

Critical Analysis of Research Literature

Preparation

For this discussion, refer to the two articles on your topic of interest that you found in the Capella library.

Use the <="" style="margin: 0px; padding: 0px; box-sizing: border-box;">to gather information on each article you will use to prepare for this discussion. Create a matrix, using the procedure outlined in the *Developing a Matrix to Organize Your Literature Review* media presentation, to develop the information in your two articles. Identifying key variables and constructs of interest in the articles under review should depend on questions such as:

- What are they measuring?
 - What are they manipulating?
 - What are they comparing?
 - What are they contrasting?
 - What relationships are they investigating?
- Your answers to these questions will lead you to the key variables of interest in the studies you review.

Post Content

Post the following for this discussion:

- Present a summary of findings gleaned in the analysis of your literature. Be sure to cite sources for each summative statement.
- On the basis of the summary, draw conclusions based on pros and cons of the theories, the variables measured, and the assessment methods, instruments, and material used.
- Evaluate findings from studies in review to identify questions that remain unanswered, important elements that are missing in solving the problem, or any gaps that indicate a need for further research in this area.

ISSN 2231-1149 (Print)
2349-2996 (Online)

www.anvpublication.org



RESEARCH ARTICLE

Stress Reaction and Coping Strategies among Nursing Students in Delhi

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ABSTRACT:

Background:

Professional education can be a very stressful experience which often affects the physical and mental health. It is important to assess the psychological well being of the nursing students. This study was planned with an objective to identify and analyze the stress, stress reactions and coping strategies among nursing students in response to the stress in a nursing college in Delhi.

Materials and Methods:

A cross sectional study was conducted among 139 students of a nursing college in Delhi selected from different batches by purposive sampling method. Data was collected using a self administered questionnaire consisted of items on socio-demographic profile, clinical stress, stress reactions and coping strategies after getting written informed consent. Data was analyzed using SPSS software (version 17). Coefficient of correlation between clinical stress and stress reaction; stress reaction and coping strategies; clinical stress and coping strategies was calculated and "p" value less than 0.05 was considered significant.

Results:

A majority (70.5%) of study subjects were in the age group of 20-22 years, educated upto post high school (83.4%) and belonged to nuclear families (86.3%). The mean clinical score for stress was 56.8 ± 15.7 . Maximum number of study subjects (76.97%) reported moderate degree of stress with a mean stress score of 60.18. Study subjects reported both psychological and physical stress reactions but physical reactions (average-160.2) were more evident. Study reveals that anticipated coping and seeking social support were the most common coping strategies.

Conclusions:

Effective intervention strategies should be taken for reducing stress among nursing students.

KEYWORDS: Nursing students, Stress, Delhi

INTRODUCTION:

Professional education can be a very stressful experience which often affects the physical and mental health. Distress in the educational years may lead to impairments in the practicing years of a professional.¹ Academic stress among college students, especially fresher who are particularly prone to stress due to the transitional nature of college life is an area of interest. Students may need to develop entirely new social contacts and are expected to take responsibility for their own needs. They may have difficulty adjusting to more rigorous academic expectations and the need to learn to deal with individuals of different cultures and beliefs.²

Received on 06.01.2015

Modified on 08.02.2015

Accepted on 13.02.2015

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Asian J. Nur. Edu. and Research 5(2): April-June 2015; Page 274-278

DOI: 10.5958/2349-2996.2015.00054.3

Tests, grades, competition, time demands, professors, class environment and concern about future careers are major sources of academic stress.³ If stress is not dealt with effectively, feelings of loneliness and nervousness, as well as sleeplessness and excessive worrying may result. Student perception of high stress levels can lead to poor academic performance, depression and serious health problems. Methods to reduce student stress often include effective time management, social support, positive appraisal, and engagement in leisure pursuits.⁴ The stress reported among nursing students have been categorized as academic, clinical and personal sources of stress.⁵ Coping has been viewed as a stabilizing factor that may assist individuals in maintaining psychosocial adaptation during stressful events. It can be positive or negative depending upon situation and content.²

AIM:

Keeping the above aspect in view, it is important to assess the psychological well being of the nursing students so that effective intervention strategies can be made. This study was planned with an objective to identify and analyze the stress, stress reactions and coping strategies among nursing students in response to the stress in a nursing college in Delhi.

MATERIALS AND METHODS:

Study settings and population

A cross sectional study was conducted among students of a nursing college in Delhi. B.Sc nursing students studying in the institution constituted the study population. A total of 139 nursing students were selected from different batches by purposive sampling method.

METHODOLOGY:

A nominal roll of all nursing students studying in a batch was prepared. 139 students were selected randomly from batches in population proportionate to size sampling. Purpose of the study was explained to the study subjects and confidentiality was assured. Data was collected using a self administered questionnaire after getting written informed consent. The schedule consisted of four parts; I – socio-demographic details like age, education, type of family and family income; part II – clinical stress; part III – stress reactions; and part IV – coping strategies. In part II, items pertaining to clinical stress which were placed in seven stressor areas. For each question there was provision for selecting one out of four possible responses and weights were given as: severe stress (3), moderate stress (2), mild stress (1) and no stress (0). Total scores were summed up for the individual and categorized the degree of stress as “mild”, “moderate” and “severe”. The mild stress was with score 1-44, moderate stress with score 45-88 and severe stress having score of 89-132.

In part III, items pertaining to stress reaction which was categorized into physical and psychological reactions. The stress reaction questionnaire consists of 26 items related to physiological and psychological reactions. It is a four point scale with the responses and assigned weights accordingly: frequently (3), occasionally (2), rarely (1) and never (0). As per frequency of stress reaction, the total responses were categorized as rarely with stress reaction score of 1-26, occasionally with stress reaction score of 27-52 and frequently with score of 53-78.

Part IV had coping strategy items which were divided into eight categories of coping styles of seeking relaxation, venting, escaping, accepting responsibility, seeking social support, problem solving, anticipated coping and wishful thinking. The coping strategies questionnaire consisted of 35 items. It was a three point scale with the responses assigned weights as ‘Always’ (2), ‘Sometimes’ (1), ‘Never’ (0). Here also, it was classified as “sometimes” with coping strategies when total scores were ranged between 1 and 35 and “always” with total scores were ranged between 36 and 70.

