

Development and validation of instrument to measure stress among older adult
nursing students: The Student Nurse Stressor-15 (SNS-15) Scale

Patricia Sheridan
Dundalk Institute of Technology, Dundalk, Co. Louth, Republic of Ireland

Lucia Carragher
Dundalk Institute of Technology, Dundalk, Co. Louth, Republic of Ireland,
Email: lucia.carragher@dkit.ie

Natacha Carragher
University of New South Wales, Sydney, Australia,
Email: n.carragher@unsw.edu.au

Joe Treacy
Dundalk Institute of Technology, Dundalk, Co. Louth, Republic of Ireland,
Email: joe.treacy@dkit.ie

Address correspondence concerning this article to: Patricia Sheridan,
Dundalk Institute of Technology, Dundalk, Co. Louth, Republic of Ireland
Email: patur@eircom.net

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Abstract

Aims and objectives: To report the development, testing and validation of an instrument to assess the stressors experienced by student nurses during their older adult clinical placements.

Background: The world's population of older adults is accelerating rapidly, with associated increased health care demands and a growing need for skilled nursing staff. However, this sector fails to attract adequate numbers of nursing graduates which is leading to a significant gap between nursing supply and demand. Older adult care is considered to be less attractive than other specialties and accompanied by more sources of stress.

Design: A quantitative design was used

Methods: Data were collected from a cohort of Irish student nurses ($n=242$) completing older adult clinical placements as part of their undergraduate degree. Exploratory and confirmatory factor analysis examined the instrument's underlying latent structure. Discriminant validity was investigated using a confirmatory factor analysis model with covariates. STROBE guidelines for cross-sectional studies informed reporting of this paper's research.

Results: Factor analyses identified two factors relating to 'Knowledge and Workload' and 'Resources', which were assessed by nine and six items respectively.

Discriminant validity analyses found a significant relationship between age and the workload and knowledge factor, and between year of programme and the resources factor. The new instrument was labelled the Student Nurse Stressor-15 (SNS-15) Scale.

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Conclusions: The SNS-15 contained some overlap with stressors from extant general student nurse stress instruments and a number of unique stressors encountered in older adult care. Future research directions are discussed.

Relevance to clinical practice: The SNS-15 may assist stakeholders in nurse education and practice with the development of undergraduate degree programmes and clinical placements, and ultimately, in improving patient care and student retention.

Keywords: Clinical placements; older adults; stress; stressors; student nurses

What does this paper add to the wider global clinical community?

- This paper examines the development of an instrument that assesses sources of stress experienced by student nurses on their older adult clinical placements.
- Identification of sources of stress amongst student nurses engaged in older adult nursing holds promise of informing teaching and learning in undergraduate degree programmes and clinical placements, and ultimately, improving patient care and student retention.

Introduction

The world's population of older adults aged 65 years+ has expanded significantly in recent years, with growth forecast to accelerate even further in the coming decades (United Nations [UN], 2015). In fact, globally, the number of people aged 80 years+ (the 'oldest-old') is increasing more rapidly than the number of older adults overall. By 2050 it is projected that the oldest-old will number 434 million, a tripling of the 2015 figure of 125 million (UN, 2015). In line with international trends, the number of people aged 85years+ is growing in Ireland and is expected to rise to 470,000 by 2046 (Central Statistics Office Ireland, 2013). This has critical implications for the nursing profession which already faces a chronic shortage of nurses in older adult nursing. Concerns have been raised that the increasing number of older people with associated complex health needs will outstrip the number of suitably skilled nurses to provide them with high quality care (Institute of Medicine, 2008).

The implications of population ageing for the health system are expected to be wide and far-reaching, from pressures on acute care wards linked to delayed discharges to the growing demands for care that will be placed on older adult nursing (Nursing Homes Ireland, 2015). Of critical concern, a low number of new nursing graduates choose older adult nursing as a career choice upon graduation. Only 7.5% of nurses who participated in the Health Service Executive (HSE)'s 'Nursing Graduates Survey' (N=625) – a survey of Irish nursing graduates – indicated that they were working in the aged care sector (HSE, 2011). In Ireland, health and social care employment opportunities in the public healthcare sector diminished with the deterioration in public finances after the economic recession in 2008, compounded by

the HSE moratorium on recruitment. Nonetheless, despite more recent recovery in the economy and recruitment efforts by the HSE, staff shortages have continued in a number of professions, including in older adult nursing (SOLAS, 2016).

