

Factors associated with emotional exhaustion in undergraduate and postgraduate nursing students

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Background. Nursing students face dual stress from a combination of academic and clinical demands, which may affect their emotional wellbeing. Poor emotional wellbeing may prevent them from gaining the necessary knowledge and skills to care for patients.

Objectives. To describe and compare levels of emotional exhaustion, personal accomplishment, compassion satisfaction, compassion fatigue and perceived stress of undergraduate and postgraduate nursing students, and to determine the influence of compassion fatigue, perceived stress and disengaged coping on emotional exhaustion.

Methods. This study was a cross-sectional descriptive survey at a purposively selected South African university. There were 685 students, of whom 471 (68.8%) completed the questionnaire, which comprised a biographical section, as well as standardised and validated scales.

Results. The respondents obtained a moderate score for perceived stress and were at average risk for emotional exhaustion and compassion fatigue. There were statistically significant differences between undergraduates and postgraduates on all scales, with undergraduates faring the worst. Stress from assignments and workload, lack of professional knowledge and skills, teachers and nursing staff and compassion fatigue made a statistically significant contribution to the prediction of emotional exhaustion in undergraduates. Compassion fatigue and stress from assignments and workload made a statistically significant contribution to the prediction of emotional exhaustion in postgraduates.

Conclusion. Nursing students had moderate stress scores and were at average risk for emotional exhaustion and compassion fatigue, with undergraduate students faring the worst. Schools of nursing should prioritise the emotional wellbeing of their students, particularly that of undergraduates.

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The backbone of a caring nurse is compassion, when nurses have feelings of empathy for the suffering of others and understand patients' personal feelings or experiences without being judgemental.^[1] As a result, nursing is particularly stressful,^[2-4] as nurses not only cope with their personal stress but also with secondary forms of stress due to the nature of their interaction with patients and their families. Nursing students may be more vulnerable to the harmful effects of secondary stress, as they are developing the skills necessary to fulfil their professional roles effectively.^[5] They are also faced with academic stressors,^[5-11] such as practical training in environments characterised by high patient loads, insufficient resources and long working hours;^[12] lack of professional knowledge and skills;^[5] and unclear roles and responsibilities.^[8,10]

While nursing education fosters empathy and compassion in the student nurse to prepare them for their professional role of caring for others,^[13] ongoing empathetic and compassionate behaviour and stress pave the way for burnout and compassion fatigue.^[12,13] Burnout is a combination of negative behavioural, attitudinal and physical changes in response to work-related stress.^[14] Burnout or compassion fatigue among nursing students may result in students failing to acquire the knowledge and skills needed to care for their patients. This situation has a domino effect on the quality of care, which could expose patients to healthcare-related risks.^[15]

With this in mind, this article describes the emotional wellbeing of undergraduate and postgraduate nursing students at a university in South

Africa (SA). Wellbeing was defined by levels of emotional exhaustion, personal accomplishment, compassion satisfaction, compassion fatigue and perceived stress. More specifically, the objectives of the study were to:

- describe levels of emotional exhaustion, personal accomplishment, compassion fatigue, compassion satisfaction and perceived stress experienced by nursing students
- compare levels of emotional exhaustion, personal accomplishment, compassion satisfaction, compassion fatigue and perceived stress of undergraduate and postgraduate nursing students
- determine the influence of compassion fatigue, perceived stress and disengaged coping on emotional exhaustion of undergraduate and postgraduate nursing students.

Methods

Design and sample

A cross-sectional descriptive survey was undertaken at a purposively selected SA university. There was a total of 685 registered undergraduate ($n=333$) and postgraduate ($n=352$) nursing students at the university. Four hundred and seventy-one questionnaires (258 undergraduate and 213 postgraduate) were returned (68.8% response rate), of which 27 were discarded owing to extensive missing data, leaving a total of 444 completed questionnaires (252 undergraduate and 192 postgraduate).

Data collection

At the start of each class, students received an envelope with an information leaflet, consent form and questionnaire. The class co-ordinator allowed time for students who wished to participate in the study to complete the questionnaire. Completed questionnaires and consent forms were returned in a sealed envelope.

