

Quality of life and student life satisfaction among undergraduate pharmacy students at a public university in Central Thailand

Worrakanya Narakornwit, Tipaporn Pongmesa*, Chalermpon Srisuwan,
Nattawut Srimai, Peangkwan Pinphet and Sirirat Sakdikul

*Faculty of Pharmacy, Silpakorn University,
Nakhon Pathom 73000, Thailand*

**Corresponding author: pongmesa_t@su.ac.th*

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ABSTRACT

This cross-sectional study aimed to assess quality of life (QoL) and student life satisfaction among 320 undergraduate pharmacy students at a public university in Central Thailand, and to compare the QoL of students with different characteristics. The participants were recruited by systematic stratified sampling in March 2018. Their mean age was 21.6 years. Most of them were female (68.4%) and having a Grade Point Average of 3.00 or higher (66.9%). From the Thai version of the World Health Organization Quality of life-Brief version (WHOQOL-BREF-THAI), both the total score and each of the four domain scores were at a moderate level, with the median for the total QoL score of 86.0 out of a maximum possible score of 130. For the student life satisfaction, most participants rated it at either a moderate (43.4%) or high (43.8%) level. Statistically significant difference in the total QoL score was shown among participants with different numbers of siblings, year of study, type of accommodation during study, and level of overall student life satisfaction. This study contributed to a better understanding of the pharmacy students' QoL and life satisfaction, and also suggested room for improvement of both aspects.

Keywords: quality of life; student life satisfaction; pharmacy student; WHOQOL-BREF-THAI

1. INTRODUCTION

Universities are generally responsible for equipping individuals with knowledge, professional skills, life skills and desired characteristics in order to ensure their graduates' abilities and competencies for their future careers (Gow and McDonald, 2006; Hernández-March et al., 2009; West, 2000). Additionally, enhancing the students' quality of life (QoL) is often placed as a goal of development for all study settings (Audin et al., 2003; Vaez et al., 2010).

QoL is defined by the World Health Organization as "individuals' perception of their position in life in the

context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (The WHOQOL Group, 1995). It is a multi-dimensional concept that encompasses at least three domains of health, i.e., physical, psychological, and social functioning (Fayers and Machin 2007; Shumaker and Naughton, 1995). QoL is well regarded as an important aspect of one's life, not only for individuals with a disease but also the healthy, regardless of their age (Fayers and Machin, 2007). In addition to their QoL, student life satisfaction is well regarded as a determinant of the quality of the learning

experience, and a key to the successful implementation of a study program (Khosravi et al., 2013). It is therefore essential to incorporate both aspects into the design of any curriculum.

The current undergraduate pharmacy curriculum in Thailand (Doctor of Pharmacy program, PharmD) is a six-year program that incorporates not only lecture- and laboratory-based learning but also many rounds of professional clerkships. In addition to fulfilling all the academic requirements for graduation, undergraduate pharmacy students are required to pass the national pharmacy license examinations in order to qualify as licensed pharmacists. Studying in pharmacy can therefore be considered to be stressful or even overwhelming for some students, and this may potentially affect the students' QoL and life satisfaction (Hirsch et al., 2009; Marshall et al., 2008; Opoku-Acheampong et al., 2017). The incorporation of strategies to enhance QoL and student life satisfaction into the faculty planning should contribute to a more practical and effective plan of action, however little is known about the QoL and student life satisfaction among pharmacy undergraduate students in Thailand. Although many studies have been conducted to assess the QoL among university students in many countries (Klemenc-Ketis et al., 2011; Vaez et al., 2010), only a small number of them concentrated on pharmacy students, and most studies were from the US (Hirsch et al., 2009; Klemenc-Ketis et al., 2011; Marshall et al., 2008; Opoku-Acheampong et al., 2017; Payakachat et al., 2014; Unni et al., 2015). Those studies generally revealed significantly higher stress and lower QoL scores among the sampled students compared to the US norms. For example, Marshall et al. (2008) assessed the QoL and perceived stress among 109 third-year PharmD students in the US using the Perceived Stress Scale (PSS) and the 12-Item Short Form Health Survey (SF-12). The study demonstrated significantly higher levels of stress and lower mental QoL, yet higher physical QoL, among the participants

compared to the general US population aged 20-34 years. Perceived stress was also found to be inversely correlated with the mental QoL (Marshall et al., 2008).