Background

Recruitment into older adult nursing is challenging. Previous research suggests that student nurses perceive older adult nursing as lower-status and less career rewarding than other groups during their training (Henderson, Xiao, Siegloff, Kelton, & Paterson, 2008). Many are reluctant to choose this specialism as a career path, citing reasons such as an inability to relate to and communicate with older people and the perception that the work is uninteresting and depressing (Henderson *et al.*, 2008). Further reasons are negative perceptions of older adults as ‘creepy’ and ‘smelly’ with older adult nursing deemed ‘pointless’ due to older peoples’ inability to be younger or healthier in tandem with poor working environmental conditions (Stevens, 2011). Stress is also likely to play a role.

The concept of stress was introduced in physiological and biomedical research by Hans Selye (1956) who posited that no one can live without experiencing some stress. Stress within the working environment is termed ‘occupational stress’ when the perceived demands of a job exceed a person’s perceived ability to cope with those demands (Lazarus, 1995). For nurses in general, occupational stress levels tend to be high as a result of the nature of work involved in tending to the sick and dying, which impacts negatively on their health and the nursing profession (Lim, Bogossion, & Ahern, 2010). Sources of stress include work overload (Lim *et al.*, 2010), shift-work and low staffing levels (Purcell, Kutash, & Cobb, 2011). For nurses caring for older

adults in particular, these stressors are compounded by lower pay rates in comparison to other nursing sectors and poor career advancement prospects (Stevens, 2011).

While student nurses experience many of the same stressors as qualified nurses (Michalec, Diefenbeck, & Mahoney, 2013), they are also likely to experience stressors linked to academic workloads, fear of failing a placement and making errors while on placement (Pulido-Martos, Augusto-Landa, & Lopez-Zafra, 2012).

Clinical training is recognised as a stressful experience for nursing students (Hamaideh, Al-Omari, & Al-Modallal, 2017; Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013). Some stress assessment instruments have been developed to measure these stressors (e.g., BSSI = Beck Shrivastava Stress Inventory (Beck & Shrivastava, 1991); CEA Form = Clinical Experience Assessment Form (Kleehammer, Hart, & Fogel-Keck, 1990); ISSN = Index of Sources of Stress in Nursing Students Inventory (Gibbons, Dempster, & Moutray, 2009); Kezkak Questionnaire (Zupiria *et al.*, 2007); Lindop Questionnaire (Lindop, 1989); PSSCP = Perceived Stress Scale of Clinical Placement (Sheu *et al.*, 1997); SIS = Stressors in Students scale (Salamonson, Andrew, Watson, Teo, & Deary, 2011); SNE = Stress in Nursing Education questionnaire (Rhead, 1995); SINS = Stressors in Nursing Students scale (Deary, Watson, & Hogston, 2003); SNSI = Student Nurse Stress Index (Jones & Johnston, 1999); SSS = Student Stress Survey (Seyedfatemi, Tafreshi, & Hagani, 2007); SWSS = Students' Workplace Stressors Schedule (Silins & Cooper, 1989)) and, while informative, these instruments have limitations (Gibbons *et al.*, 2009; Jones & Johnston, 1999). These include failing to use a robust method such as factor analysis to assess psychometric properties (Beck & Shrivastava, 1991; Kleehammer *et al.*, 1990), employing small sample sizes, which makes findings harder to generalise to

other populations (Beck & Shrivastava, 1991; Kleehammer *et al.*, 1990; Rhead, 1995; Zupiria *et al.*, 2007) and using a large number of questions, which in a busy environment is burdensome to complete (Deary *et al.*, 2003; Rhead, 1995; Zupiria *et al.*, 2007).

Another instrument, the NWFQ (Nurses Work Functioning Questionnaire – Italian version; Magnavita & Chiorri, 2017) is a refined and validated version of the original NWFQ which was designed by Gärtner, Nieuwenhuijsen, Dijk, and Sluiter (2012) to assess impairment in nurses' work functioning caused by mental health issues such as stress, anxiety and depression. However, the instrument does not contain a measure of perceived stress levels, nor is it designed specifically for use in older adult nursing.

