



This is a repository copy of *Stressors affecting nursing students in Pakistan*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/121667/>

Version: Accepted Version

Article:

Watson, R., Rehman, S. and Ali, P.A. orcid.org/0000-0002-7839-8130 (2017) Stressors affecting nursing students in Pakistan. *International Nursing Review*, 64 (4). pp. 536-543. ISSN 0020-8132

<https://doi.org/10.1111/inr.12392>

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Stressors Affecting Nursing Students in Pakistan

Professor Roger Watson

Professor of Nursing
Faculty of Health and Social Care
University of Hull
Cottingham Road
HU6 7RX
Email: r.watson@hull.ac.uk

Ms. Salma Rehman, MScN, RN, RM

PhD Candidate
Faculty of Health and Social Care
University of Hull
Cottingham Road
Hull
HU6 7RX
Salma.rehman@2015.hull.ac.uk

Dr. Parveen Azam Ali, PhD, MScN, BScN, FHEA

Lecturer
The School of Nursing and Midwifery
The University of Sheffield
Barber House Annexe
3a Clarkehouse Road
Sheffield
S10 2LA
parveen.ali@sheffield.ac.uk

Running head: Stress in Nursing

Word count: 3675

Authors Contribution:

Study Design: RW, PA

Data Collection: SR, PA

Data analysis: RW, PA

Study Supervision: RW

Manuscript writing: RW, PA, SR

Critical revision for important intellectual content: RW, PA

Conflict of Interest: None

Key words: nurses, nursing students, stress, stressors, psychometric

ABSTRACT

Aim: To determine factors contributing to stress experienced by pre-registration nursing students in Pakistan, using the Stressors in Nursing Students scale. The aim was to explore the psychometric properties of this instrument and to investigate the effect of a range of demographic variables on the perception of stressors in nursing students.

Background: Nursing is a stressful profession and nursing students may experience more stress due to competing demands and challenges of nursing education, assessment, placements, and worries about employment prospects.

Methods: In this cross-sectional survey, data from 726 nursing students from 11 schools of nursing in Karachi, Pakistan was collected using a questionnaire. Data were analysed using descriptive as well inferential statistics. An exploratory factor analysis was also conducted.

Results: There was no apparent factor structure to the Stressors in Nursing Students scale, unlike in previous studies. The total score on the Stressors in Nursing Students scale was related to gender with males scoring higher. The score generally increased over four years of the programme and students in private schools of nursing scored higher than those in public schools of nursing.

Conclusion: Nursing students in Pakistan do not appear to differentiate between different stressors and this may be due to cultural differences in the students and to the structure of the programme and the articulation between the academic and clinical aspects. Likewise, cultural reasons may account for differences between stress experienced by male and female students.

Implications for nursing and policy: The fact that scores on the Stressors in Nursing Students scale increased over four years of the programme and males scored higher than females should alert nursing schools and policy makers related to nursing education and workforce to pay attention to prevent attrition from nursing programmes.

INTRODUCTION

Nursing is an emotionally demanding (Mann and Cowburn 2005) and a highly stressful profession as nurses have to deal with different people, in various situations and different times of the day. During their everyday work, they have to cope with extremely emotionally charged and rapidly changing circumstances, including shortage of staff, difficult situations, difficult patients and families, stressed colleagues and high level of expectations (Chang et al. 2005). Stress may result in feelings of distrust, rejection, anger, and depression that may manifest itself in psychosomatic symptoms such as pain, aches, tiredness, headache, upset stomach, rashes, insomnia, and ulcers. Stress may also result in emotional exhaustion (Watson et al. 2008). In addition, stress contributes to burnout, poor job satisfaction resulting in high attrition rates, contributing to further shortage of nurses (Adriaenssens et al. 2015, Khamisa et al. 2016, Arekar et al. 2016).

