



PERCEIVED STRESS AND COPING STRATEGIES OF BACCALAUREATE NURSING STUDENTS IN CLINICAL PRACTICE

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Abstract

Purpose: The purpose of this study was to examine baccalaureate nursing students' stress, physio-psycho-social health and their coping strategies in clinical practice.

Design: A cross-sectional and descriptive study design was used.

Sample: All baccalaureate nursing students studying in Shree Guru Gobind Singh Tricentenary (SGT) University, who have clinical experiences, were invited to participate in this study. Total 205 baccalaureate nursing students' were the sample for the research study.

Methods: A self-administrative survey including demographics, Perceived Stress Scale (PSS), Physio-psycho-social Response Scale (PPSRS), and Coping Behavior Inventory (CBI) was used. The researcher approached the eligible subjects at the end of lectures. Those who were willing to participate in the study were required to sign a consent form, fill in the questionnaire and then return it to the researcher immediately.

Results: The findings revealed that students perceived a moderate level of stress [mean (SD) = 2.10 (0.44)] and were in good physio-psycho-social health [mean (SD) = 1.40 (0.65)]. The most common stressor came from 'lack of professional knowledge and skills' [mean (SD) = 2.34 (0.63)]. Emotional symptoms commonly occurred in response to clinical stress. Students frequently used transference coping strategies, which they found most effective in dealing with stress in clinical practice. Furthermore, year of study and level of stress were the two factors affecting students' health. Year of study and stress from taking care of patients were the two predictors of the frequency of use of the problem-solving approach. Year of study, religion and stress from teachers and nursing staff affected the frequency of use of avoidance strategies. The frequency of four coping strategies, stress from peers and daily life, stress from taking care of patients and religion predicted the effectiveness of coping.

Conclusion: The results provided valuable information for clinical educators and clinical staff in identifying students' needs, facilitating their learning in the clinical setting and developing effective interventions to reduce the stress they encounter.

Key Words: *Levels of stress, Stressors, Physio-psycho-social health, Coping strategies.*



BACKGROUND OF THE STUDY:

Empirical research supports the view that nursing students suffer stress in their clinical practice (Pagana, 1988; Beck & Srivastava, 1991; Lindrop, 1991; Mahat 1996; Mahat, 1998; Oermann & Sperling, 1999; Oermann & Lukomski, 2001). Without doubt, clinical practice is one of the crucial components in nursing education. However, students may face many challenges or threats in dynamic and complex clinical environments, such as how to use high-tech medical equipment, how to maintain good relationships with clinical staff and instructors, how to manage sudden changes in a patient's condition and how to deal with the demands of patients' relatives (Elliott, 2002). These clinical experiences may lead students to perceive stress. Prolonged experience of stress may have negative impacts on students' clinical learning and on their health. For example, their eagerness to learn in clinical settings may be inhibited; or they may experience emotional responses to stress, such as nervousness or anxiety, vertigo or dizziness during clinical practice (Oermann, 1998; Sheu, Lin & Hwang, 2002). Little is known about the effectiveness of coping strategies for relieving stress. Some studies have found that problem solving, social support, tension reduction and avoidance are used by nursing students (Mahat, 1996 & 1998; Jones & Johnston, 1997). However, the effectiveness of these strategies was not further examined. It is important for faculty and clinical educators to have a clear perception of stress among nursing students, of their emotional responses towards stress, and of their coping strategies to relieve it. Then effective coping or stress-management strategies can be formulated and taught to the students. Since there are limited studies examining the perception of stress among baccalaureate nursing students during clinical practice and the apparent efficacy of self-initiated coping strategies, the purposes of the study are therefore to examine such students' stress levels, the types of stressful events they encounter, their emotional responses to stress and coping strategies during clinical practice.

PROBLEM STATEMENT

A Cross-sectional study to assess the perceived stress level, stressors, physio-psycho-social health and its coping strategies of baccalaureate nursing students in the clinical practice in the selected University of Gurgaon, Haryana.

PURPOSE OF THE STUDY: The purpose of this study was to examine baccalaureate nursing students' stress, physio-psycho-social health and their coping strategies in clinical practice.

OBJECTIVES:

1. To examine the level of stress perceived by baccalaureate nursing students in clinical practice.
2. To identify the most stressful clinical setting reported by the students.
3. To identify types of stressors commonly experienced by the students during clinical practice.
4. To investigate the physio-psycho-social health status of students during the practice.
5. To identify the coping strategies students frequently use to relieve their stress and the effectiveness of such strategies.
6. To examine factors affecting the physio-psycho-social health of students during the practice.
7. To examine factors affecting the frequency and effectiveness of coping strategies used by the students.



VARIABLES:

- **Independent variables:** Levels of stress & Stressors.
- **Research variables:** Physio-Psycho-Social responses & Coping strategies.
- **Selected variables:** Gender, Religion, Year of study, Work settings, Nursing by choice or by chance.

