

## Original Article

## Depression, Anxiety and Stress among Undergraduate Nursing Students in a Public University in Sri Lanka

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### Abstract

**Background:** Nursing students face tremendous stressors during their student life that lead to physical and mental health problems and poor academic performance. But, evidence relating to stress, anxiety and depression in this population in Sri Lanka is limited.

**Objective:** The aim of this study was to examine depression, anxiety and stress and associated factors among undergraduate nursing students in Sri Lanka.

**Methodology:** This cross-sectional study was conducted at Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya. A purposive sample of 92 undergraduate nursing students completed a pre-tested self-administered questionnaire. Depression, anxiety and stress were measured by the Sinhala version of Depression, Anxiety and Stress Scale.

**Results:** The sample consisted of 30.4% male and 69.6% female students. The mean age was 24.1 years ( $SD \pm 1.6$ ). The majority of the respondents reported mild to extremely severe symptoms of depression (51.1%), anxiety (59.8%) and stress (82.6%). It showed a significant positive relationship between depression and anxiety ( $r = .689, p < .001$ ), depression and stress ( $r = .785, p < .001$ ) and anxiety and stress ( $r = .763, p < .001$ ). The factors associated with depression were age, academic year of the students, satisfaction with the nursing program, physical well-being factors, possible stressors, self-rated physical health and self-rated mental health; the factors associated with anxiety were age, self-rated physical health and self-rated mental health and the factors associated with stress were possible stressors, self-rated physical health and self-rated mental health.

**Conclusion:** Depression, anxiety and stress are highly prevalent among undergraduate nursing students and correlations between these variables are positive. Self-rated physical health and self-rated mental health are the factors most closely related to negative emotional states. The improvement of mental health among nursing students is essential. The findings call for initiation of stress management interventions and increased counseling facilities for nursing students.

**Key words** – Depression, anxiety, stress, nursing students, Sri Lanka

### Introduction

The process of education is a very stressful experience (Manpreet & Maheshwari, 2015; Papazisis et al., 2008) and university students encounter a great deal of academic, personal and social stress during their academic activities (Kurupparachchi et al., 2012). Stress can be identified as a multi-dimensional phenomenon that is focused on a dynamic relationship

between the individuals and the environment (Yazdani, Rezaei & Pahlavanzadeh, 2010). Although some degree of stress is essential to stimulate and motivate individuals to achieve their goals (Ellawela & Fonseka, 2011), stress can be a barrier for concentrating, problem solving, decision making, and other necessary abilities for students' learning (Yazdani et al., 2010).

It is well known that stress is associated with the development of anxiety and depression, and a positive relationship between stress, anxiety and depression is well-established (Kurebayashi, Prado & Silva, 2012; Manpreet & Maheshwari, 2015; Papazisis et al., 2008; Ratanasiripong, 2012). According to the Psychology Foundation of Australia (PFA) (2014), these three problems indicate a composite state of negative emotional symptoms.

These problems lead to poor psychological well-being that interfere with learning and limit the academic performance of students (Chernomas & Shapiro, 2013; Sreeramareddy et al., 2007; Uras et al., 2012) and lower productivity, increase suicidal thoughts and minimize quality of life (Manpreet & Maheshwari, 2015; Papazisis et al., 2008).

Nursing is one of the most stressful professions in the world (Najimi, Goudarzi, & Sharifirad, 2012; Sharma et al., 2014). Hence, adjusting to a nursing career is very stressful. Nursing students face stressful events in their study period that lead to negative consequences in their academic, professional and personal life (Akhu-Zaheya et al., 2015; Damayanthi, 2014; Sharma & Kaur, 2011).

In addition to class room learning, they have to acquire skills in laboratories and clinical settings, and undergo extensive evaluation processes consisting of theory and practical examinations that lead to a complex learning environment.

Evidence indicates that there is an inverse relationship between stress and lack of professional knowledge and skills, poor patient care and clinical performance among nursing students (Akhu-Zaheya et al., 2015).

Recently, an undergraduate nursing degree program was introduced to the national university system in Sri Lanka. Therefore, nursing education at present is in a transition period from diploma programs to degree programs.

