lowered the mental QoL. Sleep is considered an indispensable element of health, general well-being, and proper daily functioning. Several studies have investigated the sleep patterns of pharmacy, medical and nursing students, but to date, none have addressed those of community pharmacists. The different symptoms of insomnia have been regularly associated with painful physical conditions and decline of physical QoL.⁴⁸ Moreover, the poor quality of sleep significantly

Table 5. Multivariable analyses.

Variable	Unstandardized beta	Standardized beta	p-value	95% CI	
Model 1: Stepwise linear regression taking the PCS-12 score as the dependent variable.					
Age	-0.08	-0.12	0.028	-0.15	-0.01
PhD degree vs. BS	-4.54	-0.11	0.04	-8.90	-0.17
Hamilton depression score	-0.25	-0.24	<0.001	-0.37	-0.14
Emotional work fatigue	-0.13	-0.19	<0.001	-0.20	-0.06
Physical work fatigue	-0.14	-0.16	0.003	-0.22	-0.05
Model 2: Stepwise linear regression taking the MCS-12 score as the dependent variable.					
BDS-22 score	-0.17	-0.27	<0.001	-0.25	-0.1
Insomnia score	-0.21	-0.20	0.001	-0.33	-0.09
Hamilton depression score	-0.20	-0.15	0.009	-0.34	-0.05
Number of working hours >40 hours vs. <16 hours	-2.00	0.12	0.025	-3.76	-0.25

PCS= Physical quality of life subscale score; MCS= Mental quality of life subscale score; CI= confidence interval

contributes to lack of concentration, increased work-related accidents and injuries and difficulty performing regular tasks, and in other words to a poor mental QoL.⁴⁹ Further studies on the sleep patterns of community pharmacists are required; it is recommended that the factors and habits underlying poor sleep quality be addressed to establish strategies to prevent or mitigate problems.

The life of healthcare professionals is often stressful. Mild, moderate, and severe levels of stress, as well as cases of burnout were documented mainly among physicians, nurses, dentists and pharmacists.⁵⁰ Throughout this study, an evaluation of levels of stress and the QoL of community pharmacists revealed a negative correlation between perceived levels of stress and mental QoL. These findings are consistent with those of other studies.⁵⁰⁻⁵² Indeed, it is well known that stress negatively affects the mental health of professionals, resulting in stress-related disorders, poor job performance and poor QoL.⁵³ A recent study showed that burnout syndrome was associated with several comorbidities (anxiety, depression and alcohol abuse) and the consumption of health resources.⁵⁴ Practically, treating patients and dealing with human distress, arguing with colleagues about decision-making, and taking responsibility for mistakes may be causes of moderate to high stress.⁵⁵ In addition, the demands of work are an important source of stress, given the challenge of staying constantly active and the competitive spirit that creates great emotional work-related distress.⁵⁶ Other stressors may also directly affect the quality of services and the QoL of health professionals such as huge workload and long working days. Moreover, other factors could be related to reduced numbers of support staff; no wage increases despite an increased workload, or marginal wage increases for management positions; inability to take personal leave despite having home and child commitments (reported mostly by female pharmacists); a lack of opportunity for career advancement, and a diminishing sense of autonomy due to corporatization.⁵⁷⁻⁶⁰ In this context, it can be useful to monitor pharmacists' burnout levels and prevalence periodically. Interventions on individual and organizational basis were needed to cope with burnout, respond to job demands, minimize the level of chronic stress, and increase work contentment and satisfaction.²⁹ Furthermore, some interventions can be done to improve the inefficacy prevalence among community pharmacists in Lebanon. Their working hours can be reduced. Part time working can be promoted. Also monitoring pharmacists' burnout levels periodically can give significant clues for primary and secondary prevention of this global disease. Precautions should be organized via governmental and professional bodies in Lebanon in order to reduce stress and promote the mental and physical QoL of pharmacists.

Our results also showed that emotional and physical work fatigue were associated with lower physical QoL. The different conditions experienced by pharmacists can be a heavy psychological burden and cause physical, mental and emotional health problems, thereby reducing the physical QoL.⁶¹ For this, it is strongly recommended that community pharmacists become familiar with the best strategies for preventing burnout and clarifying predisposing behaviors.

