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Quality of life of nursing students from nine countries: A cross-sectional study



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ABSTRACT

Background: Nursing student life is stressful as a result of the work they exert to learn concepts ranging from basic to complicated issues and health concerns for maintaining overall human health. Hence, assessing the quality of life (QOL) of nursing students is important to determine if they have excellent well-being levels as they go through the learning process.

Objectives: This study measured and compared QOL of respondents by country of residence, and identified the QOL predictors of students.

Design: Descriptive, cross-sectional design.

Settings: A multi-country study conducted in Chile, Egypt, Greece, Hong Kong, India, Kenya, Oman, Saudi Arabia, and the United States of America.

Participants: A convenience sample of 2012 Bachelor of Science in Nursing (BSN) students.

Methods: A self-administered questionnaire containing demographic characteristic items and the World Health Organization QOL-BREF (WHOQOL-BREF) was used to gather data from respondents.

Results: The highest overall QOL was recorded in the physical health domain, whereas the lowest was in the social health domain. The perceived highest and lowest QOL dimension varied between countries. Age, country of residence, and monthly family income showed statistically significant multivariate effect on the aspects of QOL.

Conclusions: Considering their stressful lives, the present study underscores the importance of ensuring the highest level of well-being among nursing students. The maintenance of high levels of well-being among nursing students should also be prioritized to maximize their learning and ensure their satisfaction in their student life.

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1. Introduction

Quality of life (QOL) can be defined instinctively and felt differently across varying environment, health status, and psychosocial situations. Studying nursing requires students to have a balance on these aspects to establish quality in their daily lives, but nursing student life can be overwhelming due to the amount of work they exert to learn concepts ranging from basic to complicated issues and health concerns to maintain overall human health. The rigorous education nursing students undergo one of the many reasons the nursing profession regarded as one of the most challenging professions. Nursing students face abundant stress in their daily lives, such as stress through the caring of patients, assignments and workloads, and negative interactions with staff and faculty (Labrague et al., 2017). Also, as university students, they are in their developmental period, assuming additional responsibilities with increased independence (Yildirim et al., 2013), such as moving away from home, dealing with peer pressure, independently managing finances, and navigating challenges of personal relationships (Bhandari, 2012). Wolf et al. (2015) identified problematic relationships and time management issues as the major stressors among nursing students in the US.

Moreover, nursing students deal with academic stress. According to Por (2005), student nurses experience more stress compared with other health science students and the general population. In a systematic review, Pulido-Martos et al. (2015) found the most common stressor nursing students experience is related to academics. They have heavier academic workloads, regularly deal with anxiety related to examinations or assessments (e.g., fear of failing and dropping out), and extensively navigate the educational environment (e.g., relationships with instructors and preceptors). The clinical side of nursing education also causes them stress due to their lack of knowledge and skills leading them to fear committing mistakes in caring for patients. They also report experiencing stress related to communicating with physicians and nursing staff during clinical rotations (Gibbons et al., 2011; Pulido-Martos et al., 2015). Eswi et al. (2013) presented baccalaureate Saudi nursing students reported their most commonly experienced stressors as responsibility overload (57%), having lower grades than hoped for (43%), not having enough sleep (43%), and too many requirements from them at the same time (42%).

The studies presented above suggest nursing students' stress may influence their QOL. The learning environment of nursing students, which includes extensive classroom and clinical time, problematic teacher-student encounters, the absence of leisure time and areas, inadequate sleep, rest and eating habits, lack of exercise, and academic pressures, may affect their lifestyle. These factors may, in turn, influence their QOL (Arronqui et al., 2011).

The concept of QOL is subjective and multidimensional as it is influenced by factors regarding education, socioeconomic status as well as socio-cultural aspects according to Orley and Kuyken (1994). Quality of Life (QOL) has been generally defined by scholars as an individual's perception of the general and constant state of well-being (Zullig et al., 2005). The philosopher Aristotle stated people conceive good life or well-being to be the same as happiness. The World Health Organization (WHO, 1998) defined QOL as the "individuals' perceptions 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." (p. 1). This demarcation has been closely associated with the concept of health, which extends the notion of the absence of disease to broader concepts of physical health, psychological health, independence, social relationships, environmental domain, and spirituality. Thus, QOL is a subjective measurement of one's physical and mental health and covers multiple domains such as physical, psychological, economical, spiritual, and social well-being (Wong et al., 2001).