To our knowledge, only two studies on the QoL of Thai undergraduate pharmacy students were available (Cheerat, 2011; Pokawannawit et al., 2013). Furthermore, one of them was performed on students from six faculties (Cheerat, 2011), with less than 10% of the participants being pharmacy students. Likewise, with regard to pharmacy students' life satisfaction, we found only one published study on the student satisfaction with the environment of the faculty (Maneewong, 2012). Due to the acknowledgement that culture potentially plays an important role in shaping individuals' perception of their QoL, generalization of the findings from other countries to our students could be limited. This study therefore aimed to assess the QoL and student life satisfaction of undergraduate pharmacy students at a public university in Central Thailand, and also to compare QoL scores of students with different characteristics (i.e., gender, age range, number of siblings, disease [with/without], study year, GPA range, and type of accommodation during study) and levels of student life satisfaction. The results from this study may extend our understanding of the students' various aspects of life and serve as the basis for creating or improving student care plans and activities in the future, at least in the context of the study faculty.

2. MATERIALS AND METHODS

2.1 Study design and participants

This cross-sectional survey was conducted among 320 undergraduate pharmacy students at a public university in Central Thailand in March 2018 (after midterm examination of semester 2/2017). The sample size was calculated from the Taro Yamane's formula (Yamane, 1973), with an additional 10% for potential incomplete data cases. The participants were selected from a total of 1,007 students by stratified

systematic sampling according to year of study and gender, and also field of study (for the fifth-and six-year students) using the university's computer database. They were included in the study if they had normal student status (not 'hold status') and agreed to provide their written informed consent. The participants were asked to self-complete the study questionnaires at their convenience and return them to the investigators before the end of March 2018. This study obtained ethical approval from the Ethics Committee for Human Research of the study institution before the study initiation.

2.2 Study instruments

The three questionnaires used in this study were a characteristics questionnaire, the Thai version of the World Health Organization Quality of life-Brief version (WHOQOL-BREF-THAI), and a student life satisfaction questionnaire. The WHOQOL-BREF is a generic QoL questionnaire developed by the World Health Organization (WHO) as an abbreviated version of the WHOQOL-100 (The WHOQOL Group, 1998). The WHOQOL-BREF-THAI was developed by Mahatnirunkul et al. (1998) and validated for its content validity and reliability (Cronbach's alpha coefficient of 0.84). In this present study, the Cronbach's alpha coefficient for the WHOQOL-BREF-THAI was 0.88. The questionnaire comprises altogether 26 items which are categorized into four domains, i.e., physical (7 items), psychological (6 items), social relationships (3 items), and environment (8 items), and two independent items (overall QoL and satisfaction with own health). The respondents were asked to self-rate their feelings during the past two weeks on a 5-point Likert scale which ranges from "not at all" (1 point for positively phrased items and 5 points for negatively phrased items) to "an extreme amount" (5 points for positively phrased items and 1 point for negatively phrased items). The total QoL score range is therefore 26 to 130, which can be further

categorized into three levels of QoL: poor (26-60 points), moderate (61-95 points), and good (96-130). The scores for each domain also can be calculated and categorized into these three levels (Mahatnirunkul et al., 1998). Approval for use of the WHOQOL-BREF-THAI in this study was granted by Suan Prung Psychiatric Hospital.

The other two questionnaires were developed by the research team and underwent content validation and pilot testing for comprehension and acceptability. The student satisfaction questionnaire included one independent item (overall satisfaction with student life at the faculty) and 17 items that were categorized into three domains, i.e., curriculum, learning, and teaching (7 items); social and environmental (7 items); and general (3 items). The respondents were asked about their satisfaction with each aspect during the past month and rated at 5 levels: lowest, low, moderate, high, and highest. The respondents were also allowed to provide additional suggestions at the end of the questionnaire. In this study, the Cronbach's alpha coefficient for the student satisfaction questionnaire was 0.83.

2.3 Statistical analyses

Data were analyzed using PSPP software version 1.0.1 (GNU Project, Boston, MA), with a significance level of 0.05 for all analyses. Descriptive statistics were used to describe the students' characteristics and their QoL scores, with the results shown as n (%), mean (standard deviation, SD) or median (interquartile range, IQR) as appropriate. Comparisons of the QoL scores of the students with different characteristics (gender, age range, number of siblings, disease [with/without], study year, GPA range, and type of accommodation during study) and levels of student life satisfaction were performed either with the Mann-Whitney U test or Kruskal-Wallis test. The correlation between the QoL score and age was evaluated using Spearman's rank test.