Consequently, the nursing undergraduates in Sri Lanka encounter several difficulties in addition to the common stressful indicators specific to nursing education. However, there is little evidence relating to mental health problems among university nursing students in Sri Lanka (Damayanthi, 2014; Illankoon & Warnakulasooriya, 2014).

Internationally, there are numerous studies related to stress, anxiety and depression among nursing students. These studies show that stress, anxiety and depression symptoms are highly prevalent (Amr et al., 2011; Kurebayashi et al., 2012; Manpreet & Maheshwari, 2015; Papazisis et al., 2008; Papazisis et al., 2014; Reeve et al., 2013; Uras et al., 2012).

Moreover, studies have shown that socio-demographic data such as gender, family residence, father's education, father's work and grade of previous year (Amr et al., 2011; Uras et al., 2012), interest in the field of study and various stressors such as fear of future, self-reported anxiety and depression, increased class workload, accommodation problems, congested classrooms, student assignments, stress related patient care, stress from teachers and nursing staff, dissatisfaction about the training environment, boredom at work, fear of failure in examinations, conflict situations with colleagues, unavailability of professional counselling services, death of a family member or a close person, increasing arguments with family members, and missing opportunities to meet loved ones were associated with negative emotional symptoms (Akhu-Zaheya et al., 2015; Amr et al., 2011; Dalir & Mazloum, 2012; Ellawela & Fonseka, 2011).

Additionally, studies found that there was a association between stress and the physical well-being factors: feeling tired easily, getting nervous, poor sleep and chest tightness, loss of appetite, reduced or increased psychomotor speed, weight changes and loss of libido (Furegato, Santos & Silva, 2008; Illankoon & Warnakulasooriya, 2014).

In Sri Lanka, there is limited evidence relating to mental health problems among undergraduate nursing students. There are no reported studies that investigate the relationship between stress, anxiety and depression among university nursing students, and researchers have paid little attention toward factors associated with mental health problems. Therefore, the findings of this study could be used in nursing education and counselling activities.

### **Aims**

Owing to a paucity of information, this study aimed to examine the prevalence of depression, anxiety and stress among nursing students in Sri

Lanka. In addition, this study further examined the relationship between depression, anxiety and stress and their associated factors among nursing students.

## Methodology

### Sample

This cross-sectional study was conducted among undergraduate nursing students in the Department of Nursing, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka. The total number of students during the data collection period was 132. Due to the small number of students, all nursing students enrolled in the undergraduate degree program from first to fourth year of studies were included.

The students who could not read and understand the Sinhala language and who refused to participate in the study were excluded. Additionally, the students who were previously diagnosed with major psychiatric illnesses were excluded. Out of 132 students, 110 students who can read and understand Sinhala language were included. Out of the 110 students, 95 students filled and returned the questionnaires, indicating a response rate of 86.4%.

### Instrument of data collection

The data collection instrument used in this study was a self-administered questionnaire consisting of 6 sections. This instrument was pre-tested among 8 nursing students with similar characteristics to those of the study population. Section 1 consisted of questions regarding the socio-demographic variables. Additionally, past history of major psychiatric illness was assessed by one question; “Have you been previously diagnosed with any major psychiatric illness by a psychiatrist?”

In section 2, student nurses’ overall satisfaction with nursing program was assessed by two questions:

- (1) Please state the main reason for selecting the nursing program as a choice for your career pathway and
- (2) Overall, how do you rate your satisfaction with the chosen program (nursing) based on a five point scale from fully satisfied to extremely unsatisfied.

Section 3 assessed the presence of physical well-being factors under four categories:

- (1) somatic symptoms: back pain, allergies, infectious diseases, frequent cold and generalized body pain;
- (2) agitation symptoms: sleep problems, headache, nausea and lack of appetite;
- (3) eating, drinking and smoking related problems; and
- (4) chronic illnesses and health problems related with daily activities (Hojat et al., 2003).

Section 4 assessed possible stressors that students may face based on a four point scale consisting of relationship problems with parents, relationship problems with the opposite gender, trouble with class mates, personal illness or injury, death of family members, change of family members’ health, financial problems, self-rated anxiety and depression, congested class rooms, increased class work load, inadequate academic staff, clinical training, clinical examinations, paper-based examination, fear of future/job security, accommodation problems, poor counselling services, environmental health problems, and time limitation for extra activities.