These domains are commonly mentioned in QOL research across diverse cultures and populations (Lam, 2015; The WHOQOL Group, 1998). Specifically, for nursing students, it can be defined as having a safe learning environment that also welcomes the idea of student leisure time, availability of support and resources to manage stress situations experienced, an appreciation of learning activities engaged in, sufficient time to engage in the nursing course, and good student-professor relationship (Arronqui et al., 2011).

QOL assessment is essential to determine if nursing students have excellent well-being levels as they go through the learning process. Souza et al. (2012) suggested educational institutions assess students' QOL to improve the quality of education they provide. For instance, in a cross-sectional study that conducted using the WHOQOL-BREF among preclinical medical students in Saudi Arabia, high academic performance of students was positively associated with their QOL, particularly on their physical health, psychological health, social relations and environment domains (Shareef et al., 2015). Furthermore, Goldin et al. (2007) observed that QOL is related to student attrition rates and academic achievements and QOL starts to decline as they progress in their medical studies. In the studies conducted by Saube et al. (2004) and Oliveira and Ciampone (2008), nursing students suggested negative impacts on their QOL. Yildirim et al. (2013) reported nursing students' life satisfaction is directly correlated with QOL. Souza et al. (2012) indicated nursing students who experienced highly intense depression symptoms were more likely to report negative QOL scores. However, further exploration of the QOL among nursing students in different perspectives is urgent as stressful situations have been continuously linked to student's poor perception of QOL in multiple studies (Lee et al., 2014; Song, 2012). Thus, this study is the first multi-country study examining nursing students' QOL perception, which can provide evidence on how QOL varies across countries. This study provides insights into the increasing demand to ensure excellent well-being of nursing students that can be attributed to better academic performance and a more sound and holistic process of immersing one's self in the practice of professional nursing in the future.

2. Aims of the Study

This study aims to measure the QOL of nursing students from nine countries. Specifically, it (1) measured the QOL of the respondents in terms of physical health, psychological health, social relationships, and environmental domains, (2) compared the QOL of the respondents by country of residence, and (3) identified the QOL predictors of students.

3. Methods

3.1. Study Design, Sample and Settings

This descriptive, cross-sectional design included a convenience sample of 2012 Bachelor of Science in Nursing (BSN) students from nine countries, namely, Chile, Egypt, Greece, Hong Kong, India, Kenya, Oman, Saudi Arabia, and the United States of America (USA). Chile and Hong Kong have 5-year BSN program with the 5th year in the program focused on clinical internship, while the rest of the countries have 4-year BSN program. Participants were recruited from the researchers' respective colleges of nursing. Students were invited to participate if they met the following inclusion criteria: (1) enrolled in the BSN program of participating schools, (2) full-time student, (3) registered in the 1st to 4th year of the nursing program, and (4) hold nationality in the country of residence. Students directly supervised by the researchers were excluded in this study. The sample size was entered in a post hoc statistical power analysis using the G*Power version 3.1.9.2 software to identify the power achieved by the sample. The analysis revealed that

the statistical power for this study was 100.0%, with medium effect at the 5% level of significance. Thus, there was more than adequate power to detect a small difference.

3.2. Ethical Considerations

The study protocol was reviewed and approved by the Institutional Review Board of King Saud University, College of Medicine in Saudi Arabia on September 27, 2016 (No. E-16-2072). The protocol was reviewed and approved by each participating university. Measures to protect students from undue influence or coercion were observed accordingly. Information about student rights, such as their rights to refuse participation and to terminate participation without any consequences on their part, was adequately explained before data collection. Students were also provided with sufficient time to raise questions for clarifications. A written informed consent was collected from each respondent once they received adequate information about the study. Confidentiality was assured throughout the research process.

3.3. Survey

A self-administered questionnaire was used for data gathering. The questionnaire has two sections. The first section contained questions designed to obtain information on the socio-demographic characteristics of respondents, which includes questions on country of residence, age, gender, academic year level, type of community residence, and family monthly income (i.e., household income). For the type of community residence, options including rural, suburban and urban were provided, which were defined based on location. Urban community was defined as a city or a town, rural was defined as countryside, and suburban was defined as area lying immediately outside a town or city.