Measures

The first section of the questionnaire collected demographic and background information (e.g. sex, age, marital status, dependants, home language, place of residence, payment of university fees and year of study). The second section comprised the following standardised and validated scales:

- The **Maslach burnout inventory**, which assesses three dimensions of burnout, i.e. emotional exhaustion, depersonalisation and personal accomplishment.^[14] Reliability and validity were found acceptable for SA nurses.^[4] Scoring for this scale is as follows: emotional exhaustion – low score ≤ 18 , average score 19 - 26, high score ≥ 27 ; depersonalisation – low score ≤ 5 , average score 6 - 9, high score ≥ 10 ; and personal accomplishment – low score ≥ 40 , average score 39 - 40, high score ≤ 33 .^[14]
- The **professional quality of life (ProQoL) scale** measures compassion fatigue, burnout and compassion satisfaction.^[16] SA studies with nurses report good levels of internal consistency for two sub-scales, i.e. compassion satisfaction and compassion fatigue.^[17] For all scales, a low-risk cut-off score was set at a total sum of ≤ 22 , between 23 and 41 for average risk, and ≥ 42 for high risk.^[16]
- The **perceived stress scale** measures stress from taking care of patients; teachers and nursing staff; assignments and workload; peers and daily life; lack of professional knowledge and skills; and clinical environment.^[18] Cronbach's α of 0.87 was reported for the total scale among Filipino nursing students.^[5] The following cut-off points have been suggested: 2.67 - 4.00 for high levels of perceived stress; 1.34 - 2.66 for moderate levels of perceived stress; and 0 - 1.33 for low levels of perceived stress.^[5,18]
- The **coping strategies inventory short form** measures engaged and disengaged coping styles.^[19,20]

Data analysis

Data were double captured, cleaned and analysed in SPSS version 25 (IBM Corp., USA). Descriptive statistics were generated yielding frequency counts and percentages for categorical variables, and means and standard deviations (SDs) for continuous variables. Composite scores were calculated for all sub-scales. Cronbach's α was used to test the internal consistency of the scales and sub-scales. The independent sample *t*-test was used to determine if there was a difference between undergraduate and postgraduate students on the mean scores for emotional exhaustion, personal accomplishment, compassion satisfaction, compassion fatigue, perceived stress and coping strategies. Standard multiple regression was performed to predict emotional exhaustion for undergraduate and postgraduate nursing students from compassion fatigue, perceived stress and disengaged coping.

Ethical approval

Before data collection early in October 2018, ethical clearance was obtained from the Ethics Committee, Faculty of Economic and Management Sciences, University of the Free State, Bloemfontein (ref. no. UFS-HSD2017/1097).

The various scales were purchased/accessed in line with their copyright agreements.

Results

Reliability analysis

An α value of 0.7 is considered a sufficient measure of reliability.^[21] Therefore, scales with $\alpha < 0.7$ were eliminated from further analyses (Table 1).

Biographical characteristics

The majority of respondents were female (88.5%) and the average ages of undergraduates and postgraduates were 21.8 years and 37.1 years, respectively. Two-thirds of postgraduates (67%) were married or in a long-term relationship compared with 30.9% of undergraduates. While most postgraduate students lived at home with family (61.8%), undergraduates mostly stayed in student houses off campus (37.7%) or at home (24.6%). Two-thirds of postgraduates paid for their own studies (67.7%), while undergraduates reported having bursaries (44.6%) or their parents paid for their studies (37.8%) (Table 2).

Perceived stress

Overall, nursing students obtained a moderate score on the perceived stress scale (mean (SD) 1.48 (0.61)). There was a statistically significant difference between undergraduates (1.72 (0.53)) who fell in the 'moderate' category, and postgraduates (1.15 (0.55)) who fell in the 'low' stress category (95% confidence interval (CI) 0.47 - 0.68; $t(442)=11.094$; $p=0.000$). A closer look revealed significant differences between undergraduate and postgraduate students on all sub-scales. More specifically, undergraduates had moderate scores on all sub-scales while postgraduates had low scores on stress from taking care of patients (0.87 (0.56)), lack of professional knowledge and skills (0.66 (0.76)), the environment (1.16 (0.78)) and teachers and nursing staff (1.06 (0.73)) (Table 3).