Study tool validity and reliability analysis:

The content validity of the tool was established by giving it to ten experts in the fields of clinical psychology, psychiatric nursing, psychiatrist educationist, and administrator. Most of the experts agreed on most of the items and necessary modifications were made as per their suggestions. Pilot testing was done on adequate sample of nursing students of another nursing college. The reliability of the tool was established using Cronbach’s alpha method. The reliability of the clinical stress was 0.99 and for stress reaction it was 0.84 and 0.75 for coping strategies.

Data analysis

Data was analyzed using SPSS software (version 17). Results were presented in proportion, mean (M) and standard deviation (SD) wherever applicable. Coefficient of correlation between clinical stress and stress reaction; stress reaction and coping strategies; clinical stress and coping strategies was calculated and “p” value less than 0.05 was considered significant. Ethical clearance was taken from institutional ethical committee.

RESULTS:

Table 1 shows socio-demographic characteristics of the study subjects. 98 (70.5%) were in the age group of 20-22 years. 116 (83.4%) of the nursing student nurses had education up to post high school. The family-wise classification showed that majority of the student nurses; 120 (86.3%) belonged to nuclear families whereas only 19 (13.7%) belonged to joint family. Majority of the nursing students (30.9%) had a family income above Indian National Rupee (INR) twenty thousand.

Table 1: Socio demographic characteristics of nursing students

Characteristics	Frequency	Percentage (%)
Age		
17-19 years	40	28.8
20-22 years	98	70.5
23-25 and above	1	0.7
Education		
Till post high school	116	83.5
Graduate	22	15.8
Post graduate	1	0.7
Type of Family		
Nuclear	120	86.3
Joint	19	13.7
Monthly Family Income (INR):		
< 10000	31	22.4
10001-15000	32	23.0
15001-20000	33	23.7
20001 and above	43	30.9
Number of Family Members:		
1-4	104	74.8
5-10	32	23.0
11-15	3	2.2

The mean clinical score for stress was 56.8 ± 15.7 . To identify the highest and least clinical stress area of nursing students, an area wise computation of mean score was done. Mean score calculated by adding up the scores of each item of one area and dividing it by the number of items as represented in Table 2. Data shows that the highest mean stress score was in the area of "Interaction with clinical faculty" ($\mu = 207.71$) followed by "Interaction with health team members" ($\mu = 203.6$). The least stress scores were in the area of "Interaction with patients and relatives" ($\mu = 134.5$).

To assess the degree of stress in nursing students, scores were categorized into 'mild', 'moderate', and 'severe' as shown in Table 3. The maximum number of student nurses; 107 (76.97%) had moderate degree of stress with a mean stress score of 60.18. Five student nurses (3.59%) experienced severe stress with a mean score of

100.2 and 27 students (19.42%) experienced only mild stress with a mean of 35.33.

Table 2: Mean score of areas of clinical stress among nursing students

Clinical Stress area	Mean score (μ)
Interaction with clinical faculty	207.7
Interaction with health team members	203.6
Clinical rotation and assignments	184.5
Nursing procedures	181.7
Interaction with peer group/senior students	169.8
Patients' disease condition	164.8
Interaction with patients and relatives	134.5

Table 3: Degree of stress among nursing students

Degree of Stress	Frequency (Percentage)	Mean score
Mild Stress (1-44)	27 (19.4)	35.3
Moderate Stress (45-88)	107 (76.9)	60.2
Severe Stress (89-132)	5 (3.6)	100.2

Mean stress score of second year student was 44.8 with S.D of 6.9 whereas third year student's mean score was 40.8 with S.D. of 9.5 and fourth year students had a mean clinical stress score of 56.8 and S.D. of 12.2, although the students of all the years experienced clinical stress, however fourth year students experienced maximum stress and third year students had least clinical stress scores. Mean stress reaction score was 29.4 with standard deviation of 13.1. The stress reactions were divided into two areas-physical (10) and psychological reactions (16). Item wise mean score of physical and psychological stress reaction were computed to identify the most frequent and least frequent stress reactions as shown in Table 4. Although students experience both psychological and physical reactions but physical reactions (average-160.2) were more evident among students than psychological stress reactions (average-155.25).

Table 4: Stress reaction score for physical and psychological stress reactions among nursing students

Physical Stress Reactions	Stress reaction score	Psychological Stress Reactions	Stress reaction score
Do you suffer from headaches?	179	Do you feel depressed?	196
Do you have disturbed sleep?	178	Do you experience restlessness?	192
Do you experience palpitation?	169	Do you find it difficulty in concentration?	188
Do you feel lethargic?	166	Do you feel nervous while speaking and doing procedures?	183
Are you troubled by indigestion?	162	Do you experience mood change?	182
Do you experience muscular tensions and pains?	159	Do you feel irritated easily?	176
Do you over eat?	155	Do you find difficulty in taking decisions?	159
Do you suffer from Diarrhea?	148	Do you want to be left alone?	152
Do you feel thirsty frequently?	145	Do you get panicky in emergency situations?	151
Do you experience increased perspiration?	141	Do you perceive unknown fears?	139
Average	160.2	Do you get tried easily?	138
		Do you experience inferiority feelings?	134
		Do you feel threatened in the Clinical setting?	134
		Do you lose your self- control?	131
		Do you find yourself disorganized and disoriented?	128
		Do you feel like harming who disturb you?	101
		Average	155.2