Significantly, little is known about the sources of stress experienced by student nurses caring for older adults, reflecting the limited literature in this area. There is no existing instrument that specifically assesses stress amongst this population, despite the challenges around recruitment of nurses for older adult nursing. Stress measurement instruments for the student population working with older adults need to be tailored purposely to accurately assess the stressors they experience. Identifying these stressors determine how and where to intervene appropriately. Switzer, Wisniewski, Belle, Dew, and Schultz (1999) stress that the cultural appropriateness of the instrument for the study population is an important issue to consider when developing a new research tool. Opie, Dollard, Lenthall, and Knight (2013) assert that many extant stress measurement instruments are not suitable for application to nurses working outside a hospital-based context, hence the development of stress instruments specific to nursing specialty areas (e.g., Jackson,

Clare, & Mannix, 2002; Cocco, Gatti, Augusto de Mendonça-Lima, & Camus, 2003; Kennedy, 2005).

Greater knowledge and awareness of the stress experienced by student nurses on older adult clinical placements could inform early prevention and intervention approaches to the challenges of attracting graduates to the sector. This is vital for future health resource planning as well as teaching and learning. Specifically, understanding stress and resultant decision-making about specialisms early, when student nurses are enrolled in undergraduate nursing programmes and participating in clinical placements, is likely to have the greatest long-term impact. Intervening at this key juncture in a nurse's career trajectory could improve knowledge of sources of stress with the possible benefit of reducing stress levels. Further, the information could lead to: an improvement in patient care; enhanced quality of teaching and learning experience; a reduction in overall attrition; and importantly, the potential that students would more readily choose older adult nursing, thus helping to close the gap between staffing requirements and nursing availability. Against this background, the current paper describes the development, testing and validation of an instrument to measure stress among student nurses in older adult nursing.

Methods

Procedure

Data collection took place between September 2014 and January 2015 with student nurses registered in first, second, third and fourth year of study in nursing programmes at a higher education institution in the Republic of Ireland. These programmes provide students with greater access to hands-on learning. Ethical

approval was obtained from the School of Health and Science Ethics Committee in the researcher's institution prior to fieldwork. Participants' names were not linked to the questionnaires to ensure anonymity. Further, no incentive was offered for participation and informed consent was obtained from participants prior to the questionnaire being distributed. To maintain confidentiality all completed questionnaires were stored in a locked filing cabinet that was only accessible to the authors. In accordance with the institution's guidelines questionnaires will be stored for a period of five years.

Participants

From a cohort of 304 registered students, 62 students were absent from class for reasons such as illness and family issues on the dates that data collection occurred. Accordingly, 242 students participated in the study and, of these, 196 provided full information for the 21 stress questions described below (64.5% response rate), and thus are the focus of this paper.

Instrument

A series of 21 questions (see Appendix A) enquired about the level of stress experienced by students on older adult clinical placements. Participants indicated their responses on a five-point Likert-type scale (1 = 'highly stressed', 2 = 'stressed', 3 = 'neutral', 4 = moderately stressed' 5 = 'not stressed'). All Likert-type items were recoded into dichotomous variables (i.e., 'stressed [highly stressed, stressed] vs. all others [neutral, moderately stressed, not stressed]').

Statistical analysis

Factor analysis was utilised to explore the underlying latent structure of the 21 stress items. Using SPSS, the data was randomly split into two halves to facilitate exploratory factor analysis (EFA) on the first half of the data and confirmatory factor analysis (CFA) on the second half of the data. CFA assessed the reproducibility of the factor structure derived from the EFA.

Models were specified and estimated in Mplus 7.4 (Muthén & Muthén, 1998-2016) using robust weighted least squares (WLSMV) estimation, which is appropriate for dichotomous data. Missing data were handled using pairwise present deletion, the default strategy used in Mplus when the WLSMV estimator is employed. The first half of the sample, used for EFA, comprised 91 respondents and the second half, used for the CFA, included 105 respondents.

Model evaluation

In the EFA model, eigenvalues >1 indicate the presence of distinct factors. In addition, Mplus compares a model with k factors against a model with $k-1$ factors. In other words, the test compares the estimated model relative to a model with one less factor (e.g., 1-factor against 2-factor solution) using a chi-square difference test ($\Delta\chi^2$). If the p -value is non-significant (i.e., <0.05), the model with one less factor provides a more parsimonious fit to the data.