In section 5, the overall health status among nursing students was assessed by two questions:

- (1) ‘How do you rate your present physical health?’ and
- (2) ‘How do you rate your present mental health?’ based on a five point scale ranging from very poor to very good.

Section 6 assessed depression, anxiety and stress among nursing students using the Depression, Anxiety and Stress Scale - 21 (DASS-21) (PFA, 2014). This is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress (PFA, 2014). The DASS-21 is a short version of the original 42-item questionnaire, and consists of 21 items in three scales: depression (DASS-D), anxiety (DASS-A) and stress (DASS-S). The items are scored on a 4-point Likert-type scale of 0 to 3 and the total scores for each scale were multiplied by the sum of 2. The possible range for each scale is from 0 to 42, with higher scores indicating more depression, anxiety and stress. In the present study, the Sinhala version of DASS-21 (DASS -21 S) was used (PFA, 2014). In a validation study, Rekha (2012) reported that the internal consistency of the sub-scales of depression, anxiety and stress in the DASS-21 S were 0.83, 0.76, and .80, respectively. In a

confirmatory factor analysis, it further reported that the factor structure of DASS-21 S was similar to that of the original DASS-21 (Rekha, 2012).

### Data collection

Data collection was conducted in the months of November and December, 2015. The respondents who met the inclusion criteria were selected. Questionnaires were administered during the study period.

### Ethical approval

Ethical approval was obtained from the Ethics Review Committee, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka.

Permission to conduct this study was obtained from the Dean of Faculty of Allied Health Sciences, University of Peradeniya. Written information was given to the participants.

Verbal informed consent was obtained prior to data collection from participants.

### Statistical Analysis

Data was recorded and analyzed using the Statistical Package for Social Sciences (SPSS) Version 22. During the analysis, one respondent who was previously diagnosed with a major psychiatric problem and 2 respondents with missing values were excluded. Finally, 92 respondents were included.

Descriptive statistics were used to describe socio-demographic characteristics, satisfaction with the nursing program, number of physical well-being factors, number of possible stressors, and the prevalence of depression, anxiety and stress.

The symptoms of depression, anxiety and stress were grouped into five categories: normal, mild, moderate, severe and extremely severe based on the recommended cut-off scores (Lovibond & Lovibond, 1995).

An assessment of the normality of data was tested by the Shapiro-Wilk test. The data was not normally distributed as such the Spearman's correlation was used to examine the relationship among depression, anxiety and stress and Pearson's Chi-squared test was used to identify associations between independent variables with depression, anxiety and stress.

Alpha level of significance was set at  $< 0.05$ .

## Results

### Demographic characteristics

The total sample consisted of 92 undergraduate nursing students consisting of 30.4% males and 69.6% females ranging from 21 to 27 years. The mean age of the sample was 24.1 years ( $SD \pm 1.6$ ).

Almost all the respondents were Sinhalese (98.9%). The major religious group was Buddhist (96.7%).

From the sample, the majority of the respondents was from the fourth year class (32.6%) and lived in university accommodation (87%).

The majority of the respondents' fathers and mothers had a secondary level education: 62.0% and 66.3%, respectively. From the sample, 19.6% of the respondents stated that their monthly family income was insufficient to cover their family expenditure (Table 1).

### Satisfaction with nursing program

The majority of the respondents were not satisfied with the nursing program (26.1% unsatisfied and 26.1% extremely unsatisfied). Only 2.2% of the respondents were fully satisfied (Table 1).

### The main reason for selecting nursing program as a career pathway

From the sample, 26.1% of the respondents stated that the main reason for selecting a nursing program as a choice of their career pathway was 'aptitude' followed by being unsuccessful in entering another university degree programs (20.7%), recommendation from parents (13.0%) and employment opportunities (13.0%) (Table 1).

