

ASSOCIATED FACTORS OF STRESS AMONG NURSING STUDENTS IN THEIR CLINICAL SETTINGS

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ABSTRACT

Stress is an important phenomenon because it may affect students' learning and productivity. The objective of this study was to estimate the association of student stress with their clinical factors among nursing students, Karachi, Pakistan. This study used an analytical descriptive cross-sectional study design at 12 nursing schools in Karachi conducted from July 10-29, 2009. The sample comprised of 374 students randomly selected from nursing homes. The data was collected through the "Cohen's Students' Stress and Coping Inventory". Results showed that physical status of the patients, condition of the client assigned, interaction with staff nurse, insufficient time, handling an emergency situation, being in a new environment and exposure to contagious diseases, are significantly associated with nursing student stress. This study concludes that nursing students at clinical placement suffer from stress with modifiable factors, which needs urgent attention by the respective governing bodies so that any untoward consequences may be prevented through timely identification of the students undergoing extreme stress.

Keywords: *Stress Associated Factors, Clinical Placement, Workload*

INTRODUCTION

Stress is a common phenomenon that nursing students experience in their clinical academic life, whereby they are expected to integrate theory into practice. Stress may be intensified by various factors of the physical, social, and environmental nature. High levels of continuous stress can affect students' learning and productivity. Stress produces tension and anxiety, and if it is allowed to escalate beyond a certain level it leads to depression. To minimize the negative consequences of students' stress, faculty members must be aware of the possible factors responsible for stress especially during clinical placements of the students.

Literature showed various reasons of stress among students during their clinical practice; it include students' theory-practice gap, students' workload, hospital environment and caring for patients, place and period of clinical rotation (Sharif and Masoumi, 2005; Gibbons *et al.*, 2008).

Lack of resources in clinical setting is also a stress producing factor among students, especially when they find insufficient or no resources to manage patient care

(Burnard *et al.*, 2007). This issue is more serious in Pakistani context because many of the public hospitals do not have sufficient basic care items, such as bed linen, or disposable syringes (Gul, 2007).

Although debated, faculty supervision of students in clinical is another factor of students' stress. The presence of supervising faculty by some students is perceived to enhance their learning (Carver *et al.*, 2007), while some students feel that constant faculty supervision in clinical could be a hindrance in their learning and undermines their confidence for independent decision making (Elcigil and Yildirim Sari, 2007; Sharif and Masoumi, 2005).

The General Nursing Diploma Program in Pakistan requires a student to complete 2355 hours of clinical as opposed to 1315 hours of theory classes (PNC, 1998). Students are assigned to clinical areas as early as three months after their enrollment into the programme. With some exceptions, the majority of nursing schools in Pakistan use the apprenticeship model to train nurses in the general nursing diploma program. Nursing

education in the government sector is free, as nursing students are provided monthly stipends that are equivalent to the basic salary of a staff nurse. Therefore, students are treated as service providers; they are assigned to take care of patients independently though they are learners. With some exceptions, in the majority of nursing schools in Pakistan, the nursing superintendent of the hospital is also responsible for school administration. Consequently, service becomes more important than education. Students face aggression (Gul, 2007) from physicians and senior members of the nursing staff (Gul, 2007; Gul, 2008). Students are expected to follow physicians' orders without questioning or without any clarification. These factors indicate that the nursing students face challenges in the clinical learning environment in Pakistan. However, very limited research is found on this topic in Pakistan as per the researcher's knowledge.

PURPOSES OF THE STUDY

The purpose of this study was to estimate the association of student stress with their clinical factors among nursing students in Karachi, Pakistan.

STUDY DESIGN

An analytical descriptive cross-sectional study design was used to fulfill the purpose of the study.

STUDY POPULATION AND SETTING

The population of this study was second year nursing students in the general nursing diploma program, in Karachi, Pakistan. Karachi was thought to be the most suitable place, as it has large number of nursing schools of different sizes, institutional age, sources of finance, and availability of resources, which were likely to affect the students' learning experience.

INCLUSION AND EXCLUSION CRITERIA

All the schools of nursing in Karachi that were offering a General Nursing Diploma Program, established at least four years ago, and currently recognized by PNC were included in this study. The schools of nursing that agreed to provide administrative permission to access their students were included in this study. Likewise, all second year diploma students who had completed their first year and were willing to participate in the study were included.

DEFINITIONS OF TERMS

In this study:

1. *Stress* is defined as “something in a person's environment that he/she believes or feels is upsetting, threatening, or endangering to him/her” (p. 223).