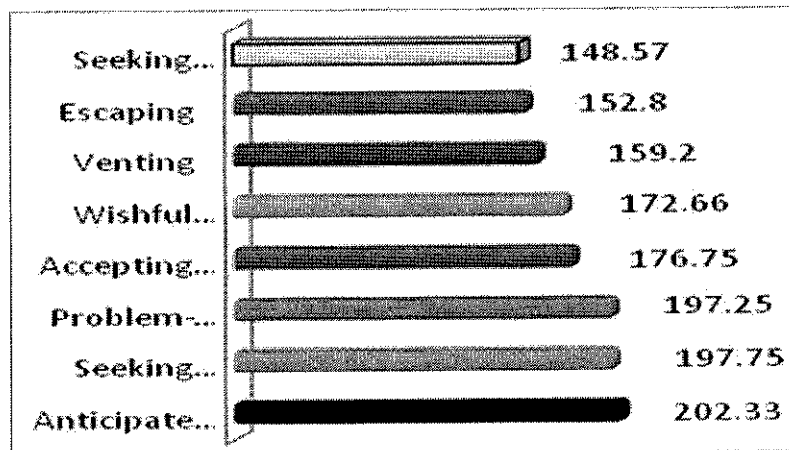


Figure 1: Coping strategies scores among nursing students

When inquired about frequency of stress reactions, 57 (41%) reported rarely, 77 (55.39%) as occasionally and frequently was reported by 5 (3.6%). Mean coping strategy score was 42.5 ± 7.9 .

Figure 1 shows that the highest coping scores were in the area of "anticipated coping" ($\mu = 202.3$) followed by "seeking social support" ($\mu = 197.8$). The lowest score was in the area of "seeking relaxation" ($\mu = 148.6$) preceded by "escaping" ($\mu = 152.8$). It suggests that "anticipated coping and seeking social support" were the most common coping strategies while "seeking relaxation and escaping" were least common. Most of the student nurses; 112 (80.5%) reported using coping strategies "always" with a mean score of 45.4, whereas 27 (19.4%) of them reported use of coping strategies "sometimes" with a mean score of 30.6.

Coefficient of correlation between clinical stress and stress reaction was 0.96 which was statistically significant (p value = 0.03). Similarly, coefficient of correlation between stress reaction and coping strategies was 0.98 (p value = 0.02). Coefficient of correlation between clinical stress reaction and coping strategies was also 0.98 (p value = 0.03).

DISCUSSION:

It was observed in the present study that stress levels were high among nursing students. Moderate stress levels were present in majority of nursing students. The findings are consistent with a study conducted by Singh A et al in a nursing college where mean perceived stress score of students was 28.67 (SD = 5.32) with least stress levels in third year students.⁶ Other studies also indicated higher levels of stress and physiological and psychological symptoms among nursing students.⁷

Interaction with faculty, nursing procedures were main sources of stress. Nolan G et al also found that main sources of stress were associated with relationships in the clinical environment; clinical workload; matching competence and responsibility; and simultaneous clinical and academic demands.⁸

A number of physical and psychological symptoms were perceived by students like headaches, lethargy, disturbed sleep, palpitations, depressed mood etc. This is consistent with the study carried out by Sheu S et al which revealed that stress for students came mainly from the lack of professional knowledge and skills as well as caring of patients. The most common response to stress was social behavioral symptoms.⁹

Regarding coping strategies, anticipated coping, problem solving and seeking social support were most frequent responses. Similar findings were reported by Seyedfatemi N et al who conducted study among Iranian nursing students. The study revealed that problem solving strategies, trying to reason with parents and compromise were common coping strategies.¹⁰ Other studies also stated that nursing students used to cope up by using both problem-focused and emotion-focused coping skills as found in present study.¹¹

The significant correlation were found between stress reactions and coping strategies. Similarly significant correlation ($P < 0.01$) was found with avoidance coping behaviors and negative self-esteem. Positive self-esteem was significantly correlated ($P < 0.01$) with proactive coping behaviors in study conducted by Lo R.¹¹ The possible limitations of the study are sampling method which may lead to selection bias.

CONCLUSION AND RECOMMENDATIONS:

It is concluded that educators must take a close look at the clinical education process which encompasses the methods of teaching and evaluation choice of clinical faculty and the attitudes towards clinical expectations. Effective measures should be taken for reducing stress among students.

CONFLICT OF INTEREST:

None declared.

ACKNOWLEDGMENT:

The authors are grateful to study participants for their contribution.

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Stress sources in nursing practice. Evolution during nursing training

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Accepted 23 October 2006

KEYWORDS

Stress;
Nursing student;
Clinical practice;
Training

Summary A cohort study was carried out in order to evaluate the evolution of nursing students' perception of stressors associated with clinical practice. Sixty-nine students answered the KEZKAK questionnaire about nursing stressors [Zupiria X., Uranga M.J., Alberdi, M.J., Barandiaran, M., 2003b. Kezkak: cuestionario bilingüe de estresores de los estudiantes de enfermería en las prácticas clínicas. *Gac. Sanit.* 17 (1), 37–51.] at four stages of their studies. The most powerful stressors identified by students both at the beginning and at the end of their studies were: lack of competence, uncertainty and impotence, being harmed by the relationship with patients, emotional involvement, lack of control in relationships with patients, contact with suffering, relationships with tutors and companions, and overload. Nevertheless, most of the stressors were found to lose stressor power during the course of nursing training. The evolution of the perception of stressor power and its implications for nurse training are discussed, and some recommendations based on our findings are provided.
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Introduction

The exercise of a professional occupation involves specific activities with varying degrees of responsibility, and the corresponding tasks to be carried out invariably involve a certain degree of stress. Some stressors are associated with work organization, while others are more related to the specific nature of the tasks themselves (Gray-Toft and Anderson, 1981; Escribá et al., 2000; McGrath et al., 2003). The suffering responses to both types of stressors vary for different individuals. Thus, differences in the ways in which individuals perceive stressful situations and cope with them, account for why some individuals suffer more than others and are negatively affected in terms of their health, well being and their way of working (Lazarus and Folkman, 1984). In order to work well as a professional, it is thus necessary to acquire competences which facilitate the performing of the job in a correct and healthy way (Zupiria, 2000).

Nurse-specific stress

In the nursing profession in particular, stress has been associated with less work satisfaction (Artacoz et al., 1996) and impaired psychological and psychosomatic well being (Escribá et al., 2000; Artacoz et al., 1996; Lambert et al., 2004), and is known to exert an important negative impact on the quality of nursing (Clegg, 2001). The single most important stressor for nurses working in a hospital environment has been reported to be contact with suffering (Gray-Toft and Anderson, 1981; Escribá et al., 2000). The main sources of distress for experienced nurses include excessive workload (Gray-Toft and Anderson, 1981; Escribá et al., 2000; Artacoz et al., 1996; McGrath et al., 2003), leadership/management styles, professional conflict and the emotional cost of caring (McVicar, 2003).