The second section is the World Health Organization QOL-BREF (WHOQOL-BREF), which assesses individual perceptions on their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards, and concerns. This instrument is the short version of the WHOQOL-100. This 26-item, 5-point Likert scale measures four dimensions, namely, physical health, psychological health, social relationships, and environment domain. Items one and two of the scale measure the overall perceived QOL and health perception of the respondents, respectively. Each item in the WHOQOL-BREF is scored from 1 to 5 on a response scale. High scores indicate high QOL. The Arabic version was used in Egypt, Oman, and Saudi Arabia, whereas the Spanish and Chinese versions were used in Chile and Hong Kong, respectively. The English version was used in the remaining countries. The WHOQOL-BREF manifested excellent reliability and validity in various previous studies (Gholami et al., 2013; WHO, 1998). For this study, the computed Chronbach's alphas of each country were 0.83 (Egypt), 0.84 (Greece, India, and Kenya), 0.85 (Chile and Hong Kong), 0.87 (Saudi Arabia and USA), and 0.90 (Oman).

3.4. Data Collection

Data collection was conducted from October 2016 to February 2017 by the researchers at their respective universities. The researchers coordinated with the instructor of the respondents to use a short period at the end of their classes. Class instructors were asked to leave the classroom during data collection. The questionnaire and a white envelope were distributed and respondents were instructed to refrain from writing anything in the survey that will identify them. The students were instructed to place the survey in the envelope and seal it themselves before handing it to the researchers.

3.5. Statistical Analysis

The statistical analyses were carried out using the statistical software, SPSS version 22.0. Descriptive statistics were used accordingly to fully describe the socio-demographic characteristics and QOL of the respondents. To examine the multivariate effect of the respondents' demographic characteristics to each QOL dimension, a multivariate multiple regression analysis was conducted. Multiple linear regression analyses were performed to assess the independent relationship between the predictor variables and the QOL dimensions. A p -value of ≤ 0.05 was considered significant.

4. Results

The socio-demographic characteristics of respondents are summarized in Table 1. The mean age of the respondents was 21.37 (SD = 3.28, range = 17–48) years, and most of them were female (63.7%). The biggest proportion of the respondents was from Chile (20.7%), whereas the lowest was from Kenya (4.0%). The respondents were fairly distributed across the different levels of the BSN program. Most students resided in urban communities (54.4%). Majority of respondents (62.4%) reported having 2000 USD and below monthly family income. The socio-demographic characteristics of the respondents per country are reflected in Table 1.

4.1. QOL of the Nursing Students Across Nine Countries

Overall, the highest QOL was recorded in the physical health domain (M = 63.77, SD = 14.72), whereas the lowest was in the social health domain (M = 58.87, SD = 21.87). The overall perceived QOL and health of the respondents were above average with means of 3.75 (SD = 0.82) and 3.66 (SD = 0.95), respectively (see Table 2).

The overall perceived QOL of life scores ranged from 3.09 (SD = 0.82; Hong Kong) to 4.30 (SD = 0.71, USA), whereas the overall perceived health scores ranged from 2.87 (SD = 0.90; Hong Kong) to 4.17 (SD = 0.66; Greece). In terms of the different QOL dimensions, students from Egypt (M = 56.73, SD = 13.63), Greece (M = 73.16, SD = 12.34) and Hong Kong (M = 61.29, SD = 12.96) perceived physical health as their highest QOL dimension, while students from Saudi Arabia (M = 61.72, SD = 13.48) reported physical health as their poorest dimension. For psychological health, nursing students India (M = 68.48, SD = 12.94), Oman (M = 60.29, SD = 11.23), and Saudi Arabia (M = 69.65, SD = 12.80) reported it as their highest QOL dimension, while students from Hong Kong (M = 53.03, SD = 14.74) and USA (M = 64.63, SD = 15.74) reported it as their lowest. Respondents from Chile (M = 67.25, SD = 20.18), Kenya (M = 73.77, SD = 17.49), and USA (M = 73.48, SD = 18.29) rated social health as the highest dimension, while students from India (M = 41.67, SD = 17.42) and Oman (M = 24.94, SD = 17.05) rated it as the lowest dimension. Environmental domain was perceived as the lowest QOL dimension among nursing students in Chile (M = 62.05, SD = 14.94), Egypt (M = 53.87, SD = 13.80), Greece (M = 64.53, SD = 13.95), and Kenya (M = 61.31, SD = 14.39; see Table 2).

4.2. Multivariate Analysis of the QOL

Age, country of residence, and monthly family income showed statistically significant multivariate effects (Table 3). Multiple regression analyses were carried out to assess the independent relationship between socio-demographic characteristics and QOL dimensions.