Finally, results of our study revealed that working over 40 hours per week is significantly associated to lower physical QoL. To date, studies on working hours focused on health care professionals in general, and showed that an episode of major depression was diagnosed in 3.4% of professionals working for 12 hours and in 3% of those working for 8 hours.⁶² In addition, it has been validated that people working 40 hours or full-time in hospitals or pharmacies are the most stressed, and have a reduced physical QoL.⁶³ Also, longer work shifts are associated with higher levels of stress, and lower physical QoL because of the basic characteristics of the work, lack of sleep, work stress and psychological suffering.⁶⁴⁻⁶⁵

Clinical implications

QoL of pharmacists would affect his/her performance with patients, especially that Lebanese patients have high expectations from pharmacists.² Therefore, understanding the mechanisms associated with the pharmacists' QoL is a must. The results of our study focus on undiagnosed physical and mental health problems in community pharmacists. Thus, to improve and maintain the ability of pharmacists to work, strategies must be developed to reduce stress and further promote the mental and physical quality of life of these pharmacists. Screening programs for early detection of underlying health conditions and related treatments can improve the health and productivity of pharmacists who regularly interact with patients. Interventions and health promotion activities for pharmacists and changes in their working conditions, affecting their physical and mental quality of life, can directly and indirectly improve the health of pharmacists, patients and society.

Limitations

Acknowledging some limitations is necessary. First, the design of this study is cross-sectional, thus it doesn't allow for causal relationships to be investigated. Causal sequential relationships should be explored in larger longitudinal studies while considering other factors that might be associated with the quality of life among community pharmacists. Second, the information obtained from the scales were self-reported and not based on a physician's diagnosis, thus, there may be an information bias as participants may either over- or underestimate their symptoms. Third, some of the scales were not validated in Lebanon (WPA, and Toronto Empathy Questionnaire). Nonetheless, the authors found the results to be noteworthy, because they offer consistency when compared to other studies. A time-series study, taking all this study's limitations into consideration and targeting pharmacists from all fields, is needed to explore causes behind the decrease in Lebanese pharmacists' QoL.

CONCLUSIONS

Our research has found a strong correlation between quality of life and psychological factors, including stress, burnout, insomnia, and depression among community pharmacists. It is essential for healthcare professionals to have access to appropriate care for their personal physical and mental health, since not only are they directly associated with one another, but they are also associated

with self-perceived quality of life. Pharmacists must evidently pay better attention to what they personally need, to be able to properly carry out their valuable mission: taking caring of the health of others.

CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

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References

1. Kheir N, Emmerton L, Shaw J. Can pharmacists influence the health-related quality of life of patients with asthma?: The New Zealand Pharmaceutical Care experience. *J Sci Res Med Sci*. 2001;3(2):69-75.
2. Iskandar K, Hallit S, Raad EB, Droubi F, Layoun N, Salameh P. Community pharmacy in Lebanon: A societal perspective. *Pharm Pract (Granada)*. 2017;15(2):893. <https://doi.org/10.18549/PharmPract.2017.02.893>
3. Al-Arifi MN. Patients' perception, views and satisfaction with pharmacists' role as health care provider in community pharmacy setting at Riyadh, Saudi Arabia. *Saudi Pharm J*. 2012;20(4):323-330. <https://doi.org/10.1016/j.jsps.2012.05.007>
4. Mott DA, Doucette WR, Gaither CA, Pedersen CA, Schommer JC. Pharmacists' attitudes toward worklife: results from a national survey of pharmacists. *J Am Pharm Assoc* (2003). 2004;44(3):326-336. <https://doi.org/10.1331/154434504323063968>
5. Majd M, Hashemian F, Younesi Sisi F, Jalal M, Majd Z. Quality of Life and Job Satisfaction of Dispensing Pharmacists Practicing in Tehran Private-sector Pharmacies. *Iran J Pharm Res*. 2012;11(4):1039-1044.
6. Ahmad A, Khan MU, Elkalmi RM, Jamshed SQ, Nagappa AN, Patel I, Balkrishnan R. Job satisfaction among Indian pharmacists: an exploration of affecting variables and suggestions for improvement in pharmacist role. *Indian J Pharm Educ Res*. 2016;50(1):9-16. <https://doi.org/10.5530/ijper.50.1.2>
7. Balkhi B, Alghamdi A, Alshehri N, Alshehri A. Assessment of job satisfaction among hospital pharmacists in Saudi Arabia. *IOSR J Pharm*. 2017;7(5):34-40.
8. Armstrong M. *A handbook of human resource management practice*. London: Kogan Page Publishers; 2006.
9. Balayssac D, Pereira B, Virot J, Lambert C, Collin A, Alapini D, Gagnaire JM, Authier N, Cuny D, Vennat B. Work-related stress, associated comorbidities and stress causes in French community pharmacies: a nationwide cross-sectional study. *PeerJ*. 2017;5:e3973. <https://doi.org/10.7717/peerj.3973>
10. Salameh P, Hamdan I. Pharmacy manpower in Lebanon: An exploratory look at work-related satisfaction. *Res Social Adm Pharm*. 2007;3(3):336-350. <https://doi.org/10.1016/j.sapharm.2006.09.003>
11. Antoun RB, Salameh P. [Satisfaction of pharmacists in Lebanon and the prospect for clinical pharmacy]. *East Mediterr Health J*. 2009;15(6):1553-1563.
12. Choueiry G, Hallit S, Salameh P. Analysis of Cost and Content of 1326 Medical Prescriptions from the Area of Mount Lebanon. *Res Rev*. 2017;6(3):10-17.
13. Hallit S, Zeenny RM, Sili G, Salameh P. Situation analysis of community pharmacy owners in Lebanon. *Pharm Pract (Granada)*. 2017;15(1):853. <https://doi.org/10.18549/PharmPract.2017.01.853>
14. McCann L, Hughes CM, Adair CG, Cardwell C. Assessing job satisfaction and stress among pharmacists in Northern Ireland. *Pharm World Sci*. 2009;31(2):188-194. <https://doi.org/10.1007/s11096-008-9277-5>
15. Sabbah I, Drouby N, Sabbah S, Retel-Rude N, Mercier M. Quality of life in rural and urban populations in Lebanon using SF-36 health survey. *Health Qual Life Outcomes*. 2003;1:30. <https://doi.org/10.1186/1477-7525-1-30>
16. Frone MR, Tidwell MO. The meaning and measurement of work fatigue: Development and evaluation of the Three-Dimensional Work Fatigue Inventory (3D-WFI). *J Occup Health Psychol*. 2015;20(3):273-288. <https://doi.org/10.1037/a0038700>
17. Obeid S, Abi Elias Hallit C, Haddad C, Hany Z, Hallit S. Validation of the Hamilton Depression Rating Scale (HDRS) and sociodemographic factors associated with Lebanese depressed patients. *Encephale*. 2018;44(5):397-402. <https://doi.org/10.1016/j.encep.2017.10.010>
18. Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry*. 1960;23:56-62. <https://doi.org/10.1136/jnnp.23.1.56>
19. Barbour B, Saadeh N, Salameh PR. Psychological distress in Lebanese young adults: constructing the screening tool 'BDS-22'. *Int J Cult Mental Health*. 2012;5(2):94-108. <https://doi.org/10.1080/17542863.2011.563043>
20. Pancorbo G, Laros JA. Validity evidence of the Social and Emotional Nationwide Assessment (SENNA) inventory. *Paidéia (Ribeirão Preto)*. 2017;27(68):339-347. <http://doi.org/10.1590/1982-43272768201712>
21. Reilly M, Bracco A, Ricci JF, Santoro J, Stevens T. The validity and accuracy of the Work Productivity and Activity Impairment questionnaire-irritable bowel syndrome version (WPAI: IBS). *Aliment Pharmacol Ther*. 2004;20(4):459-467. <https://doi.org/10.1111/j.1365-2036.2004.02091.x>
22. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*. 2000;25(24):3186-3191. <https://doi.org/10.1097/00007632-200012150-00014>
23. Beaton D, Bombardier C, Guillemin F, Ferraz MB. *Recommendations for the cross-cultural adaptation of health status measures*. New York: American Academy of Orthopaedic Surgeons. 2002.
24. Al-Bannay H, Jarus T, Jongbloed L, Yazigi M, Dean E. Culture as a variable in health research: perspectives and caveats. *Health Promot Int*. 2014;29(3):549-557. <https://doi.org/10.1093/heapro/dat002>
25. Antunes B, Daveson B, Ramsenthaler C, Benalia H, Ferreira P, Bausewein C, Higginson IJ. *The Palliative care Outcome Scale (POS) Manual for cross-cultural adaptation and psychometric validation*. London: Cicely Saunders Institute. 2012.