For both the EFA and CFA, model fit was evaluated using the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). Based on recommendations in the extant literature, RMSEA values ≤ 0.05 indicate close model fit, values ≤ 0.60 good model fit and values ≤ 0.80

acceptable model fit. For CFI and TLI, values ≥ 0.90 indicate acceptable fit and values ≥ 0.95 imply good fit (Brown, 2015; Hu & Bentler, 1998). Additionally, for both the EFA and CFA models, a single latent factor was supported by salient loadings ≥ 0.40 (Brown, 2015), which were also positive and statistically significant ($p < 0.05$). Multicollinearity – indicating a lack of discriminant validity between factors – was evidenced by factor intercorrelations ≥ 0.80 (Kline, 1998). Model fit was also evaluated on the basis of conceptual considerations.

To investigate discriminant validity, the relationship between the emergent latent factors and external variables – age, nursing discipline (general, intellectual disability, and psychiatric) and year of programme (first year, second year, third year, fourth year) – were examined using a CFA model with covariates. Model fit was evaluated using the indices described above.

Results

Demographic data

Table 1 presents the demographic characteristics of the overall sample as well as the EFA and CFA subsamples. Across the sample and two subsamples, the vast majority were female and aged 17-25 years. Further, most participants were drawn from the general nursing program and were enrolled in fourth year.

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Table 1: *Frequencies and percentages for the entire sample, exploratory and confirmatory factor analysis subsamples*

Sample	Gender		Age (yrs)		Programme			Year of study			
	Males	Females	17-25	26+	General	Intellectual Disability	Psychiatric	1 st	2 nd	3 rd	4 th
Entire sample (N = 196)	19 (9.7)	177 (90.3)	138 (70.4)	58 (29.6)	93 (47.4)	57 (29.1)	46 (23.5)	48 (24.5)	36 (18.4)	54 (17.6)	58 (29.6)
EFA subsample (n = 91)	9 (9.9)	82 (90.1)	65 (71.4)	26 (28.6)	41 (45.1)	29 (31.9)	21 (23.1)	20 (22.0)	17 (18.7)	24 (26.4)	30 (33.0)
CFA subsample (n = 105)	10 (9.5)	95 (90.5)	73 (69.5)	32 (30.5)	52 (49.5)	28 (26.7)	25 (23.8)	28 (26.7)	19 (18.1)	30 (28.6)	28 (26.7)

EFA

For the EFA analysis ($n=91$), models with 1-7 factors were estimated (see Table 2). Seven factors displayed eigenvalues >1.00 and the fit indices demonstrated very good to excellent model fit for the 2-7 factors solutions (CFI and TLI values ≥ 0.90 , RMSEA values <0.05). However, the chi-square difference test was significant ($p>0.05$) for the 3-factor and successive solutions, indicating that a more parsimonious 2-factor model provided the best fit to the data. Indeed, the item loadings demonstrated a better empirical fit for the 2-factor model compared to successive models as all items were salient (≥ 0.43), positive, statistically significant and did not cross-load on more than one factor (see Table 3).

Table 2: *Exploratory factor analysis model fit comparisons for a new measure of nursing stress ($n=91$)*

EFA Model	RMSEA (90% CI)	CFI	TLI	Models Compared	$\Delta\chi^2*$	<i>df</i>	<i>p</i> -value
1-factor	0.05 (0.03-0.07)	0.89	0.88	-	-	-	-
2-factors	0.04 (0.00-0.06)	0.95	0.93	1-factor against 2-factor	40.86	20	0.01
3-factors	0.03 (0.00-0.06)	0.97	0.95	2-factor against 3-factor	28.08	19	0.08
4-factors	0.03 (0.00-0.06)	0.98	0.97	3-factor against 4-factor	23.83	18	0.16
5-factors	0.03 (0.00-0.06)	0.98	0.97	4-factor against 5-factor	18.76	17	0.34
6-factors	0.03 (0.00-0.06)	0.99	0.97	5-factor against 6-factor	18.77	16	0.28
7-factors	0.01 (0.00-0.06)	0.99	0.99	6-factor against 7-factor	20.01	15	0.17

Note: Best fitting model is highlighted in bold face.