As indicated in Tables 4 and 5, country of residence was a significant predictor of the QOL dimensions, as well as of the overall

Table 1
Socio-demographic characteristics of the respondents (n = 2012).

Variable	Overall (n = 2012)	Chile (n = 417)	Egypt (n = 248)	Greece (n = 275)	Hong Kong (n = 316)	India (n = 221)	Kenya (n = 81)	Oman (n = 151)	Saudi Arabia (n = 221)	USA (n = 82)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age	21.37 (3.28) ^a	22.89 (3.37) ^b	20.44 (1.52) ^c	21.81 (5.74) ^d	20.14 (1.93) ^e	20.29 (0.97) ^f	20.35 (2.63) ^g	19.84 (1.79) ^h	22.99 (1.88) ⁱ	21.98 (3.57) ^j
Gender	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Male	731 (36.3)	344 (82.5)	86 (34.7)	52 (18.9)	72 (22.8)	0 (0)	51 (63.0)	15 (9.9)	102 (46.2)	9 (11.0)
Female	1281 (63.7)	73 (17.5)	162 (65.3)	223 (81.1)	244 (77.2)	221 (100)	30 (37.0)	136 (90.1)	119 (53.8)	73 (89.0)
Year of study										
1st year	547 (27.2)	66 (15.8)	50 (20.2)	75 (27.3)	241 (76.3)	0 (0)	21 (25.9)	48 (31.8)	46 (20.8)	0 (0)
2nd year	424 (21.1)	124 (29.7)	60 (24.2)	59 (21.5)	26 (8.2)	32 (14.5)	30 (37.0)	43 (28.5)	50 (22.6)	0 (0)
3rd year	563 (28.0)	105 (25.2)	68 (27.4)	72 (26.2)	27 (8.5)	129 (58.4)	25 (30.9)	60 (39.7)	49 (22.2)	28 (34.1)
4th year	478 (23.8)	122 (29.3)	70 (28.2)	69 (25.1)	22 (7.0)	60 (27.1)	5 (6.2)	0 (0)	76 (34.4)	54 (65.9)
Type of living community										
Rural	596 (29.6)	1 (0.2)	126 (50.8)	53 (19.3)	9 (2.8)	115 (52.0)	44 (54.3)	141 (93.4)	91 (41.2)	16 (19.5)
Suburban	322 (16.0)	0 (0)	63 (25.4)	53 (19.3)	28 (8.9)	12 (5.4)	26 (32.1)	4 (2.6)	97 (43.9)	39 (47.6)
Urban	1094 (54.4)	416 (99.8)	59 (23.8)	169 (61.5)	279 (88.3)	94 (42.5)	11 (13.6)	6 (4.0)	33 (14.9)	27 (32.9)
Monthly family income										
2000USD and below	1256 (62.4)	360 (86.3)	162 (65.3)	227 (82.5)	87 (27.5)	213 (96.4)	60 (74.1)	6 (4.0)	113 (51.1)	28 (34.1)
Above 2000USD	756 (37.6)	57 (13.7)	86 (34.7)	48 (17.5)	229 (72.5)	8 (3.6)	21 (25.9)	145 (96.0)	108 (48.9)	54 (65.9)

^a Range = 17–48.
^b Range = 18–46.
^c Range = 18–29.
^d Range = 17–48.
^e Range = 18–27.
^f Range = 19–24.
^g Range = 18–24.
^h Range = 17–23.
ⁱ Range = 20–34.
^j Range = 20–40.

Table 2
Quality of life domains across the nine countries (n = 2012).

