

# Factors Influencing Examination Anxiety among Undergraduate Nursing Students: An Exploratory Factor Analysis

CHARLET JASMINE VAZ<sup>1</sup>, TWINKLE DAN POTHYIL<sup>2</sup>, LINU SARA GEORGE<sup>3</sup>, SOUMYA ALEX<sup>4</sup>, DAN ISAAC POTHYIL<sup>5</sup>, ASHA KAMATH<sup>6</sup>

## ABSTRACT

**Introduction:** The time of examination is a stressful period where stress is on its highest levels. To some extent, low level of stress can help in motivating the students, however on the contrary more stress can be discouraging. It will make students exhausted, overwhelmed and confused.

**Aim:** To assess examination anxiety and explore the factors influencing the examination anxiety.

**Materials and Methods:** The present exploratory study was conducted among 341 undergraduate nursing students enrolled in selected colleges of nursing. The data were collected by using a demographic proforma used to collect the background information and test anxiety scale to assess examination anxiety and a Likert's scale to explore the factors influencing examination anxiety. Factors were identified by exploratory factor analysis using extraction method of principal component

analysis with varimax rotation. Data were analysed using SPSS version 16.0. Demographic proforma and test anxiety score was analysed using frequency and percentage.

**Results:** Majority (90.3%) of the samples were females. Maximum number of participants (95%) had English as their medium of instruction in Preuniversity College. Most (61%) of subjects were normal or had no test anxiety, 25% had mild test anxiety, 12% had moderate test anxiety, and 2% subjects had severe test anxiety. Factor analysis identified four factors (Learning Process, Perceptions related to examination, Learning pattern, Over expectations related to learning outcome) that influence examination anxiety.

**Conclusion:** The study findings will help the teaching faculty to take into consideration these factors during examination and help students to overcome anxiety.

**Keywords:** Factors, Learning process, Learning pattern, Over expectation

## INTRODUCTION

Examination anxiety is considered a situation-specific trait which predisposes the students to respond with increasing anxiety to an exam. The examination is a complex process which can increase stress and anxiety and has a direct influence on exam performance. Most researchers have found that there is a strong relationship between examination anxiety and performance in academics [1].

Examination anxiety can affect students exam results; teachers have an important role to play in identifying the factors affecting examination anxiety and take appropriate steps to prevent it, so that the students could achieve better results in examinations. Anxiety reactions are perceived as threatening in many situations. Nursing students have to overcome many stressors as they face competitive and grueling nursing curriculum [2].

Exams or formal assessment are designed to test the performance, giving an indication of student's ability to cope under pressure in a fixed time. Moderate level of anxiety is motivating and can improve their test performance, however high level anxiety will hinder and interfere their academic performance [3]. Stress is considered an important factor in exam performance. Mild degree of stress can be beneficial as it compels to focus and perform given task energetically [4]. It creates powerful inspiration to avoid failing, encourages strategies and techniques of studying and use of effective time management [5]. An acceptable level of test anxiety motivates students to work hard [6]. It also provides students with positive consequences [7].

A cross-sectional study carried out in Dow Medical College among 120 students, found that greatest exam anxiety checked on Visual Analogue Scale (VAS) was 64±28. Among the distinctive variables helping exam uneasiness, broad course stacks (90.8%), the absence of physical activity (90%) and the long span of exams

(77.5%) were the most imperative components. A large number of participants had no knowledge of exam taking, and tension diminishment strategies [8]. Studies have also reported factors like inefficient study, studying previous night before exams, lack of review and no revision before exams, emotional factors, student's inability to enhance their learning, complaints of not having enough time to prepare for the exams or learn the course materials, family responsibilities and family pressure influence exam anxiety [9-12].

In view of the above mentioned studies, it is clear that identification of factors influencing examination anxiety is very important. Thus, the study was undertaken to assess the examination anxiety and factors influencing it.

## MATERIALS AND METHODS

The present study was an exploratory study. The study was conducted among 341 undergraduate nursing students who were enrolled in selected College of Nursing of a selected University at Karnataka. Purposive sampling technique was used, since the investigator included all the undergraduate nursing students who were willing to participate and available during data collection.