Stress in nursing remains very high; however, nursing education may even be more stressful as student nurses are new to the nursing profession, nursing education, clinical placements and hospital environments (Sun et al. 2016, Bartlett et al. 2016). In everyday life—in addition to the stressors mentioned above—nursing students may also be exposed to many other stressful situations which they may have never been previously exposed. Nursing students have to cope with the challenges of nursing education, exams, assessment, placements, and being worried about employment prospects. Many of them may also have left home and family for the first time (Zellars et al. 2000, Deary et al. 2003). They may also have to face financial issues. Due to such stressors, nursing students sometimes decide to leave nursing education, however, leaving nursing education does not only affect nursing students, but the nursing profession as well, as it loses prospective nurses leading to a shortage of nurses resulting in increasing stress and workload on available workforce (Rudman et al. 2014). Much research has been conducted

to explore stress in other professions such as medicine (Sohail 2013, Shiralkar et al. 2013), physiotherapy (Bíró et al. 2016) and dentistry (Divaris et al. 2014). Research has also been conducted to explore stress experienced by healthcare professionals (Haq et al. 2008) and nursing students in many different countries, including Canada (Benson et al. 2010), Hong Kong (Watson et al. 2008, Chang et al. 2005), Ireland (Gibbons 2010), Jordan (Shaban et al. 2012), Spain (Jimenez et al. 2010), United States (Goff 2011), United Kingdom (Thomas et al. 2012, Baglin and Rugg 2010, McLaughlin et al. 2010). However, no research has been conducted to explore the level of stress and factors contributing to stress in nursing students in Pakistan.

Nursing Education in Pakistan

The Islamic Republic of Pakistan is a developing country already affected by the shortage of health care professionals including nurses. While Pakistan is the sixth most populous country in the world with a population of more than 200 million, the number of nurses in the country is only 90,276.00 (Mashhadi et al. 2016). The country has been experiencing a shortage of nurses owing to poor recruitment, poor retention and emigration of nurses to other countries, resulting in further stress to the nursing workforce (Hamid et al. 2014, Fooladi 2008) as well as nursing students.

In Pakistan, pre-registration nursing education is provided through two distinct routes, including a three-year Diploma in Nursing programme and a four-year Bachelor of Science (BSc) Nursing degree programme. The Diploma in Nursing Programme is offered by public or private schools of nursing affiliated with local teaching hospitals, whereas the BSc degree programmes are offered by the universities and affiliated teaching hospitals. Nursing students completing Diploma in Nursing programme, especially from public institutions receive nursing

education free of cost and may also receive a stipend to help with living expenses. However, students in most private institutions and those completing BSc programmes have to pay tuition fee for themselves (Ali and Naylor 2010) and do not get any financial support to help with living expenses.

The Pakistan Nursing Council (PNC), an autonomous regulatory body, is responsible for developing, implementing, and monitoring the standards for nursing education and practice throughout the country (Jan et al. 2016, Ali and Naylor 2010). The PNC not only determines the number of students each institution can take annually, but also dictates admission criteria to enrol students in nursing education programmes. According to the admission criteria, candidates of 15-30 years of age, regardless of gender or marital status are eligible to apply for admission to basic nursing education programmes. Academic admission requirements for both programmes, however, differ. For Diploma in Nursing candidates who have passed their 10th grade (Matric) in science (Matric Science) with at least 60% or arts (Matric Arts) with at least 70% are eligible to apply. The admission into a BSc Nursing programme requires a candidate to have passed 12th grade in science (Intermediate Science) (Ali and Naylor 2010).

To enable professional regulation, PNC is supported by four provincial nurses' examination boards, including the Balochistan Nurses Examination Board, North West Frontier Pakistan Nurses Examination Board, Punjab Nurses Examination Board, and Sindh Nurses Examination Board (Ali and Naylor 2010). These boards are regulated by the PNC, but are administratively run by the provincial government in the respective provinces. These nursing examination boards are responsible for conducting three licensing examinations (preliminary, second, and final year) - for students undertaking diploma in nursing- at the end of each academic year. Successful completion of the programme enables the candidate to register with the PNC and

work as a Registered Nurse in the country. Those completing a BSc degree nursing programme have to complete a slightly different process. Following completion of the degree programme, they appear in PNC licensing examination to be able to work as a Registered Nurse in the country (Khan 2016).

It is important to explore specific stressors that nursing students are exposed to in developing countries like Pakistan as the cultural and other differences may affect the way students perceive or cope with stressors in their life. Such research will help identify and understand the situation of stress and stressors experienced by nursing students in Pakistan. Considering this, the current study was conducted to determine factors contributing to stress experienced by pre-registration nursing students in Karachi, Pakistan, using an existing scale, the Stressors in Nursing Students (SINS) scale. A secondary purpose of the study was to check the psychometric properties of this instrument in Pakistani nursing students, compare with previous studies in other populations and to investigate the effect of a range of demographic variables on the perception of stressors in nursing students. The findings of the study will help to identify ways whereby stress can be reduced and students can be helped to cope with the stress positively. Moreover, as there is a lack of research related to the nursing profession in Pakistan, this study contributes to the body of knowledge of the nursing discipline.

