



Health-related Quality of Life among Community Pharmacists

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Authors' contributions

This work was carried out in collaboration among all authors. Authors MSI and MZI designed the study, performed the initial statistical analyses and wrote the protocol. Authors FIAS and MSI wrote the first draft of the manuscript. Authors NJA and MZI managed refined analyses. Authors FIAS and MSI revised the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: The role of community pharmacists (CPs) has kept on changing. Due to the evolving role of CPs, it is important to know its impact on the health-related quality of life (HRQoL) among CPs. Besides, the literature on the HRQoL of CPs is not being enriched, there is an urge to carry out a study to evaluate the HRQoL among CPs. This study aimed to examine the association between the socio-demographic factors and the HR QoL among CPs.

Methodology: A set of questions related to the HRQoL has been adopted from a pre-validated questionnaire, the Duke Health Profile and contextualized it to measure study outcomes. The target population in this study was the registered CPs that were practicing. The site of the study included all the chain and independent pharmacies. Statistical Package for Social Science (SPSS) version 22.0 was used to analyze the data and the significance level was set at $p \leq 0.05$. Various domains of the Duke Health Profile (DHP) were calculated using the provided formula.

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Results: A total of 172 respondents were included in this study. Several HRQoL domains were significantly associated with socio-demographic factors. The univariate analysis illustrated that mental and general health state had significant associations with age, practice setting was significantly associated with the mental health state, the salary was significantly associated with self-esteem and mental health was significantly associated with length of service and practice setting. Dysfunction dimensions of anxiety, anxiety-depression, and pain were significantly associated with gender.

Conclusion: Gender, age, length of service, salary and practice setting were the risk factors for HRQoL among CPs.

Keywords: HRQoL; DHP; community pharmacists; pharmacology; pharmacotherapy; CPs.

1. INTRODUCTION

These days, the role of community pharmacists (CPs) has kept on changing, developing and evolving worldwide. Unlike in the past where the role of a CP was just to dispense medicinal drugs, now CPs have become increasingly important and they are the health-care professionals that are most accessible to the public. However, current CPs will not only face great challenges in their profession, but they also possess good business acumen on how to run a successful pharmacy business. Due to the evolving role of CPs, it is important to know its impact on their HRQoL [1-3].

According to the World Health Organization (WHO), health is defined as the absence of diseases associated with one's physical, social and mental well-being [4]. However, the Centre for Disease Control and Prevention (CDC) defined quality of life as a multidimensional concept which evaluates the positive and negative aspects of life [5,6]. The HRQoL is concerned with the quality of life in the context of health. It can also be further defined as an integrative measure of independence level, social relationship, and the surrounding environment, physical and psychological well-being. The conceptualization of HRQoL is both objective and subjective, so its measurement is dependent on the perspective of the study [4-6].

In studies of social sciences, HRQoL is not a new term and is frequently used in healthcare systems [7]. This is because many studies on the HRQoL have been conducted and discussed by many researchers in the past. For example, there was a study on the HRQoL of employees in a Greek hospital to assess how healthy are their health workers [7]. However, in Asia, little was known about the HRQoL among employees with documented knowledge. Thus, this study was designed to investigate HRQoL among CPs.

Most reported studies [8-12] focused on the job and career satisfaction of CPs, and also on the quality of life of patients with certain diseases. Never the less, the HRQoL of CPs has not been reported so far. Since the literature on the HRQoL among CPs is not much evident, there was an urge to carry out a study to evaluate the HRQoL among CPs.

In another study of Tountas et al. HRQoL of employees is significantly associated with their age where older employees had a better health [7]. Besides, in another study of Flap et al. it showed that the HRQoL in term of social functioning aspect can be improved by the promotion of employees' job satisfaction in the aspects of income, security and career opportunities [13]. Meanwhile, another study by Janahiraman et al. reported that low job satisfaction can have a negative impact on the employees' HRQoL [8]. Carlier et al. also found that salary, working conditions, and job status can affect the health of employees [14]. Other than that, employment conditions such as the psychosocial environment of the work and working flexibility do affect the health outcomes of the employees [15,16]. This study attempted to describe the HRQoL among CPs using the DHP. The study also aimed to examine the relationship between HRQoL and socio-demographic factors among practicing CPs.

2. METHODOLOGY

A set of questions related to the HRQoL was adopted from a pre-validated DHP questionnaire and this set has been contextualized through the face and content validity. All necessary changes and modifications had been incorporated to cater to our survey. The survey questions were phrased to be simple and direct so respondents can answer easily without the aid of an interviewer. The internal consistency of the questionnaire was tested and it was 0.877.