Variable	Perceived overall quality of life	Perceived overall health	Physical health	Psychological health	Social health	Environmental
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Overall (n = 2012)	3.66 (0.95)	3.75 (0.82)	63.77 (14.72)	62.84 (15.76)	58.87 (21.87)	60.46 (15.32)
Chile (n = 417)	3.61 (0.86)	3.36 (0.99)	64.93 (15.57)	62.83 (14.55)	67.25 (20.18)	62.05 (14.94)
Egypt (n = 248)	3.63 (0.85)	3.63 (1.05)	56.73 (13.63)	55.12 (15.17)	54.97 (20.17)	53.87 (13.80)
Greece (n = 275)	3.95 (0.72)	4.17 (0.66)	73.16 (12.34)	69.42 (14.04)	70.00 (19.39)	64.53 (13.95)
Hong Kong (n = 316)	3.09 (0.82)	2.87 (0.90)	61.29 (12.96)	53.03 (14.74)	57.17 (18.41)	56.21 (14.02)
India (n = 221)	4.07 (0.60)	3.81 (0.69)	68.00 (12.33)	68.48 (12.94)	41.67 (17.42)	64.92 (13.88)
Kenya (n = 81)	4.07 (0.61)	4.16 (0.73)	70.55 (12.09)	71.50 (12.61)	73.77 (17.49)	61.31 (14.39)
Oman (n = 151)	3.99 (0.68)	4.01 (0.77)	48.96 (12.20)	60.29 (11.23)	24.94 (17.05)	51.60 (12.68)
Saudi Arabia (n = 221)	4.05 (0.73)	4.06 (0.86)	61.72 (13.48)	69.65 (12.80)	65.54 (18.15)	62.50 (14.34)
USA (n = 82)	4.30 (0.71)	3.96 (0.78)	72.08 (13.79)	64.63 (15.74)	73.48 (18.29)	72.91 (12.67)

Table 3
Multivariate test of significance with Wilk's Lambda test (n = 2012).

Effect	Value	F	Hypothesis df	Error df	p
Age	0.99	3.11	6.00	1767.00	0.005*
Country	0.72	12.35	48.00	8698.44	< 0.001**
Gender	0.99	1.74	6.00	1767.00	0.109
Year of study	0.99	1.54	18.00	4998.32	0.068
Type of living community	0.99	0.98	12.00	3534.00	0.462
Monthly family income	0.98	5.77	6.00	1767.00	< 0.001**

* Significant at 0.01 level.

** Significant at 0.001 level.

perceived QOL and health among nursing students. Furthermore, respondents' age was negatively associated with their perceived overall QOL and health and the environmental domain. This finding implies that an increase of one year in the students' age corresponds to 0.02 decreases in the overall QOL (95%CI = -0.03, -0.00, p < 0.01) and

health (95%CI = -0.03, -0.00, p < 0.05) scores and a drop of 0.36 (95%CI = -0.58, -0.13, p < 0.01) in the environmental domain score. Fourth year nursing students reported better overall health (β = -0.14, 95%CI = -0.24, -0.03, p < 0.05), physical health (β = -3.68, 95%CI = -5.37, -2.00, p < 0.001), psychological health (β = -3.06, 95%CI = -4.90, -1.23, p < 0.01), and environmental domain (β = -3.51, 95%CI = -5.34, -1.69, p < 0.001) than third year nursing students. Fourth-year students also showed better overall health (β = -0.20, 95%CI = -0.31, -0.08, p < 0.01) and physical health (β = -3.01, 95%CI = -4.86, -1.17, p < 0.01), as well as environmental domain (β = -3.22, 95%CI = -5.38, -1.06, p < 0.01) compared with second- and first-year students, respectively. Regarding the type of community, students from urban communities indicated better overall health than those from rural (β = -0.14, 95%CI = -0.25, -0.02, p < 0.05) and suburban (β = -0.20, 95%CI = -0.33, -0.08, p < 0.01) areas, as well as better environmental domain (β = -2.69, 95%CI = -4.82, -0.55, p < 0.05) compared with students from suburban areas. Students with a monthly

Table 4
Results of the multiple linear regression analyses to assess the independent relationship between the socio-demographic variables and quality of life – Part 1 (n = 2012).