HYPOTHESIS: All the hypothesis will be tested at 0.05 level of significance

H1- There will be a significant relationship between the effectiveness of the coping strategies and its frequency used by the baccalaureate nursing students’.

H2- There will be a significant relationship between factors affecting students’ physio-psycho-social health with the effectiveness of the coping strategies and its frequency used by the baccalaureate nursing students’.

H3- There will be a significant relationship between the students’ physio-psycho-social health with their demographic data and stressors.

H4- There will be a significant relationship between demographics and stressors of the baccalaureate nursing students’.

CONCEPTUAL FRAMEWORK:

The conceptual framework of the study was based on **The stress theory of Lazarus & Folkman (1984)**.

DELIMITATION:

- The study is limited to students of second year to fourth year Baccalaureate (Nursing).
- Sample size was limited to 205 Baccalaureate (Nursing).
- The study is limited to students studying under The SGT University, Gurgaon.

RESEARCH METHODOLOGY:

Research Approach- The Survey approach was used for the present study & best suited for descriptive type of research.

Research design

The study used a cross-sectional Survey design to examine baccalaureate nursing students’ stress, their emotional responses and the types of coping strategies used to relieve that stress during clinical practice. The study is a piece of descriptive survey research in which the relationship and differences existing between two variables or more groups are examined. This research design is an efficient and effective means to collect a large amount of data about the phenomena of stress in clinical practice.



Sample

All baccalaureate nursing students at The SGT University with clinical experience were invited to participate in this study. 1st Year baccalaureate nursing students were excluded because they had no clinical experience prior to data collection.

Setting

The students were approached in the lecture theatre at the SGT University. This proved an easy way to collect data from large numbers of eligible students.

Data collection procedures

The researcher approached the students at the end of lectures and explained the purpose of the study. An information sheet with the details of the study was also provided. Confidentiality and anonymity of the collected data were assured. Those who were willing to participate in the study were required to sign a consent form, fill in the questionnaire and then return it to the researcher immediately.

Ethical considerations

The proposal for the study was approved by the Institutional Review Board of the University. The researcher approached all eligible students at the end of lectures and explained the nature of the study to them. They were informed that participation in the study was voluntary and they could withdraw from it at any time. A refusal to participate would not affect their learning process and academic results. Anonymity and confidentiality of the collected data were also assured. An information sheet with details of the study was given to the students. Opportunities for asking questions about the study were provided. Those students who were interested in the study were asked to sign the consent form, fill in the questionnaire and return it to the researcher immediately. All data collected were kept strictly confidential.

Tools for Data Collection

The self-report survey consisted of four parts: 1) **Demographic information** - Students' demographic data included personal details such as religion, gender, year of study, work setting and the most stressful clinical area, nursing by choice or by chance. These demographic data are potential variables influencing students' stress and coping in clinical practice.

2) **Perceived Stress Scale (PSS)** – PSS was used to examine nursing students' stress levels and types of stressors. This instrument was developed by Sheu et al (1997). It is a five-point Likert-type scale that consists of 29 items grouped into six factors, labeled as follows: 'Stress from taking care of patients' (8 items), 'Stress from teachers and nursing staff' (6 items), 'Stress from assignments and workload' (5 items), 'Stress from peers and daily life' (4 items), 'Stress from lack of professional knowledge and skills' (3 items), and 'Stress from clinical environment' (3 items). Each item is rated on a five-point Likert scale (0=never, 1=almost never, 2=sometimes, 3=fairly often and 4=very often). Usually, both total scores and individual subscale scores are measured. Higher scores indicate higher level of stress.

3) **Physio-psycho-social Response Scale (PPSRS)** – Sheu et al (2002) developed PPSRS, which is used to describe nursing students' responses to and emotions caused by stress in clinical practice. It also measures the physio-psycho-social health status of students during clinical practice. The PPSRS consists of 21 items and each item is rated on a five-point Likert-



type scale (0=never, 1=almost never, 2=sometimes, 3=fairly often and 4=very often). The 21 items are divided into three subscales: 'Physical symptoms', 'Emotional symptoms' and 'Social-behavioural symptoms'. Usually, both subscale scores and total scores are calculated. Higher scores indicate the presence of more and serious symptoms reported and poorer physio-psycho-social health status.

4) Coping Behaviour Inventory (CBI) - Sheu et al (2002) developed CBI, which is used to identify nursing students' coping strategies. It consists of 19 items, divided into four types: 'Avoidance behaviours' (6 items), 'Problem-solving behaviours' (6 items), 'Optimistic coping behaviours' (4 items) and 'Transference behaviours' (3 items). Each item is rated for frequency and effect on a five-point Likert-type scale, where (frequency) 0=never, 1=almost never, 2=sometimes, 3=fairly often and 4=very often; and (effect) 0=not at all, 1=somewhat, 2=moderately, 3=moderately so and 4=very much. Higher scores for each factor indicate more frequent use and greater effectiveness of a certain type of coping behavior.