METHODS

This cross sectional study was conducted in Karachi, Pakistan which is the biggest city of Pakistan and is the second most populated city in the world. Data were collected from all schools of nursing that offer diploma or degree programme to nursing students. According to the Pakistan nursing council (2014), at present there are 35 schools of nursing offering a three-year Diploma in Nursing programme and the six schools of nursing offering a four-year BSc

Nursing degree programme in Karachi. In this study 11 schools of nursing (including six public and five private) participated.

Participants

For this study, all nursing students enrolled in the nursing diploma or degree programme in any schools of nursing in Karachi at the time of the study were eligible to participate. According to the sample size calculation based on the ratio of respondents to items in the instrument (see below), we required a absolute minimum sample of 215 completed questionnaires. However, we managed to exceed this over threefold as 752 participants completed survey meaning that the data were more than adequate for the planned analysis using exploratory factor analysis.

The Stressors in Nursing Students Questionnaire

Data about students' experiences of stress were collected using an Urdu translated version of SINS. The original SINS is a 43-item instrument that assesses stressors related to the student nurse experience under various dimensions. Each statement is ranked on a scale of 1-5 where one referred to 'not at all stressful' and 5 meant 'extremely stressful'. Developed in 2003 in Scotland by Deary et al. (2003) the SINS was shown to have four underlying dimensions as demonstrated using principal components analysis. These dimensions were: clinical work (e.g. 'Fear of making a mistake in clinical placements'); the confidence (e.g. 'Conflicts with staff in placements'); education (e.g. 'The difficulty of the classwork material to be learned'); and finance (e.g. 'Making less money than friends who are not nurses'). This structure has been observed using principal components analysis in a longitudinal study in Hong Kong nursing students (Watson et al. 2010) and using confirmatory factor analysis in nursing students in Mainland China (Watson et al. 2013). In a modified version, omitting the clinical aspects of

the SINS for university students not engaged in clinical work, using confirmatory factor analysis the education and finance factors were observed (Salamonson et al. 2011).

Instrument translation

The instrument (SINS) was translated into Urdu by an experienced bilingual researcher fluent both in Urdu and English. The translated version was then translated back into English by two independent translators and another independent researcher compared back translation to English version to determine accuracy. The final translated version of the questionnaire was then used for data collection.

Data Collection

Data collection was facilitated by a research assistant. Programme Directors of the Diploma or Degree programmes in each school of Nursing were approached for permission to access their students. Information flyers explaining the study and inviting participation were placed on notice boards at each school. The Programme Directors in each school of nursing introduced the study and distributed paper questionnaires to the nursing students. Students were allowed to take questionnaire home with them for completion. The students returned completed questionnaire to a drop box located in the reception area of each school.

Analysis

Data were entered into SPSS version 22 and descriptive analysis was conducted to describe the data and to summarise the participants' responses. For exploratory factor analysis (EFA) using a method—principal components analysis (PCA) —which is closely related to EFA (Watson and Thompson 2006). The PCA was conducted by running an initial solution to see how many putative components were present by the methods of Eigenvalues > 1 , inspection of the scree slope and by running Monte Carlo Parallel analysis (Watkins, 2000) and comparing with the

initial solution. Thereafter, on the basis of the above outcomes components were rotated using both oblique and orthogonal methods to seek a simple solution with high variable loadings on putative components and low loading on the remaining components. The relationship between demographic factors and the SINS was investigated using t-test and one-way analysis of variance (ANOVA). Effect size (Cohen's d) was calculated using Becker's effect size calculator (Becker 1999).

Ethics

Ethical approval for the study was obtained from the University of Hull Research Ethics Committee (REF150). As mentioned above, permission was also obtained from Programme Directors from each school of nursing. The study was explained to all students. The contact information of the researchers was provided on the questionnaire to ensure any student with any question regarding study could contact the researcher. Completion and submission of questionnaire through the drop box (located in the reception area) was considered consent to participate in the study. No identifiable information was collected from any participant and confidentiality and anonymity were maintained all the time.