Student nurse-specific stress

Stressors associated with organizational aspects of work have been reported to be present in students in the form of academic stress (Evans and Kelly, 2004). In order to identify what is considered by students to be the most stressful aspects of clinical training, we developed a questionnaire which measured the degree of stress perceived in 41 potentially stressful situations (Zupiria et al., 2003a,b). Factorial analysis revealed nine principal factors. Some of these have to do with the task itself: "lack of competence", "contact with suffering", "uncertainty and impotence" whereas others are

more related to relationships developed during the course of the tasks: "lack of control in the relationship with patients", "emotional involvement", "being harmed in the relationship with patients", "patients seeking a closer relationship" and "relationships with tutors and companions". One of the least important stressing factors was found to be "overload", which for students represents clinical situations which produce a feeling of being overwhelmed, rather than a high work-load in itself. These findings corroborate those of other authors which identified similar sources of stress and degrees of importance assigned to them (Garret et al., 1976; Amat et al., 1990; Beck and Srivastava, 1991; Sánchez, 1992; Mahat, 1996; Ortega et al., 1996; Admi, 1997; Kimberly, 1997). On the other hand, the factor "lack of competence" has been identified as the main source of stress for nursing students in clinical setting (Pagana, 1988; Sheu et al., 2002) and was also found by other authors to be associated with nurses with little experience (McVicar, 2003), whereas it was not considered to be important by experienced nurses (Gray-Toft and Anderson, 1981; Escribá et al., 2000; Artacoz et al., 1996; McGrath et al., 2003; McVicar, 2003). Thus, some stressors are related to a lack of experience, while others are independent of experience.

Stress management for nurses

In a recent study of the effectiveness of interventions to reduce workplace stress in the nursing profession, more evidence was found for the effectiveness of stress reducing programs based on providing personal support rather than on environmental management (Mimura and Griffiths, 2003). In a critical review of the stress management literature targeting both trained and student nurses, Jones and Johnston (2000) concluded that many work-site programmes in this series were successful in terms of adaptive changes in problem-solving, self-management skills, affective well being and work performance. However, these authors insisted that it is vital to further clarify the structure of perceived stressors and to develop causal models of the stress process in order to identify the job characteristics 'causing' work-related distress.

As trainers of tomorrow's nurses and in the light of the recent Bologna Agreement which attempts to define specific competences which students should acquire during their higher education in the European Union, we considered it important to characterize the power of different stress factors on students during their nursing training and to identify

which of them gain or loose importance over time. The development of appropriate stress management competences will facilitate a healthier way of working, contributing to the nurse remaining healthy and capable of providing better quality caring. We discuss the implication of these results for improving programs of training of future nurses and propose some recommendations on the basis of our findings.

Methods

A prospective cohort study was carried out. The initial population consisted of students registered for the first year at the San Sebastian Nursing School (Basque Country, Spain) during the 1999–2000 academic year (n : 130). Nursing studies in Spain are carried out over 3 years, at the end of which a university degree in general nursing is conferred. In the San Sebastian Nursing School, clinical training is provided during the 3 years of formation. The academic year consists of two four-month periods from September to December and from February to May. During the first year, students undergo 7 weeks of clinical practice in the second four-month period. During the second and third years of training, students have two periods of clinical practice each year, with a duration of 7 weeks at the end of each four-month period. Among these five periods of clinical practice, four of them take place in a hospital, and one in a primary care setting (in the third year). Each student is obliged to carry out one training cycle in a surgical ward and another in an internal ward. The remaining two hospital

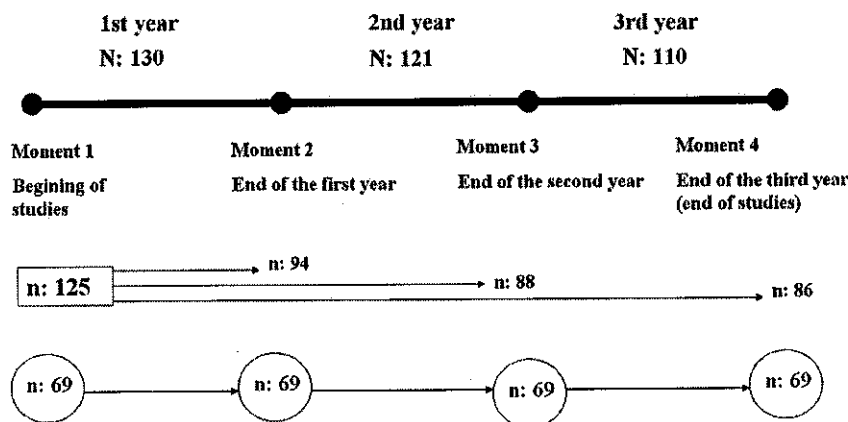
cycles can be carried out in any of the other specialist wards: pediatrics, gynecology, mental health, geriatrics, intensive care, emergency.

We chose four specific moments (Fig. 1) for the administration of questionnaires to students, without prior notice:

- (1) At the beginning of studies (before initiating practical training).
- (2) At the end of the first year (during the last week of their first period of practical training).
- (3) At the end of the second year (during the last week of their third period of practical training).
- (4) At the end of their studies (during the last week of their last period of practical training).

Data were collected in October 1999 (during the first week of their nursing studies), May 2000, May 2001 and May 2002 (during the last week of their practical training at the end of each term).

Students were informed that participation in this study was voluntary and that the data acquired was to be used for a scientific study. Questionnaires were filled out anonymously since anonymity is the best way to ensure that non-participants are treated in the same way as participants, thus avoiding unnecessary pressure. We used surnames for anonymous identification of students. Most students in the Basque Country know up to eight of their surnames. The first surname of the individual comes from the first surname of the father and the second one comes from the first surname of the mother and so on. Thus, students were asked to label the question-



Final sample: 69 out of 130 (53%) or 69 out of 110 (62.7%)

Figure 1 Population and sample.

naire with their third and fourth surname, in order to identify the student, while at the same time maintaining their anonymity.