The investigators used demographic proforma, test anxiety scale, and Likert's scale to explore factors influencing examination anxiety. Demographic proforma was used to collect background information on students. Test anxiety scale a standardised tool, developed by clinical psychology department, Manipal Academy of Higher Education was used to assess the examination anxiety, and it consisted of seven items with five point rating scale ranged from 1-strongly disagree, 2-disagree, 3-unsure, 4-agree, 5-strongly agree. The negative items in the tool were scored in the reverse order. The minimum score was 7, and the maximum was 35. It was further classified as Normal (<23), Mild Test Anxiety (24-27),

Moderate Test Anxiety (28-31), Severe Test Anxiety (>32). Content validation was not done as already been done in one of author's earlier work (Unpublished data).

Likert's scale to identify the factors influencing examination anxiety consisted of 15 dimensions and 58 items. The scale was developed based on the investigator's experience and literature search [13-15]. To establish the content validity, tools were given to five experts from the field of Nursing, Community Medicine, and Clinical Psychology. Among 58 items, 54 items had 100% agreement, four items had 80% agreement, two items were deleted, and two items were modified as per the suggestions. Finally, tool contained 56 items and 15 dimensions. The dimensions included in the study were lack of self-confidence (2 items), expectations (4 items), lack of motivation (4 items), perfectionism (3 items), study habits (6 items), preparedness (4 items), course content (3 items), test situation (5 items), test content (4 items), past experience (3 items), health aspects (4 items), sleep pattern (3 items), recall (3 items), weightage (5 items), parental pressure (3 items).

Pretesting of the tool was done by administering the tool to the 10 newly graduated students who were working in a selected hospital. The time taken to complete the questionnaire was 15 minutes. All the items were clearly understood without any difficulty; therefore all the items were retained. Reliability of the tool was established by administering the tool to 80 undergraduate (BSc Nursing) students of a college of nursing using the Cronbach's alpha equation ( $\alpha=0.74$ ). A pilot study was conducted among 80 students of the same institution to check the feasibility and practicability of the study.

Institutional Ethical Committee clearance was obtained (KMC IEC 622/2015). Written permission was obtained from heads of selected nursing colleges. Informed consent was taken after explaining the study purpose. The tools were administered as a group, and the investigators were available to entertain any questions related to the study and to ensure completion of tools. Confidentiality and anonymity were maintained throughout the study.

## STATISTICAL ANALYSIS

The data were analysed using SPSS version 16.0 (Statistical Package of Social Sciences). Demographic proforma and test anxiety score was analysed using frequency and percentage. The factors were identified using exploratory factor analysis using extraction method of principal component analysis with varimax rotation and Kaiser Normalisation [16]. The number of factors extracted was determined on the basis of scree plot and factors that had Eigen value larger than one. The variance of each factor is a minimum of 5% and each factor having at least three variables with a loading factor more than 0.40 per factor.

## RESULTS

The demographic variables of the study samples are depicted in [Table/Fig-1], which shows that majority 90.3% of the samples were females, the mean age group was 20, most of them (29.3%) were studying in the 1<sup>st</sup> year of nursing, and 29.3% of them had family income above Rs. 25,000/month. Those studied in English medium were 79.5% in 10<sup>th</sup> standard, and the majority (95%) of them had English as the medium of instruction in 12<sup>th</sup> standard.

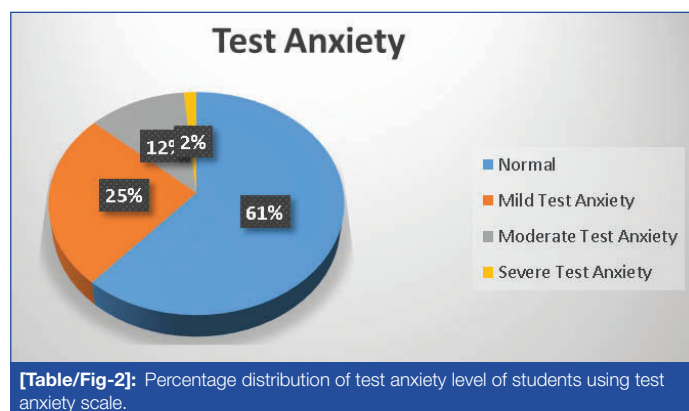
The data presented in [Table/Fig-2] depicts that 209 (61%) students being normal or no test anxiety, 87 (25%) with mild test anxiety, 40 (12%) show moderate test anxiety and 5 (2%) have severe test anxiety.