### Physical well-being factors and possible stressors

The mean number of physical well-being factors was 4.1 ( $SD \pm 2.9$ ). The majority of the respondents reported 1-3 physical well-being factors (40.2%), followed by 4-6 (28.3%) and 7-9 factors (18.5%). The mean number of possible stressors was 10.2 ( $SD \pm 3.9$ ). The majority of the respondents reported 9-12 stressors (35.9%) followed by 5-8 (28.3%) and 13-16 stressors (22.8%) (Table 1).

**Table 1: Descriptive statistics for socio-demographic characteristics, satisfaction with nursing program, reasons for selecting nursing program as a career path way, physical well-being factors, possible stressors, SRPH and SRMH of the respondents (n = 92)**

Demographic characteristic		Number	Percentage %	Mean ± SD
Age				24.07 ± 1.616
Gender	Male	28	30.4	
	Female	64	69.6	
Ethnicity	Sinhalese	91	98.9	
	Muslims	1	1.1	
Religion	Buddhism	89	96.7	
	Islam	1	1.1	
	Catholic/Christians	2	2.2	
Academic year of the student	First year	24	26.1	
	Second year	17	18.5	
	Third year	21	22.8	
	Fourth year	30	32.6	
Type of residence	With family	4	4.3	
	In university accommodation	80	87	
	Rented places	7	7.6	
	Relative places	1	1.1	
Father's education	No formal education	2	2.2	
	Primary education	14	15.2	
	Secondary education	57	62	
	Tertiary education	19	20.7	
Mother's education	No formal education	1	1.1	
	Primary education	12	13	
	Secondary education	61	66.3	
	Tertiary education	18	19.6	
Monthly family income	Sufficient for expenditure	25	27.2	
	Intermediate	49	53.3	
	Insufficient for expenditure	18	19.6	
	Satisfaction with nursing program			
	Fully satisfied	2	2.2	
	Satisfied	20	21.7	
	Neither satisfied nor unsatisfied	22	22.9	
	Unsatisfied	24	26.1	
	Extremely unsatisfied	24	26.1	
The main reason for selecting nursing program as a choice for career pathway	Aptitude/interest	24	26.1	
	Recommendation from parents	12	13	
	Recommendation from relatives/friends	3	3.3	
	Employment opportunity	12	13	
	Not successful in other university degree program	19	20.7	
	Lack of awareness	11	12	
	Others	11	12	
Number of physical well-being factors	None	8	8.7	4.12 ± 2.866
	1-3 well-being factors	37	40.2	
	4-6 well-being factors	26	28.3	
	7-9 well-being factors	17	18.5	
	10-12 well-being factors	4	4.3	
	13-15 well-being factors	0	0.0	
Number of possible stressors	None	0	0.0	10.24±3.853
	1-4 stressors	6	6.5	
	5-8 stressors	26	28.3	
	9-12 stressors	33	35.9	
	13-16 stressors	21	22.8	
	17-19 stressors	6	6.5	
SRPH	Very poor	2	2.2	
	Poor	15	16.3	
	Neither poor or good	17	18.5	
	Good	48	52.2	
	Very good	10	10.9	
SRMH	Very poor	8	8.7	
	Poor	18	19.6	
	Neither poor or good	19	20.7	
	Good	41	44.6	
	Very good	6	6.5	

**Table 2. Distribution of depression, anxiety and stress among the respondents (n = 92)**

Category	n	%	Mean $\pm$ SD
<b>Depression</b>			17.76 $\pm$ 11.646
Normal	45	48.9	
Mild	11	12.0	
Moderate	7	7.6	
Severe	15	16.3	
Extremely severe	14	15.2	
<b>Anxiety</b>			11.15 $\pm$ 9.633
Normal	37	40.2	
Mild	9	9.8	
Moderate	20	21.7	
Severe	11	12.0	
Extremely severe	15	16.3	
<b>Stress</b>			18.91 $\pm$ 10.017
Normal	16	17.4	
Mild	17	18.5	
Moderate	23	25.0	
Severe	16	17.4	
Extremely severe	20	21.7	

**Table 3. Relationship between depression, anxiety and stress among the respondents (n = 92)**

	Depression	Anxiety	Stress
Depression	1.0		
Anxiety	.689**	1.0	
Stress	.785**	.763**	1.0

\*\*Correlation is significant at the 0.01 level (2-tailed).