Only students who had answered the questionnaires completely at each of the four different stages were included in the definitive sample (inclusion criteria).

The questionnaire included questions about sex, age, and components from the KEZKAK and the STAI questionnaires. The KEZKAK questionnaire (Zupiria et al., 2003b) evaluates the main stressors affecting nursing students during their practical training. It has 41 items and the subjects have to rate how much the described situation worries them (0: not at all; 1: a little; 2: quite; 3: a lot). It is possible to obtain a global score (how much clinical practice stresses the student) and nine subscale scores (how much stress the student experiences from the different sources of stress). The STAI questionnaire (Spielberger et al., 1970, 1988) measures two aspects of anxiety: the first one, trait-anxiety, has to do with the trend of personality to feel anxiety, and the second one, state-anxiety, is related to the anxiety-level an individual feels the last days before answering the questionnaire.

Data were computerized and statistically handled by using SPSS software on a PC. Significant differences between two independent groups were evaluated by applying the Mann-Whitney *U* test. Significant differences in the scores obtained at different moments were evaluated by applying the Wilcoxon test for repeated measures.

Results

Out of the 130 students who registered for the first year of studies (1999–2000 academic year), 125 answered the questionnaire completely at the beginning of the first year (96%). Of these students, 94 completely answered the questionnaire on the second occasion (at the end of the first year), 88 at the end of the second year and 86 at the end of the final year. Of the 130 first year students, 110 continued on to the third year (85% of the cohort). Of the 125 students who initiated their studies during 1999–2000 and answered the first questionnaire, 69 answered the questionnaire totally on each of the four occasions. Thus, the definite sample was made up of 69 students (53.1% of the initial cohort, but 62.7% of the cohort that was in the third year during 2001–2002) (see Fig. 1). Finally, 89.9% of the final sample was female and the main age was 19.88 (3.6) years with a range of 18–37 years.

Table 1 presents data about sex and age together with STAI trait-anxiety and KEZKAK scores measured initially for students who were classified into two groups: those who completed the questionnaires on each of the four occasions (*n*: 69), and those who answered on the first occasion but not on all the three other occasions, or who were eliminated (*n*: 56). No significant differences were detected in characteristics measured on the first occasion between students belonging to the final sample, and those who were part of the initial cohort, but were lost during the course of the study.

The mean scores for the 41 items of the KEZKAK questionnaire at the four moments of measurement

Table 1 Percentage of females in the cohort and mean ratings for age, STAI trait-anxiety and the KEZKAK score (global and nine subscales) in the final sample and excluded group

	Excluded group, <i>n</i> : 56	Final sample, <i>n</i> : 69	<i>p</i>
Female (%)	89.1	89.9	0.89
Age	20.9 (4.6)	19.9 (3.6)	0.159
Trait-anxiety	25.9 (4.3)	26 (4.4)	0.712
KEZKAK41 global core	72 (18.7)	68.4 (18.6)	0.335
Lack of competence	23.7 (6.7)	23.2 (6.5)	0.556
Uncertainty and impotence	22.5 (6.1)	21.3 (5.2)	0.124
Being harmed by the relationship with patients	9 (3.6)	9.6 (3)	0.366
Emotional involvement	6.9 (2.9)	6.7 (2.9)	0.714
Lack of control in relationships with patients	13.3 (4.4)	13.1 (4.6)	0.915
Contact with suffering	17.1 (5.9)	16 (5.3)	0.160
Relationships with tutors, workmates and classmates	9 (3.6)	8.5 (3.8)	0.407
Overload	7.6 (2.9)	7.2 (2.5)	0.285
Patients seeking a close relationship	2.3 (2)	2 (1.5)	0.758

These measures were obtained at the beginning of studies. No significant differences were detected between these groups (Mann-Whitney *U* test).

are presented in Table 2. It can be observed that in general, the situations cause less stress at the end of studies (moment 4) than at the beginning (moment 1). The stressing power of most of the most worrying situations (means near to 2) was seen to fall off significantly during the course of studies.

The global and nine subscale scores from the KEZKAK questionnaire, measured on the four occasions of this study are listed in Table 3, together with the differences which are statistically significant. The same results can be seen more clearly in Fig. 2 where the ratings are pondered by the number of items which comprise each factor. There is a significant decrease in score during the course of formation for the factors which were perceived to be most stressful: *"lack of competence"*, *"uncertainty and impotence"*, *"emotional involvement"*, *"being harmed by the relationship with patients"*, *"lack of control in relationships with patients"* and *"contact with suffering"*. In contrast, no significant decrease was found in scores for the factors perceived as being less stressful: *"relationships with tutors and companions"*, *"overload"* and *"patient seeking a close relationship"*. Some factors are more stressful than others for the students, and the order of stressor power is the same at the beginning and throughout studies, as can be seen in Fig. 2.

The factors which significantly decrease do so basically during the first two years of studies. During the third year this decrease stops or even increases, although the increases in these factors are not statistically significant. The mean rating for the factor *"lack of competence"* progressively decreases, even through the third year, although this decrease is not statistically significant.

Discussion

Sample considerations

The final sample was 53.1% of the initial population. There were two causes for exclusion: the student did not pass exams and did not reach the third year in two years, or the student did not answer completely on all four occasions. From the 130 registered students in the first year, only 110 were registered in the third year, two years later. Among this cohort of 110, 62.7% answered on the four occasions. The high exclusion rate is largely due to the methodology which ensures anonymity. Students could have been encouraged to answer questionnaires but this measure might have prejudiced both anonymity and the voluntary nature of the

exercise. In any case, it can be observed in Table 2 that there are no significant differences between students from the definitive sample and excluded students in any of the studied characteristics on the occasion of the first questionnaire regarding sex, age, trait-anxiety and KEZKAK scores. The final sample may thus reasonably be considered valid and unbiased for the objectives of the present study.