3. RESULTS

A total of 320 students agreed to participate in this study as planned, representing a response rate of 100%. The numbers of students from each study year were between 49 to 59, and the students' age ranged between 18 to 28 with a mean (SD) of 21.6 (1.9) years. They were predominantly female (68.4%) and had no disease (80.9%). Almost 67% of them had obtained a GPA of 3.00 or higher.

3.1 QoL

The total QoL score calculated from all domains indicated that nearly 88% of the participants had a moderate level of QoL, with a median (IQR) score of 86.0 (13.0) out of a maximum possible score of 130. Similarly, their QoL scores in every domain were considered as moderate to good. "Social relationships" was revealed as the domain with the highest median percentage (73.3%) as shown in Table 1.

The participants' responses to each item of the WHOQOL-BREF-THAI are shown in Table 2. The majority of responses for all the 26 items were in a positive direction (moderately satisfied to very satisfied), especially for "dependence on medicinal substances and medical aids" which is incorporated within the physical health domain. In addition, as high as 60.6% of the participants rated their satisfaction with the support they get from friends as very high. Regarding the two independent items, the highest percentage of participants rated their satisfaction with health and their QoL as moderate and good respectively.

3.2 Student life satisfaction

Most participants reported their overall satisfaction with student life as either moderate (43.4%) or high (43.8%), as presented in Table 3. For the domain of curriculum, learning and teaching, the highest percentages of responses in all seven items were "moderate" (43.5% to 59.5%). Almost 46% of the participants also reported high to highest satisfaction with the helps they received from the faculty for any problems in studying. For the social and environmental domain, a small majority of the participants rated their satisfaction with every item as high (44.7% to 63.8%), except for "relaxing places/areas" which was rated as moderate (42.8%). "Relationships with classmates" was revealed to be the item with the highest proportion of positive responses (74.4% for high and highest satisfaction). Regarding the general domain, the highest percentages of responses were "moderate" for the items "daily time management" and "acknowledgement of information from the faculty", and "high" for "convenience in transportation to the faculty".

3.3 Comparisons of the total QoL scores of the participants with different characteristics

As demonstrated in Table 4, the participants with different numbers of siblings ($p=0.02$), study year ($p=0.02$), and type of accommodation during study ($p=0.01$) were found to have significantly different total QoL scores. Additionally, those with different levels of satisfaction with their student life reported significantly different total QoL scores ($p<0.001$).

Table 1 Participants' QoL scores as assessed by the WHOQOL-BREF-THAI (N = 320)

Domains	QoL level			Mean score (SD)	Median score (IQR)	% Median score
	Poor	Moderate	Good			
	n (%)	n (%)	n (%)			
Physical health ¹	1 (0.3)	221 (69.1)	98 (30.6)	24.7 (3.2)	25.0 (4.8)	71.4
Psychological health ²	12 (3.8)	187 (58.4)	121 (37.8)	20.9 (3.4)	21.0 (4.0)	70.0
Social relationships ³	7 (2.2)	174 (54.4)	139 (43.4)	11.2 (1.6)	11.0 (2.0)	73.3
Environment ⁴	3 (0.9)	193 (60.3)	124 (38.8)	28.0 (3.8)	28.0 (5.0)	70.0
Total QoL ⁵	1 (0.3)	280 (87.5)	39 (12.2)	84.7 (9.5)	86.0 (13.0)	66.2

Maximum possible score: ¹35 points; ²30 points; ³15 points; ⁴40 points; ⁵130 points

Table 2 Participants' responses to each item of the WHOQOL-BREF-THAI (N = 320)