**Table 4. Factors associated with depression among the respondents (n = 92)**

Variable	No depression (n = 45)	Mild to extremely severe depression (n =47)	X <sup>2</sup>	df	P value
<b>Age</b>			12.797	1	< 0.001
22-24 years	33 (66.0)	17 (34.0)			
25-27 years	12 (28.6)	30 (71.4)			
<b>Gender</b>			1.091	1	0.296
Male	16 (57.1)	12 (42.9)			
Female	29 (45.3)	35 (54.7)			
<b>Academic year of students</b>			6.224	1	0.013
First year/second year	26 (63.4)	15 (36.5)			
Third year/fourth year	19 (37.3)	32 (62.7)			
<b>Type of residence</b>			1.741	1	0.187
University accommodation	37 (46.3)	43 (53.8)			
Others	8 (66.7)	4 (33.3)			
<b>Father's education</b>			0.009	1	0.924
None/primary education	8 (50.0)	8 (50.0)			
Secondary/tertiary education	37 (48.7)	39 (51.3)			
<b>Mother's education</b>			0.966	1	0.326
None/primary education	8 (61.5)	5 (38.5)			
Secondary/tertiary education	37 (46.8)	42 (53.2)			
<b>Monthly family income</b>			0.131	1	0.717
Sufficient for family expenditure	13 (52.0)	12 (48.0)			
Insufficient for family expenditure	32 (47.8)	35 (52.2)			
<b>Reason for selecting nursing program as a career pathway</b>			1.153	1	0.283
Aptitude	14 (58.3)	10 (41.7)			
Others	31 (45.6)	37 (54.4)			
<b>Satisfaction with nursing program</b>			12.531	1	< 0.001
Fully satisfied/satisfied/ neither satisfied or not	30 (68.2)	14 (31.8)			
Extremely unsatisfied/unsatisfied	15 (31.3)	33 (68.8)			
<b>Physical well-being factors</b>			6.863	1	0.009
0-6 factors	40 (56.3)	31 (43.7)			
7-15 factors	5 (23.8)	16 (76.2)			
<b>Possible stressors</b>			10.353	1	0.001
0-8 stressors	23 (71.9)	9 (28.1)			
9-19 stressors	22 (36.7)	38 (63.3)			
<b>SRPH</b>			17.316	1	< 0.001
	38 (65.5)	20 (34.5)			
	7 (20.6)	27 (79.4)			
<b>SRMH</b>			34.172	1	< 0.001
	37 (78.7)	10 (21.3)			
	8 (17.8)	37 (82.2)			

**Table 5. Factors associated with anxiety among the respondents (n = 92)**

Variable	No anxiety (n = 37)	Mild to extremely severe anxiety (n =55)	X <sup>2</sup>	df	P value
<b>Age</b>			4.359	1	0.037
22-24 years	25 (50.0)	25 (50.0)			
25-27 years	12 (28.6)	30 (71.4)			
<b>Gender</b>			1.602	1	0.206
Male	15 (50.0)	15 (50.0)			
Female	23 (35.9)	41 (64.1)			
<b>Academic year of students</b>			3.724	1	0.054
First year/second year	21 (51.2)	20 (48.8)			
Third year/fourth year	16 (31.4)	35 (68.6)			
<b>Type of residence</b>			0.549	1	0.459
University accommodation	31 (38.8)	49 (61.3)			
Others	6 (50.0)	6 (50.0)			
<b>Father's education</b>			0.059	1	0.807
None/primary education	6 (37.5)	10 (62.5)			
Secondary/tertiary education	31 (40.8)	45 (59.2)			
<b>Mother's education</b>			1.170	1	0.279
None/primary education	7 (53.8)	6 (46.2)			
Secondary/tertiary education	30 (38.0)	49 (62.0)			
<b>Monthly family income</b>			0.964	1	0.326
Sufficient for family expenditure	8 (32.0)	17 (68.0)			
Insufficient for family expenditure	29 (43.3)	38 (56.7)			
<b>Reason for selecting nursing program as a career pathway</b>			0.426	1	0.514
Aptitude	11 (45.8)	13 (54.2)			
Others	26 (38.2)	42 (61.8)			
<b>Satisfaction with nursing program</b>			3.357	1	0.067
Fully satisfied/satisfied/ neither satisfied or not	15 (31.3)	33 (68.8)			
Extremely unsatisfied/unsatisfied	22 (50.0)	22 (50.0)			
<b>Physical well-being factors</b>			3.047	1	0.081
0-6 factors	32 (45.1)	39 (54.9)			
7-15 factors	5 (23.8)	16 (76.2)			
<b>Possible stressors</b>			3.400	1	0.065
0-8 stressors	17 (53.1)	15 (46.9)			
9-19 stressors	20 (33.3)	40 (66.7)			
<b>SRPH</b>			4.239	1	0.040
Good/very good	28 (48.3)	30 (51.7)			
Very poor/poor/neither poor or good	9 (26.5)	25 (73.5)			
<b>SRMH</b>			11.864	1	0.001
Good/very good	27 (57.4)	20 (42.6)			
Very poor/poor/neither poor or good	10 (22.2)	35 (77.8)			