One limitation of this study is its cultural dependence and the caution with which the results can be extrapolated to other cultural settings. Admittedly, other independent studies have reported stressors which are similar to those we report (Beck and Srivastava, 1991; Mahat, 1996; Admi, 1997; Sawatzky, 1998; Amat et al., 1990; Ortego et al., 1996; Sánchez, 1992; Lo, 2002). Nevertheless, longitudinal studies which are comparable to the present work do not appear in the literature. Thus, it will be interesting to see which stressors are identified by similar studies in other countries, with distinct cultural contexts.

In Spain, there is a low degree of nursing specialization at an undergraduate level. Thus, after 3 years of studies, a generalist adult nursing degree is conferred with specialist degrees being awarded only for midwifery and mental health. It would be interesting to see if the results of the present study vary as a function of the different specialist branches of nursing and this limitation of the current study, which applies to general nursing should also be borne in mind.

It should also be noted that the questionnaire was elaborated and validated in Spanish/Basque (bilingual), rather than in English (Zupiria et al., 2003b). The items on the questionnaire have been translated into English by a native, English-speaking scientist. Nevertheless, the validation of the English version of the questionnaire has not been performed.

Diminishing stresses

The factors which appear to be most stressful at the beginning of studies remain most stressful at the end of them, and with the same order of importance (see Fig. 2). Nevertheless, a general decrease in scores can be observed during the course of studies. This weakening of the stressor power of stressful situations is likely due to progressive exposure to clinical work, observational learning, supervised clinical training and the gradual acquisition of experience. In contrast, we observed that for the 3 weakest stressors of the 9 stress factors, there was no significant decrease

Table 2 Average scores for answers to 41 items by the 69 individuals who belonged to the final sample on the four occasions of this study

Stressor	1	2	3	4	<i>p</i>			
					1-2	2-3	3-4	1-4
To do my job badly and prejudice the patient	2.57	2.38	1.97	2.07	0.043	0.000	0.736	0.000
To mix up medicines	2.29	2.27	2.1	1.93	0.969	0.048	0.374	0.004
To receive a formal complain from a patient	2.29	2.07	1.77	1.54	0.103	0.009	0.264	0.000
To jab myself with an infected needle	2.17	2.17	1.78	1.87	0.981	0.001	0.330	0.018
To psychologically harm the patient	2.14	1.81	1.57	1.41	0.007	0.006	0.393	0.000
To make a mistake	2.13	2.09	1.87	2.07	0.049	0.046	0.165	0.014
To feel that I cannot help the patient	2.13	1.87	1.72	1.57	0.011	0.024	0.527	0.000
Not to locate a doctor when necessary	2.13	1.78	1.62	1.97	0.013	0.157	0.008	0.046
To physically harm the patient	2.10	1.67	1.45	1.3	0.000	0.005	0.487	0.000
Finding myself in a situation in which I don't know what to do	1.99	1.97	1.93	1.84	0.907	0.199	0.857	0.164
To have to give bad news	1.91	1.87	1.59	1.52	0.642	0.003	0.899	0.002
Not to feel integrated into the work group	1.88	1.78	1.97	1.83	0.389	0.765	0.669	0.309
To have to be with the patient's family when s(he) is dying	1.86	1.67	1.46	1.55	0.111	0.017	0.423	0.013
To see a patient dying	1.86	1.51	1.26	1.10	0.003	0.012	0.408	0.000
When a patient who was improving becomes worse	1.83	1.52	1.26	1.42	0.004	0.009	0.364	0.000
To find myself in an urgent situation	1.81	1.71	1.59	1.72	0.363	0.278	0.293	0.453
When the patient's emotions affect me	1.75	1.56	1.3	1.38	0.068	0.003	0.823	0.000
To receive contradictory instructions	1.72	1.75	1.61	1.77	0.753	0.194	0.399	0.670
To be infected by a patient	1.71	1.84	1.8	1.61	0.280	0.306	0.258	0.363
When the patient does not respect me	1.71	1.33	1.30	1.26	0.001	0.772	0.654	0.000
When my responsibility for the patient is too much	1.68	1.52	1.19	1.58	0.194	0.004	0.002	0.146
To have to be with a patient from whom bad news has been withheld	1.67	1.45	1.28	1.49	0.070	0.075	0.189	0.072
When a patient mistreats me	1.61	1.42	1.23	1.36	0.159	0.037	0.473	0.006
Not to know how to respond to a patient	1.61	1.39	1.38	1.51	0.038	0.890	0.130	0.324
Differences between what was learned in class and what is experienced in clinical practice	1.59	1.20	1.04	1.35	0.005	0.102	0.055	0.020
Not to know how to respond to patient's expectations	1.58	1.54	1.39	1.46	0.660	0.112	0.444	0.301
To become too involved	1.58	1.58	1.30	1.43	1.000	0.001	0.201	0.063
Not to be able to attend to all patients	1.48	1.32	1.32	1.49	0.132	0.353	0.052	0.524
Relationship with the tutor	1.45	1.43	1.38	1.32	0.876	0.562	0.450	0.243
To have to carry out procedures which hurt the patient	1.41	1.32	1.22	1.25	0.367	0.277	0.519	0.079
Relationship with health professionals	1.38	1.39	1.46	1.35	0.861	0.526	0.228	0.864
To have to work with aggressive patients	1.35	1.48	1.38	1.39	0.149	0.058	0.982	0.745
Not to know how to conclude a conversation with a patient	1.35	1.14	0.97	0.99	0.074	0.069	0.876	0.001
To have to be with a patient with whom it is difficult to communicate	1.33	1.27	1.17	1.12	0.516	0.302	0.605	0.033
To have to talk with the patient about his/her suffering	1.16	1.49	1.2	1.33	0.001	0.002	0.594	0.249
Relationship with the professor in charge of the clinical practice	1.14	1.04	1.06	1.00	0.401	0.983	0.664	0.215
To have to be with a terminally-ill patient	1.13	1.06	1.00	0.99	0.479	0.536	0.853	0.276
Work overload	1.09	1.14	1.17	1.09	0.694	0.651	0.918	0.916
When the patient touches my body inappropriately	1.06	1.12	1.07	1.01	0.678	0.754	0.509	0.803
When a patient of the opposite sex makes sexual insinuations	0.96	1.04	0.93	0.88	0.436	0.227	0.646	0.579
Relationship with other nursing students	0.65	0.54	0.72	0.90	0.278	0.033	0.066	0.061

The items are ordered in accordance with the stressor power assigned by students on the first measurement occasion (beginning of their studies). In the last four columns, differences in the ratings obtained on the different measurement occasions which are statistically significant are presented in bold (Wilcoxon test).