2. *Clinical Placement* refers to clinical settings where students go for their practicum including hospitals, clinics or a community.

3. *Socio-demographic* variable age, gender, nationality, religion and ethnicity, refers to demographic variables, whereas the socioeconomic variable consists of monthly family income, nature of residence and level of participants fathers' education.

SAMPLE AND SAMPLING

The sample size was calculated for associated factors of stress, by using the statistical method of Epi Info software 2003. As per one of the Karachi study, (Salloum, 2008) the stress factor of “availability of instructor for assistance” as an exposure of 12% among non-stressors, with Odds Ratio (ORs) of 0.2, confidence interval (CI) of 95%, and power of the study as 80%. The required minimum sample size was 352 second year nursing students. To take care of the refusals we enrolled the sample of 374 students. The 374 selected students were present on the days of data collection and all of them participated in this study showing a 100% response rate. The data was collected from randomly selected school of nursing.

DATA COLLECTION TOOL

Data was collected through self-administered questionnaires of the student' stress and coping inventory (SSCI). The SSCI was originally developed to identify the psychological stress factors that affect nursing students' academic, as well as clinical learning. The original SSCI had three sections; section “A” consisted of five parts measuring students' stress related to nursing, clinical experience of nursing, classroom and laboratories, college environment and social/personal environment, in relation to the attending school. Section “B” comprised of coping strategies, and Section “C” contained questions on demographic variables. Items mention in section “A” are rated on four point of likert scale denoting one “1” for “not at all stressful” and “4” as “extremely stressful.” For this paper results of section A and C are presented.

VALIDITY AND RELIABILITY OF THE TOOL

According to Waltz and Jenkins (2001) the content validity of Cohen's tool was established by faculty members who were experienced in conducting stress workshops for nursing students. The computed content validity was 0.67 for clinical situations and the internal consistency and reliability on Cronbach's alpha coefficient was 0.91 for nursing clinical situations. The concurrent validity of the stress sub-scales in the tool ranged from 0.93 to 0.83.

The face and content validity of the modified SSCI (pertinent to clinical experience sub-scales) was confirmed by 4 faculty members (nursing and medicine). Using Cronbach's alpha test, the internal consistency for items on stress was found 0.88.

For the current study, pilot testing was not required because the tool was already used by Syed Fatimi in a private institution in Pakistan. However, the content validity was re-established by expert nursing faculty members to ensure that the tool was appropriate for use in all types of nursing schools. The post hoc Cronbach's alpha coefficient for this study was found to be 0.84 for stress factors which implies *good to moderate* reliability.

DATA COLLECTION PROCESS

The principal investigator approached the students for data collection by setting appointments and collected data from 12 schools of nursing from July 10-29, 2009. The questionnaires were distributed on students' study time after the introduction of the study purpose. All the students were willing to participate in this study; hence, the response rate was 100%. Each forms being signed and they took 35-40 minutes to fill them.

ORGANIZATION AND ANALYSIS OF DATA

The data was double entered in the Statistical Package for Social Sciences (SPSS) version 16; cleaning of data was done by an epidemiologist. To measure the association between the presence of overall stress with clinical stress factors, univariate and multivariate logistic regression were used, with 95% confidence intervals. To develop the dependent variable, responses to stress variables at ordinal level (1= not at all stressful, 2 = slightly stressful, 3 = moderately stressful, and 4 = extremely stressful) they were converted into binary form. Participants

responding as "not at all or slightly stressful" were coded as "0" while those who responded as "*moderate to extreme stress*" were coded as "1". In the next step, responses to all factors were summed up for each participant. Since the total items on the scale were 22, the total possible score ranged from "0" to "22" [lowest to highest]. This score was plotted in a quartile distribution, showing 0 to 4 as the first quartile, 5 to 7 as the second, 8 to 10 as the third, and more than 10 as the fourth quartile. Binary division of stress was developed by specifying stress level less than 50th percentile as no stress, rated as "0". On the other hand, stress found at more than 50th percentile, indicating presence of stress, rated as "1".

ETHICAL CONSIDERATIONS

An approval was taken from AKU-ERC. Administrative approval to access the students was obtained from the principals of the selected nursing schools.

The researcher ensured that, all the potential participants (second year students) were informed about the purpose, process, and outcome of this research through an information letter that was written in simple English. Students were informed that they can refuse to participate without any percussion on them.