CFI, comparative fit index; CI, confidence interval; *df*, degrees of freedom; RMSEA, root-mean-square error of approximation; TLI, Tucker-Lewis index; $\Delta\chi^2$, chi-square difference test.

This model also provided the best conceptual fit as the items clustered together in a meaningful way. Specifically, nine items clustered together to form a factor labelled 'Knowledge and Workload'. This factor reflects clinical skills, knowledge of medications and placement and academic workloads. Eight items loaded onto a factor labelled 'Resources', reflecting student nurses' access to clinical resources such as equipment, staffing levels and relationships with Clinical Placement Co-ordinators (CPCs). Table 3 presents the item mappings, item loadings and factor correlations. Four items, however, displayed item loadings that were not salient or statistically significant. This included items assessing 'placement experience', 'learning on placement' 'patient behaviour' and 'access to protected hours'. Accordingly, these four items were removed from the CFA.

Table 3: Exploratory factor analysis standardised factor loadings and factor correlation for a new measure of nursing stress ($n=91$)

Item description	Item loading
<i>Knowledge and Workload</i>	
Preceptor relationships	0.66
Treatment by staff	0.82
Clinical skills	0.88
Medications	0.84
Being prepared	0.75
Placement workload	0.64
Academic workload	0.49
Missing days	0.55
Journey length to placement	0.43
<i>Resources</i>	
Resources e.g. equipment	0.53
Staffing levels	0.65
CPC relationships	0.61
Patient/client relationships	0.81
Access to link lecturers	0.62
No. of work days per week	0.69
Facilities e.g. canteen	0.75
Environment	0.84
<i>Factor Correlation</i>	0.48

Note: Item loadings >0.05 are highlighted in bold face.

Weighted least means and variance adjusted (WLSMV) estimation was used.

CFA

In total, 17 items were entered into the CFA. The two-factor model identified in the EFA was tested in the second half of the sample using CFA ($n=105$). The fit indices indicated good model fit (CFI = 0.94, TLI = 0.93, RMSEA = 0.05 [90% CI – 0.02-0.07]). However, one of the items ‘access to link lecturer’ was not salient (loading = 0.27) or statistically significant (p -value = 0.14). In addition, the item ‘environment’ displayed a very high loading (0.98). These items were removed and the model was rerun. The revised model provided a good fit to the data (CFI = 0.93, TLI = 0.92, RMSEA = 0.06 [90% CI = 0.03-0.08]) and all items were salient (≥ 0.55),

positive, and statistically significant ($p < 0.001$). The factors displayed a correlation of 0.71 ($p < 0.001$), which did not indicate evidence of multicollinearity. The removal of two items did not impact the conceptual interpretation of this model. This revised and final factor model – comprising 15 items and called the Student Nurse Stressor-15 (SNS-15) Scale – is displayed in Figure 1.