Table 3 Average global and nine subscale scores on the "KEZKAK" questionnaire ordered by what students at the beginning of their studies considered to be most stressful

	1, Beginning of the studies before the first clinic contact	2, At the end of the first year after the first clinic cycle	3, At the end of the second year after 3 clinic cycles	4, At the end of the third year (end of the studies) after 5 clinic cycles	p			
					1-2	2-3	3-4	1-4
K1	68.4	63.5	57.8	59	0.018	0.000	0.696	0.000
Lack of competence	23.2	21.5	19.4	18.6	0.010	0.000	0.779	0.000
Uncertainty and impotence	21.3	18.9	17.0	18.1	0.002	0.000	0.265	0.000
Being harmed by the relationship with patients	9.6	8.5	7.3	7.4	0.006	0.000	0.976	0.000
Emotional involvement	6.7	6.1	5.1	5.9	0.077	0.000	0.076	0.000
Lack of control in relationships with patients	13.1	12.2	11.3	11.7	0.094	0.083	0.550	0.011
Contact with suffering	16	15.1	13.2	13.8	0.135	0.001	0.585	0.000
Relationships with tutors and companions	8.5	8.2	8.5	8.2	0.391	0.646	0.563	0.519
Overload	7.2	7.1	6.6	6.8	0.953	0.025	0.447	0.147
Patients seeking a close relationship	2	2.2	2	1.9	0.356	0.359	0.403	0.740

The average scores for each of the four moments of the study are presented, together with statistically significant differences (in bold) between ranks in the Wilcoxon test at different stages, taken two by two.

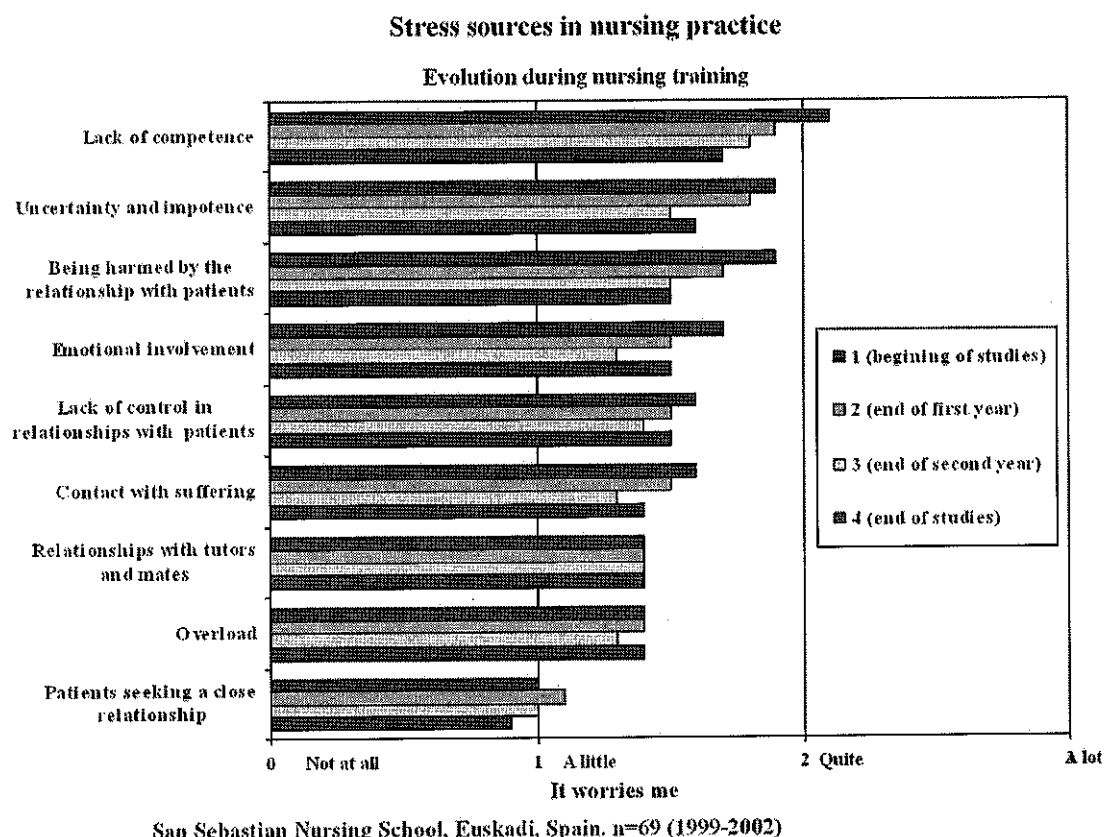


Figure 2 Evolution of pondered average scores for nine factors of the "KEZKAK" questionnaire during the four moments of this study.

in scores from the beginning to the end of studies: these stressors induce less worry both at the beginning and at the end of training.

Surprisingly, there is a reduction in perceived stress for five of the nine factors during the course of studies, accompanied by a slight increase in the corresponding ratings from the end of the second year to the end of the third year ("uncertainty and impotence", "emotional involvement", "lack of control in relationships with patients", "contact with suffering" and "overload"). This may be due to the fact that some insecurities and fears can be re-activated upon finishing training and starting professional activity. Indeed, most of these factors are also present as stressors in experienced nurses (Gray-Toft and Anderson, 1981; Escribá et al., 2000; Artacoz et al., 1996; McGrath et al., 2003; McVicar, 2003).