**Table 6. Factors associated with stress among respondents (n = 92)**

Variable	No stress (n = 16)	Mild to extremely severe stress (n =76)	X <sup>2</sup>	df	P value
<b>Age</b>			0.519	1	0.471
22-24 years	10 (20.0)	40 (80.0)			
25-27 years	6 (14.3)	36 (85.7)			
<b>Gender</b>			1.622	1	0.203
Male	9 (14.1)	55 (85.9)			
Female	7 (25.0)	21 (75.0)			
<b>Academic year of students</b>			0.232	1	0.630
First year/second year	8 (19.5)	33 (80.5)			
Third year/fourth year	8 (15.7)	43 (84.3)			
<b>Type of residence</b>			2.441	1	0.118
University accommodation	12 (15.0)	68 (85.0)			
Others	4 (33.3)	8 (66.7)			
<b>Father's education</b>			0.323	1	0.570
None/primary education	18 (18.4)	62 (81.6)			
Secondary/tertiary education	2 (12.5)	14 (87.5)			
<b>Mother's education</b>			0.341	1	0.559
None/primary education	3 (23.1)	10 (76.9)			
Secondary/tertiary education	13 (16.5)	66 (83.5)			
<b>Monthly family income</b>			0.046	1	0.830
Sufficient for family expenditure	4 (16.0)	21 (84.0)			
Insufficient for family expenditure	12 (17.9)	55 (82.1)			
<b>Reason for selecting nursing program as a career pathway</b>			0.541	1	0.426
Aptitude	3 (12.5)	21 (87.5)			
Others	13 (19.1)	55 (80.9)			
<b>Satisfaction with nursing program</b>			3.398	1	0.065
Fully satisfied/satisfied/ neither satisfied or not	11 (25.0)	33 (75.0)			
Extremely unsatisfied/unsatisfied	5 (10.4)	43 (89.6)			
<b>Physical well-being factors</b>			1.172	1	0.279
0-6 factors	14 (19.7)	57 (80.3)			
7-15 factors	2(9.5)	19(90.5)			
<b>Possible stressors</b>			3.935	1	0.047
0-8 stressors	9 (28.1)	23 (71.9)			
9-19 stressors	7 (11.7)	53 (88.3)			
<b>SRPH</b>			4.972	1	0.026
Good/very good	14 (24.1)	44 (75.9)			
Very poor/poor/neither poor or good	2 (5.9)	32 (94.1)			
<b>SRMH</b>			10.277	1	0.001
Good/very good	14 (29.8)	3 (70.2)			
Very poor/poor/neither poor or good	2 (4.4)	43 (95.6)			

### **Perceived health status**

Nearly half of the respondents (52.2%) reported good SRPH status. This was followed by neither poor or good (18.5%) and poor (16.3%). From the sample, 44.6% of the respondents stated that their SRMH was good. It was followed by neither poor or good (20.7%) and poor (19.6 %) (Table 1).

### **Prevalence of depression, anxiety and stress**

The internal consistency of the sub scales of DASS-D, DASS-A and DASS-S were tested by

Cronbach's alpha. It showed a coefficient of .896, .854 and .840 respectively, indicating these scales were reliable. The mean score for depression was 17.8 ( $SD \pm 11.6$ ).

