Perceived Stress and Associated Factors among BSc Nursing Undergraduates in University of Sri Jayewardenepura, Sri Lanka

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Abstract *—Nursing education has shifted to the conventional universities in Sri Lanka during the past two decades. Since there is a significant difference between school education and university education, new nurse undergraduate has to get acclimatized with the new university environment while coping the new psychosocial challenges. Consequently, students experience various types of stress which affect their health and academic achievements. Despite several studies have reported evidences about stress among nursing undergraduates in other countries, we could not find any evidence in Sri Lanka.*

A descriptive cross sectional study was performed using a self-administered questionnaire to determine perceived stress levels and associated factors among nursing undergraduates at the University of Sri Jayewardenepura. The questionnaire consisted of standard Perceived Stress Scale (PSS) and personal and academic characteristics. The SPSS statistical package (version 16) was used to analyze the data.

Eighty seven undergraduates representing all four current batches voluntarily participated in the study. Mean perceived stress level was 21.57 (SD=5.921). Nearly half of the students (52.9%) had high perceived stress levels and most common stress related symptoms were easily feeling tired (75.9%), get nervous (69%), poor sleep (32.2%) and chest tightness (29.9%). High level of stress was significantly associated with peer competition (OR=2.5, 1.4-10.9), too many assignments (OR=3.9, 1.4-10.9), inadequate support in clinical area (OR= 3.2, 1.1-8.9), unrealistic expectations of the family (OR= 4.0, 1.2-13.5) and lack of guidance and counseling (OR= 4.8, 1.97-12.2). When adjusted for the influencing variables, unrealistic expectations of the family and lack of guidance and counseling were the strong predictors of reporting high stress.

Almost half of the nursing undergraduates experience high level of stress due to various academic and personal factors. Unrealistic expectations of the family were the strongest predictor of high stress followed by lack of guidance and counseling. These findings have potentials for planning to improve the quality of the nursing education in the university.

Keywords: Perceived Stress**,** Undergraduates, Associated factors

I. INTRODUCTION

Nursing education in the conventional universities was implemented in 2005 in University of Sri Jayewardenepura and since then five conventional universities and few private universities have implemented the graduate nursing education. When new nursing undergraduates enroll the universities directly after school education, they have to get adjusted to new environment with various challenges such as new medium of instructions, the university subculture, new teaching learning and assessment methods as well as unfamiliar clinical environment with various risks and hazards. Not only that, increased academic workload with deadlines and increased time pressure to complete them leads to physical, psychological and social pressures ultimately causing stress for undergraduates.

In Sri Lanka, entering in to a university is very competitive and selected students also need to work hard for achieving good grade point average (GPA) to complete their degree. The curriculum of BSc nursing Programme, University of Sri

Jayewardenepura leads to three year general degree and four year special degree which students are selected based on their achievements (GPA). Further nursing undergraduates need to perform highly technical procedures that are challenging as they are expected to perform nursing procedures without any harm or discomfort to patients. For clinical experience, students need to travel several kilometers by public transport to reach clinical settings in teaching hospitals in Colombo for different clinical appointments. Understanding undergraduates' levels of stress and associated factors are important for their parents as well as teachers in order to provide pastoral care and facilitate student learning.

Up to now, BSc Nursing Programme has completed eight years and, there is no any investigation that has focused on students' stress related to their academic programme. Therefore, results of this study will be useful to determine the stress levels among students in different academic years and associated factors for stress in order to minimize psychosocial stresses related to nursing education in the university. Further, nursing educators can make any modifications or amendments in delivering the BSc Nursing curriculum and teaching leaning process accordingly. This attempt would be helpful to both students and academic staff to improve the quality of graduate nursing education.

II. LITERATURE REVIEW

Many research studies have been conducted regarding the stress experienced by students and the personal factors that cause stress among students. "Stress is a complex dynamic process of interaction between a person and his/her life" (Mane, *et al*., 2011). It is also personal, physiological and emotional reactions against stimulus (Greenberge & Baroon, 2000 cited in Thawabieh & Qaisy, 2012). Stress can impede learning or motivate students and is conducive to learning (Gurbinder, *et al*., 2011). Stress can adversely affect students' academic achievements, personal wellbeing and long term professional capabilities (Mane, *et al*., 2011). Stress in an individual may present as feelings of loneliness, sleeplessness, fatigue, dizziness, tachycardia, gastrointestinal symptoms, irritability and anxiety may result. Especially, students in professional courses face great amount of pressure in dealing with academic stress and anxiety (Mane, *et al*., 2011). There are many sources of stress in undergraduates related to academics, personal and environmental factors (Mane, *et al*., 2011). These sources of stress are environmental factors (16.9%), interpersonal relationship problems (13.9%), frequent examinations (12.2%), language barrier (12.1 %), and number of assignments (9.5%), sleeping difficulties (9%) and competition (8.9%) for university undergraduates (Mane, et al., 2011). Sources of stress for nursing undergraduates that have been reported in previous research include examinations, long hours of study, assignments and grades, lack of free time, inadequate faculty response to student needs, lack of timely feedback and lack of social support (Beck & Srivastava, 1991; Huerta & Maville, 1997 cited in Maville, *et al*., 2004).