RESULTS

Seven hundred and fifty-two students contributed to the study. After excluding incomplete questionnaires, the final sample included 276 male and 450 female students (n=726). The instrument used to collect data was not a diagnostic instrument and therefore, students were not referred to support services; however, usual support mechanisms were available to all students during their study period. Table 1 summarises the demographic characteristics of the study participants and shows the mean stress scores related to these demographics.

Principal components analysis

The initial solution indicated that there were 11 components with Eigenvalues greater than 1 and inspecting the scree slope suggested either three or four components. The Monte Carlo Parallel Analysis for PCA provided five components. All of these potential solutions were tested further by oblique and orthogonal rotation with removal of cross-loading items, but a simple structure yielding interpretable factors—i.e. ones with a cognate group of items—remained elusive. We decided, therefore, to pursue the remaining analysis using the total SINS score to investigate the association between demographic variables and stressors in nursing students.

Inferential statistics

The results of inferential analysis related to the demographic analysis are shown at the foot of Table 1. There were no statistically significant differences related to age, marital status or programme of study. Male students scored significantly higher on stressors than female students and first year students were significantly less stressed than second, third or fourth year students. Students in public schools of nursing scored higher on stressors than students and private schools of nursing.

DISCUSSION

This study was designed to apply the SINS in a new environment to study perceived stressors in nursing students in Pakistan and to check the psychometric properties of the SINS. As described in the introduction to this article, previous studies have observed that the SINS has an underlying four-factor structure (Deary et al. 2003, Watson et al. 2010, Watson et al. 2013). In the present study, using the same methods and an adequate sample size, this structure was

not observed. While this does not detract from the utility of the SINS, it is interesting to speculate why these Pakistani nursing students should perceive stress so differently from cohorts in Scotland, Hong Kong and Mainland China (Watson et al. 2010, Watson et al. 2013).

To address the above, it is necessary to consider why we might expect the SINS to have underlying dimensions and how such dimensions: education; clinical; financial; and confidence, were observed initially and why they have been reproduced across studies. Initially, the SINS was developed by including questions which addressed the four dimensions observed. Therefore, the observation of these dimensions served as evidence that, indeed, these questions address varied aspects of the experience of nursing students likely to lead to stress. But a more fundamental question is the nature of these underlying dimensions and why they arise and this is explained by what the methods of factor analysis do, which is to analyse the explained variance in a dataset. Factor analysis (and principal components analysis) search multivariate datasets for clusters of covarying items and their identification is facilitated by specifying the variance explained by each putative factor (Kline 2014). While the results of any particular factor analysis is generated mathematically, there is a considerable amount of judgement involved in deciding how many factors to rotate and then deciding whether those factors consist of cognate items and, thereby, form a sensible factor.

In the present study a range of solutions was tested using factor analysis – different numbers of factors and items – to arrive at a mathematically robust and sensible solution comprised of cognate clusters of items; but no such solution was derived. Clearly, nursing students in Pakistan perceive stressors differently from nursing students in the previous studies. Specifically, it appears that they do not differentiate between the various types of stressors that were the basis of the items initially included in the SINS. However, this begs an explanation

and the possibilities include cultural differences and programme differences or some combination of these.

Programme aspects

In terms of the nursing programme, it is easier to envisage why the Pakistani nursing students may perceive the causes of stress differently from previous studies. In the programmes studied to date, there is a clear separation between the classroom learning and the clinical learning; they are not especially integrated, therefore, nursing students may be able to differentiate between these aspects of the programme as sources of stress. Nursing education programmes in Pakistan consist of 50% theory and 50% practice element (Ali and Naylor 2010) and majority of schools of nursing are attached to specific teaching hospitals and this may mean more integration in classroom and clinical learning leading to more common variance in the items related to these aspects of the programme than in the previously studied programmes. This could explain the lack of identifiable educational and clinical dimensions to the SINS in Pakistani nursing students. However, it does not account for the financial and confidence aspects, unless the programmes are structured and the rules of the nursing schools are such that being on a student budget is not an issue; there may be less opportunity to socialise and spend money. Such aspects of student life may be more important in Scotland and China. Nevertheless, there is likely to be some interaction between programme and cultural factors; two, three and five factor solutions were studied in the present study to try and identify any cognate clusters of covarying items, alongside other such clusters, but none was observed.