26. Weidmer B. Issues and guidelines for translation in cross-cultural research. In: Proceedings of the American Statistical Association, Section on Survey Research Methods. 49th, American Association for Public Opinion Research. Danvers, 1994.
27. Maneesriwongul W, Dixon JK. Instrument translation process: a methods review. *J Adv Nurs*. 2004;48(2):175-186. <https://doi.org/10.1111/j.1365-2648.2004.03185.x>
28. Nejari C, El Fakir S, Bendahhou K, El Rhazi K, Abda N, Zidouh A, Benider A, Errihani H, Bekkali R. Translation and validation of European organization for research and treatment of cancer quality of life Questionnaire-C30 into Moroccan version for cancer patients in Morocco. *BMC Res Notes*. 2014;7:228. <https://doi.org/10.1186/1756-0500-7-228>
29. Calgan Z, Aslan D, Yegenoglu S. Community pharmacists' burnout levels and related factors: an example from Turkey. *Int J Clin Pharm*. 2011;33(1):92-100. <https://doi.org/10.1007/s11096-010-9461-2>
30. World Health Organization. Active Ageing: A Policy Framework. Available at: http://whqlibdoc.who.int/hq/2002/who_nmh_nph_02.8.pdf (accessed Jul 4, 2019).
31. Hunger M, Thorand B, Schunk M, Doring A, Menn P, Peters A, Holle R. Multimorbidity and health-related quality of life in the older population: results from the German KORA-age study. *Health Qual Life Outcomes*. 2011;9:53. <https://doi.org/10.1186/1477-7525-9-53>
32. Parker L, Moran GM, Roberts LM, Calvert M, McCahon D. The burden of common chronic disease on health-related quality of life in an elderly community-dwelling population in the UK. *Fam Pract*. 2014;31(5):557-563. <https://doi.org/10.1093/fampra/cmu035>
33. Low G, Molzahn AE, Schopflocher D. Attitudes to aging mediate the relationship between older peoples' subjective health and quality of life in 20 countries. *Health Qual Life Outcomes*. 2013;11:146. <https://doi.org/10.1186/1477-7525-11-146>
34. Raggi A, Corso B, Minicuci N, Quintas R, Sattin D, De Torres L, et al. Determinants of Quality of Life in Ageing Populations: Results from a Cross-Sectional Study in Finland, Poland and Spain. *PLoS One*. 2016;11(7):e0159293. <https://doi.org/10.1371/journal.pone.0159293>
35. Chia EM, Wang JJ, Rochtchina E, Smith W, Cumming RR, Mitchell P. Impact of bilateral visual impairment on health-related quality of life: the Blue Mountains Eye Study. *Invest Ophthalmol Vis Sci*. 2004;45(1):71-76. <https://doi.org/10.1167/iovs.03-0661>
36. Lopez D, McCaul KA, Hankey GJ, Norman PE, Almeida OP, Dobson AJ, Byles JE, Yeap BB, Flicker L. Falls, injuries from falls, health related quality of life and mortality in older adults with vision and hearing impairment--is there a gender difference? *Maturitas*. 2011;69(4):359-364. <https://doi.org/10.1016/j.maturitas.2011.05.006>
37. Bookwala J. Marital quality as a moderator of the effects of poor vision on quality of life among older adults. *J Gerontol B Psychol Sci Soc Sci*. 2011;66(5):605-616. <https://doi.org/10.1093/geronb/gbr091>