Items*	n (%) of participants for each response				
	Not at all	A little	A moderate amount	Much	An extreme amount
<i>In the past two weeks....</i>					
How satisfied are you with your health?	10 (3.1)	33 (10.3)	156 (48.8)	108 (33.8)	13 (4.1)
Domain 1: Physical health					
1. To what extent do you feel that physical pain prevents you from doing what you need to do?*	32 (10.0)	107 (33.4)	119 (37.2)	55 (17.2)	7 (2.2)
2. Do you have enough energy for everyday life?***	3 (0.9)	26 (8.1)	98 (30.6)	167 (52.2)	23 (7.2)
3. How satisfied are you with your sleep?	13 (4.1)	69 (21.6)	130 (40.6)	97 (30.3)	11 (3.4)
4. How satisfied are you with your ability to perform your daily living activities?	3 (0.9)	24 (7.5)	158 (49.4)	121 (37.8)	14 (4.4)
5. How much do you need any medical treatment to function in your daily life?*	144 (45.0)	119 (37.2)	45 (14.1)	10 (3.1)	2 (0.6)
6. How satisfied are you with your capacity for work?	3 (0.9)	22 (6.9)	163 (50.9)	119 (37.2)	13 (4.1)
7. How well are you able to get around?***	5 (1.6)	9 (2.8)	87 (27.2)	155 (48.4)	62 (19.4)
Domain 2: Psychological health					
1. How much do you enjoy life?***	7 (2.2)	35 (10.9)	130 (40.6)	129 (40.3)	18 (5.6)
2. How well are you able to concentrate?	7 (2.2)	46 (14.4)	170 (53.1)	92 (28.8)	5 (1.6)
3. How satisfied are you with yourself?	4 (1.3)	25 (7.8)	136 (42.5)	135 (42.2)	20 (6.3)
4. Are you able to accept your bodily appearance?	1 (0.3)	14 (4.4)	116 (36.3)	159 (49.7)	30 (9.4)

Table 2 Participants' responses to each item of the WHOQOL-BREF-THAI (N = 320) (Continued)

Items*	n (%) of participants for each response				
	Not at all	A little	A moderate amount	Much	An extreme amount
5. How often do you have negative feelings such as blue mood, despair, anxiety, depression?***	22 (6.9)	120 (37.5)	128 (40.0)	47 (14.7)	3 (0.9)
6. To what extent do you feel your life to be meaningful?***	3 (0.9)	12 (3.8)	74 (23.1)	131 (40.9)	98 (30.6)
Domain 3: Social relationships					
1. How satisfied are you with your personal relationships?	1 (0.3)	17 (5.3)	103 (32.2)	169 (52.8)	30 (9.4)
2. How satisfied are you with the support you get from your friends?***	0 (0.0)	5 (1.6)	77 (24.1)	194 (60.6)	43 (13.4)
3. How satisfied are you with your sex life?***	9 (2.8)	5 (1.6)	134 (41.9)	109 (34.1)	62 (19.4)
Domain 4: Environment					
1. How safe do you feel in your daily life?	0 (0.0)	14 (4.4)	98 (30.6)	185 (57.8)	23 (7.2)
2. How satisfied are you with the conditions of your living place?	2 (0.6)	13 (4.1)	81 (25.3)	169 (52.8)	55 (17.2)
3. Have you enough money to meet your needs?	3 (0.9)	11 (3.4)	79 (24.7)	157 (49.1)	70 (21.9)
4. How satisfied are you with your access to health services?	1 (0.3)	26 (8.1)	131 (40.9)	145 (45.3)	17 (5.3)
5. How available to you is the information that you need in your day-to-day life?***	4 (1.3)	31 (9.7)	158 (49.4)	114 (35.6)	12 (3.8)
6. To what extent do you have the opportunity for leisure activities?***	1 (0.3)	70 (21.9)	145 (45.3)	89 (27.8)	14 (4.4)
7. How healthy is your physical environment?***	2 (0.6)	24 (7.5)	151 (47.2)	121 (37.8)	21 (6.6)
8. How satisfied are you with your transport?***	7 (2.2)	38 (11.9)	129 (40.3)	130 (40.6)	15 (4.7)
How would you rate your quality of life?***	2 (0.6)	9 (2.8)	116 (36.3)	163 (50.9)	29 (9.1)

*The items shown in the table are from the English version (Department of Mental Health and Substance Dependence, World Health Organization, 2002)., ** Negatively phrased items, ***With missing data

Table 3 Participants' responses to each item of the student life satisfaction questionnaire (N = 320)