The target population in this study was the registered CPs in one city of Pakistan that were practicing either in the chain or independent pharmacies. In this study, the researchers introduced themselves to the CPs, informed them that participation was voluntary and that their privacy and confidentiality would be ensured. Formal written consent was taken from each participant before the start of the study and the total study duration was 6 months. Participants' identity was kept strictly confidential. When necessary, researchers clarified items and terms but took care to avoid influencing the content of the answers in any way. SPSS version 22.0 was used to analyze the data and the significance level was set at $p \leq 0.05$. The Chi-square test of association was used to determine the relationship between the studied variables.

3. RESULTS

The questions were coded and interpreted according to instructions in the DUKE manual. The score for each dimension was the sum of the scores for the items, standardized from 0 to

100. For the six health functions scales (physical health, mental health, social health, general health, perceived health, and self-esteem), high scores indicate better health whereas, for the five dysfunction scales (anxiety, depression, anxiety-depression, pain, and disability), high scores indicate greater dysfunction [17].

Selected demographic characteristics of respondents were shown in Table 1. Most of the respondents who participated in this survey were males, which constituted 65.1%. The majority of the respondents were Urdu-speakers (84.9%) and below the age of 34-years-old (65.7%). About 82.6% of the CPs involved in this study held undergraduate degrees (Bachelor of Pharmacy or Doctor of Pharmacy) while only 17.4% held postgraduate degrees (Master's degree or Doctorate Degree). The distribution between the setting of pharmacists working in, either chain (57%) or independent pharmacies (43%) was almost equal. Around 55.2% of CPs held managerial positions while 44.8% of CPs were junior pharmacists. However, more than half of the respondents had held

Table 1. Demographic profile of the respondents

Demographic profile	Community pharmacists	
	Frequency (N)	Percentage (%)
Gender		
Male	112	65.1
Female	60	34.9
Age		
< 34-year-old	113	65.7
≥ 34-year-old	59	34.3
Mother tongue		
Urdu	146	84.9
Others	26	15.1
Highest academic qualification		
Undergraduate degree	142	82.6
Postgraduate degree	30	17.4
Sector of work		
Chain Pharmacy	98	57.0
Independent Pharmacy	74	43.0
Length of service		
< 3 years	108	62.8
≥ 3 years	64	37.2
Position Held		
Managerial	95	55.2
Shift Pharmacists	77	44.8
Average weekly working hours		
< 50 hours per week	139	80.8
≥ 50 hours per week	33	19.2
Monthly salary		
< USD500	22	12.8
≥ USD500	150	87.2

their current positions for less than 3 years. 80.8% of respondents worked less than 50-hours per week and 87.2% of respondents enjoyed a monthly income of more than USD500.

The association between HRQoL dimensions and some of the socio-demographic factors such as gender, age, dependent, position, length of service, salary, practice settings and working hours are shown in Tables 2, 3, and 4. The univariate analysis illustrated that mental and general health had significant associations with age. Apparently, respondents in the less than 34-age-group (86.7%) had better mental and general health than respondents older than 34 years of age (74.6%). Mental health had also shown a significant association with length of service and practice setting. Respondents who had worked in their current settings for more than 3 years (25%) had shown poorer mental health compared to those working for less than 3 years (13%). On the other hand, respondents that worked in chain pharmacies (87.8%) had better mental health than those working in independent pharmacies (75.0%). The univariate analysis also demonstrated significant associations between salary and self-esteem. CPs with monthly salaries greater than USD500 had better self-esteem than those earning less than USD500. Other than that, the univariate analysis also demonstrated that three HRQoL dimensions such as anxiety, anxiety depression, and pain had a significant association with gender. Interestingly, the majority of male respondents were very unhealthy in these three dimensions compared to the female respondents.

4. DISCUSSION

The DHP questionnaire has been used for many years to describe the HRQoL among patients but has not been used for general populations. This was the first study presenting norms for the DHP for CPs. As DHP is an extensively detailed research tool comprising 17 domains and the apprehension was that putting the results of the entire domains will make the paper too lengthy so we only presented the major domains of this tool to give the reader a comprehensive but significant data obtained from the study participants.