Eswi, *et al*. (2013) stated that nursing clinical practice component cause high level of stress and student nurses need a large amount of preparatory work before their clinical assignments. Nursing student's stress in the clinical setting is associated with the complexity and acuity of patient care, interacting with members of the multi-disciplinary team and clinical environment (Gurbinder, *et al*., 2011). When students are unable to overcome stressors faced at various levels during their nursing education, most of them leave nursing profession (Glossop 2002; Last & Fulbrook 2003 cited in Gurbinder, *et a*l., 2011).

The study of Thawabieh and Qaisy (2012) aimed to assess the levels of stress experienced by university students in Tafila Technical University, Jordan. The results indicated that university students experienced a moderate stress level and more stress was found among female students. Further, gender, college and study level were statistically significant factors with stress. In another study, gender was not a significant factor for stress related to academic work Gurbinder, *et al*. (2011). That particular study was to assess perceived stress related to nursing education and they have found that first year nursing undergraduates had perceived that the academic load causes more stress to them than 2nd, 3rd and 4th year undergraduates. Similar results have found in study by Thawabieh & Qaisy (2012). Maville, *et al*. (2004) investigated Perceived Stress Reported by Nurse Practitioner Students by using grounded theory and found that majority of them

have above and highest ever current levels of stress and students were struggled to find time to manage responsibilities related to family, work, and school. Further in a study on stress among baccalaureate nursing students in Mansoura Egypt revealed that 40.2% students had high level of stress and most frequently reported stressors had been the fear of future, self-reported anxiety and depression, increased class workload, accommodation problems and congested classrooms (Amr, *et al*., 2011). Learning skills and techniques for clinical practice also has been reported as stressful in baccalaureate and diploma nursing students in some studies (Bell, 1991; Hamill, 1995; Speck, 1990 cited in Maville, *et al*., 2004).

The Perceived Stress Scale (PSS) is the most widely used psychological tool for measuring the perception of stress in many studies in the past (Garden, 1994). It has been developed by Cohen, *et al*. (1983), American Sociological Association. PSS has been validated in Sri Lanka by Somasiri, et al., 2005 and have used in studies in the local context (Wickramarachchi, 2003). Many researchers have used PSS to assess perceived stress (Eswi, *et al*., 2013; Al-Sowygh, 2013; Mane, *et al*., 2011).

III. METHODOLOGY

A. Study design

This descriptive cross sectional study was carried out in the BSc Nursing Programme, Faculty of Medical Sciences, University of Sri Jayewardenepura (USJP). There were four batches of students consisted of 105 nursing undergraduates at the time of study period from January to December 2013. Whole population of the BSc nursing undergraduates was taken as the sample.

B. Study instruments

A Self-administered Questionnaire was developed by incorporating personal experience of the researchers and known associated factors for stress among undergraduates in published literature which was combined with Perceived Stress Scale (PSS) by Cohen, *et al*. (1983). Questionnaire has three sections namely demographic characteristics, factors associated with stress and PSS. Questionnaire was administered in Sinhala language for majority Sinhalese students and Tamil language for Tamil students. PSS is a measure of the degree to which situations in one's life are appraised as stressful. The questions in the PSS ask about the feelings and thoughts of the students during the past month. Perceived stress levels were obtained by reversing the scores on the four positive items, e.g., 0=4, 1=3, 2=2, etc. and then summing across all 10 items. Items 4, 5, 7, and 8 are the positively stated items. Higher PSS Scores are associated with higher levels of stress and associated with an increase in a person's vulnerability to compromised health. The PSS-10 has a possible range of scores from 0 to 40. PSS levels were categorized as <20 (low stress) and >21 (high stress) and PSS score 20 is the operational cut off value for the upper bound (Shah, *et al*., 2010).