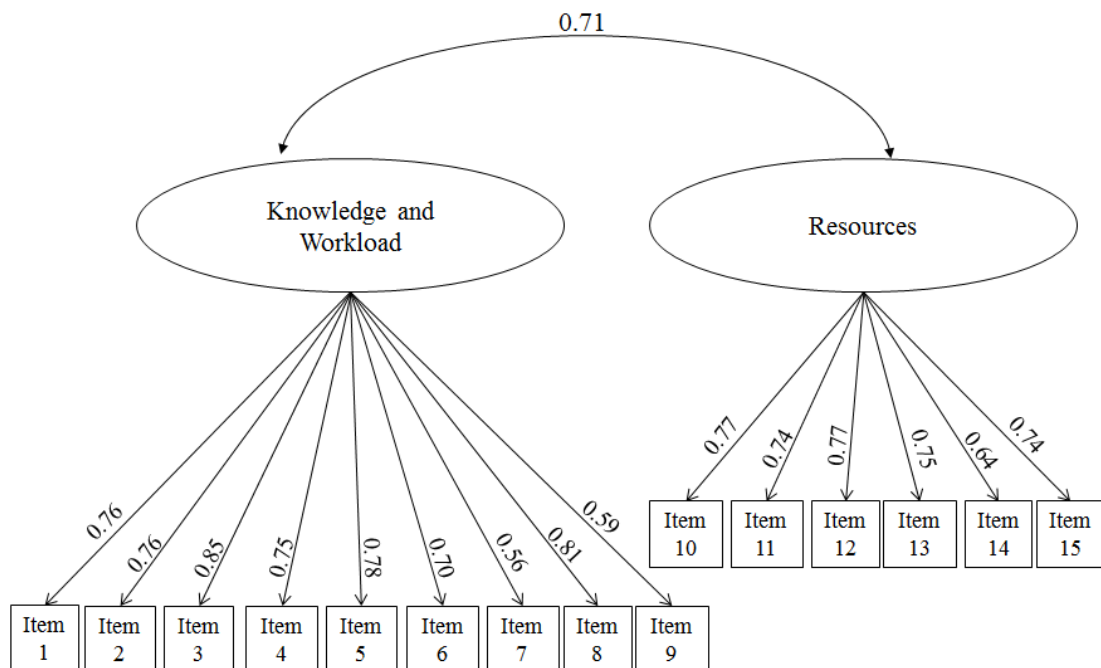


Figure 1: Confirmatory factor analysis (CFA) standardised item loadings and factor correlations for the Student Nurse Stressor-15 (SNS-15) Scale ($n = 105$). All estimates are statistically significant (< 0.001).

Discriminant validity

As mentioned earlier, to investigate discriminant validity, the relationship between the two nursing latent factors and three external variables – age, nursing discipline (general, intellectual disability and psychiatric) and year of programme –

were examined using a CFA model with covariates. The addition of these variables into the model provided a good fit to the data (CFI = 0.93, TLI = 0.92, RMSEA = 0.05 [90% CI = 0.03-0.08]) and all items remained salient (range: 0.56-0.85) and statistically significant ($p < 0.001$). The factors displayed a correlation of 0.70 ($p < 0.001$), which did not indicate evidence of multicollinearity.

A significant relationship was observed between age and the workload and knowledge factor. Compared to students aged 17-25 years, older students displayed higher knowledge and reported greater workload levels ($\beta = 0.22$, $SE = 0.10$, $p < 0.05$). Further, a significant relationship was observed between year of programme and the resources factor. Relative to students enrolled in first year, students in higher stages of the nursing programmes reported less access to resources ($\beta = -0.28$, $SE = 0.11$, $p \leq 0.010$). No significant relationship was observed between nursing discipline and the factors.

Discussion

This paper described the development, testing and validation of an instrument to assess sources of stress among student nurses caring for older adults. Our literature search identified 12 instruments which measured student nurse stress, but no instruments assessing stressors among students on their older adult clinical placements. A further instrument (the NWFQ) was identified which assessed student nurses' work function and behaviour, but this instrument did not contain a measure of students' perceived stress levels. Factor analysis identified two factors relating to 'Knowledge and Workload' and 'Resources', which were assessed by nine and six items respectively. The correlation between the factors was positive and indicated that

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students with higher levels of knowledge and workload also reported greater access to resources. Some of the items in the SNS-15 (see Appendix B) are unique (i.e., missing days, journey length to placement, CPC relationships, the number of work days per week and access to facilities) and others overlap with previous instruments (e.g., preceptor relationships and availability of resources). The former are discussed in turn below.

The first unique stressor identified in this study was *missing days* on placement. Students undertaking older adult clinical placements (and nursing students in general) are required to complete 100% attendance during their clinical rotation (Nursing and Midwifery Board of Ireland [NMBI], 2016). The knock-on effects non-attendance has for their academic progression in their nursing programme include difficulties in registering for their next year of study, access to exam results and finally, access to Institution facilities (e.g., email, Moodle and the library).

The second unique stress item identified amongst this nursing population was *journey length to placement*. This is stressful for students because they are often required to travel long journeys to the clinical site which necessitates access to a car because public transport services are limited or operating times are not compatible with shift work. Indeed, some students have to pay for additional accommodation close to their placement location if they cannot avail of transport, imposing an extra financial burden.

The third unique source of stress was student nurses' relationships with their *CPC*. A CPC is a qualified, experienced nurse who supports student nurses in their clinical placements. Their main functions are to guide, facilitate and monitor learning and competence acquisition among undergraduate student nurses (NMBI, 2016). The

CPC plays an important role in a student's clinical placement experience, hence, it is vital that the student-CPC relationship is a positive one.