Bartlett's test for sphericity gave a p-value of <0.001 and the Kaiser Meyer Olkin (KMO) test gave a value of 0.824. Four factors were extracted and the total variance explained was 32.37% as depicted in scree plot [Table/Fig-3].

Scree plot has on the y-axis Eigen values and on the x-axis number of factors. The criteria of Eigen value >1 was used to determine the

| Demographic Variables                                    | Frequency (f) | Percentage (%) |
|--|---------------|----------------|
| <b>Gender</b>  |               |                |
| Male   | 33            | 9.7            |
| Female   | 308           | 90.3           |
| <b>Year of study</b>                                     |               |                |
| 1 <sup>st</sup> year                                     | 100           | 29.3           |
| 2 <sup>nd</sup> year                                     | 90            | 26.4           |
| 3 <sup>rd</sup> year                                     | 86            | 25.2           |
| 4 <sup>th</sup> year                                     | 65            | 19.1           |
| <b>Family income per month</b>                           |               |                |
| Below 5000   | 38            | 11.1           |
| 5001-10,000  | 88            | 25.8           |
| 10,001-15,000  | 45            | 13.2           |
| 15,001-20,000  | 52            | 15.2           |
| 20,001-25,000  | 18            | 5.3            |
| Above 25,001   | 100           | 29.4           |
| <b>Medium of Instruction in 10<sup>th</sup> standard</b> |               |                |
| English  | 271           | 79.5           |
| Kannada  | 36            | 10.6           |
| Malayalam  | 25            | 7.3            |
| Hindi  | 4             | 1.2            |
| Tibetan  | 2             | 0.6            |
| Bengali  | 2             | 0.6            |
| Swedish  | 1             | 0.2            |
| <b>Medium of Instruction in 12<sup>th</sup> standard</b> |               |                |
| English  | 324           | 95             |
| Malayalam  | 10            | 2.9            |
| Hindi  | 03            | 0.9            |
| Tibetan  | 01            | 0.3            |
| Bengali  | 02            | 0.6            |
| Swedish  | 01            | 0.3            |

[Table/Fig-1]: Frequency and percentage distribution of sample characteristics. (n=341)

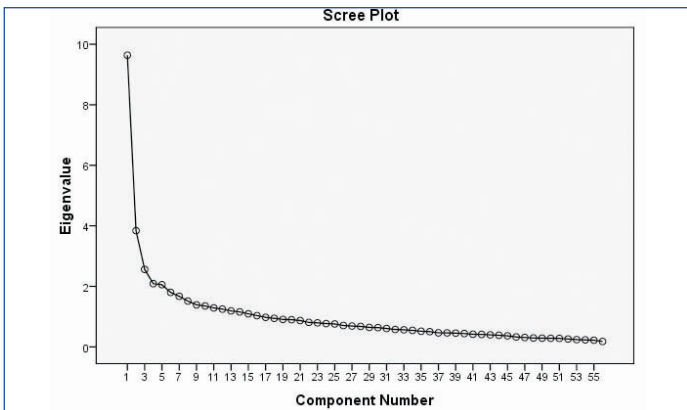


[Table/Fig-2]: Percentage distribution of test anxiety level of students using test anxiety scale.

number of factors. The four factors explain most of the variability, since the line gets straight after factor 4 in the scree plot. The remaining factors explain a very small proportion of the variability hence, those factors are not much important.

The first factor had 14 items loading (variance explained 9.569%), 12 items loading in the second factor (variance explained 9.425%), eight items loading in the third factor (variance explained 7.328%) and five items loading in the fourth factor (variance explained 6.050%) [Table/Fig-4]. Sixteen items did not load on any factor.

The first factor, contained items associated with highlighting the processes involved during learning; lack of motivation, study habits; preparedness; course content; sleep pattern; weightage given for