Reliability of the Tools –1. **Perceived Stress Scale (PSS)** Cronbach's alpha for the entire scale was 0.89. 2. **Physio-psycho-social Response Scale (PPSRS)** Cronbach's alpha for the entire scale was 0.94. 3. **Coping Behaviour Inventory (CBI)** Cronbach's alpha for the entire scale was 0.94.

Statistical analysis

This study used Statistical Package for the Social Sciences (SPSS) 14.0 for data analysis. Descriptive statistics were reported on all variables including demographics, degree and types of stressors, physio-psycho-social responses, and frequency and effectiveness of coping strategies. The Friedman test was used to compare the mean score among the six stressors and the mean score of frequency and effectiveness among the four coping strategies. Pearson's correlation coefficient was used to examine the relationship between mean frequency and effectiveness of the coping strategies. Multiple regression analysis was used to identify factors affecting students' physio-psycho-social health, and the frequency and effectiveness of the coping strategies they used. A p-value equal to or less than 0.05 was regarded as the appropriate level of statistical significance.

Results Analysis

205 baccalaureate nursing students at the University were successfully recruited to the study in October 2012. The researcher invited students to participate after their lectures and while still in the lecture theatre. The researcher explained that the data would be kept confidential and anonymous and that it was a voluntarily-based study. The students recruited were in their second, third or fourth years, with different periods of clinical placement experience at the time of data collection.

Demographic background of the sample

Demographic information on the students is presented in Table 1. 205 students completed the questionnaire. Their mean age was 21.3 ± 1.2 , with a range of 19-25. The majorities were female (79%). 38.5% were from Year II, 35.1% from Year III and 26.3% from Year IV.

Table 1
Participants' demographics (N=205)

S.No	Characteristics	n	%
1	Sex		
	Female	181	89.2
	Male	24	11.7
2	Religion		
	Hindu	150	73.1
	Christian	15	7.3
	Muslim	22	10.7
	Shikh	12	5.8
	Buddhist	6	2.9
3	Year of Study		
	Second year	79	38.5
	Third year	72	35.1
	Fourth year	54	26.3
4	Work settings		
	Surgical	149	76.8
	Medical	15	7.7
	Accident & Emergency (A & E)	14	7.2
	Geriatric	3	1.5
	Obstetric	3	1.5
	Paediatric	3	1.5
	ICU	3	1.5
	Others	4	2.1
	5	Nursing by Choice	112
Nursing by chance		93	45.3

The most stressful clinical setting

The most stressful clinical settings perceived by nursing students are presented in Table 2. The five most stressful clinical settings were: (1) accident & emergency unit (32.8 %), (2) medical unit (27.4%), (3) surgical unit (14.0%), (4) intensive care unit (8.6%) and (5) operating theatre (8.6%). Students rated community settings as the least stressful setting (0.5%).

Table 2
The most stressful clinical settings rated by participants (N=205)

S.No	Clinical Settings	n	%
1	Accident & Emergency (A&E)	71	34.6
2	Medical unit	60	29.2
3	Surgical Unit	26	14.0
4	Intensive care unit (ICU) or High dependency unit	16	8.6
5	Operating theatre (OT)	16	8.6
6	Psychiatric unit	5	2.7
7	Geriatric unit	2	1.1
8	Obstetrics unit	2	1.1
9	Pediatric unit	2	1.1
10	Semi-Private Ward	2	1.1
11	Community settings	1	0.5
12	Others	2	1.1

Level of stress and types of common stressors

The level of stress and types of stressors perceived by nursing students are tabulated in Table 3. On the whole, students perceived a moderate level of stress during clinical practice (mean=2.10, SD=0.44). The most common type of stressor perceived by students was ‘the lack of professional knowledge and skills’ (mean=2.34, SD=0.63). Students felt stressed when they were unfamiliar with medical terminology, or with patients’ histories, diagnoses and treatments. The second and third most common stressors encountered by students were ‘stress from assignments and workload’ (mean=2.21, SD=0.61) and ‘stress from taking care of patients’ (mean=2.20, SD=0.50). Students also worried about receiving poor marks and about their ability to provide nursing care and make judgment in their clinical practice. The difference in level of perceived stress induced by six stressors was found to be significant ($\chi^2=167.93$, $df=5$, $p<0.001$).