38. Netuveli G, Wiggins RD, Hildon Z, Montgomery SM, Blane D. Quality of life at older ages: evidence from the English longitudinal study of aging (wave 1). *J Epidemiol Community Health*. 2006;60(4):357-363. <https://doi.org/10.1136/jech.2005.040071>
39. Han KT, Park EC, Kim JH, Kim SJ, Park S. Is marital status associated with quality of life? *Health Qual Life Outcomes*. 2014;12:109. <https://doi.org/10.1186/s12955-014-0109-0>
40. Georgellis Y, Tsitsianis N, Yin YP. Personal values as mitigating factors in the link between income and life satisfaction: Evidence from the European Social Survey. *Soc Indicators Res*. 2009;91(3):329-344. <https://doi.org/10.1007/s11205-008-9344-2>
41. Mielck A, Vogelmann M, Leidl R. Health-related quality of life and socioeconomic status: inequalities among adults with a chronic disease. *Health Qual Life Outcomes*. 2014;12:58. <https://doi.org/10.1186/1477-7525-12-58>
42. Skilled for life? Key findings from the Survey of Adult Skills. Paris, France: Organisation for Economic Co-Operation and Development (OECD). Available at: http://skills.oecd.org/documents/SkillsOutlook_2013_KeyFindings.pdf (accessed Jul 4, 2019).
43. Mayberry KM, Miller LN. Incidence of Self-Reported Depression Among Pharmacy Residents in Tennessee. *Am J Pharm Educ*. 2017;81(8):5960. <https://doi.org/10.5688/ajpe5960>
44. Blekemolen J, Hulshof C, Sluiter J. The prevalence of work-related stress complaints among healthcare workers for the disabled participating in a workers' health surveillance program. *Occup Med Health Aff*. 2016;4(256):2.
45. Gong Y, Han T, Yin X, Yang G, Zhuang R, Chen Y, Lu Z. Prevalence of depressive symptoms and work-related risk factors among nurses in public hospitals in southern China: a cross-sectional study. *Sci Rep*. 2014;4:7109. <https://doi.org/10.1038/srep07109>
46. Craiovan PM. Burnout, depression and quality of life among the Romanian employees working in non-governmental organizations. *Procedia-Soc Behav Sci*. 2015;187:234-238. <https://doi.org/10.1016/j.sbspro.2015.03.044>
47. Swider BW, Zimmerman RD. Born to burnout: A meta-analytic path model of personality, job burnout, and work outcomes. *J Vocation Behav*. 2010;76(3):487-506. <https://doi.org/10.1016/j.jvb.2010.01.003>
48. Verlander LA, Benedict JO, Hanson DP. Stress and sleep patterns of college students. *Percept Mot Skills*. 1999;88(3 Pt 1):893-898. <https://doi.org/10.2466/pms.1999.88.3.893>
49. Léger D, Guilleminault C, Bader G, Lévy E, Paillard M. Medical and socio-professional impact of insomnia. *Sleep*. 2002;25(6):625-629.
50. Lapane K, Hughes C. Job satisfaction and stress among pharmacists in the long-term care sector. *Consult Pharm*. 2006;21(4):287-292. <https://doi.org/10.4140/TCP.n.2006.287>
51. Marshall LL, Allison A, Nykamp D, Lanke S. Perceived stress and quality of life among doctor of pharmacy students. *Am J Pharm Educ*. 2008;72(6):137. <https://doi.org/10.5688/aj7206137>
52. Yong FR, Garcia-Cardenas V, Williams KA, Benrimoj SI. Factors affecting community pharmacist work: A scoping review and thematic synthesis using role theory. *Res Social Adm Pharm*. 2019 [ahead of print]. <https://doi.org/10.1016/j.sapharm.2019.05.001>