Cultural aspects

It is hard to imagine how culture could have such a profound effect on how nursing students perceive the causes of stress. However, the close knit family structure and the support provided

by the family members may have an impact in such a way that students do not see specific causes of stress or differentiate between them. The findings suggest that approximately 84% of the nursing students in this study were younger than 24 years of age. Considering culture of Pakistan, this means that all of them will have been supported financially by their parents or other older family members (often siblings). In fact, students may also be receiving pocket money from their parents and or other family members and this suggests that students do not see finances as a cause of stress. Female nursing students, specifically, may be living in nursing hostels attached to their schools of nursing and hospital, suggesting that they do not need to make travel arrangements. In additions, travel to off-site placements are usually arranged by the school of nursing for male as well as female nursing students, therefore, students may not really see this as a source of financial stress. Nursing, while suffering from a poor image in Pakistan, has developed as an attractive profession over past two decades. Unlike other professions, availability of job following completion of a nursing programme is guaranteed. Jobs in the public sector are highly sought after in Pakistan and a nursing degree means that the nurse can get a job at grade 16 level, which is considered very prestigious. In addition, having a nursing degree provides nurses with opportunities to work in developed countries. In fact, these days, many students, especially men join the nursing profession with an aim to find a job in the Middle East or Western countries. The nursing profession also provides people with an opportunity to pursue higher education within and outside country, something not available two decades ago. Therefore, as can be seen, nursing education in Pakistan takes place in a very unique culture which is distinct from, for example, the culture in the United Kingdom, where families are unlikely to provide financial support to such an extent and where, perhaps, students are more inclined to socialise outside of the nursing program and where less provision is made for their welfare in terms of accommodation and off site placement travel (Wray et al 2017).

Stressors in Pakistani Nursing Students

Some interesting differences were observed amongst these students on the basis of gender, year of study and place of study. There were no differences on the basis of age, marital status or programme of study. Male students scored significantly higher on the SINS than female students—a difference that was not observed in a previous study (Deary et al. 2003). A higher score on the SINS means that males identify and score higher on specific stressors included in the questionnaire. One explanation could be that many male students may have been living away from their families as they may have come from other parts of the country. While there are no obvious reason why male students should identify more stressors and, presumably, be more stressed than female students, we can speculate. Male students may feel that the expectations on them are greater as Pakistani society may expect more from them in terms of success and career needed to marry and support a family. In a gendered profession such as nursing where females predominate, the stereotype of the nurse is female and nursing remains a relatively low status, profession, this may add to the perception of stressors by male nursing students who are ‘breaking the mould’ and, possibly, sacrificing more in terms of self-image and their perception by peers and family (Fooladi 2008, Khan et al. 2012, Arif and Khokhar 2016). Another aspect that may explain this is the fact the nursing education opportunities for males are much higher in the province of Sindh and especially Karachi (Khan et al. 2012). This is evident by the fact that out of 1185 allocated places on diploma in nursing for male nursing students throughout the country 1165 places are available through institutions in the province of Sindh and mainly Karachi. Table 2 presents information about the number of accredited institutions, by the PNC, to offer Diploma in Nursing education in the country (Pakistan Nursing Council 2016b). At the same time, out of 686 allocated places for generic or fast track nursing degree programmes, 95 places are available for male nursing students throughout the

country and 69 of these are available through institutions in the province of Sindh and especially Karachi city (Pakistan Nursing Council 2016a). Staying away from family means that these students have to take care of their domestic needs such as cooking, cleaning and clean laundry. Males, in Pakistan culture, are not really expected to have these skills as the female members of the family perform all these tasks. Staying away from family, therefore, can create extra pressures and stressors for the male nursing students in this regard. This m

In the first year of the nursing programme, students score significantly lower on the SINS than in other years of the programme. While the score dips between the years 2 and 4 of the programme, the trend in the perception of stressors increases over the programme and this was observed for two dimensions of the SINS—the educational and the clinical—in a previous study (Watson et al. 2008). The explanation for this is probably quite simple: the programme gets harder as students' progress through it. Otherwise, students in private nursing schools scored significantly higher on the SINS than those in public nursing schools. Again, we can only speculate as this difference may be due to differences between the students or the schools. Private schools may take less able students into their programme who perceive aspects of the programme as being more stressful or studying in a private school and working in a private hospital may lead to a greater awareness of stressors than in the public sector. In addition, private schools of nursing require students to pay fees and other expenses associated with the studies and this may contribute to stress experienced by students in these programmes.