The factor "patient seeking for a close relationship" causes as little stress at the beginning as at the end of studies. We have not found this factor to be reported in other studies, and it thus appears to be of little importance in this context (Menzies, 1960; Gray-Toft and Anderson, 1981; Artacoz

et al., 1996; Escribá et al., 2000; McGrath et al., 2003; McVicar, 2003; Garret et al., 1976; Amat et al., 1990; Beck and Srivastava, 1991; Sánchez, 1992; Mahat, 1996; Ortego et al., 1996; Admi, 1997).

Implications for the training of nursing students

The fundamental objective of this study was to examine how nursing students' perception of stressors associated with clinical practice evolves during the course of their training, in order that nurses may acquire during their formation competences to help them to cope better with nurse-related stress. Many of the most recent studies about stress are based on the Interaction Theory by Lazarus and Folkman (1984). This Theory states that the cognitive evaluation by the person is the main predictor of responses to stress. The way in which stressful situations which alter or threaten personal equilibrium are perceived and the way in which people cope with them will influence the degree of success of the adapted response to the new

situation. Thus, the development of the capacity for a more healthy approach to stress will make the person more capable of enduring and digesting stress. We will now discuss how we think more healthy approaches to situations which have been identified as being particularly stressful for nursing students can be promoted during training.

General information about stressors

We propose that stressor power can be diluted and student stress alleviated if students are made aware that most of the stressors they will experience in their clinical training will lose power as they learn skills, acquire experience and develop competence, that others will decrease and even disappear, and that others will remain probably throughout their professional lives. Thus, *"uncertainty and impotence"*, *"emotional involvement"* and *"contact with suffering"* are experienced as stressors by professional nurses with ample experience (Escribá et al., 2000; McGrath et al., 2003) and are known as *"emotional cost of care"* factors (McVicar, 2003). There are some realities we can change and some others that we cannot and we have to accept. Students should be taught to recognize which ones are a constant in nursing work and this awareness in itself will have a reassuring effect on the students, reducing anxiety and contributing to a more healthy approach to stress and to better quality nursing.

Facing lack of competence

The factor students reported feeling most stressful about is lack of competence. This factor loses its stressor power progressively during training, but nevertheless remains the most stressful up to the end. Lack of competence has been reported to continue to be an important stressor for professionals with little experience, but to disappear with experience (McVicar, 2003). We consider that students should be made aware of this particularly important stressor and consider their clinical training as a *"time to learn"*. Attempts should be made to encourage the development of a positive attitude to the present moment which the student is living, by assuming from the beginning his/her role as a student, and later on, his/her role as a nurse with little experience. Part of the uneasiness felt by students is thought to come from the fact that they are not focused on the present moment which they are living, but rather demand of themselves levels of competence which they are not yet prepared for (Zupiria and Tazón, 1997; Zupiria, 1999). This may

often be due to an excessively demanding and idealized nursing model.

Management of caring relationships

The power of stressors which are concerned with nurse-patient relations (*"being harmed in the relationship with patients"*, *"emotional involvement"*, *"lack of control in the relationship with patients"* and *"relationship with tutors and companions"*) tends to decrease with experience, since these stressors are not present to the same degree in experienced professionals (Gray-Toft and Anderson, 1981; Escribá et al., 2000; Artacoz et al., 1996; McGrath et al., 2003; McVicar, 2003). It is important that students are aware that the adequateness of the distance in the relationship with the patient is determined fundamentally by the nature of the caring task at hand. Adequate distance could be defined as that which is *"as close as necessary and as far as possible"* (Zupiria, 2000). The importance of maintaining a *"secure distance"* should be emphasized. We will be close as far as we feel secure and the more secure we feel, the closer we can become. It is certain that the decrease in this class of stressor may be due in part to defenses against stress provided by institutionalized nursing services (Menzies, 1960). However, these defenses tend to make the relationship between nurse and patient less human. In a recent study (McGrath et al., 2003), it is reported that in order for a nurse to offer holistic care to patients, it is necessary to develop a whole series of social abilities. Once more, young nurses should be aware of their limitations in this regard and should be taught to develop a positive attitude to their limited role in these situations, without renouncing humanized and personalized nursing care. The development of interpersonal, social skills would be useful in this regard.

Relationship with workmates is another constant stressing aspect, not only for students, but also later for professionals. Team-work is necessary and conflicts are inevitable within groups. In groups in which there is a high-quality interpersonal environment, the group acts as a buffer against work stress (McGrath et al., 2003). In this sense, positive attitudes to team-work, as well as to conflict-resolution should be developed, since these represent important opportunities to grow. *"Problem-solving techniques"*, *"decision making techniques"* and *"team-work"* should thus be included as part of the training of student nurses in order to minimize the occurrence of this stress in professional life.

The importance of reflection groups

Globally, we consider that it is important to encourage the development of awareness of stress-related feelings and a positive attitude to self-knowledge, as Evans and Kelly (2004) also propose. Moreover it is necessary to learn to cope with the inevitable, accepting limitations and renouncing illusions of omnipotence, i.e. it is better to learn to cope than to avoid. In order to do this, spaces (both temporal and spatial) should be provided to relax, to share, to feel supported and to contrast and digest feelings which generate stress. Supervision groups and task-reflection groups are an effective means to these ends and we very much encourage the inclusion of reflection or supervision group experiences in the formation of student nurses (Zupiria, 1999; Zupiria and Tazón, 1997; Totorika et al., 2003).

Conclusions

Within the current context of changes in European higher level education, it seems timely to define specific competences which should be acquired by nursing students during the course of their training. On the basis of our findings, we suggest that it is important to:

- inform students in advance about the foreseeable evolution of stressors associated with their profession;
- stimulate the development of professional competences, social abilities and capacity for group work;
- emphasize the importance of digesting and assimilating stressful situations associated with clinical work, as well as of promoting the development of more self-awareness.

Acknowledgements

We thank the students who took part in this study, for their patience answering questionnaires. The authors also like to express their thanks to the agency PMG Biomedical Translations (<http://www.euskalnet.net/acts>) for having improved the English of this manuscript.

This research was sponsored by a grant from the University of the Basque Country (1/UPV00079.252-HA-8084/2000).

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