Table 1. Reliability of the scales

Scales	Items, <i>n</i>	Cronbach's α
Maslach burnout inventory	22	
Emotional exhaustion	9	0.86
Depersonalisation	5	0.55
Personal accomplishment	8	0.76
Professional quality of life	30	
Compassion satisfaction	10	0.85
Burnout	10	0.63
Compassion fatigue	10	0.75
Perceived stress scale	29	0.93
Stress from taking care of patients	8	0.80
Stress from assignments and workload	5	0.85
Stress from lack of professional knowledge and skills	3	0.92
Stress from the environment	3	0.67
Stress from peers and daily life	4	0.71
Stress from teachers and nursing staff	6	0.81
Coping strategies (short form)	16	
Engaged coping	8	0.76
Disengaged coping	8	0.70

Burnout

The student nurses scored an average of 24.83 (11.62) (range 0 - 54) on the emotional exhaustion sub-scale, indicating an average risk for burnout. There was a statistically significant difference in the mean emotional exhaustion scores between undergraduates (26.01 (10.87)) and postgraduates (23.28 (12.38)) (95% CI 0.56 - 4.91; $t(442)=2.471$; $p=0.016$). The mean scores for undergraduates suggest that they were close to a high risk for emotional exhaustion, where scoring guidelines indicate that ≥ 27 is a high score.^[14] At the other end of the spectrum, student nurses had a high score on personal accomplishment (26.35; 6.42; range 0 - 48). There was a statistically significant difference between undergraduates and postgraduates on feelings of personal accomplishment (95% CI -2.80 - -0.40; $t(442)=-2.623$; $p=0.009$). Postgraduates had a higher mean score on personal accomplishment (27.26 (6.53)) than undergraduates (25.66 (6.26)) (Table 3).

Compassion fatigue and satisfaction

An average of 24.03 (6.14) was scored on the compassion fatigue sub-

scale, an indication of average levels. Undergraduates scored higher on compassion fatigue (25.19 (5.8)) than postgraduates (22.51 (6.26)). This statistically significant difference (95% CI 1.56 - 3.82; $t(442)=4.674$; $p=0.000$) places undergraduates at an average risk and postgraduates at a low risk for compassion fatigue. Average levels of compassion satisfaction were recorded (40.16 (6.34)), with a statistically significant difference between undergraduates (39.59; 6.67) and postgraduates (40.91 (5.81)) (95% CI -2.51 - -1.35; $t(442)=-2.189$) (Table 3).

Engaged coping

The students had an overall mean score of 27.55 (5.12) for engaged coping. There was a statistically significant difference between postgraduates (28.66 (5.14)), who scored higher than undergraduates (26.71 (4.95)) (95% CI -2.90 - -1.00); $t(424)=-4.043$; $p=0.000$). The mean score for disengaged coping was 23.44 (5.24), and differed significantly for undergraduates (24.83 (5.24)) and postgraduates (21.62 (5.21)) (95% CI 2.27 - 4.16); $t(242)=6.716$; $p=0.000$) (Table 3).

Table 2. Biographical information

	Total (N=444), n (%)	Undergraduate (N=252), n (%)	Postgraduate (N=192), n (%)
Sex			
Male	51 (11.5)	18 (7.1)	33 (17.2)
Female	393 (88.5)	234 (92.9)	159 (82.8)
Married/in a long-term relationship*	203 (46.5)	77 (30.9)	126 (67.0)
Place of residence [†]			
At home with family	180 (40.6)	62 (24.6)	118 (61.8)
Student house off campus	127 (28.7)	95 (37.7)	32 (16.8)
Rent accommodation off campus	75 (16.9)	36 (14.3)	39 (20.4)
Residence on campus	61 (13.8)	59 (23.4)	2 (1.0)
Payment of university fees [‡]			
Bursary	154 (35.2)	111 (44.6)	43 (22.8)
Self-funded	135 (30.8)	7 (2.8)	128 (67.7)
Parents pay	94 (21.5)	94 (37.8)	-
Student loan	55 (12.6)	37 (14.9)	18 (9.5)

*N=440; n=188 (postgraduate).

[†]N=443; n=191 (postgraduate).

[‡]N=438; n=249 (undergraduate); n=189 (postgraduate).