The fourth unique stressor for students was the *number of work days per week*. This was a source of stress for students on placements where they were required to work a 5-day shift pattern as they had less free time and incurred additional travelling costs.

The final unique source of stress identified by students was *facilities*. The question was posed in regard to students' ability to access on-site facilities such as a canteen or rest-room, or the condition (e.g., state of repair, cleanliness) of such facilities. A clinical placement lacking in adequate facilities may diminish the attractiveness of that sector when considering employment upon graduation.

Consistent with the extant literature relating to this population, *preceptor relationships* were identified as a source of stress. A preceptor is a registered nurse who supports student learning in clinical settings and assumes the role of supervisor and assessor (Department of Health and Children, 2012). Previous research suggests that while positive preceptor-student relationships can significantly enhance students' placement experiences (Williamson, Callaghan, Whittlesea, & Health, 2011), negative encounters with preceptors can leave students feeling abandoned and demoralised (Grav, Lysfjord-Juul, & Hellzen, 2010).

The availability of *resources* (e.g., equipment) was a concern for student nurses in our study. This is consistent with Brown, Nolan, Davies, Nolan, and Keady (2008) who described 'impoverished working conditions' in older adult nursing. These conditions are characterised by poor environments, equipment shortages, staff with insufficient knowledge and training, low staffing levels and low levels of pay.

This is a key source of stress and thus an important focus for intervention in this population.

Implications

Clinical placements play a crucial role in shaping student nurses' future career specialisms. However, the stressors identified in our study could deter students from choosing older adult nursing as a career option upon graduation. To potentially reduce sources of stress and attract students to the sector, course co-ordinators may wish to focus attention on addressing the issues identified by the student nurses herein (missing days, journey length, CPCs and the number of work days). These stressors may impact on students' enthusiasm for older adult nursing as a career choice and in fact, may contribute to their rejection of this sector when added to other stressors such as poor career advancement opportunities and lower pay rates. Further, it is essential that more is invested in facilities in this sector by the HSE to attract nurses to the field and ensure appropriate and high quality levels of care. Against a background of increasingly restrictive economic constraints, however, this is a challenge.

In practice, student nurses' negative perceptions of older adult nursing may be reinforced by educationalists (Stevens, 2011). Curricula lacking in theoretical and clinical contact and insufficient preparation for older adult clinical placements due to limited contact with suitably qualified academics are allied to a lack of interest in older adult nursing (McCann, Clark, & Lu, 2010). Changes currently being introduced in Irish nursing programmes require that specialist knowledge and experience in caring for older adults are integral to the curriculum (NMBI, 2016). The development of the SNS-15 instrument is timely given the increased emphasis on

older adult nursing in the new curriculum requirements, as it holds promise of informing teaching and learning, including the development of degree programme modules and clinical placements.

Further, of particular relevance to this study, previous research has drawn attention to the relationship between the quality of the clinical placement and attrition (Eick, Williamson, & Heath, 2012). Attrition has critical repercussions for a sector such as older adults which is already experiencing an acute shortage of nurses. High student nurse attrition rates affect the number of qualified nurses providing health care as it is the graduate pool which contributes significantly to the nursing workforce (HSE, 2009). Moreover, the economic ramifications of attrition are also a serious concern for a health system struggling to cope with increasing costs, given that the cost to the Irish State of training each student to degree level was reported to be €85,000 in 2010 (Irish Nurses and Midwives Organisation, 2010). Addressing the sources of stress identified herein and discussed above may go some way in stemming attrition.

Limitations and strengths of the study

The above findings should be tempered by some notes of caution. First, data collection was limited to one institution and thus caution should be exercised when extrapolating the findings. That being said, the institution selected is one of only a small number of institutions in Ireland offering three undergraduate nursing programmes with older adult modules. Second, the sample comprised a small number of males (8.1%; n=20). Whilst this reflects the demographic characteristics of the profession in general, it precluded examination of gender differences in the

experience of stress. Third, the analyses were conducted on a small sample and thus further work, using larger samples and samples from different countries, is warranted to evaluate the generalisability of the current findings.