In this study, male respondents experience more anxiety, anxiety-depression, and pain than female respondents. Our study opposed the study of Jiang et al. [18] where women

participants especially those in the reproductive age group were significantly more likely to had a poorer HRQoL than the male participants and experienced more mental and physical distress, anxiety and depression. Other studies had shown that males and females had different experiences at work. Females involved in jobs that had low demands and lesser control had been linked to adverse health outcomes. Also, women who were exposed to jobs with greater gender inequalities were associated with poorer health status [7,15,18-20]. Additionally, in a predominantly male societal structure, females had poorer HRQoL than the males due to their low social positions [7].

According to a study by Tountas et al. [7] HRQoL of employees was significantly associated with age. Younger employees who were climbing their career ladders and had not yet reached their peak might have a different HRQoL compared to the older employees [19]. The study has shown that the oldest group sample (40-50 years old) had a better HRQoL than the younger participants (20-39 years old [7]. Interestingly, our study results contradict with the study of Tountas et al. Our study had shown that respondents in the less than 34 age group had better mental and general health than the older respondents. Moreover, respondents with a working experience of more than 3 years in their current setting had shown poorer mental health than those respondents that worked for less than 3 years.

In our study, results reinforced previous findings that HRQoL varied according to salaries. [13,14,16,18,19,21-24] Respondents with salaries greater than USD500 had better self-esteem than those respondents with salaries less than USD500. In the study of Flap et al. [13] it showed that the HRQoL in term of social functioning aspect can be improved by the promotion of employees' job satisfaction in the aspect income, security and career opportunities. In addition, Carlier et al. [14] found that being disadvantaged in terms of salary, working conditions and job satisfaction can also affect the health of employees.

Employment conditions such as the psychosocial environment of work and working flexibility can also affect the health outcomes of employees. [16,19,23] In general, CPs' HRQoL also seems to be affected by their practice setting. In our study, it is showed that chain store CPs had better mental health than those working in

Table 2. Physical, mental and social health correlations with HRQoL

Socio-demographic	Physical health				Mental health				Social health			
	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI
Gender												
Female	51 (85.0)	9 (15.0)	0.128	0.826-4.322	52 (86.7)	8 (13.3)	0.299	0.660-3.824	49 (81.7)	11 (18.3)	0.947	0.458-2.306
Male	84 (75.0)	28 (25.0)			90 (80.4)	22 (19.6)			91 (81.2)	21 (18.8)		
Age												
<34 year-old	93 (82.3)	20 (17.7)	0.092	0.253-1.116	98 (86.7)	15 (13.3)	0.046*	0.202-0.998	96 (85.0)	17 (15.0)	0.097	0.238-1.134
≥34year-old	42 (71.2)	17 (28.8)			44 (74.6)	15 (25.4)			44 (74.6)	15 (25.4)		
Dependent												
No children	76 (80.0)	19 (20.0)	0.592	0.395-1.698	76 (80.0)	19 (20.0)	0.326	0.666-3.380	80 (84.2)	15 (15.8)	0.292	0.306-1.430
Have children	59 (76.6)	18 (23.4)			66 (85.7)	11 (14.3)			60 (77.9)	17 (22.1)		
Position												
Managerial	81 (81.0)	19 (19.0)	0.345	0.339-1.462	80 (80.0)	20 (20.0)	0.297	0.677-3.549	79 (79.0)	21 (21.0)	0.341	0.661-3.288
Shift Pharmacist	54 (75.0)	18 (25.0)			62 (86.1)	10 (13.9)			61 (84.7)	11 (15.3)		
Length of service												
<3 years	88 (81.5)	20 (18.5)	0.215	0.301-1.313	94 (87.0)	14 (13.0)	0.044*	0.201-0.992	90 (83.3)	18 (16.7)	0.396	0.328-1.557
≥ 3 years	47 (73.4)	17 (26.6)			48 (75.0)	16 (25.0)			50 (78.1)	14 (21.9)		
Salary												
<USD 500	15 (68.2)	7 (31.8)	0.208	0.699-4.985	16 (72.7)	6 (27.3)	0.193	0.699-5.541	15 (68.2)	7 (31.8)	0.088	0.863-6.309
≥ USD 500	120 (80.0)	20 (20.0)			126 (84.0)	24 (16.9)			125 (83.3)	25 (16.7)		
Practice setting												
Chain	76 (77.6)	22 (22.4)	0.731	0.544-2.384	86 (87.8)	12 (12.2)	0.039*	0.194-0.970	79 (80.6)	19 (19.4)	0.761	0.517-2.463
Independent	59 (79.7)	15 (20.3)			56 (75.7)	18 (24.3)			61 (82.4)	13 (17.6)		
Working hours												
< 50 hours	109 (78.4)	30 (21.6)	0.963	0.404-2.584	118 (84.9)	21 (15.1)	0.098	0.194-1.162	114 (82.0)	25 (18.0)	0.669	0.318-2.086
≥ 50 hours	26 (78.8)	7 (21.2)			24 (72.7)	9 (27.3)			26 (78.8)	7 (21.2)		