Items	n (%) of participants for each response				
	Lowest	Low	Moderate	High	Highest
<i>What level of satisfaction do you have with the following issues?</i>					
Domain 1: Curriculum, learning, and teaching*					
1. Number of subjects in the current semester	2 (0.7)	30 (11.1)	143 (53.2)	90 (33.5)	4 (1.5)
2. Teaching-learning model in overall	1 (0.4)	27 (10.0)	155 (57.6)	83 (30.9)	3 (1.1)
3. Number of hours for doing assignments in the current semester**	6 (2.2)	53 (19.7)	134 (49.8)	73 (27.1)	1 (0.4)
4. Study results**	4 (1.5)	30 (11.1)	159 (59.1)	69 (25.6)	6 (2.2)
5. Co-curricular activities (both compulsory and optional ones)	9 (3.3)	42 (15.6)	160 (59.5)	54 (20.1)	4 (1.5)
6. Study support materials/tools, e.g., access to academic databases, books, and IT system for education	7 (2.6)	26 (9.7)	134 (49.8)	92 (34.2)	10 (3.7)
7. Helps from the faculty for study-related problems	2 (0.7)	27 (10.0)	117 (43.5)	108 (40.1)	15 (5.6)
Domain 2: Social and environment					
1. Relationships with classmates	1 (0.3)	9 (2.8)	72 (22.5)	204 (63.8)	34 (10.6)
2. Relationships with seniors/juniors	3 (0.9)	31 (9.7)	113 (35.3)	153 (47.8)	20 (6.3)
3. Working with others**	0 (0.0)	8 (2.5)	97 (30.3)	193 (60.3)	21 (6.6)
4. Buildings for studying in the faculty	3 (0.9)	17 (5.3)	114 (35.6)	170 (53.1)	15 (4.7)
5. Relaxing places/areas within the faculty	11 (3.4)	74 (23.1)	137 (42.8)	89 (27.8)	9 (2.8)
6. Restrooms in the faculty (adequacy and readiness for use)	3 (0.9)	31 (9.7)	87 (27.2)	143 (44.7)	56 (17.5)
7. Infrastructure, e.g. electricity, water, and the Internet	3 (0.9)	30 (9.4)	99 (30.9)	156 (48.8)	31 (9.7)
Domain 3: General issues					
1. Daily time management	7 (2.2)	53 (16.6)	178 (55.6)	79 (24.7)	3 (0.9)
2. Convenience in transportation to the faculty**	1 (0.3)	16 (5.0)	86 (26.9)	174 (54.4)	42 (13.1)
3. Acknowledgement of information from the faculty	3 (0.9)	22 (6.9)	164 (51.3)	121 (37.8)	10 (3.1)
Overall satisfaction of student life at the faculty**	0 (0.0)	15 (4.7)	139 (43.4)	140 (43.8)	12 (3.8)

*n=269 (1st to 5th year students), **With missing data

Table 4 Comparisons of the total QoL scores of the participants with different characteristics (N = 320)

Characteristics	n (%)	WHOQOL-BREF-THAI score	
		Median (IQR)	p-value
Gender			
Male	101 (31.6)	82.0 (17.0)	0.06 ¹
Female	219 (68.4)	86.0 (13.0)	
Age ^{3,4}			
18-22	210 (65.6)	85.0 (13.0)	0.89 ¹
>22	109 (34.1)	86.0 (14.5)	
Number of siblings (including the participant)			
1	68 (21.3)	84.0 (15.3)	0.02 ²
2	171 (53.4)	87.0 (12.0)	
3	67 (20.9)	82.0 (17.0)	
>3	14 (4.4)	85.0 (13.5)	
Having a disease ⁵			
Yes	60 (18.8)	84.0 (12.5)	0.73 ¹
No	259 (80.9)	86.0 (13.0)	
Study year			
1	59 (18.4)	88.0 (11.3)	0.02 ²
2	52 (16.3)	85.0 (14.0)	
3	54 (16.9)	85.0 (17.5)	
4	55 (17.2)	85.0 (11.0)	
5	49 (15.3)	87.5 (11.0)	
6	51 (15.9)	80.0 (16.0)	
GPA			
<2.00	1 (0.3)	N/A	0.52 ²
2.00-2.49	12 (3.8)	88.0 (14.0)	
2.50-2.99	93 (29.1)	85.0 (11.0)	
3.00-3.49	162 (50.6)	85.0 (11.0)	
≥3.50	52 (16.3)	86.0 (12.0)	
Type of accommodation during study			
Staying with parents	18 (5.6)	91.0 (15.0)	0.01 ²
University dorm	43 (13.4)	88.5 (12.3)	
Private dorm	259 (80.9)	85.0 (14.0)	
Student life satisfaction ⁵			
Lowest	0 (0.0)	-	<0.001 ²
Low	15 (4.7)	74.0 (18.0)	
Moderate	139 (43.4)	81.0 (13.0)	
High	140 (43.8)	90.0 (10.3)	
Highest	12 (3.8)	85.0 (22.0)	