Table 3
Stressors perceived by nursing students (N=205)

Stressors	Rank	Mean	SD
Overall perceived stress	1	2.10	0.44
I. Stress from lack of professional knowledge and skills		2.32	0.63
Unfamiliar with medical history and terms		2.40	0.78
Unfamiliar with professional nursing skills		2.27	0.82
Unfamiliar with patients’ diagnoses and treatments		2.36	0.73
I	2	2.21	0.61
I. Stress from assignments and workload		2.71	0.93
		2.36	0.82
Worry about poor grades		2.37	0.90
Pressure from the nature and quality of clinical practice		1.65	0.99
Feelings that performance does not meet teachers' expectations		1.98	0.85
Feelings that dull and inflexible clinical practice affect family/social life			
Feelings that the demands of clinical practice exceed physical and			



emotional endurance			
III. Stress from taking care of patients	3	2.20	0.50
Lack of experience and ability in providing nursing care and in making judgments		2.80	0.83
Not knowing how to help patients with physio-psycho-social problems		2.24	0.73
Unable to reach expectations		2.26	0.80
Unable to provide appropriate responses to doctors', teachers' and patients questions		2.34	0.76
Worry about not being trusted or accepted by patients or their families		1.91	0.77
Unable to provide patients with good nursing care		2.03	0.71
Not knowing how to communicate with patients		1.83	0.76
Difficulties in changing from the role of a student to that of a nurse		2.18	0.92
IV. Stress from clinical environment	4	2.08	0.66
Feelings of stress in the environment where clinical practice takes place		1.96	0.85
Unfamiliarity with ward facilities.		2.09	0.79
Feelings of stress from rapid changes in a patient's condition		2.20	0.84
V. Stress from teachers and nursing staff	5	1.91	0.55
Seeing a discrepancy between theory and practice		2.47	0.71
Not knowing how to discuss a patient's illness with teachers or medical and nursing personnel		1.64	0.69
Feelings of stress when a teacher's instruction is different from expectations		2.09	0.79
Medical personnel lacking empathy and willingness to help		1.63	0.87
Feelings that teachers do not evaluate students fairly		1.94	0.93
Lack of care and guidance from teachers		1.67	0.87
VI. Stress from peers and daily life	6	1.86	0.60
Experience of competition from peers in school and clinical practice		1.80	0.85
Feelings of pressure from teachers who evaluate students' performance by comparison		2.28	0.93
Feelings that clinical practice affects involvement in extracurricular activities		2.18	1.00
Inability to get along with group peers		1.20	0.79

Physio-psycho-social responses to stress

Nursing students' physio-psycho-social responses to stress during clinical practice are presented in Table 4. Overall, students' physio-psycho-social health was good (mean=1.40, SD=0.65). Emotional symptoms (mean=1.70, SD=0.77) were the most common responses to stress. Students tended to be worried or nervous when they were in clinical practice.

Table 4
Physio-psycho-social symptoms occurring during clinical practice (N=205)

Physio-psycho-social status	Rank	Mean	SD
Overall physio-psycho-social status*		1.40	0.65
I. Emotional symptoms	1	1.70	0.77
I tend to be worried and nervous		2.17	0.92
I tend to be nervous and anxious lately		2.14	0.85
I often feel depressed and miserable		1.60	1.14
I feel afraid without any reason		1.65	0.89
I feel I am going to have a nervous breakdown		1.47	1.00
I feel more anxious lately		1.69	1.05
I cannot calm down		1.19	0.92
II. Social behavioural symptoms	2	1.45	0.78
I am not optimistic about my future		1.44	1.05
My life is not very colourful		1.19	1.00
I cannot work as usual		1.37	0.97
I have difficulty in making decisions		1.66	0.92
I do not feel needed or valued		1.39	0.98
I cannot think as clearly as before		1.68	1.03
III. Physical symptoms	3	1.10	0.64
I often feel giddy		1.25	0.90
I experience nausea and vomiting		0.90	0.90
I often have vertigo and feel dizzy		1.13	0.92
I often have vertigo and feel dizzy		1.05	1.01
I feel pressure in the chest		0.93	0.84
My fingers and toes feel numb or painful		1.36	0.90
I have stomach-ache and diarrhea		0.69	0.80
I have difficulties in breathing for no reason		1.45	0.97
I catch cold more often			

Note: * A higher score represents a poorer health status
 # The scale is 0 (never) to 4 (very often)

Coping strategies frequently used and their effectiveness

Coping strategies commonly used by nursing students during clinical practice and their effectiveness are presented in Table 5. The most frequent coping strategy was transference (mean=2.73, SD=0.71) – for example, sleeping, watching TV or movies, having a shower or taking physical exercise - followed by staying optimistic (mean=2.38, SD=0.51), problem solving (mean=2.33, SD= 0.58) and avoidance (mean=1.57, SD= 0.60). The most and least effective coping strategies were consistent with frequency of use (Table 5). A significant correlation was found between the mean frequency and efficacy of each coping strategy ($r=0.64-0.77$, $p<0.01$). Students who used coping strategies more frequently were more likely to regard them as effective. Significant results were also reported as far as the mean frequency ($\chi^2=273.24$, $df=3$, $p<0.01$) and efficacy ($\chi^2=256.14$, $df=3$, $p<0.01$) of the four coping strategies were concerned.