Data collection was done in the mid of one academic term when the assessments and examinations are minimal in order to prevent additional stress on students and assuring minimal disturbance to their studies.

A. Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 16. Demographic characteristic of students and common stress related symptoms were analyzed using descriptive statistics. Stress and associated factors were tested using chi-square test and strong predictors for stress were determined by Binary logistic regression analysis. Variations of student stress levels and effect of associated factors on each group were tested using ONE WAY ANOVA. Associations of various stressors with Perceived stress were summarised by odds ratios (ORs) with associated 95% confidence intervals (CIs).

Informed verbal consent from participants was obtained after explaining the purpose of the study, their role in the study, how privacy is guarded, and their right to volunteer participation and refuse to participate or to stop the participation without penalty and the manner in which data will be used and the potential benefits. Ethical clearance was obtained from the Ethics Review Committee of the Faculty of Medical Sciences, USJP and permission to conduct the study was obtained from University administration.

IV. RESULTS

A. Demographic characteristics

Out of 105 nursing undergraduates, 87 were volunteered to participate in the study and returned completed questionnaire (response rate of 100%). Study group consist of 62 (71%) female and 25 (29%) male students. The age of the participants was range from 21 to 40 years and mean age ± (SD) was 24.7 ± 3.4 years. The summary of socio-demographic characteristics is presented in Table 1. Majority of the students were Sinhala (n=83) and Buddhists (n=77). Very high percentage (87%) of the students was resided in the university hostels and boarding places. And others (13%) lived in their own home. Majority of the students came from Nuclear Families (79%) and their parents' status was united (90%). High proportion of students (90%) had more than four family members in their families. Family income of the participants was range from Rs.4000-75,000 and mean family monthly income ± SD was Rs.24201± 17872.68. Seventy five percent students stated that financial situation for studies was satisfactory and (25%) said poor.

Table 1. Demographic characteristics of undergraduates

Responses	Frequency	Percentage (%)
Gender		
Male	25	28.7
Female	62	71.3
Ethnicity		
Sinhala	83	95.4
others	4	4.6
Religion		
Buddhism	77	88.5
others	10	11.5
Academic year		
First year	25	28.7
Second year	17	19.5
Third year	21	24.1
Fourth year	24	27.6
Residence		
Living in own home	11	12.6
others	76	87.4
Number of family members		
1-3	9	10.3
>4	78	89.7
Educational qualifications of guardian		
Never attended school	4	4.6
Up to GCE O/L	36	41.4
Up to GCEA/L	37	42.5
Degree	10	11.5
Family income		
<10,000.00	19	21.2
>10,000.00	68	78.2
Mean age ± (SD)		24.7 ± 3.4 years
Mean perceived stress level ± (SD)		21.57 ± 5.921

Mean perceived stress level was 21.57 (SD=5.921). Nearly half of the students (52.9%) had high perceived stress levels indicating that half of this population at high level of vulnerability to compromise their health. From that majority (36.8%) were female undergraduates (Table 2).

Table 2. Distribution of perceived stress among undergraduates

Responses	Female (%) n = 62	Male (%) n = 25	Total (%) n = 87
Less than 20	30 (34.5)	11 (12.6)	41 (47.1)
More than 21	32 (36.8)	14 (16.1)	46 (52.9)

Most common stress related symptoms were easily feeling tired (75.9%), get nervous (69%), poor sleep (32.2%) and chest tightness (29.9%) (Table 3).

Lack of recreational activities (p=0.076), fear of failure in exams (0.068) and personal problems (0.076) had marginal associations with high perceived stress. Type of family, gender, presence of chronic diseases in the family, engage in hobbies were not significantly associated with PSS in this study group. This can be due to the limitation of small sample size in this study (Table 4).

Table 3. Stress related symptoms of students

Symptoms	Female (%) n = 62	Male (%) n = 25	Total (%) n = 87
Easily feel tired	51 (58.6)	15 (17.2)	66 (75.9)
Get nervous	44 (50.6)	16 (18.4)	60 (69.0)
loss of sleep	20 (23.0)	8 (9.2)	28 (32.2)
Loss of appetite	14 (16.1)	2 (2.3)	16 (18.4)
Nausea and vomiting	8 (9.2)	0 (0)	8 (9.2)
Chest tightness	19 (21.8)	7 (8.0)	26 (29.9)

High level of stress were significantly associated with academic stressors such as peer competition (OR=2.5, 1.4-10.9), too many assignments (OR=3.9, 1.4-10.9) and lack of guidance and counseling (OR= 4.8, 1.97-12.165) (Table 5). Further, high stress level was significantly associated with personal factors such as unrealistic expectations of the family (OR= 4.0, 1.2-13.5). Inadequate support in clinical area (OR= 3.2, 1.1-8.9) was the clinical factor which was significantly associated with high stress of the study group (Table 5).