¹Mann-Whitney U test; ²Kruskal-Wallis test; ³One participant did not provide the information; ⁴Correlation coefficient (from Spearman's correlation test) = -0.07, p-value = 0.21); ⁵With missing responses

4. DISCUSSION

Overall, this present study demonstrated a moderate QoL and moderate to high student life satisfaction among stratified samples of undergraduate pharmacy students at a public university in Central Thailand. The assessment using the WHOQOL-BREF-THAI, a commonly used generic QoL instrument, revealed that a majority of the participants had moderate QoL scores in both the total and all the four domains, i.e., physical health, psychological health, social relationships, and environment. This finding is congruent with the QoL study of Pokawannawit et al. (2013) of 281 undergraduate students at the same study faculty which also used the WHOQOL-BREF-THAI. This could be at least partly due to the similarities of the characteristics of most participants in the two studies, i.e., being female, having no disease, having a GPA between 3.00-3.49, and staying in private accommodation. However, it should be noted that the two study groups were in different pharmacy curriculums, and the data were collected during different semesters. In addition, the study of Pokawannawit et al. (2013) was conducted five years ago and included only the first to fifth year students. The similar trend in the QoL scores from the two studies therefore possibly implies that there is no significant effect of the curriculum and semester on the students' QoL in overall.

Even though a number of studies on the QoL of undergraduate students from many faculties are available, it is difficult to compare our results with previous studies. This is due to the fact that different QoL measures were used in each study, and some were even self-developed for a specific study. Among the studies using the WHOQOL-BREF-THAI, Anusornteerakul et al. (2008) reported interesting findings from a comparison of the QoL in medical students of Khon Kaen Medical School and the general population of the same age range (aged 18 to 25 years). The study demonstrated that the medical students reported significantly higher QoL, both in total

and in the domains of physical health, social, and environment. Additionally, a small majority of those students reported good QoL, both in total and in almost all domains whereas a majority of the participants in this present study reported their QoL as moderate in every domain and in total. Nevertheless, that study was conducted approximately ten years ago and many aspects of student life could be very different from the present.

Our finding that "social relationships" was the domain with the highest median score correlates with the high satisfaction with social friend groups reported in the study of Maneewong (2012). Considering the responses to each item in this domain, as high as 60.6% of the participants reported that they were very satisfied with the support they got from friends, and none of them reported "not at all" for this item. These findings are in line with the results of Pokawannawit et al. (2013). It is also quite promising to find that almost 58% of the participants felt very safe in their daily life while none of them reported "not at all" for the same item. The percentage of the "much" response to this item was obviously higher than that of the study of Pokawannawit et al. (2013). This may be partly attributed to changes in the physical environment both inside and around the university.

In this study, the assessment of student life satisfaction revealed high satisfaction for the social and environmental domain, especially for relationships with classmates and working with others. This is in accordance with the study of Maneewong (2012) which was conducted in the same setting and found high satisfaction in overall and with the domain of social friend groups and moderate satisfaction with the domain of faculty building. The high satisfaction with the faculty's environment in our study is potentially due to the continuous improvement of the faculty's buildings, areas around them, and facilities, especially Wi-Fi in the study rooms. For the social part, the high satisfaction both in Maneewong's study and ours

possibly implies the success of the faculty's Student Affair Unit in building strong bonds between students in the same year as well as their juniors/seniors and also enhancing the students' collaborative working skills via various co-curricular activities and other activities throughout their six years at the university. Nevertheless, although the moderate level of satisfaction with the curriculum, learning, and teaching was quite satisfactory, it suggests room for improvement in these aspects. Further investigations of the students' opinions should be useful and likely to contribute to even higher student satisfaction in the future.