Table 5
Frequently used coping strategies and their effectiveness (N=205)

Coping strategies / items	Rank		Frequency		Effectiveness	
	Freq	Eff.	Mean	SD	Mean	SD
I. Transference	1	1	2.73	0.71	2.65	0.77
Eating large meals and taking a long sleep			2.61	0.99	2.66	1.08
Saving time for sleep and maintaining good health in the face of stress			2.65	0.92	2.45	0.95
Relaxing, via TV, movies, a shower or physical exercise (ball-playing, jogging)			2.92	0.88	2.83	0.92
II. Staying optimistic	2	3	2.38	0.51	2.14	0.58
Keeping an optimistic and positive attitude in dealing with everything in life			2.75	0.73	2.37	0.87
Seeing things objectively			2.50	0.68	2.20	0.84
Having the confidence to overcome difficulties			2.41	0.83	2.30	0.89
Crying, feeling moody, sad and helpless			1.87	1.06	1.67	1.14
III. Problem solving	3	2	2.33	0.58	2.15	0.58
Adopting different strategies to solve problems			2.49	0.79	2.29	0.79
Setting up objectives to solve problems			2.27	0.86	2.00	0.85
Making plans and listing priorities to solve stressful events			2.36	0.94	2.33	0.94
Finding the meaning of stressful incidents			2.41	0.87	2.09	0.90
Employing past experience to solve problems			2.37	0.84	2.21	0.84
Having confidence in performing as well as senior colleagues			2.11	0.86	2.00	0.92
IV. Avoidance	4	4	1.57	0.60	1.37	0.67
Avoiding difficulties during clinical practice			1.99	0.85	1.75	0.89
Avoiding teachers			1.38	0.93	1.31	1.00
Quarrelling with others and losing one's temper			1.37	0.95	1.14	0.99
Expecting miracles to avoid facing difficulties			1.45	1.03	1.23	0.99
Expecting others to solve the problem			1.63	0.91	1.39	0.91
Attributing everything to fate			1.60	0.91	1.38	0.97

Note: Freq=frequency and Eff=effectiveness



Frequency, 0 (never) to 4 (very often); effectiveness, 0 (not at all) to 4 (very much)

Factors affecting students' physio-psycho-social health

Table 6 presents the results from the structured multiphase regression model for physio-psycho-social health. The only significant demographic variable was the year of study, which explained 8.3% of the variance in physio-psycho-social health ($F=17.27$, $df=1,190$, $p<0.01$). A further one year of study results in a decrease of 0.23 units in the level of physio-psycho-social health. When the year of study was adjusted, a 38.6% variance in physio-psycho-social health status was explained by total mean score for stress. Students who perceived a higher level of stress were the

more likely to have poorer physio-psycho-social health ($\beta=0.82$, $p<0.01$).

Table 6

Multiple regression analysis for the predictors of physio-psycho-social health

Predictors	Estimated effect	95%CI	Standard Error	p-value
<i>Phase I: Demographics ($R^2=0.083$, adjusted $R^2=0.079$)</i>				
Year of study	0.23	(0.12, 0.35)	0.06	<0.01
<i>Phase II: Stressors ($R^2=0.386$, adjusted $R^2=0.379$)</i>				
Total mean score for stress	0.82	(0.65, 0.98)	0.08	<0.01

Factors affecting the frequency and effectiveness of the coping strategies used by students

Predictors of the frequency of coping strategies

Table 7 presents results from the structured multiphase regression model of the frequency of coping strategies used by the students. Significant results were found in the model for frequency of problem-solving and avoidance. The year-of-study variable explained 2.8% of the variance in the frequency of problem solving ($F=5.46$, $df=1,188$, $p<0.05$). Students at a senior level were more likely to use a problem-solving approach as their coping strategy for relieving stress ($\beta=0.12$, $p<0.05$). When the year of study was adjusted, the mean score for stress resulting from taking care of patients explained only 6.6% of the variance in frequency of using a problem-solving approach. Results showed that an increase of one unit in the level of stress resulting from taking care of patients would result in a decrease of frequency in using a problem-solving approach of 0.2 units (Table 7). The two significant demographic variables (year of study and religion) explained only 6.5% of variance in the frequency of using the avoidance method ($F=6.46$, $df=2,187$, $p<0.01$). Students at a senior level ($\beta=0.14$, $p=0.01$) who had no religious belief ($\beta=0.19$, $p<0.05$) were more likely to use avoidance as their coping strategy for relieving stress. When the variables of year of study and religion were adjusted for, a significant result was found in the variable of stress caused by teachers and nursing staff, which explained 9.2 % of the variance in the frequency of using avoidance as a coping strategy ($F=6.25$, $df=3,186$, $p<0.01$). Students who perceived a higher level of stress from teachers and nursing staff were more likely to use an avoidance method as their coping strategy ($\beta=0.22$, $p<0.01$). belief ($\beta=0.19$, $p<0.05$) were more likely to use avoidance as their coping strategy for relieving stress. When the variables of year of study and religion were adjusted for, a significant