Direct logistic regression was performed to assess the impact of factors on the likelihood that respondents would report that they have stress due to these factors. The model contained five independent variables (peer competition, too many assignments/ seminars, inadequate support in clinical area, unrealistic expectations of the family, and lack of guidance and counseling). The full model containing all predictors was statistically significant, *[x^2 (5, N=87) =24.08, p<0.001]* indicating that the model was able to distinguish between respondents who reported and did not report high stress.

The model as a whole explained between 24.2% (Cox and Snell R square) and 32.3% (Nagelkerke R squared) of the variance in stress level, and correctly classified 74.7% cases. Only two of the independent variables made a unique statistically significant contribution to the model (unrealistic expectations of the family and lack of guidance and counseling) (Table 6). The strong predictor of reporting high stress was the former recording on odd ratio of 5.2 which indicates that undergraduates who had unrealistic expectations of the family, approximately five time more likely to report high stress than those who did not have unrealistic expectations of the family, controlling all other factors in the model.

Table 4. Personal factors associated with perceived stress

Responses	Frequency			
	Stress >21	**Stress <20**	**Unadjusted OR**	**95% CI**
Gender				
Male	11	14	1.193	(0.469-
Female	30	32		3.035)
Ethnicity				
Sinhala	46	37	0.902	(0.816-
others	0	4		0.998)
Religion				
Buddhism	43	34	0.339	(0.081-
others	3	7		1.409)
Age range (in years)				
21-25	29	38	0.509	(0.184-
≥26	12	8		1.406)
Residence				
Living in own home	05	6	0.926	(0.26- 3.295)
others	36	40		
Number of family members				
1-3	3	6	0.526	(0.123-
>4	38	40		2.256)
Parents status				
United	36	42	0.686	(0.171-
Not united or no parents	5	4		2.748)
Practicing religion				
yes	41	43	0.512	(0.415-
no	0	3		0.631)
Family income (rupees)				
<10,000.00	09	10	1.012	(0.366-
>10,000.00	32	36		2.8)
Family history of chronic disease				
Yes	11	20	0.477	(0.193-
No	30	26		1.177)
Do exercise				
Yes	25	35	0.491	(0.195-
no	16	11		1.236)
Have hobbies				
Yes	5	5	1.139	(0.305-
No	36	41		4.255)
Participate recreational activities				
Yes	19	30	0.461	(0.18-
No	22	16		1.406)

Academic year	**mean stress**	**p** **F**
First year	22.48	0.400¶ 0.993
Second year	19.41	
Third year	21.90	
Fourth year	21.88	

¶-One way Anova

Table 5. Association of perceived stress and academic activities						
Factors		**Stress <20**	**Stress >21**	**P value**	**Unadjusted OR**	**(95% CI)**
Increased workload towards exam	Yes	35	45	*0.033**	*7.7*	*0.89-67-07*
	No	6	1			
Lack of free time	Yes	35	44	0.097	3.8	0.77-19.85
	No	6	2			
Deadlines of submission	Yes	28	36	0.293	1.8	0.64- 4.37
	No	13	10			
Fear of failure in exams	Yes	28	39	0.068	2.6	0.91-7.31
	No	13	7			
Too many seminars/ assignments	Yes	24	39	***0.006****	*3.9*	*1.43-10.96*
	No	17	7			
Not getting expected marks	Yes	20	27	0.354	1.5	0.64-3.48
	No	21	19			
Tired feeling after the academic/ clinical schedules	Yes	39	44	0.906	1.1	0.15- 8.39
	No	2	2			
Peer competition	Yes	11	22	***0.044****	*2.5*	*1.4- 10.9*
	No	30	24			
Personal problems	Yes	19	30	0.076	2.2	0.92-5.15
	No	22	16			
Family constrains	Yes	23	26	0.968	1.0	0.43-2.38
	No	18	20			
Inadequate support in clinical area	Yes	26	39	***0.022****	*3.2*	*1.15-8.96*
	No	15	7			
Theory and practice gap	Yes	25	32	0.4	1.5	0.60- 3.55
	No	16	14			
Absenteeism to the clinical training	Yes	11	10	0.58	0.8	0.28-2.03
	No	30	36			
Teachers' unrealistic expectations	Yes	15	25	0.097	2.1	0.87-4.88
	No	26	21			
Inadequate resources	Yes	18	28	0.114	2.0	0.84-4.67
	No	23	18			
Family's unrealistic expectations	Yes	4	14	***0.017***	*4.0*	*1.21-13.54*
	No	37	32			
Lack of guidance and counseling	Yes	14	33	***0.000****	*4.8*	*1.97-12.16*
	No	27	13			
Clinical supervisors' pressure	Yes	23	33	0.128	1.9871	0.816-4.8
	No	18	13			