Half of the respondents had a normal level of depressive symptoms while 16.3% and 15.2% of the respondents presented severe and extremely severe symptoms, respectively. The mean score of anxiety was 11.1 ( $SD \pm 9.6$ ). The majority of the respondents (40.2%) presented with normal level of anxiety, followed by moderate symptoms (21.7%) and extremely severe symptoms

(16.3%). The mean score of stress was 18.9 ( $SD \pm 10.0$ ). From the sample, 21.7% of the respondents reported extremely severe symptoms of stress while only 17.4% of the respondents reported a normal level of stress (Table 2).

#### ***Relationship between depression, anxiety and stress***

Spearman correlation found that a significant positive relationship between depression and anxiety ( $r = .689, p < .001$ ), depression and stress ( $r = .785, p < .001$ ) stress and anxiety ( $r = .763, p < .001$ ) (Table 3).

#### ***Factors associated with depression, anxiety and stress***

Pearson's Chi-Square tests found that the factors associated with depressive symptoms were age ( $p < 0.001$ ), academic year of the students ( $p = 0.013$ ), satisfaction with the nursing program ( $p < 0.001$ ), physical well-being factors ( $p = 0.009$ ), possible stressors ( $p = 0.001$ ), SRPH ( $p < 0.001$ ) and SRMH ( $p < 0.001$ ) (Table 4). The factors associated with symptoms of anxiety were age ( $p = 0.037$ ), SRPH ( $p = 0.040$ ) and SRMH ( $p = 0.001$ ) (Table 5). The factors associated with symptoms of stress were possible stressors ( $p = 0.047$ ), SRPH ( $p < 0.001$ ) and SRMH ( $p = 0.001$ ) (Table 6).

#### **Discussion**

This study examined the prevalence of depression, anxiety and stress, their inter-relationships and associated factors among nursing students in a public university in Sri Lanka. The findings of this study showed that the prevalence of symptoms of depression, anxiety and stress was high. The majority of the respondents reported mild to extremely severe symptoms of depression (51.1%), anxiety (59.8%) and stress (82.6%). This finding is alarming in terms of increased risk for psychiatric morbidity. In another Sri Lankan study, Illankoon and Warnakulasooriya (2014) also found that there was a high prevalence of stress level among undergraduate nursing students. Similar to these findings, studies conducted in other countries reported the above negative emotional symptoms were highly prevalent among nursing students (Amr et al., 2011; Chernomas & Shapiro, 2013, Kurebayashi et al., 2012; Papazisis et al., 2008, Papazisis et al., 2014; Reeve et al., 2013; Uras et al., 2012). Moreover, our study found a strong significant

positive association between depression, anxiety and stress. This result is consistent with findings of previous studies conducted in other countries (Kurebayashi et al., 2012; Manpreet & Maheshwari, 2015; Papazisis et al., 2008; Papazisis et al., 2014; Ratanasiripong, 2012). This strong association also indicates increased risk for psychiatric morbidity among nursing students. These negative emotional symptoms lead to poor psychological well-being that interfere with learning and limit the academic performance of the students (Chernomas & Shapiro, 2013; Sreeramareddy et al., 2007; Uras et al., 2012). According to Akhu-Zaheya et al. (2015), stress is associated with lack of professional knowledge and skills, patient care and clinical performances of students. Therefore, early recognition of students under poor psychological states is very important factor in enhancing their psychological health. It is well accepted that untreated mental health problems can lead to psychiatric illnesses. From a nursing perspective, nurses are playing a key role in caring and health. Hence, poor mental health status among nursing students has a significant impact on future health and development in the country. Therefore, interventions to improve mental health among nursing students need to be prioritized.

Our study found that SRMH was significantly associated with all three outcome variables: depression, anxiety and stress. This population health measure is a multi-item measure of mental health, self-rated health, health problems, service utilization, and service satisfaction (Ahmad et al., 2014). Therefore, improvement of mental health among nursing students should be prioritized and this factor should be considered in future policy making related to development of programs and interventions for nursing students. To improve mental health, stress management strategies need to be included into the nursing program. Studies have found that stress management strategies are beneficial in managing stress and other mental health problems (Riet et al., 2015; Yazdani et al., 2010).