With regards to the comparisons of the total QoL score of participants with different characteristics, this study yielded significant differences for number of siblings, study year, type of accommodation during study, and level of student life satisfaction. For the study year, the first-year and sixth-year students reported the highest and lowest total QoL score respectively, while the average scores of the second-year, third-year and fourth-year students were comparable. Our finding that the QoL scores of the second-year students were lower than those of the first-year students is consistent with the study of Hirsch et al. (2009) which explored the QoL, perceived stress, and coping skills in the three preclinical years of 213 PharmD students in the US. In that study, the second-year students reported significantly lower mental QoL scores and higher stress compared to the first-year students, and significant differences in perceived stress and mental QoL were demonstrated across the three preclinical curriculum years. However, our results are in contrast to the previous observations of Pokawannawit et al. (2013) that the highest and lowest total QoL scores were among the fifth-year and third-year students respectively, and the total QoL score of the first-year students was lower than that of the second-year students. These incongruencies between the studies could be attributed partly to substantial changes in the structures of the curriculums in which the participants in the two studies

were studying, although the trends of the QoL scores observed in our study are in line with our predictions. Although the first-year students may encounter significant changes when they start their university life, they seem to have the lowest level of stress in studying compared to their seniors given the fact that most subjects in the first year are similar to what they have learned in secondary schools. In addition, the first-year students tend to have far fewer quizzes, examinations, laboratory reports and class assignments. The lowest QoL score reported among the sixth-year students is also unsurprising since, at the time of the data collection, all of them were undergoing preparation for the upcoming pharmacy license examination which is generally perceived as one of the most important examinations for pharmacy students. While further studies are warranted to test the robustness of our results, these findings appear to reaffirm the impact of stress on the students' QoL, thus emphasizing the need for stress-relieving strategies and more support from both the faculty and the students' families.

When considering the type of accommodation during study, the average QoL score was highest and lowest among students who stayed at their own home and those staying at private dorms respectively. This finding totally contradicts the study of Pokawannawit et al. (2013) which revealed the highest score among students staying in the university dorms followed by the private dorms, and this deserves further investigation among a larger set of students. The significantly different QoL scores among students with different levels of student life satisfaction are generally as expected. Although the highest QoL score was reported for students with high, but not the highest, satisfaction in this study, the results tend to indicate that student life satisfaction correlates with the students' QoL, thus emphasizing the need for incorporating both aspects in the faculty development plan.

This study has several limitations worth mentioning. Firstly, the single point of data collection

of the students' QoL and life satisfaction could be biased by a number of factors, especially the upcoming pharmacy license examination for the sixth-year students. Secondly, given the fact that the recall periods for the WHOQOL-BREF-THAI and our student life satisfaction questionnaires were two weeks and one month respectively, our results may not reflect the QoL and life satisfaction of the students in other time periods. A longitudinal study with periodic assessments of the students' QoL and life satisfaction throughout the six-year program is therefore worth pursuing in the future to confirm our results as well as to provide a broader and more complete picture of our students' life. Thirdly, we had not controlled for other extraneous variables when identifying the difference of the total QoL scores between groups for each independent variable. In addition, as our study was performed only at a pharmacy faculty in a public university, our results cannot be generalized or assumed to relate to pharmacy students in other universities in Thailand. It would be interesting if future researches attempt to explore these two concepts among pharmacy students from other universities in Thailand and then compare the results with our present study.

5. CONCLUSION

In summary, our assessment of the QoL and student life satisfaction among undergraduate pharmacy students using the WHOQOL-BREF-THAI and a student life satisfaction questionnaire revealed a moderate QoL and moderate to high overall satisfaction with their student life. Significant differences in the QoL score in total were found among participants with different number of siblings, year of study, type of accommodation during study, and overall student life satisfaction level. This study provided a better understanding of the pharmacy students' QoL and life satisfaction and suggested potential aspects for further improvement.