Predictor variables	Overall QOL			Overall health			Physical health		
	β	SE	95%CI	β	SE	95%CI	β	SE	95%CI
Age	-0.02**	0.01	-0.03, -0.00	-0.02*	0.01	-0.03, -0.00	-0.19	0.10	-0.39, 0.02
Country (Reference group: USA)									
Chile	-0.61***	0.10	-0.81, -0.40	-0.68***	0.12	-0.91, -0.44	-5.58**	1.87	-9.24, -1.92
Egypt	-0.65***	0.10	-0.84, -0.46	-0.32**	0.11	-0.53, -0.10	-14.66***	1.75	-18.09, -11.23
Greece	-0.258	0.10	-0.44, -0.05	0.22	0.11	-0.00, 0.44	2.14	1.76	-1.32, 5.59
Hong Kong	-1.30***	0.10	-1.50, -1.10	-1.23***	0.12	-1.46, -1.01	-11.49***	1.83	-15.08, -7.89
India	-0.12	0.10	-0.32, 0.08	-0.10	0.12	-0.32, 0.13	-2.49	1.83	-6.07, 1.10
Kenya	-0.19	1.12	-0.43, 0.05	0.25	0.14	-0.02, 0.53	-0.06	2.19	-4.34, 4.23
Oman	-0.51***	1.11	-0.74, -0.29	0.07	0.13	-0.18, 0.32	-22.95***	1.99	-26.86, -19.04
Saudi Arabia	-0.22	0.10	-0.41, -0.02	0.16	0.11	-0.06, 0.38	-9.49***	1.77	-12.96, -6.01
Gender (Reference group: female)									
Male	0.05	0.04	-0.03, 0.13	0.09	0.05	-0.01, 0.18	-0.32	0.75	-1.79, 1.15
Year of study (reference group: 4th year)									
1st year	-0.02	0.06	-0.13, 0.09	-0.03	0.07	-0.16, 0.09	-0.70	1.01	-2.68, 1.29
2nd year	0.04	0.05	-0.07, 0.14	-0.20**	0.06	-0.31, -0.08	-3.01**	0.94	-4.86, -1.17
3rd year	-0.00	0.05	-0.10, 0.09	-0.14*	0.06	-0.24, -0.03	-3.68***	0.86	-5.37, -2.00
Type of living community (reference group: Urban)									
Rural	0.03	0.05	-0.07, 0.13	-0.14*	0.06	-0.25, -0.02	0.09	0.92	-1.71, 1.89
Suburban	-0.11	0.06	-0.22, 0.01	-0.20**	0.06	-0.33, -0.08	-0.50	1.00	-2.47, 1.46
Monthly family income (reference group: 2000USD and below)									
Above 2000USD	0.31***	0.04	0.23, 0.39	0.08	0.05	-0.01, 0.18	1.38	0.75	-0.09, 2.84
R ² (Adjusted R ²)	0.210 (0.204)			0.231 (0.224)			0.211 (0.205)		

* Significant at 0.05 level.

** Significant at 0.01 level.

*** Significant at 0.001 level.

Table 5

Results of the multiple linear regression analyses to assess the independent relationship between the socio-demographic variables and quality of life – Part 2 (*n* = 2012).

Predictor variables	Psychological health			Social relationships			Environmental domain		
	β	SE	95%CI	β	SE	95%CI	β	SE	95%CI
Age	0.06	0.11	-0.17,0.28	-0.10	0.14	-0.380,17	-0.36**	0.11	-0.58, -0.13
Country (reference group: USA)									
Chile	-2.18	2.04	-6.17,1.81	-4.98*	2.48	-9.84, -0.12	-9.83***	2.03	-13.80, -5.85
Egypt	-9.56***	1.91	-13.30, -5.82	-18.05***	2.32	-22.61, -13.50	-18.16***	1.90	-21.89, -14.44
Greece	5.47**	1.92	1.71, 9.24	-3.05	2.34	-7.63, 1.53	-6.26**	1.91	-10.01, -2.51
Hong Kong	-12.89***	2.00	-16.81, -8.96	-17.58***	2.43	-22.35, -12.81	-17.08***	1.99	-20.99, -13.18
India	5.54**	2.00	1.63,9.45	-30.86***	2.43	-35.62, -26.10	-5.68**	1.99	-9.57, -1.78
Kenya	7.00**	2.39	2.32, 11.68	1.08	2.90	-4.61, 6.77	-10.01***	2.38	-14.66, -5.35
Oman	-6.04**	2.18	-10.30, -1.77	-49.09***	2.65	-54.28, -43.90	-22.52***	2.17	-26.77, -18.27
Saudi Arabia	4.54*	1.93	0.75,8.33	-7.43**	2.35	-12.04, -2.82	-9.11***	1.92	-12.88, -5.34
Gender (reference group: female)									
Male	1.45	0.82	-0.153,0.6	-0.86	0.99	-2.80, 1.09	1.21	0.81	-0.39, 2.80
Year of study (reference group: 4th year)									
1st year	-0.23	1.11	-2.40,1.94	1.46	1.35	-1.18,4.10	-3.22**	1.10	-5.38, -1.06
2nd year	-1.04	1.03	-3.05,0.97	-0.36	1.25	-2.81,2.08	-1.71	1.02	-3.71,0.30
3rd year	-3.06**	0.94	-4.90, -1.23	-0.26	1.14	-2.49, 1.97	-3.51***	0.93	-5.34, -1.69
Type of living community (reference group: Urban)									
Rural	0.92	1.00	-1.04,2.88	-0.53	1.22	-2.92,1.856	-0.45	1.00	-2.40,1.51
Suburban	-1.96	1.09	-4.11,0.18	0.12	1.33	-2.49,2.72	-2.69*	1.09	-4.82, -0.55
Monthly family income (reference group: 2000USD and below)									
Above 2000USD	2.69**	0.82	1.09, 4.29	1.41	0.99	-0.53, 3.36	4.28***	0.81	2.69, 5.88
R ² (adjusted R ²)		0.178 (0.171)		0.369 (0.364)			0.136 (0.129)		