Our study further found that there was a significant association between SRPH with all three outcome variables. Additionally, it found that 18.5% of the students presented with poor and very poor SRPH status. Many people with physical health problems are at increased risk of poor mental health problems that lead to poor

health outcomes and reduced quality of life (Naylor et al., 2012). The evidence indicated that the self-rated physical health and the self-rated mental health were associated to each other (Levinson & Kaplan, 2014). Moreover, our study found that presence of physical well-being factors was significantly associated with depressive symptoms and 87% of the students experienced 1-9 physical well-being factors. Consequently, physical health is a very important factor in student life that may affect their academic and professional life. Therefore, our finding indicates the need of paying special attention toward physical health and related problems among nursing students.

Our study found that the presence of possible stressors was also significantly associated with depression and stress. According to our findings, 87% of students faced 5-16 stressors among the selected possible stressors. It indicates the prevalence of stressors is very high. Similar to our finding, Amr et al. (2011) also found that the number of stressors were significantly associated with stress among nursing students in Egypt. Our findings highlight the need for paying greater attention to limit the impact of possible stressors on students' life. This factor also needs to be considered in policy making related to the development of programs and interventions for nursing students. To improve the productivity of nursing students, nurse educators need to recognize the most stressful areas to encourage the use of healthy coping strategies (Singh, Sharma & Sharma, 2011). Avoidance, transference, problem solving, optimism, self-reliance strategies, spiritual strategies and relaxing strategies are some of coping strategies used by nursing students (Singh et al., 2011; Seyedfatemi, Tafreshi & Hagani, 2007). The improvement of facilities and re-evaluation of the program might help to make a pleasant learning environment.

Our study further found that age was significantly associated with depression and anxiety, and the academic year of student was significantly associated with depression. Papazisis et al. (2008) also found that anxiety was higher among students in senior classes than junior classes. Usually, parallel to the increasing age, students in senior classes face many problems in their academic and personal life compared to younger students. Heavy academic work load in final years, completing all practical

components and assignments, completing final research projects with deadlines, passing all the examinations, finding job and preparing for new role are some of them. These factors may contribute high depressive and anxiety symptoms among students in senior classes. Therefore, they may need more attention in counseling and stress management strategies compared to younger groups.

Moreover, our study found that satisfaction with the nursing program was significantly associated with depressive symptoms. It also found that the majority of students were not satisfied with the current program. Additionally, nearly a quarter of the respondents stated that the main reason for selecting the nursing program as a choice of their career pathway was 'aptitude'. But it did not show a significant association with depression or the other two negative emotional states. This finding indicates that satisfaction with current program is an important factor behind development of negative emotional issues than their interest toward the nursing course. Therefore, improving satisfaction toward the nursing program is essential to minimize the negative emotional symptoms among nursing students.

There were several limitations of this study. This study utilized a cross-sectional design and it does not help to establish a causal relationship among the variables. Data was collected from one undergraduate nursing program in a selected university in Sri Lanka. There may be unique features specific to the setting and the program that influence respondents' perspectives. Therefore, findings cannot be generalized to other settings. The small sample size and inclusion criteria of this study may also affect the generalization of the findings.

## Conclusion

This is the first reported study to examine depression, anxiety, and stress in one study, and their relationships among nursing students in Sri Lanka. The findings conclude that symptoms of depression, anxiety and stress are highly prevalent among undergraduate nursing students. Moreover, there is a strong positive relationship between stress, anxiety and depression. These results might help to better understand the phenomenon of psychological well-being among nursing students in the selected setting. SRMH and SRPH are the most associated factors

relating to negative emotional states. The planning of effective interventions and policies are very important to limit the psychological health issues among nursing students. Early recognition of stress and related problems are essential, and initiation of stress management programs expanding counseling activities for nursing students are warranted. Providing adequate facilities and resources should be highly prioritized by authorities. Longitudinal studies are warranted to observe time-series changes in mental health aspects among nursing students.

**Acknowledgement:** We are grateful for all the respondents participated in this study. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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