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REFERENCES

- Anusornteerakul, C., Patharateeranart, K., Chaiweerapandej, C., Rungsiprakarn, P., Kanato, M., and Sinsupan, N. (2008). The comparative study of quality of life between the medical students and general population in Samleam community at the same age group. *Srinagarind Medical Journal*, 23(2), 200-206. (Thai)
- Audin, K., Davy, J., and Barkham, M. (2003). University quality of life and learning (UNIQLL): an approach to student well-being, satisfaction and institutional change. *Journal of Further and Higher Education*, 27, 365-382.
- Cheerat, T. (2011). *Factors Influencing Quality of Student Life at Srinakharinwirot University (Ongkharak Campus)(Research Report)*. Rajamangala University of Technology Thanyaburi, Pathum Thani. (Thai)
- Fayers, P. M. and Machin, D. (2007). *Quality of Life: the Assessment, Analysis, and Interpretation of Patient-Reported Outcomes*, 2nd, John Wiley & Sons, Chichester, pp. 4-5.
- Gow, K. and McDonald, P. (2006). Attributes required of graduates for the future workplace. *Journal of Vocational Education & Training*, 52, 373-396.
- Hernández-March, J., Martín del Peso, M., and Leguey, S. (2009). Graduates' skills and higher education: the employers' perspective. *Tertiary Education and Management*, 15(1), 1-16.

- Hirsch, J. D., Do, A. H., Hollenbach, K. A., Manoguerra, A. S., and Adler, D. S. (2009). Students' health-related quality of life across the preclinical pharmacy curriculum. *American Journal of Pharmaceutical Education*, 73(8), 147.
- Khosravi, A. A., Poushneh, K., Roozegar, A., and Sohrabifard, N. (2013). Determination of factors affecting student satisfaction of Islamic Azad University. *Procedia-Social and Behavioral Science*, 84, 579-583.
- Klemenc-Ketiš, Z., Kersnik, J., Eder, K., and Colaric, D. (2011). Factors associated with health-related quality of life among university students. *Srpski Arhiv Za Celokupno Lekarstvo*, 139(3-4), 197-202.
- Mahatnirunkul, S., Tantipiwattanaskul, W., Pumpaisalchai, W., Wongsuwan, K., and Prommanajirangkul, W. (1998). Comparison of the WHOQOL-100 and the WHOQOL-BREF (26 items). *Journal of Mental HealthThailand*, 5, 4-15. (Thai)
- Maneewong, N. (2012). The satisfaction of pharmacy students toward the environment of the pharmacy faculty Silpakorn University. *Veridian E-Journal Silpakorn University*, 5(1), 562-570. (Thai)
- Marshall, L. L., Allison, A., Nykamp, D., and Lanke S. (2008). Perceived stress and quality of life among doctor of pharmacy students. *American Journal of Pharmaceutical Education*, 72(6), 137.
- Opoku-Acheampong, A., Kretchy, I. A., Acheampong, F., Afrane, B. A., Ashong, S., Tamakloe, B., and Nyarko, A. K. (2017). Perceived stress and quality of life of pharmacy students in University of Ghana. *BMC Research Notes*, 10(1), 115.
- Pokawannawit, C., Sutthiwong, T., Chairak, N., and Naowarat, S. (2013). *Quality of Life of Undergraduate Pharmacy Students at Silpakorn University (Research Report)*. Faculty of Pharmacy, Silpakorn University, Nakhon Pathom. (Thai)
- Payakachat, N., Gubbins, P. O., Ragland, D., Flowers, S. K., and Stowe, C. D. (2014). Factors associated with health-related quality of life of student pharmacists. *American Journal of Pharmaceutical Education*, 78(1), 7.
- Shumaker, S. A. and Naughton, M. J. (1995). The international assessment of health-related quality of life: a theoretical perspective. In *The International Assessment of Health-Related Quality of Life: Theory, Translation, Measurement and Analysis* (Shumaker, S. A. and Berzon, R. A., eds.), pp. 3-10. Rapid Communications, Oxford, New York.
- The WHOQOL Group. (1995). The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. *Social Science & Medicine*, 41(10), 1403-1409.
- The WHOQOL Group. (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychological Medicine*, 28(3), 551-558.
- Unni, E. J., Madrid, L. A., Oderda, G., and Saokaew, S. (2015). Quality of life of pharmacy students in the United States. *Currents in Pharmacy Teaching and Learning*, 7(6), 753-763.
- Vaez, M., Voss, M., and Laflamme, L. (2010). Health-related quality of life among university students. In *Handbook of Disease Burdens and Quality of Life Measures* (Preedy, V. R. and Watson, R. R., eds.), pp. 2555-2578, Springer, New York.
- West, J. (2000). Higher education and employment: opportunities and limitations in the formation of skills in a mass higher education system. *Journal of Vocational Education & Training*, 52, 573-588.
- Yamane, T. (1973). *Statistics: An Introductory Analysis*. 3rd, Harper & Row, New York, p. 1133.