53. Gallagher CT, Mehta AN, Selvan R, Mirza IB, Radia P, Bharadia NS, Hitch G. Perceived stress levels among undergraduate pharmacy students in the UK. *Curr Pharm Teach Learn*. 2014;6(3):437-441. <https://doi.org/10.1016/j.cptl.2014.02.004>
54. Balayssac D, Pereira B, Virot J, Collin A, Alapini D, Cuny D, Gagnaire JM, Authier N, Vennat B. Burnout, associated comorbidities and coping strategies in French community pharmacies-BOP study: A nationwide cross-sectional study. *PLoS One*. 2017;12(8):e0182956. <https://doi.org/10.1371/journal.pone.0182956>
55. Kumar A, Bhat PS, Ryali S. Study of quality of life among health workers and psychosocial factors influencing it. *Ind Psychiatry J*. 2018;27(1):96-102. https://doi.org/10.4103/ipj.ipj_41_18
56. La Torre G, Sestili C, Mannocci A, Sinopoli A, De Paolis M, De Francesco S, Rapaccini L, Barone M, Iodice V, Lojodice B, Sernia S, De Sio S, Del Cimmuto A, De Giusti M. Association between Work Related Stress and Health Related Quality of Life: The Impact of Socio-Demographic Variables. A Cross Sectional Study in a Region of Central Italy. *Int J Environ Res Public Health*. 2018;15(1):159. <https://doi.org/10.3390/ijerph15010159>
57. Phipps DL, Ashcroft DM. An investigation of occupational subgroups with respect to patient safety culture. *Saf Sci*. 2012;50(5):1290-1298. <https://doi.org/10.1016/j.ssci.2011.12.016>
58. Hermansyah A, Sainsbury E, Krass I. Investigating influences on current community pharmacy practice at micro, meso, and macro levels. *Res Social Adm Pharm*. 2017;13(4):727-737. <https://doi.org/10.1016/j.sapharm.2016.06.007>
59. Gidman W. Increasing community pharmacy workloads in England: causes and consequences. *Int J Clin Pharm*. 2011;33(3):512-520. <https://doi.org/10.1007/s11096-011-9498-x>
60. Harvey J, Avery AJ, Ashcroft D, Boyd M, Phipps DL, Barber N. Exploring safety systems for dispensing in community pharmacies: focusing on how staff relate to organizational components. *Res Social Adm Pharm*. 2015;11(2):216-227. <https://doi.org/10.1016/j.sapharm.2014.06.005>
61. Potter P, Deshields T, Divanbeigi J, Berger J, Cipriano D, Norris L, Olsen S. Compassion fatigue and burnout: prevalence among oncology nurses. *Clin J Oncol Nurs*. 2010;14(5):E56-E62. <https://doi.org/10.1188/10.CJON.E56-E62>
62. AlFahhad N. Prevalence and factors associated with depression among health care workers in National Guard Hospital in Riyadh, KSA. *Int J Med Develop Countries*. 2018;2(3):92-96. <http://doi.org/10.24911/IJMDC.51-1526306040>
63. Pawlina MMC, Schnorr GP. Prevalence of stress in health workers in the context hospital. *Psychol Behav Med Open Access J*. 2018;0(0):15-21.
64. Silva NC, Ferreira JVB, Albuquerque TC, Rodrigues MR, Medeiros MF. [Mental health disorders will likely related to working life of nurses: a literature review]. *Revista Eletrônica Estácio Saúde* 2016; 5(2):107-122.
65. Antunes M. Brazilian scientific production on psychic suffering and depression of the nursing team in the emergency. . *Revista Enfermagem Contemporânea*. 2017;6(1):68-72.
66. Kho BP, Hassali MA, Lim CJ, Saleem F. Challenges in the management of community pharmacies in Malaysia. *Pharm Pract (Granada)*. 2017 Apr-Jun;15(2):933. <https://doi.org/10.18549/PharmPract.2017.02.933>
67. Carvajal MJ, Popovici I. Gender, age, and pharmacists' job satisfaction. *Pharm Pract (Granada)*. 2018;16(4):1396. <https://doi.org/10.18549/PharmPract.2018.04.1396>