Table 3. Descriptive statistics

Scales	Total, mean (SD)	Undergraduate, mean (SD)	Postgraduate, mean (SD)	p-value
Maslach burnout inventory				
Emotional exhaustion	24.83 (11.62)	26.01 (10.87)	23.28 (12.38)	0.016
Personal accomplishment	26.35 (6.42)	25.66 (6.26)	27.26 (6.53)	0.009
Professional quality of life				
Compassion satisfaction	40.16 (6.34)	39.59 (6.67)	40.91 (5.81)	0.260
Compassion fatigue	24.03 (6.14)	25.19 (5.80)	22.51 (6.26)	0.000
Perceived stress scale	1.48 (0.61)	1.72 (0.53)	1.15 (0.55)	0.000
Stress from taking care of patients	1.14 (0.62)	1.35 (0.58)	0.87 (0.56)	0.000
Stress from assignments and workload	2.23 (0.96)	2.54 (0.87)	1.82 (0.90)	0.000
Stress from lack of professional knowledge and skills	1.06 (0.86)	1.37 (0.80)	0.66 (0.76)	0.000
Stress from the environment	1.36 (0.76)	1.52 (0.71)	1.16 (0.78)	0.000
Stress from peers and daily life	1.71 (0.86)	1.98 (0.79)	1.36 (0.83)	0.000
Stress from teachers and nursing staff	1.39 (0.78)	1.65 (0.72)	1.06 (0.73)	0.000
Coping strategies (short form)				
Engaged coping	27.55 (5.12)	26.71 (4.95)	28.66 (5.14)	0.000
Disengaged coping	23.44 (5.24)	24.83 (4.83)	21.62 (5.21)	0.000

Prediction of emotional exhaustion

Multiple regressions were run to predict emotional exhaustion in undergraduate and postgraduate nursing students from stress from taking care of patients; assignments and workload; lack of professional knowledge and skills; the environment; peers and daily life; teachers and nursing staff; as well as compassion fatigue and disengaged coping (Tables 4 and 5). The assumptions of linearity, independence of errors, homoscedasticity, unusual points and normality residuals were met.

For undergraduate nursing students (Table 4), these variables were statistically significant in predicting emotional exhaustion ($F(9.243)=1.517$; $p=0.000$; adjusted $R^2=0.358$). Compassion fatigue ($t=5.587$; $p=0.000$), stress from assignments and workload ($t=6.020$; $p=0.000$), stress from lack of professional knowledge and skills ($t=-2.837$; $p=0.005$) and stress from teachers and nursing staff ($t=2.531$; $p=0.012$) made a statistically significant unique contribution to the prediction of emotional exhaustion. Stress from assignments and workload ($\beta=0.412$) was the highest predictor of emotional exhaustion, followed by compassion fatigue ($\beta=0.314$) and stress from teachers and nursing staff ($\beta=0.159$).

For postgraduate nursing students, these variables were statistically significant in predicting emotional exhaustion ($F(8.183)=9.954$; $p=0.000$; adjusted $R^2=0.273$) (Table 5). Compassion fatigue ($t=4.470$; $p=0.000$) and stress from assignments and workload ($t=3.289$; $p=0.001$) made a statistically significant unique contribution to the prediction of emotional exhaustion. Compassion fatigue ($\beta=0.310$) was the highest predictor of emotional exhaustion, followed by stress from assignments and workload ($\beta=0.249$).

Discussion

University students in general,^[8,22] and nursing students in particular,^[5-11] experience numerous stressors during their academic life, which affect their emotional wellbeing. This is the first cross-sectional study investigating and comparing the emotional wellbeing of undergraduate and postgraduate nursing students in SA.

Overall, we found that nursing students had moderate stress scores and were at average risk for emotional exhaustion and compassion fatigue. More specifically, undergraduate students had higher levels of perceived stress, compassion fatigue and emotional exhaustion than postgraduate students.

In his research, Labrague^[5] found that senior nursing students have less stress than junior students. A possible explanation is that, as students obtain more experience, they perceive less stress. It is, however, important to keep in mind that academic and occupational stress is inevitable, even necessary at times, but it should not need to lead to dysfunction. This can be avoided if preventive stress management and enhanced wellbeing strategies are in place. In this regard, the scores on perceived stress, compassion fatigue and emotional exhaustion suggest that nursing students may not have appropriate stress management strategies. More specifically, undergraduates, with higher scores on emotional exhaustion, compassion fatigue and perceived stress, also scored higher on disengaged coping, a negative strategy that sees the individual not sharing their feelings with others, avoiding thoughts about situations and not initiating behaviours that could change the situation. However, postgraduate students, who had lower levels of emotional exhaustion, compassion fatigue and perceived stress, scored higher on engaged coping, which is a positive strategy that sees the individual engage in active and ongoing negotiation with the stressful event.^[19] While research suggests that coping mechanisms have a great influence on the occurrence of burnout,^[23] we did not find a significant association between type of coping strategy and emotional exhaustion in undergraduate or postgraduate students. Further research is necessary to inform strategies to prevent burnout in nursing students.