FINDINGS

Socio-demographic profile of the participants

A total of 374 students from 12 schools of nursing in Karachi participated in this study; half of them were females (50.5%) Students' age ranged from 19-25 years, with mean age of 21, (± 2.2 SD) years. As shown in Table 1, most of the participants (97.1%) were Pakistani, (72.1%) Muslims and half of them were Punjabi/Hindko. Majority of the participants' fathers (36.4%) were Matriculates (Grade 10); only 7.5% had a Master's degree while, 35.8% of the mothers' were uneducated. The occupational status of the parents of participants revealed that majority of the mothers (83.4%) were housewives, and only 1.6% had a technical or/and skilled occupation. An analysis of the participants' fathers occupation revealed that less than half (42.5%) had a technical or/and skilled occupation, rest had their own business (19%), laborers and farmers (15.5%) and were professional workers (9.6%); rest of the participants did not respond. The family's monthly income ranged from 1,000-60,000 Pakistani rupees, with the median income of Rupees 16,000/- .

Table 1: Table shows the demographic Profile of Study Participants

Variable	n	%
Gender		
Female	189	50.5
Male	185	49.5
Religion		
Islam	270	72.1
Christianity	101	27.0
Hinduism	04	1.1
Pakistani	363	97.1
Foreign	05	1.3
Ethnicity		
Punjabi/Hindko	170	45.5
Pathan	97	25.9
Sindhi/Kacchi	44	11.7
Gujrati	24	6.4
Chitrali/Gilgiti/Hunzai	17	4.5
Urdu speaking	11	2.9
Other	03	0.8
Participants' Place of Residence		
With family	192	51.3
In a hostel	134	35.8
With relatives	31	8.3
Rented	12	3.2
Family Monthly Income Rupees		
≤ 5000	23	6.1
6000-10,000	62	16.5
11,000-20,000	148	39.5
21,000-30,000	62	16.5
31,000 - 50,000	32	8.5
>50,000	17	4.5
No Response	30	8.0
Level of Parents' Education		
	Mother n (%)	Father n (%)
No education	134 (35.8)	49 (13.1)
Kindergarten	08 (2.1)	10 (2.7)
Primary	78 (20.9)	43 (11.5)
Matriculation	87 (23.3)	136 (36.4)
Intermediate	36 (9.6)	68 (18.2)
Bachelors	22 (5.9)	36 (9.6)
Masters	05 (1.3)	28 (7.5)
Categories of Occupation		
House wife	312(83.4)	-
Technical/Skilled	06 (1.6)	159 (42.5)
Business	-	71 (18.9)
Laborer/Farmers	-	58 (15.5)
Professional	34 (9.0)	36 (9.6)
Clerical	03 (0.8)	-
Deceased/Retired/Jobless	06 (1.6)	41 (10.9)
Not responded	12 (3.2)	09 (2.4)

ASSOCIATION OF SOCIO-DEMOGRAPHIC VARIABLES AND STRESS

To measure the association of participants' stress with socio-demographic variables, logistic regression was applied at uni-variate level. The results indicated that participants' age, nature of residence, their fathers' education level, and monthly family income has no effect on the students' stress level, but gender stayed significant at 95% CI. To elaborate, female students are 3.8 times more likely to develop stress than male students (CI 2.4, 5.8) (see Table 2).

Table 2 : Table shows the univariate analysis: association of the participants' socio-demographic variables with stress

Variables	No stress n(%)	Stress n(%)	OR	95% CI
Age				
21-32 years	123 (58.3)	94 (57.7)	1.0	0.6, 1.5
17 - 20 years	88 (41.7)	69 (42.3)		
Gender				
Female	77 (36.5)	112 (68.7)	3.8	2.4, 5.8
Male	134 (63.5)	51 (31.3)		
Nature of students Residence				
Living in hostel or on rent	79 (37.4)	72 (44.4)	1.3	0.8, 2.0
Living with family or relatives	132 (62.6)	91 (55.8)		
Matric and below				
Above Matric	140 (66.4)	102 (62.6)	0.8	0.5, 1.2
Below Matric	71(33.6)	61(37.4)		
Monthly Family Income				
21000 and above	69 (34.8)	42 (29.2)	1.2	0.9, 1.6
11 - 20000	86 (43.4)	61 (42.4)		
<10000	43 (21.7)	41 (28.5)		

PERCEIVED STRESS FACTORS

Univariate analysis (Table 3)

Out of total 22 factors, “interaction with patient”, “interaction with staff nurses”, “being in emergency situations”, “exposure to experiences for nursing practice”, “physical status of a patient”, “meeting psychomotor requirements”, “communicating with a client”, “being in a new environment”, and “relationship with patients' family members” showed high magnitude of stress. For example, the OR for “meeting psychomotor requirements” indicating 6.8 which means that students who were stressed by this factor were 6.8 times more likely to develop stress (95% CI: 4.1, 11.1). Moreover, five factors revealed moderate magnitude (OR = 5.7 till 4.9) and eight factors illustrated a low magnitude of stress which is OR less than 4.8 till 2.8.