*Here, p-value of ≤0.05 was considered as significant

Table 3. Anxiety, depression and anxiety-depression correlations with HRQoL

Socio-demographic	Anxiety				Depression				Anxiety-depression			
	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI
Gender												
Female	47 (78.3)	13 (21.7)	0.044*	0.232-0.989	41 (68.3)	19 (31.7)	0.122	0.308-1.152	42 (70.0)	18 (30.0)	0.048*	0.263-0.997
Male	71 (63.4)	41 (36.6)			63 (56.2)	49 (43.8)			61 (54.5)	51 (45.5)		
Age												
<34 year-old	81 (71.7)	32 (28.3)	0.229	0.772-2.935	71 (62.8)	42 (37.2)	0.380	0.702-2.526	73 (64.6)	40 (35.4)	0.081	0.931-3.345
≥34year-old	37 (62.7)	22 (27.3)			33 (55.9)	26 (44.1)			30 (50.8)	29 (49.2)		
Dependent												
No children	63 (66.3)	32 (33.7)	0.472	0.410-1.512	59 (62.1)	36 (37.9)	0.625	0.631-2.154	57 (60.0)	38 (40.0)	0.972	0.548-1.866
Have children	55 (71.4)	22 (28.6)			45 (58.4)	32 (41.6)			46 (59.7)	31 (40.3)		
Position												
Managerial	64 (64.0)	36 (36.0)	0.125	0.303-1.160	58 (58.0)	42 (42.0)	0.436	0.418-1.456	58 (58.0)	42 (42.0)	0.500	0.445-1.541
Shift Pharmacist	54 (75.0)	18 (25.0)			48 (63.9)	26 (36.1)			45 (62.5)	27 (37.5)		
Length of service												
<3 years	77 (71.3)	31 (28.7)	0.323	0.721-2.694	69 (63.9)	39 (36.1)	0.233	0.781-2.751	69 (63.9)	39 (36.1)	0.164	0.833-2.927
≥ 3 years	41 (64.1)	23 (35.9)			35 (54.7)	29 (45.3)			34 (53.1)	30 (46.9)		
Salary												
< USD 500	16 (72.7)	6 (27.3)	0.655	0.462-3.408	14 (63.6)	8 (36.4)	0.745	0.461-0.754	13 (59.1)	9 (40.9)	0.935	0.387-2.394
≥ USD 500	102 (68.0)	48 (32.0)			90 (60.0)	60 (40.0)			90 (60.0)	60 (40.0)		
Practice setting												
Chain	72 (73.5)	26 (26.5)	0.114	0.880-3.227	62 (63.3)	36 (36.7)	0.387	0.708-2.431	64 (65.3)	34 (34.7)	0.095	0.911-3.132
Independent	46 (62.2)	28 (37.8)			42 (56.8)	32 (43.2)			39 (52.7)	35 (47.3)		
Working hours												
< 50 hours	99 (71.2)	40 (28.8)	0.129	0.834-3.986	87 (62.6)	52 (37.4)	0.242	0.733-3.381	86 (61.9)	53 (38.1)	0.275	0.712-3.278
≥ 50 hours	19 (57.6)	14 (42.4)			17 (51.5)	16 (48.5)			17 (51.5)	16 (48.5)		