result was found in the variable of stress caused by teachers and nursing staff, which explained 9.2 % of the variance in the frequency of using avoidance as a coping strategy ($F=6.25$, $df=3,186$, $p<0.01$). Students who perceived a higher level of stress from teachers and nursing staff were more likely to use an avoidance method as their coping strategy ($\beta=0.22$, $p<0.01$)

Table 7

Multiple regression analysis for the predictors of frequently used coping strategies

Dependent variables	Predictors	β	95%CI	SE	p-value
Transference	<i>Phase I: Demographics</i>	-	-	-	-
	<i>Phase II: Stressors</i>				
Staying optimistic	<i>Phase I: Demographics</i>	-	-	-	-
	<i>Phase II: Stressors</i>				
Problem solving	<i>Phase I: Demographics ($R_2=0.028$, Adjusted $R_2=0.023$, $df=1,188$, $F=5.46$, $p <0.05$)</i>				
	Year of study	0.12	(0.02, 0.22)	0.05	0.02
	<i>Phase II: Stressors ($R_2=0.066$, Adjusted $R_2=0.056$, $df=2,189$, $F=6.67$, $p<0.01$)</i>				
	Stress from taking care of patients	-0.20	(-0.37, -0.04)	0.08	0.01
Avoidance	<i>Phase I: Demographics ($R_2=0.065$, Adjusted $R_2=0.055$, $df=2,187$, $F=6.46$, $p<0.01$)</i>				
	Year of study	0.14	(0.03, 0.25)	0.06	0.01
	Religion	0.19	(0.36, 0.01)	0.09	0.04
	<i>Phase II: Stressors ($R_2=0.092$, Adjusted $R_2=0.077$, $df=3,186$, $F=6.25$, $p<0.01$)</i>				
	Stress from teachers & nursing staff	0.22	(0.06, 0.37)	0.08	0.006

Predictors of the effectiveness of coping strategies

Table 8 shows results from the structured multiphase regression model of the effectiveness of coping strategies used by students. The only significant variable was the frequency of use of transference, which explained 59.2% of the variance in the effectiveness of using transference for relieving stress ($F=290.49$, $df=1,200$, $p<0.01$). Students who frequently used transference were more likely to have found this method effective ($\beta=0.83$, $p<0.01$). See Table 8.



The variable of stress from peers and daily life accounted on its own for only 2.5% of the variance in the effectiveness as a coping strategy of staying optimistic ($F=4.77$, $df=1,187$, $p<0.05$). When the variable of stress from peers and daily life was adjusted, the frequency of staying optimistic significantly explained 46.7% of the variance in the effectiveness of that strategy ($F=84.61$, $df=2,193$, $p<0.001$). Students who perceived a lower level of stress from peers and daily life ($\beta=-0.15$ $p<0.05$) and used the staying optimistic strategy frequently ($\beta=0.76$, $p<0.01$) were more likely to report that staying optimistic was an effective method (Table 8).

The variable of stress from taking care of patients explained 8.9% of the variance in the effectiveness of using the problem-solving approach ($F=18.02$, $df=1,185$, $p<0.01$). After controlling the stress from taking care of patients, the frequency of using the problem-solving approach was found to contribute significantly to the prediction of the effectiveness of that method ($R^2=0.605$, $F=143.87$, $df=2,188$, $p<0.01$). Students who perceived a lower level of stress from taking care of patients ($\beta= -0.35$, $p<0.01$) and frequently used problem-solving for the relief of stress ($\beta=0.74$, $p<0.01$) were more likely to find that method effective (Table 8). The demographic variable of religion explained only 2.6% of the variance in the effectiveness of using avoidance for the relief of stress ($F=4.99$, $df=1,187$, $p<0.05$). When the variable of religion was adjusted for, a 41.3% variance in the effectiveness of using avoidance was explained by the frequency of using that strategy ($F=68.37$, $df=2,194$, $p<0.01$). Compared with students professing religious belief, those without it found that the coping strategy of avoidance was more effective by an increase of 0.18 units. Students who frequently used avoidance were more likely to find that method effective ($\beta=0.70$, $p<0.01$) (Table 8).