Multivariate analysis.

The multivariate analysis by using logistic regression model was used to identify the association between presence of stress and clinical factors of stress by controlling participants' age and gender as the potential confounding factors with adjusted Odds Ratio and 95% CI. The adjusted model illustrated 13 factors associated with stress; however, of these, two factors

revealed the highest magnitude with stress (see Table 3). These were “physical status of the patient” and “interaction with staff nurses”. To elaborate, students who found “physical status of the patients” and “interaction with staff nurses” as stressful were 25.7 and 23.7 times more likely to develop stress while controlling for other variables.

Table 3: Table shows the Multivariate analysis: logistic regression for factors associated with stress (n=374)

Stress Factors	Univariate Statistics		Multivariate statistics Adjusted for Age and Gender	
	OR	95% CI	OR	95% CI
Interaction with patients	11.8	4.8 - 28.7	6.6	1.0, 40.7
Interaction with staff nurses	8.1	4.3, 15.3	22.7	5.9, 87.8
Being in emergency situations	7.7	4.8, 12.5	7.1	2.4, 20.7
Exposure to experiences for nursing practice	7.3	4.4, 12.1	-	-
Physical status of a patient	7.3	4.3, 2.4	25.7	6.8, 96.2
Meeting psychomotor requirements	6.8	4.1, 11.1	-	-
Communicating with a patient	6.5	3.0, 14.1	-	-
Being in a new environment	6.4	4.1, 10.2	4.8	1.8, 12.7
Relationship with patients' family members	6.3	3.4, 11.3	-	-
Own abilities in clinical practice	5.7	3.5, 9.6	-	-
Fatigue and energy level	5.7	3.5, 9.2	13.9	4.2, 45.4
Ability to sleep	5.7	3.5, 9.1	11.3	3.5, 35.7
Sex and age of patient	4.9	3.0, 8.1	-	-
Evaluation by instructor	4.9	3.1, 7.9	-	-
Insufficient time to do things	4.8	3.1, 7.5	8.8	3.0, 25.9
Own expectations in caring for patients	4.1	2.5, 6.7	5.5	1.9, 15.4
Availability of instructor	4.0	2.5, 6.5	12.8	4.2, 38.9
Patient acuity	3.8	2.4, 5.9	5.4	1.8, 16.3
Academic skills needed for clinical learning	3.5	2.2, 5.8	3.3	1.1, 9.9
Possibility of making an error	3.3	2.1, 5.1	-	-
Exposure to contagious diseases	3.0	1.9, 4.7	5.7	2.0, 15.4
Physical environment of hospital	2.8	1.8, 4.3	-	-

DISCUSSION

The participants' age, nature of residence, fathers' education level, and monthly family income has no effect on the students' stress level. Whereas, gender played a significant role in determining a variation in stress level among students, which clearly shows that female nursing students experience more stress than male nursing students. This finding affirms the findings of Tully (2004) who reported that female nursing students, experience more stress than male students (Tully, 2004).

The findings indicated that physical condition of the client was highly associated with stress (OR=7.3, CI: 4.3, 12.4). Likewise, on univariate analysis of the factor "condition of the client assigned" was highly associated with stress (OR= 3.8, CI: 2.4, 5.9). However, the factor of "physical status of the patient" became highly significant when placed in the multivariate adjusted model due to the presence of "condition of the client assigned". In other words, the combined effect of these two factors was found highly significant in producing stress. To elaborate, it will be more challenging for the student to care for a physically obese patient in critical condition than a patient in critical condition but not obese. This finding is in line with the existing literature (Grealish and Ransie, 2009; Salloum, 2008). This indicates that students find it challenging when they have to take care of the clients in a very sick condition and in poor physical state.

This finding of our study is dissimilar with the study conducted in Iran (Sharif and Masoumi, 2005). Interaction with staff nurse was consistently associated with stress. However, this finding has supported by one of the Brunei study (Burnard *et al.*, 2007).

Insufficient time and high amount of workload to complete clinical objectives was identified to be highly associated with stress, which is also being identified by other authors (Burnard *et al.*, 2007; Elcigil and Yildirim Sari, 2007; Salloum, 2008).