Significant predictors of emotional exhaustion among undergraduates were increased levels of compassion fatigue and stress from assignments and workload, as well as teachers and nursing staff. The finding that a decrease in stress from lack of professional knowledge and skills led to an increase in emotional exhaustion requires further research for clarification. Emotional exhaustion in postgraduates was significantly predicted by compassion

Table 4. Standard multiple regression analysis related to the prediction of emotional exhaustion in undergraduate nursing students

Independent variables	B	Standard error	β	<i>t</i>	<i>p</i> -value
Compassion fatigue	0.588	0.105	0.314	5.587	0.000
Stress from taking care of patients	-0.616	1.261	-0.033	-0.488	0.626
Stress from assignments/workload	5.130	0.852	0.412	6.020	0.000
Stress from lack of professional knowledge/skills	-2.398	0.845	-0.177	-2.837	0.005
Stress from the environment	0.104	0.918	0.007	0.114	0.910
Stress from peers and daily life	-1.040	0.982	-0.075	-1.059	0.291
Stress from teachers and nursing staff	2.576	1.018	0.171	2.531	0.012
Disengaged coping	-0.055	0.127	-0.024	-0.433	0.666

Table 5. Standard multiple regression analysis related to the prediction of emotional exhaustion in postgraduate nursing students

Independent variables	B	Standard error	β	<i>t</i>	<i>p</i> -value
Compassion fatigue	0.656	0.147	0.331	4.470	0.000
Stress from taking care of patients	-2.500	1.853	-0.114	-1.349	0.179
Stress from assignments/workload	3.514	1.069	0.257	3.289	0.001
Stress from lack of professional knowledge/skills	-1.337	1.288	-0.082	-1.038	0.301
Stress from the environment	0.478	1.257	0.030	0.380	0.704
Stress from peers and daily life	1.689	1.246	0.113	1.355	0.177
Stress from teachers and nursing staff	0.930	1.433	0.055	0.649	0.517
Disengaged coping	0.119	0.163	0.050	0.773	0.465

fatigue and stress from assignments and workload. According to Rudman and Gustavsson,^[24] increased levels of emotional exhaustion experienced during nurse education could have a sustained effect on an individual's health when entering professional working life. Following this line of reasoning, if studies are academically and practically (i.e. clinical training) demanding, it is also more likely that considerable resources will be needed to assist students to cope with the situation and recover from energy loss. Therefore, it is recommended that nursing educators take cognisance of the need to introduce effective and preventive measures to manage burnout – already at the outset of nursing education. In this regard, Demir *et al.*^[25] found that a peer mentoring intervention, where fourth-year nursing students mentored first-year nursing students, improved the ability of those in their first year to cope with stress. In line with this, and based on our findings, nursing schools should consider using postgraduate students, who seem to be doing better emotionally and who cope better with stress and emotional exhaustion. Clinical peer mentorship programmes are already in place at nursing schools and have been found to benefit mentors and mentees,^[26,27] and could be extended to include aspects of emotional wellbeing. This reciprocal relationship would then also benefit postgraduate students, who despite being at lower risk for emotional exhaustion still experienced this to a degree.

Study limitations

The study was conducted at one university among a convenience sample of undergraduate and postgraduate nursing students. We did, however, reach 68.8% of the total group of nursing students at the university. Nonetheless, the results cannot be generalised to other university settings. Our questionnaires were self-administered and, as with most self-reported measures, some level of response bias is likely. It could be helpful to supplement survey data with other data sources. Finally, we collected our data towards the end of the year, which could also have influenced the findings, as exams were approaching.

Conclusion

Overall, we found that nursing students had moderate stress scores and were at average risk for emotional exhaustion and compassion fatigue. There were significant differences between undergraduate and postgraduate students in terms of perceived stress, emotional exhaustion and compassion fatigue. It is evident that nursing schools should include a component focusing on the emotional wellbeing of their students, particularly undergraduate students. In this regard, peer mentorship of undergraduates by postgraduates should be considered. Further research is required to investigate the link between coping strategies and burnout, as this will be key to informing the type of assistance that should be available for nursing students.

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