**[Table/Fig-3]:** Scree plot showing the number of factors influencing examination anxiety.

| Rotated Component Matrix   |              |              |              |              |
|--|--------------|--------------|--------------|--------------|
|  | 1            | 2            | 3            | 4            |
| <b>Variance explained by each factor in percentage (Total Variance=32.37)</b>                  | <b>9.569</b> | <b>9.425</b> | <b>7.328</b> | <b>6.050</b> |
| <b>Learning Process</b>  |              |              |              |              |
| (10) I am not able to concentrate fully while preparing for examination most of the time.      | 0.424        |              |              |              |
| (16) I spend time on less important things while I am supposed to prepare for the examination. | 0.412        |              |              |              |
| (17) My first priority is to finish the academic works at the earliest.                        | 0.430        |              |              |              |
| (18) While studying, I get diverted by chats/texting/phone calls, etc.                         | 0.533        |              |              |              |
| (19) I collect all the study materials well in advance.  | 0.509        |              |              |              |
| (20) I face examination without adequate preparation.  | 0.523        |              |              |              |
| (21) I prepare for examination only when the examination is near.                              | 0.676        |              |              |              |
| (22) I prepare for the examination well in advance.  | 0.530        |              |              |              |
| (23) I struggle to finish portions at the last moment.   | 0.512        |              |              |              |
| (26) This course is not what I expected.   | 0.461        |              |              |              |
| (44) I feel drowsy while studying.   | 0.516        |              |              |              |
| (49) I don't study the entire portion for the examination.                                     | 0.628        |              |              |              |
| (50) I give less importance to certain topics while preparing for the examination.             | 0.577        |              |              |              |
| (51) I skip portions that are difficult for me to understand.                                  | 0.494        |              |              |              |
| <b>Perceptions related to examination</b>  |              |              |              |              |
| (1) I lack the confidence to face the written examination.                                     |              | 0.560        |              |              |
| (2) I feel that I do not have adequate skills to appear for the examination.                   |              | 0.650        |              |              |
| (3) When I face the examination, I feel I am going to fail.                                    |              | 0.605        |              |              |
| (27) I feel uncomfortable in a big examination hall.   |              | 0.413        |              |              |
| (36) I frequently fail in examinations.  |              | 0.509        |              |              |
| (37) I usually become very anxious during the examination.                                     |              | 0.563        |              |              |
| (38) I had bad experiences with the examinations.  |              | 0.555        |              |              |
| (39) I frequently become sick.   |              | 0.559        |              |              |
| (40) While studying for along time I get headache/ unpleasant feelings.                        |              | 0.541        |              |              |
| (41) On the day of the examination, I develop gastric disturbance/ palpitations/ sweating.     |              | 0.469        |              |              |

|   |  |       |       |       |
|---|--|-------|-------|-------|
| (42) My physical illness disturbs studies.  |  | 0.567 |       |       |
| (47) I feel that I have less capacity to remember.  |  | 0.482 | 0.447 |       |
| <b>Learning pattern</b>   |  |       |       |       |
| (11) I spend a lot of time studying a portion until I am fully thorough with it.                              |  |       | 0.567 |       |
| (13) I don't get time to cover the entire portions, as I spend a lot of time studying the portions perfectly. |  |       | 0.693 |       |
| (14) I am not able to manage time for my daily studies appropriately.   |  |       | 0.561 |       |
| (15) I am not able to find enough time to prepare adequately for the examination.                             |  |       | 0.517 |       |
| (24) Certain subjects are very difficult for me.  |  |       | 0.491 |       |
| (32) Unfamiliar questions in the examination make me anxious.   |  |       | 0.431 |       |
| (46) I forget what I study.   |  | 0.410 | 0.470 |       |
| (48) I need to do a thorough revision to recollect the portion.   |  |       | 0.515 |       |
| <b>Over expectations related to learning outcome</b>  |  |       |       |       |
| (5) If I don't score good marks, others might get a bad impression about me.                                  |  |       |       | 0.510 |
| (6) I cannot face others without good performance in the examination  |  |       |       | 0.558 |
| (54) Parents force me to get good marks.  |  |       |       | 0.566 |
| (55) I am afraid that parents will scold me if I score low marks.   |  |       |       | 0.668 |
| (56) It makes me tensed when my parents compare my marks with others.   |  |       |       | 0.591 |

**[Table/Fig-4]:** Factor loading for factors influencing examination anxiety.

portions. Based on the expert's feedback, this factor was named as "learning process".

Item number 47 loaded in both second and third factor, as it had higher loading in second factor it was included in second factor. It contained items related to lack of confidence, expectations, test situation, past experience, health aspects, and recall. These items were either all related to how the student perceives the examination which was formed by events experience or anticipated to occur during the examination. So, this factor was named as "perceptions related to examination".

The third factor contained items from perfectionism, study habits, course content, test content and recall. Item number 46 loaded on the second factor, but has higher loading in the third factor, so retained in the third factor. All the items were significant about the problems related to the pattern of learning which involves the way students deal with difficult subjects, managing time, and revision of portions. Based on the expert's feedback, it was named as "learning pattern".