Being in emergency situations was also highly associated with the students' stress. This finding substantiates the findings of previous studies belonging to eastern and western countries which reports that students experience high level of stress

while dealing with emergencies (Jones and Johnston, 1997; Rhead, 1995; Salloum, 2008).

Although on the univariate logistic regression, the factor of "Being in a new environment" and "Possibility of making an error" were moderately associated with stress, the association became insignificant on multivariate analysis. Since multivariate was insignificant, this study has reported only univariate analysis.

STRENGTHS AND LIMITATIONS OF THE STUDY

The sample size was 374 and it was randomly drawn from 24 schools of nursing in Karachi that lends to broader generalization. The questionnaire used in this study was self-administered; therefore, the responses may have been distorted due to match the social desirability. In addition, some limitations of the tool used in the study were also realized. For instance, one source of stress was "sex and age of client". A close look at this factor revealed that their effects should have been questioned separately. Likewise, some other items, such as theory practice-gap and lack of resources could have been added to the source of stress.

CONCLUSION

The findings of the present study revealed that nursing students are exposed to several stressors during their clinical placement. However, some stressor has more profound effects on them than others. It is, therefore, imperative for nursing faculty to be aware of the major sources of students' stress and take appropriate measures to lessen the intensity of the stressor as well as to teach students to cope better with the stress. The ability of nursing students should be carefully assessed while assigning them to care for patients in acute conditions or emergencies. The faculty members should monitor the interaction between nursing students and staff nurses and be available to intervene the situation wherever necessary. Some opportunity of informal interaction between students and staff may also help to seek supportive interaction from the staff. Faculty should be educated and vigilant enough to identify the cause of stress. Administrative policies should also be established to

provide guiding and counseling services to the students who are in extreme stress.

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REFERENCES

- Burnard, P, Haji Abd Rahim, HT, Hayes, D & Edwards, D (2007). A descriptive study of Bruneian student nurses' perceptions of stress. *Nurse Education Today*. 27(7), pp 808-18.
- Burns, N & Grove, SK (Eds.) (1997). *The practice of nursing research conduct, critique, & utilization*, Philadelphia, W. B. Saunders.
- Carver, N, Ashmore, R & Clibbens, N (2007). Group clinical supervision in pre-registration nurse training: the views of mental health nursing students. *Nurse Education Today*. 27(7), pp 768-76.
- Elcigil, A & Yildirim Sari, H (2007). Determining problems experienced by student nurses in their work with clinical educators in Turkey. *Nurse Education Today*. 27(7), pp 491-8.
- Gibbons, C, Dempster, M & Moutray, M (2008). Stress and eustress in nursing students. *Journal of Advanced Nursing*. 61(3), pp 282-90.
- Grealish, L & Ranse, K (2009). An exploratory study of first year nursing students' learning in the clinical workplace. *Contemporary Nurse : A Journal for the Australian*. 33(1), pp 80-92.
- Gul, RB (2007). Competence of graduates of the four-year BScN program at Aga Khan University: Experiences and perceptions. *Nursing*. Edmonton, Canada, University of Alberta.
- Gul, RB (2008). The image of nursing from nurses' and non-nurses' perspectives in Pakistan. *Silent Voice: First Independent Nursing Journal of Pakistan*. 1, pp 4-17.
- Jones, MC & Johnston, DW (1997). Distress, stress and coping in first-year student nurses. *Journal of Advanced Nursing*. 26(3), pp 475-82.
- PNC (1998). *Nursing Curriculum of Pakistan form Nursing Council*. In Council, P. N. (Ed.). Islamabad.
- Rhead, MM (1995). Stress among student nurses: is it practical or academic? *Journal of Clinical Nursing*. 4(6), pp 369-76.
- Salloum, M (2008). Stress and adaptive responses of second year general nursing diploma students during their clinical placement at the Aga Khan University, Karachi, Pakistan. Karachi. School of Nursing and Midwifery, Karachi, Aga Khan University.
- Seyedfatemi, N, Tafreshi, M & Hagani, H (2007). Experienced stressors and coping strategies among Iranian nursing students. *BMC Nursing*. 6, pp 11.
- Sharif, F & Masoumi, S (2005). A qualitative study of nursing student experiences of clinical practice. *BMC Nursing*. 4, pp 6.
- Tully, A (2004). Stress, sources of stress and ways of coping among psychiatric nursing students. *Journal of Psychiatric and Mental Health Nursing*. 11(1), pp 43-7.