Limitations notwithstanding, this study has a number of important strengths. First, the study employed a robust empirical approach to examine the psychometric properties of a new stress instrument, including a randomly split sample using exploratory and confirmatory factor analyses. Second, the instrument is tailored to assess the sources of stress in student nurses working in the older adult sector, an area of nursing that faces the twin problems of increasing care demands and a low supply of nurses. Third, the SNS-15 is a succinct instrument that is easy to use in time constrained situations. Fourth, the instrument addresses calls in the literature for stress research targeting sources of stress in all years of nursing programmes (Burnard *et al.*, 2008). It is important to assess stress levels across all years as they may vary according to the year of study.

Future studies applying the SNS-15 among other older adult nursing students are warranted. In addition, research investigating potential gender differences in the experience of older adult clinical placement stress is required. This information is important for the nursing profession which faces problems in attracting and retaining males due to its female-dominated nature, prevalent stereotyping of male nurses and gender bias (McLaughlin, Muldoon, & Moutray, 2010).

Conclusion

In closing, the SNS-15 assesses stressors among student nurses in older adult nursing. Its development and validation is an important step forward in clarifying the

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issues faced by students working in the sector. The SNS-15 has the potential to assist in informing teaching and learning in the development of clinical placements and degree curricula as it identifies these issues and elicits discussion of their implications. Further, its development holds promise for enhancing student nurses' placement experiences, crucial in a sector facing a growing older population and a shortage in nurses.

Relevance to clinical practice

The development of the SNS-15 holds promise of informing teaching and learning for the development of undergraduate degree programmes and clinical placements, and ultimately, improving patient care and student retention.

Contributions:

Study design: PS, LC and JT; data collection: PS; data analyses: PS and NC; manuscript preparation: PS, LC and NC. All authors provided critical feedback and approved the final version of the manuscript for publication.

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Appendix A

Please place a circle around the number which best represents how you feel about the following possible older adult clinical placement stressors:

		Highly stressed	Stressed	Neutral	Moderately stressed	Not stressed
(1)	Placement experience	1	2	3	4	5
(2)	Preceptor relationships	1	2	3	4	5
(3)	Treatment by staff	1	2	3	4	5
(4)	Learning on placement	1	2	3	4	5
(5)	Clinical skills	1	2	3	4	5
(6)	Medications	1	2	3	4	5
(7)	Being prepared	1	2	3	4	5
(8)	Placement workload	1	2	3	4	5
(9)	Academic workload	1	2	3	4	5
(10)	Resources e.g. equipment	1	2	3	4	5
(11)	Staffing levels	1	2	3	4	5
(12)	CPC relationships	1	2	3	4	5
(13)	Patient/client relationships	1	2	3	4	5
(14)	Patient/client behaviour	1	2	3	4	5
(15)	Access to link lecturers	1	2	3	4	5
(16)	Access to protected hours	1	2	3	4	5
(17)	Number of work days per week	1	2	3	4	5
(18)	Facilities e.g. canteen	1	2	3	4	5
(19)	Environment	1	2	3	4	5
(20)	Missing days	1	2	3	4	5
(21)	Journey length to placements	1	2	3	4	5
(22)	Other (<i>please specify</i>):	1	2	3	4	5

Appendix B

Student Nurse Stressor-15 Scale (SNS-15)

We are interested in examining levels of stress on student clinical placements. For each item below, please place a circle around the number which best represents your level of stress:

Stressor	Highly Stressed	Stressed	Neutral	Moderately Stressed	Not Stressed
1. Preceptor relationships	1	2	3	4	5
2. Treatment by staff	1	2	3	4	5
3. Clinical skills	1	2	3	4	5
4. Medications	1	2	3	4	5
5. Being prepared	1	2	3	4	5
6. Placement workload	1	2	3	4	5
7. Academic workload	1	2	3	4	5
8. Resources e.g. equipment	1	2	3	4	5
9. Staffing levels	1	2	3	4	5
10. CPC relationships	1	2	3	4	5
11. Patient/client relationships	1	2	3	4	5
12. Number of work days per week	1	2	3	4	5
13. Facilities e.g. canteen	1	2	3	4	5
14. Missing days on placement	1	2	3	4	5
15. Length of journey to placement	1	2	3	4	5