*P<0.05

Chi-square statistics

V. DISCUSSION

The purpose of this study was to determine the perceived stress level among BSc nursing undergraduates and factors associated with stress. Assessing the level of stress will be helpful to plan clinical training and academic activities in order to balance their stress free life. The majority (52.9%) of the students had high perceived stress levels in this study (PPS $\geq$ 21). There were no significant association between perceived stress and other independent variables related to personal characteristics such as age, number of family members, gender and economical status. Similarly these variables were not significantly associated with perceived stress in other studies (Eswi, et al. 2013; Lo, 2002).

The most common academic stressor was "increased class workload" (66.9%) in a study conducted for assessing "experienced stressors and coping strategies among Iranian nursing students" (Seyedfatemi, et al., 2007). In present study we found many stressors related to increased workload towards exam such as peer competition, too many seminars/ assignments, inadequate support in clinical area and Lack of guidance and counseling. Among environmental sources Seyedfatemi, et al. (2007) found that "being placed in unfamiliar situations" (64.2%) and "waiting in long lines" (60.4%) were the most frequent stressors among under graduates. However, in the present study, inadequate support in clinical area and lack of guidance and counseling were source of stress in the clinical training. Further in our study, there was no significant difference in mean stress among student batches in deferent academic years. But in the study by Seyedfatemi, et al. (2007) has found that mean stress level was higher among fourth year students than first year students. In another study, the main variables reported as very stressful to the first year Bachelor students, were workload of nursing education and fear of failing the nursing programme (Gurbinder, et al., 2011). Further, Tully, (2004) found that 'amount of class-work to learn' and 'fear of failing the course' as the most stressful situations for undergraduates. Similarly in the present study, increased workload towards exam and fear of failure in exams were associated with stress.

Table 6. Academic related factors associated with stress- Binary Logistic Regression

Factors	P value	Adjusted OR	95% CI
Too many seminars/ assignments	0.066	2.8	0.93-8.51
Peer competition	0.542	1.4	0.48-4.16
Inadequate support in clinical area	0.194	2.3	0.65-8.38
Family's unrealistic expectations	**0.025***	5.2	1.23-22.13
Lack of guidance and counseling	**0.046***	3.0	1.02-8.85

P*<0.05

Different researchers have explored sources of academic stress for university students in different context. Lo (2002) found that broken relationships, parenthood, work pressures and time management, illness, and the long distance to travel to university as sources of stress. In a qualitative investigation, Gibbons, et al. (2008) have derived four themes related to students' stress as clinical experience, levels and sources of support, learning and teaching experience and course structure.

Study conducted in Chandigarh reported those long college hours, shortage of time for self-study and problems in getting log book completed as the source of stress for undergraduates (Dhar, et al., 2009). However in the present study, lack of free time and deadlines of submissions of assignments were not significantly associated with perceived stress. But too many assignments and seminars were sources of perceived stress in our study. It is a known factor that adjusting to a new environment is stressful. Adjustment to new university environment might be source of stress to new students. Sharma and Kaur (2011) found that stressful environmental factors such as change in living environment, inadequate telephone facilities among nursing students, inadequate provision of safety and security and inadequate facilities of mess and canteen as stressors. In the present study, inadequate facilities were not significantly associated with stress. Ultimately lack of recreational activities was the most common predictor of the stress in the study by Sharma and Kaur (2011). However, in the present study, lack of recreational activities had a marginal association with high perceived stress.

VI. CONCLUSION

Almost half of the nursing undergraduates experience high level of stress due to various personal and academic activities related factors. Unrealistic expectations of the family were the strongest predictor of high stress followed by lack of guidance and counseling. Nursing educators and administrators must carefully examine the curriculum demands (the potential for academic overload) and facilitating role of the clinical training for undergraduates. Lecturers, administrators, clinical supervisors and parents must be sensitive to needs of the undergraduates' and provide necessary guidance and support as well as pastoral care when students are under stress. Further, stress management and coping

skills development should be incorporated in the curriculum and extracurricular activities.

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