Table 8
Multiple regression analysis for predictors of the effectiveness of coping strategies

Dependent variables	Predictors	Estimated effect	95% CI	Standard Error	p-value
Transference	<i>Phase I: Demographics</i> <i>Phase II: Stressors</i> <i>Phase III: Frequency of transference ($R^2=0.592$, adjusted $R^2=0.59$, $F=290.49$, $df=1,200$, $p<0.001$)</i> Freq of transference 0.83 (0.74, 0.93) 0.05 <0.01				
Staying optimistic	<i>Phase I: Demographics</i> <i>Phase II: Stressors ($R^2=0.025$, adjusted $R^2=0.02$, $F=4.77$, $df=1,187$, $p<0.05$)</i> Stress from peers & daily life -0.15 (-0.29, -0.02) 0.07 0.03 <i>Phase III: Frequency of staying optimistic ($R^2=0.467$, adjusted $R^2=0.462$, $F=84.61$, $df=2,193$, $p<0.001$)</i> Frequency of staying Optimistic 0.76 (0.64, 0.88) 0.06 <0.01				
Problem solving	<i>Phase I: Demographics</i> <i>Phase II: Stressors ($R^2=0.089$, adjusted $R^2=0.084$, $F=18.02$, $df=1,185$, $p<0.01$)</i> Stress from taking				



	<p>care of patients -0.35 (-0.52, -0.19) 0.08 <0.01</p> <p>Phase III: Frequency of problem solving ($R_2=0.605$, adjusted $R_2=0.601$, $F=143.87$, $df=2,188$, $p<0.01$)</p> <p>Frequency of problem-solving 0.74 (0.65, 0.83) 0.05 < 0.01</p>
Avoidance	<p>Phase I: Demographics ($R_2=0.026$, adjusted $R_2=0.021$, $F=4.99$, $df=1,187$, $p<0.05$)</p> <p>Religion 0.18 (0.41, 0.03) 0.10 <0.05</p> <p>Phase II: Stressors</p> <p>Phase III: Frequency of avoidance ($R_2=0.413$, adjusted $R_2=0.407$, $F=68.37$, $df=2,194$, $p<0.01$)</p> <p>Frequency of Avoidance 0.70 (0.58, 0.83) 0.06 <0.01</p>

Discussion

The most stressful stress clinical setting

It is reasonable for nursing students to rate Accident & Emergency units as the most stressful settings because working there entails facing life and death situations and responding accurately and fast to any rapid change in a patient’s condition.

Level of stress and types of stressors

In this study, SGT University nursing students’ overall mean score for stress was at a moderate level. This finding, however, could have underestimated the actual stress perceived by the SGT University nursing students in clinical settings. Since this was a retrospective study and participants were asked to recall their past clinical practice, some immediate stressful experiences may have been missed, forgotten and/or under-reported. Additionally, the timing of data collection about stress levels can affect the results. Thus, the level of stress perceived by the nursing students should not be ignored. Among different stressors, students rated (1) ‘stress from lack of professional knowledge and skills’, (2) ‘stress from assignments and workload’ and (3) ‘stress from taking care of patients’ as the top three. The findings of the first and third most common stressors are consistent.

Physio-psycho-social responses to stress

In this study, nursing students’ health status was reported as good. However, SGT University nursing students always had emotional symptoms when they faced clinical stress. The most common such symptom was ‘tending to be worried and nervous’. The findings of the present study may help clinical teachers to identify students under stress. They can then help the students to identify the stressors and guide them in using effective coping strategies.

Coping strategies used and their effectiveness

Nursing students frequently used a transference coping strategy when they experienced stress in the clinical setting. Since students usually practice in the clinical setting on only one or two days per week, they have less responsibility for caring patients. Also, they can rely on their clinical

supervisors when problems arise. Transference strategies may therefore be effective over a short period of time.



Factors affecting students' physio-psycho-social health

The findings showed that year of study and intensity of stress was the two factors affecting students' health status. Senior students who perceived higher levels of stress were more likely to have poorer physio-psycho-social health.

Year of study

Senior nursing students are expected to take up more responsibilities during clinical practice. Also, clinical educators and staff have higher expectations of senior students than of their juniors in terms of their competence in providing quality care (Oermann, 1998). An increased workload and higher expectations may lead senior students to perceive a higher level of stress and, in turn, to have poorer health.

Levels of stress

Students who perceived a higher level of stress were more likely to have poorer physio-psycho-social health. This result is supported by Lazarus & Folkman's (1984) theory that stress can affect people's physical, psychological and social health if adaptational outcomes cannot be achieved. Selye (1976) also reported that stress could affect people's physical health.

Factors affecting the frequent use of coping strategies

Factors affecting the frequency of use of problem-solving strategies

Year of study and stress from taking care of patients were the two factors that affected the frequency of use of the problem-solving approach. Senior students who perceived a lower level of stress from taking care of patients were more likely to use problem-solving as a means of relieving stress. The following may be possible reasons. Throughout various learning opportunities in university education, senior students develop better problem-solving skills than their juniors. Also, senior students have gained a better degree of knowledge and more clinical experience, and can therefore make use of that knowledge and experience to identify and handle

problems when taking care of patients.