Limitations

The findings of the study should be considered cautiously as the study was conducted in only one city in Pakistan. The student population in these schools of nursing and the stressors they encounter may be different to other students studying in other cities and provinces of the

country. The self-report nature of questionnaire is also another factor to consider when interpreting the findings of the study as the students may have different interpretation of the statements given.

Implications

Some important differences have been observed in the present study, which may have implications for nursing students and nursing schools in Pakistan. Clearly, men perceive more stressors and, if men are to be encouraged to enter the profession and not to discontinue their studies, then particular attention should be paid to them as nursing students and support mechanisms may need to be in place; certainly, nursing educators, policy makers and organisations including hospitals needs to be aware of this phenomenon. It makes sense that the perception of stressors increases as a programme progresses and, while support mechanisms are often focused on first year students who are making the transition from home to nursing school and from school level study to university and college level study and entering a new and stressful career, attention also needs to be paid to students as they progress through the programme. At the very least, they must not be forgotten and assumptions must not be made once they have 'survived' the first year of the programme. Even when the students do not drop out of the programme they may be suffering from stress, which could be damaging to their mental and physical well-being. Finally, the observation regarding private versus public schools is interesting and novel and the possible reasons for this difference are worthy of further study. Further research in school of nursing in other parts of the country is recommended to assess the usefulness of the SINS in identification of stressors affecting nursing students. Further qualitative research will be useful is assessing subjective views of the participants about stressors affecting their personal and professional lives.

REFERENCES

- Adriaenssens, J., De Gucht, V. & Maes, S. (2015) Causes and consequences of occupational stress in emergency nurses, a longitudinal study. *Journal of nursing management*, **23**(3), 346-58.
- Ali, P.A. & Naylor, P.B. (2010) Association between academic and non-academic variables and academic success of diploma nursing students in pakistan. *Nurse education today*, **30**(2), 157-62.
- Arekar, K., Jain, R., Desphande, B. & Sherin, P. (2016) Relationship between individual and structural determinants on job satisfaction—analysis of employee turnover in the indian context. *The Journal of Developing Areas*, **50**(6), 387-98.
- Arif, S. & Khokhar, S. (2016) Experiences of male nursing students in nursing profession, at a private institution in karachi, pakistan. *International Journal of Nursing Education*, **8**(4), 87-91.
- Baglin, M.R. & Rugg, S. (2010) Student nurses' experiences of community-based practice placement learning: A qualitative exploration. *Nurse Education in Practice*, **10**(3), 144-52.
- Bartlett, M.L., Taylor, H. & Nelson, J.D. (2016) Comparison of mental health characteristics and stress between baccalaureate nursing students and non-nursing students. *Journal of Nursing Education*, **55**(2), 87-90.
- Becker, L.A. (1999) <http://www.uccs.edu/~lbecker/>; retrieved 11 October 2016
- Benson, G., Ploeg, J. & Brown, B. (2010) A cross-sectional study of emotional intelligence in baccalaureate nursing students. *Nurse education today*, **30**(1), 49-53.
- Bíró, É., Veres-Balajti, I. & Kósa, K. (2016) Social support contributes to resilience among physiotherapy students: A cross sectional survey and focus group study. *Physiotherapy*, **102**(2), 189-95.
- Chang, E.M., Hancock, K.M., Johnson, A., Daly, J. & Jackson, D. (2005) Role stress in nurses: Review of related factors and strategies for moving forward. *Nursing & Health Sciences*, **7**(1), 57-65.
- Deary, I.J., Watson, R. & Hogston, R. (2003) A longitudinal cohort study of burnout and attrition in nursing students. *Journal of advanced nursing*, **43**(1), 71-81.
- Divaris, K., Polychronopoulou, A., Villa-Torres, L., Mafla, A.C., Moya, G.A., González-Martínez, F., Vila-Sierra, L.A., Fortich-Mesa, N., Gómez-Scarpetta, R.Á. & Duque-Restrepo, L.M. (2014) Extracurricular factors influence perceived stress in a large cohort of colombian dental students. *Journal of dental education*, **78**(2), 213-25.
- Fooladi, M.M. (2008) Gender influence on nursing education and practice at aga khan university school of nursing in karachi, pakistan. *Nurse Education in Practice*, **8**(4), 231-8.