* Significant at 0.05 level.

** Significant at 0.01 level.

*** Significant at 0.001 level.

family income of > 2000 USD revealed significantly better overall QOL (β = 0.31, 95%CI = 0.23, 0.39, *p* < 0.001), psychological health (β = 2.69, 95%CI = 1.09, 4.29, *p* < 0.01), and environmental domain (β = 4.28, 95%CI = 2.69, 5.88, *p* < 0.001) than students with lower monthly family income.

5. Discussion

This study sought to examine the QOL of nursing students from nine countries and its predictors. The overall perceived QOL and health of the respondents were similar to that of previous studies (Neves et al., 2013; Oliveira et al., 2011). Furthermore, the highest QOL domain was recorded in physical health, whereas the lowest is in social health. Interestingly, studies in Brazil (Moritz et al., 2016) and Hong Kong (Mak et al., 2012) that used the same tool have found contradictory results. These authors found their respondents' social health domain garnered the highest score, whereas the physical domain was the lowest. In the current study, respondents' low scores in the social health domain may be attributed to their perception of their academic life as very busy that necessitate exclusive dedication by engaging in multiple activities that require extended study hours (De Araujo et al., 2015). The high score obtained in the physical health domain suggest participants still find time to perform daily activities, exercise, and/or obtain sufficient sleep. Zhang et al. (2012) found a significant association between physical exercise of students and their QOL.

The respondents' country of residence was a significant predictor of their QOL dimensions and overall perceived QOL and health. This result is difficult to interpret as it may be related to the affluence or political state of their countries; further study necessitates investigation on this matter. Nevertheless, the results posed empirical information that QOL of nursing students significantly varied across different countries, which is a consistent phenomenon on QOL of adults and older people (Caballero et al., 2013). Among the nine countries, students from USA and Greece reported the highest overall QOL and health; the lowest

were indicated by respondents from Hong Kong. These findings may be related to the high and low scores obtained by each country on the different dimension of the tool. Nursing students from USA indicated the highest scores in the environmental domain, whereas those from Greece perceived physical health as their best dimension. The high scores obtained by nursing students from USA may be attributed to the high income status of the country, where individual items of the domain, such as freedom, safety, health and social care, leisure, and transport, can be achieved as compared with those from low- or middle-income countries. In Greece, a plausible explanation may be related to the WHO report that 84.6% of the adult population meets the recommended physical activity levels for health (WHO, 2015). According to Klainin-Yobas et al. (2015), physically fit students due to regular exercise showed better perceived physical and psychological health than their counterparts.

The overall low scores among nursing students from Hong Kong could be attributed to the low score obtained in the psychological dimension. A similar result was found in China, where nursing students reported low scores in the same domain (Zhang et al., 2012). One main reason for this finding may be related to academic structure and design. In Hong Kong, the academic load of the undergraduate course is extremely high with two clinical shifts which could lead to feelings of anxiety and stress among students. The high academic load may also prevent the routine practice of exercise (as seen in the low score in physical health). This finding is confirmed by a recent study conducted in Hong Kong, which reported approximately 70% of the nursing students experienced stress related to education (Ho et al., 2015). Shultz (2011) posited the nursing students' perception of stress negatively affects their psychological aspect, which further influences their well-being. Klainin-Yobas et al. (2015) reiterated the lack of physical exercise among students might adversely affect their psychological health. Hence, psychological health is the most important indicator of QOL in the current study.