Table 4. Pain and disability correlations with HRQoL

Socio-demographic	Pain				Disability			
	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI	Healthy (N1=) N1(%)	Unhealthy (N2=) N2(%)	p Value	95% CI
Gender								
Female	36 (60.0)	24 (40.0)	0.042*	0.274-0.981	57 (95.0)	3 (5.0)	0.270	0.129-1.804
Male	49 (43.8)	63 (56.2)			101 (90.2)	11 (9.8)		
Age								
<34 year-old	53 (46.9)	60 (53.1)	0.361	0.396-1.402	103 (91.2)	10 (8.8)	0.637	0.225-2.499
≥34 year-old	32 (54.2)	27 (45.8)			55 (93.2)	4 (6.8)		
Dependent								
No children	45 (47.4)	50 (52.6)	0.550	0.456-1.520	85 (89.5)	10 (10.5)	0.204	0.140-1.548
Have children	40 (51.9)	37 (48.1)			73 (94.8)	4 (5.2)		
Position								
Managerial	54 (54.0)	46 (46.0)	0.157	0.843	94 (94.0)	6 (6.0)	0.227	2.858
Shift Pharmacist	31 (43.1)	41 (56.9)			64 (88.9)	8 (11.1)		
Length of service								
<3 years	54 (50.0)	54 (50.0)	0.843	0.573-1.976	99 (91.7)	9 (8.3)	0.904	0.298-2.914
≥ 3 years	31 (48.4)	33 (51.6)			59 (92.2)	5 (7.8)		
Salary								
< USD 500	10 (45.5)	12 (54.5)	0.690	0.339-2.046	18 (81.8)	4 (18.2)	0.065	0.091-1.132
≥ USD 500	75 (50.0)	75 (50.0)			140 (93.3)	10 (6.7)		
Practice setting								
Chain	47 (48.0)	51 (52.0)	0.660	0.477-1.597	87 (88.8)	11 (11.2)	0.089	0.090-1.244
Independent	38 (51.4)	36 (48.6)			71 (95.9)	3 (4.1)		
Working hours								
< 50 hours	64 (46.0)	75 (54.0)	0.069	0.223-1.068	128 (92.1)	11 (7.9)	0.824	0.306-4.431
≥ 50 hours	21 (63.6)	12 (36.4)			30 (90.9)	3 (9.1)		

independent pharmacies. This finding is similar to the study of Shen S. et al. [25] Though being self-employed can have advantages like freedom of decision, accountability only to oneself and a potential for greater financial rewards, the advantages of self-employment do not come without a few sacrifices. In many cases, work nature (i.e. evening or late night shifts) and its demands (to be active and present) subjugated the self-employed businesses. A high rate of failure among small businesses also put the self-employed in a state of constant anxiety and struggle requiring high investment in terms of emotional and physical resources. Thus, the place of employment of respondents is, therefore, a factor that influenced the health outcome of employees.

CPs are responsible for doing the vast majority of the patients' oriented tasks as being active members of the healthcare team so they must have updated and comprehensive knowledge regarding drug therapies and disease management which they mostly study during their professional degrees in the subjects of pharmacology and pharmacotherapy so they can better entertain their patients [26]. They should be very well aware of the epidemiology of the major disease and their control, drug utilization patterns, latest drug laws, and their amendments, availability of various vaccines for prevention of different diseases and how to take preventive measures in stop spreading a disease, family planning and related national health policies, national formulary, and availability of the different dosage forms, side effects of the drugs, adverse drug events, potential drug interactions, drug-related problems, general and socio-economic aspects of the drugs available in the market, patients' general education promotion, patients' counseling about their medications i.e. dose adjustments, device counseling, storage of the medicines, drug information provision and its resources, controlling of drug abuse and misuse, and comprehensive knowledge about complementary and alternative medicines [27-29].

They should also be familiar with major drug classes used in most prevalent disorders of human body systems like cardiovascular system, renal system, gastrointestinal tract, central nervous system, renal system, musculoskeletal system, endocrine disorders, respiratory disorders, cancer, etc. They should also be very much familiar with the major classed of the drugs used to treat the major disease of these human

body dysfunctions like antihypertensives, antiarrhythmics, anti-tuberculosis, anti-asthmatics, diuretics, antidiabetics, NSAIDs and anti-cancers [30-32].

5. CONCLUSION

In summary, our findings demonstrate that gender, age, length of service, salary and practice setting were the risk factors of HRQoL in CPs. The findings in this study can help psychologists, physicians, managerial executives, and company policymakers to pinpoint the problem of their employees' HRQoL. They should build effective management strategies concerning this problem, and thus improving employees' health and well-being. Finally, it is expected that this study will indirectly help the parties concerned to understand the importance of the HRQoL among the CPs and contributes to the betterment of their overall quality of life.

6. LIMITATIONS

The overall population size in this study was small and only conducted among the CPs in one city which might cause some measurement errors. Furthermore, the study had limited cross-sectional data. Therefore, the results may not accurately reflect the HRQoL among CPs in the entire country. Further research should involve a greater sample size that can be used to generalize the impact of risk factors and its relationships to HRQoL of all CPs.

CONSENT

Formal written consent was taken from each participant before the start of the study and the total study duration was 6 months. Participants' identity was kept strictly confidential.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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