- Gibbons, C. (2010) Stress, coping and burn-out in nursing students. *International journal of nursing studies*, **47**(10), 1299-309.
- Goff, A.-M. (2011) Stressors, academic performance, and learned resourcefulness in baccalaureate nursing students. *International Journal of Nursing Education Scholarship*, **8**(1).
- Hamid, S., Malik, A.U., Kamran, I. & Ramzan, M. (2014) Job satisfaction among nurses working in the private and public sectors: A qualitative study in tertiary care hospitals in pakistan. *Journal of Multidisciplinary Healthcare*, **7**, 25-35.
- Haq, Z., Iqbal, Z. & Rahman, A. (2008) Job stress among community health workers: A multi-method study from pakistan. *International journal of mental health systems*, **2**(1), 1.
- Jan, R., Lakhani, A., Kaufman, K. & Karimi, S. (2016) The first competency-based higher education programme for midwives in the south asian region–pakistan. *Midwifery*, **33**, 37-9.
- Jimenez, C., Navia-Osorio, P.M. & Diaz, C.V. (2010) Stress and health in novice and experienced nursing students. *Journal of advanced nursing*, **66**(2), 442-55.
- Khamisa, N., Peltzer, K., Ilic, D. & Oldenburg, B. (2016) Work related stress, burnout, job satisfaction and general health of nurses: A follow-up study. *International journal of nursing practice*, **22**(6), 538-45.
- Khan, A. (2016) Time to call for quality assurance in nursing education of pakistan. *Escalating Research: Advance Educational Institute & Research Centre*, **5**(1), 13-5.
- Khan, B.A., Ali, F., Vazir, N., Barolia, R. & Rehan, S. (2012) Students' perceptions of clinical teaching and learning strategies: A pakistani perspective. *Nurse education today*, **32**(1), 85-90.
- Kline, P. (2014) *An easy guide to factor analysis*, Routledge.
- Mann, S. & Cowburn, J. (2005) Emotional labour and stress within mental health nursing. *Journal of psychiatric and mental health nursing*, **12**(2), 154-62.
- Mashhadi, S.F., Hamid, S., Roshan, R. & Fawad, A. (2016) Healthcare in pakistan—a systems perspective. *dentist*, **15**(14,238), 13,441.
- McLaughlin, K., Muldoon, O.T. & Moutray, M. (2010) Gender, gender roles and completion of nursing education: A longitudinal study. *Nurse education today*, **30**(4), 303-7.
- Pakistan Nursing Council (2016a) List of institutions offering degree programmes. Vol. 2016 Pakistan Nursing Council, Islamabad.
- Pakistan Nursing Council (2016b) List of pnc recognized institutions for diploma program, degree program and post basic diploma program. Vol. 2016 Pakistan Nursing Council, Islamabad.