Interestingly, Omani nursing students obtained the lowest in three

dimensions (physical, social, and environmental domains). This finding can be attributed to the recent changes in the curricular structure and the shifts in program design from diploma to bachelor's degree. The physical demands for the baccalaureate degree increased but contact hours remained the same to that of the diploma program. Hence, the inclusion of additional professional concepts and electives, as well as independent learning activities, without increasing contact hours resulted in student saturation, burnout, and stress. Social and environmental components are influenced by the weight of work and independent learning activities that require time outside the official hours provided for in campus learning. Nursing students from Kenya reported the highest scores in psychological and social domains. This result can be attributed to their social integration, as [Rop \(2013\)](#) found that recreational activities play a major role in promoting positive mental and physical health.

Moreover, monthly family income was identified as a significant predictor of the QOL of nursing students in this study. Low family income may demand students to look for jobs to support their financial needs. [Gibbons et al. \(2008\)](#) found students who worked part-time to cover living expenses experience overwhelming stress from managing their time between their clinical and part-time jobs. Another study by [Evans \(2016\)](#) reported residents with low socioeconomic status indicated about four times the odds of reporting poor mental health QOL compared with residents with high socioeconomic status in a micropolitan community in Iowa, USA. These findings may further support the results of our study.

Furthermore, increase in age seems to have a negative impact on the QOL of nursing students. An aging individual progressively assumes many and more complex responsibilities which may influence negatively their QOL. In addition, major courses in the nursing curriculum are placed in the later years of the nursing program, which may overwhelm students ([Gibbons et al., 2008](#); [Felicilda-Reynaldo et al., 2017](#)), thereby negatively affecting their QOL.

6. Limitations

This study has several limitations. First, the non-equivalence sample size across the countries ($n = 81\text{--}417$). Second, the use of convenience sampling technique and the inclusion of only one university in each country may have limit the generalizability of the findings and may not provide representation of the entire nursing population in each country, respectively. Future studies should be conducted; a national survey of nursing in each country using random sampling technique is recommended in order to validate the current findings. Third, the difference in curriculum design across each nursing program in different countries can be a confounding factor to QOL. Thus, the plausible explanation for the subgroup comparison of QOL across years of study becomes general, for example, overwhelming advanced courses in senior year study may relate to perceived QOL. However, more research is necessary to explore the cause and effect relationship of the aforementioned variables and to examine other confounding factors. Fourth, the WHOQOL-BREF is a generic QOL instrument, and it is non-specific to reflect the QOL of nursing students. However, to capture the QOL of nursing students across nine countries, only this instrument has been translated and validated in respective languages and cultures. Fifth, the variable “family income” should be taken cautiously in this study because the standards and costs of living vary from country to country. Future studies should consider using other subjective financial condition that may be more appropriate to reflect the variability of standards of living in each country. The last limitation is addressed by not measuring the variable of stress in the current study because of the absence of an appropriate translated instrument. This limitation indicates the importance of a methodological study regarding instrument translation and validation as pre-requisites for a cross-cultural study.

7. Conclusions and Implications

This work is the first study to investigate the QOL of nursing students from a global perspective. With participants recruited from nine countries, the results indicate the significant difference of the QOL of nursing students from different countries for either overall or individual QOL domain. In general, country of residence, age, and monthly family income were salient predictors of the QOL of nursing students. The result poses implications for nursing educators worldwide responsible for educating nurses when the QOL of students is concerned.

Considering nursing students' stressful lives, the present study underscores the importance of ensuring the highest level of well-being among nursing students. The QOL of nursing students in Greece, Kenya, and the USA reported the highest scores while that in Egypt, Oman, and Hong Kong demonstrated the lowest. The reasons behind may not be simply related to the level of country development or household income. A multi-country study owns its value on uncovering the global phenomenon or difference, which informs further study on exploring the reasons behind or intervention to follow-up. Developing knowledge, skills, and attitudes to adequately perform the duties of nursing students is important in nursing education; however, the maintenance of high levels of well-being among nursing students should also be prioritized to maximize their learning and to ensure their satisfaction in their student life. The average range of scores in the QOL domains in this study calls for interventions that focus on enhancing all the life domains of students. Nursing educators should create programs and policies that can create a friendly and safe learning environment that encourages positive socialization given that the social and environmental domains were rated as lowest in this study. Furthermore, the lowest and highest QOL domain in each country in this work should be considered by the respective countries as they create policies and interventions to address the country-specific weaknesses on QOL.

Conflict of Interest Statement

No conflict of interest has been declared by the authors.

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Author Contributions

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Acquisition of data: All authors.

Data analysis and interpretation of data: JPC.

Drafting the article: JPC, RFD,FR, PCC.

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