Five items were loaded on the fourth factor, from expectations, parental pressure. Since, it was related to the expectations of parents and students with marks, this factor was named as "over expectations related to learning outcome".

All the factors were having a positive correlation, which was significant at the level of 0.05. Factor 2: perceptions related to examination and factor 3: learning pattern having a moderate correlation ( $r=0.655$  and  $r=0.368$ ) respectively. Factor 1: learning process and factor 4: Over expectations related to learning outcome having a weak correlation ( $r=0.017$  and  $r=0.132$ ).

## DISCUSSION

In the present study, four factors identified were learning process, perceptions related to examination, learning pattern, and over expectations related to the learning outcome. The study was supported by a similar study among Iranian students which identified factors like change in sleeping habits, eating habits, vacations, breaks, increased work load, new responsibilities, being away from

family for the first time, the change from a personal lifestyle to an academic environment and change of the academic patterns at the college level influence stress among students [17].

A similar study done by Simran G et al., identified too much course load, lack of time to do a revision before the exam, lack of systematic studies, expectations from parents and lack of time for other activities like exercise and extracurricular activities contributed to exam anxiety [18].

The present study findings were similar to a study conducted among pharmacy students, 70% had mild anxiety, 30% had moderate anxiety and 10% had high degree of test anxiety. The study identified factors like time management and strategic studying influence examination anxiety [19]. The present study finding contradicts the findings of a study conducted among nursing students to explore the relationship between test anxiety level and academic achievement. It has been reported that students with low test anxiety were 3.8% and severe test anxiety 33.1%. Moderate test anxiety was observed among 63.1% students [20].

Another study conducted among 1527 nursing students found that 10.09% had mild anxiety, 45.06% with moderate anxiety and 44.86% had severe anxiety. Six factors identified were examination reform, others' opinion, worry of future, physical and psychological discomfort, confidence and previous academic record lead to anxiety [21]. The present study results were contradicted by above study with relation to anxiety level.

Similarly, a study conducted among nursing students reported majority (97%) of samples had a moderate level of anxiety, 3% samples were with the highest level of anxiety. The components like motivation, commitment (40%) interpersonal variables (30%) can influence stress. The academic components had 19% commitment while the intrapersonal components helped negligibly [22]. Another study, reported difficult level of test, environment of examination hall, invigilation; personal and emotional factors play an important role in exam performance [23].

The present study was undertaken with the assumption that factors like study habits, past experience, health aspects, course content, test situation, motivation, self-concept, expectation of student, parental pressure may influence examination anxiety. Investigators are of view that the identified factors should be considered while students prepare for their exams.

## LIMITATION

The study conducted on a small sample of students of a selected University, thus the findings may not be generalised.

## CONCLUSION

The present study highlights the factors contributing to exam anxiety among undergraduate nursing students in the selected college of nursing, Karnataka. The findings are relevant to teaching faculty in

any institution in order to help students to cope up with examination anxiety. An examination anxiety reduction module can be developed from the above factors which will help the students to adopt better coping mechanisms in order to lead an effective life in future.

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### PARTICULARS OF CONTRIBUTORS:

1. Lecturer, Department of Fundamentals of Nursing, Manipal College of Nursing, Manipal Academy of Higher Education, Manipal, Karnataka, India.
2. Staff Nurse, Kasturba Medical College Hospital, Manipal Academy of Higher Education, Manipal, Karnataka, India.
3. Professor, Department of Fundamentals of Nursing, Manipal College of Nursing, Manipal Academy of Higher Education, Manipal, Karnataka, India.
4. Assistant Lecturer, School of Nursing, Manipal Academy of Higher Education, Manipal, Karnataka, India.
5. Assistant Professor, Department of Clinical Psychology, Manipal Academy of Higher Education, Manipal, Karnataka, India.
6. Associate Professor, Department of Statistics, Manipal College of Nursing, Manipal Academy of Higher Education, Manipal, Karnataka, India.

### NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Charlet Jasmine Vaz,  
Lecturer, Department of Fundamentals of Nursing, Manipal College of Nursing, Manipal Academy of Higher Education,  
Manipal-576104, Karnataka, India.  
E-mail: [charlet.vaz@manipal.edu](mailto:charlet.vaz@manipal.edu)

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