- Rudman, A., Gustavsson, P. & Hultell, D. (2014) A prospective study of nurses' intentions to leave the profession during their first five years of practice in sweden. *International journal of nursing studies*, **51**(4), 612-24.
- Salamonson, Y., Andrew, S., Watson, R., Teo, S.T. & Deary, I.J. (2011) The stressors in students (sis) scale: Development, reliability, and validity. *Journal of clinical nursing*, **20**(13), 2078.
- Shaban, I.A., Khater, W.A. & Akhu-Zaheya, L.M. (2012) Undergraduate nursing students' stress sources and coping behaviours during their initial period of clinical training: A jordanian perspective. *Nurse Education in Practice*, **12**(4), 204-9.
- Shiralkar, M.T., Harris, T.B., Eddins-Folensbee, F.F. & Coverdale, J.H. (2013) A systematic review of stress-management programs for medical students. *Academic Psychiatry*, **37**(3), 158-64.
- Sohail, N. (2013) Stress and academic performance among medical students. *J Coll Physicians Surg Pak*, **23**(1), 67-71.
- Sun, L., Gao, Y., Yang, J., Zang, X.-Y. & Wang, Y.-G. (2016) The impact of professional identity on role stress in nursing students: A cross-sectional study. *International journal of nursing studies*, **63**, 1-8.
- Thomas, J., Jack, B.A. & Jinks, A.M. (2012) Resilience to care: A systematic review and meta-synthesis of the qualitative literature concerning the experiences of student nurses in adult hospital settings in the uk. *Nurse education today*, **32**(6), 657-64.
- Watkins M (2000) http://download.cnet.com/Monte-Carlo-PCA-for-Parallel-Analysis/3000-2053_4-75332256.html; retrieved 9 October 2016
- Watson, R., Deary, I., Thompson, D. & Li, G. (2008) A study of stress and burnout in nursing students in hong kong: A questionnaire survey. *International journal of nursing studies*, **45**(10), 1534-42.
- Watson, R., Deary, I.J., Thompson, D.R. & Li, G. (2010) The stress in nursing students scale (sins): Principal components analysis of longitudinal data from hong kong. *Journal of clinical nursing*, **19**(7-8), 1170-2.
- Watson, R. & Thompson, D.R. (2006) Use of factor analysis in journal of advanced nursing: Literature review. *Journal of advanced nursing*, **55**(3), 330-41.
- Watson, R., Yanhua, C., Ip, M.Y., Smith, G.D., Wong, T.K. & Deary, I.J. (2013) The structure of stress: Confirmatory factor analysis of a chinese version of the stressors in nursing students scale (sins). *Nurse education today*, **33**(2), 160-5.
- Wray J, Aspland J, Barrett D, Gardiner E (2017) Factors affecting the programme completion of pre-registration nursing students through a three year course: A retrospective cohort study *Nurse Education in Practice* **24**, 14-20
- Zellars, K.L., Perrewe, P.L. & Hochwarter, W.A. (2000) Burnout in health care: The role of the five factors of personality. *Journal of Applied Social Psychology*, **30**(8), 1570-98.

Table 1: Demographic characteristics of participants

Characteristics	N (%)	Mean SINS (SD)
Gender¹		
Male	276 (38%)	122.3 (22.7)
Female	450 (62%)	114.3 (29.6)
Age²		
Under18	119 (16. %)	119.9(31.0)
18-24	493 (68%)	116.12(27.23)
25-34	101 (14%)	120.27(24.65)
35-45	13 (02%)	115.9(17.6)
Marital status³		
Single, never married	632 (87%)	117.2(28.2)
Married	89 (12%)	118.52(22.03)
Separated/Divorced/Widowed	05 (01%)	111(19.66)
Programme of study⁴		
Diploma in Nursing	609 (84%)	118.2(27.7)
BSc Nursing	117 (16%)	112.9 (25.4)
Year of programme⁵		
First year	231 (32%)	112.6(29.5)
Second year	219 (30%)	121.4(24.6)
Third year	244 (34%)	116.9(27.3)
Fourth year	32 (04%)	126.6(25.4)
Type of school⁶		
Public	409 (56%)	114.7(29.8)
Private	317 (44%)	121(23.2)

1 – mean difference 8.02 (95% CI 4.19-11.85); $p < 0.001$; $d = 1.19$

2 – no significant difference

3 – no significant difference

4 – no significant difference

5 – First year significantly different from all other years; $F = 5.23$; $p = 0.001$; $d = 0.32$ (1st vs 2nd year); 0.16 (1st vs 3rd year); 0.52 (1st vs 4th year)

6 – mean difference 6.40 (95% CI 2.53-10.26); $p = 0.001$; $d = 0.24$

CI = confidence intervals; d = Cohen's d

Table 2: Details of the allocated number of students and accredited institutions that offer Diploma in Nursing Programme in Pakistan

Province	Schools of Nursing		Available Seats	
	Male	Female	Males	Female
Punjab				
Public	00	45		
Army	00	06	00	4665
Missionary	00	02		
Private	00	04		
Sindh				
Public	06	17		
Army	00	02	1165	1583
Missionary	00	00		
Private	16	12		
Khyber Pukhtoonkhaw				
Public	00	10		
Army	00	00	00	1305
Missionary	00	02		
Private				
Balochistan				
Public	00	04		
Army	00	01	20	210
Missionary	00	00		
Private	01	00		
Total	23	99	1185	7763