Factors affecting the frequency of use the avoidance coping strategies

Year of study, religion and stress from teachers and nursing staff were the three factors that affected the frequency of use of avoidance strategies. Students who were senior, without religious belief and perceiving higher levels of stress from teachers and nursing staff were more likely to use an avoidance strategy. Interestingly, senior students frequently used a combined strategy of problem-solving and avoidance. This may be due to students' competence in taking care of patients. Students use the problem-solving approach to a difficult situation when they have confidence in handling it. However, if they are inexperienced in making clinical judgments, they may escape from the problem or expect their supervisor to solve it for them.

Factors affecting the effectiveness of the coping strategies

The findings showed that the frequency of coping strategies directly affected their effectiveness, which are consistent with the findings regarding the relationship between the frequency and effectiveness of coping strategies used by students for relieving stress. Other factors in the effectiveness of specific coping strategies are discussed below.

Factors in the effectiveness of using 'staying optimistic' strategies

The variable of stress from peers and daily life predicted the effectiveness of the 'staying optimistic' option. Students who perceived higher levels of stress from peers and daily life were reported as finding that 'staying optimistic' was less effective in dealing with stress. In fact,



students' values and beliefs may be affected by family, social support or their environment. They may be more optimistic if they have adequate support from their family and peers. Their personal values may affect their perceptions of how to tackle problems during clinical practice.

Factors in the effectiveness of using 'problem-solving' strategies

Students who perceived higher levels of stress from taking care of patients were more likely to rate the problem-solving approach as ineffective. This can be explained by students who perceived higher level of stress tending to use fewer problem-solving strategies, which they then found useless. This is consistent with the previous discussion.

Factors in the effectiveness of using 'avoidance' strategies

Students who had no religious belief and frequently used avoidance were more likely to report that this type of coping strategy was effective. The result is consistent with the factors that affect the frequency of using avoidance strategies.

Limitations of the study

This study involved several limitations: in 1) sampling, 2) research design and 3) instruments.

Sampling

This study used convenience sampling and limited data collection to one university in Gurgaon, which reduced the extent to which the results could be generalized to the other bacalaureate nursing student population of India.

Research design

The cross-sectional design of this study provided information about the intensity of stress at only one point in time. The pattern, consistency and intensity of stress over time were not evaluated. The period between experience in the most stressful setting and data collection varied and may have influenced the perceived level of stress.

Instruments

The structured questionnaire may limit the depth of understanding of students' response to stress and of other types of coping strategies not listed in the questionnaire. A qualitative component might be incorporated into the study design in future.

. Nursing implications for clinical practice

The clinical setting is a stressful environment. It is important to provide a supportive environment for students to facilitate their learning. In order to achieve this goal, clinical educators, students and clinical staff should work together.

The findings facilitate educators' clinical teaching

Nursing teachers should aim at a better understanding of the stress students undergo in clinical practice, and of how they cope with it. The major type of such stress derives mainly from a lack of professional knowledge and skills and from taking care of patients. In order to increase students' professional knowledge and skill, teachers should order the material from simple to complex, assess their students' knowledge by short classroom quizzes, and encourage students to practice psychomotor skills in the learning lab – and provide time for that activity. Before clinical practice, teachers should identify each student's strengths and weaknesses. They should be aware that students will find it difficult to apply their skills, however well-practiced, to the clinical setting. Guidance and support should be provided to students during clinical training, where positive reinforcement might encourage students to ask questions. Constructive feedback should be provided to students during post-clinical training conferences to ensure future



improvement. The results of the study may also help clinical educators to identify students who perceive a high level of stress during clinical training. Then appropriate and effective coping strategies can be planned and implemented. Clinical educators should give support and guidance to students who use the problem-solving approach to the relief of stress. A combined strategy might be used and its effectiveness evaluated in terms of students' health and stress level. In order to minimize stress from taking care of patients, good communication and social skills are needed. Effective communication skills can also increase students' self-confidence in caring for patients.

Conclusion

This cross-sectional descriptive study set out to examine the baccalaureate nursing students' stress levels, physio-psycho-social health and preferred coping strategies. The results showed that such students perceived moderate levels of stress and that their physio-psycho-social health was good during clinical practice. An inverse relation was found between stress and physio-psycho-social health - students perceiving a higher level of stress were more likely to have poorer physio-psych-social health. Students commonly used a transference strategy to cope with their stress, and they found this method to be effective. Factors affecting the frequency and effectiveness of coping strategies were identified and discussed in the study. The results provided valuable information for clinical educators and clinical staff in identifying students' needs, facilitating their learning in the clinical setting and developing effective interventions to reduce the stress they encounter.

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