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Relationships between academic literacy support, student retention and academic performance

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ABSTRACT

Retention and the academic success of nursing students remains a high priority in Australian and global higher education. This study examines an embedded academic support strategy, provided by Professional Communication Academic Literacy (PCAL) support staff, and undergraduate Bachelor of Nursing student uptake of the support. It reports on the profile of those who sought support, and the relationships between student support, retention and academic performance. A total of 11 290 PCAL consultations were recorded during a 17-month period from January 2016, with these consultations initiated by 2827 individual students. Among the undergraduate nursing students (n = 4472), those who sought PCAL support were over 7 times more likely (Adjusted Odds Ratio: 7.81, 95% CI: 6.18 to 9.86) to continue in the nursing program, taking into consideration age and enrolment category of students. Among students who continued or are continuing in the program, those who did not seek PCAL support had a lower grade point average (GPA) (mean: 3.9) compared to those who sought PCAL support between 1 and 3 times (mean: 4.3), and those who sought PCAL support on more than 3 occasions had the highest GPA (mean: 4.4), suggesting that frequency of consultations influenced academic success and retention.

1. Introduction

In developed countries such as Australia, Canada, New Zealand, the United States, and the United Kingdom, the impact of globalisation has contributed to increased student participation in higher education and a focus on student success and retention in academic programs (Beauvais et al., 2014; Murray et al., 2016). With this widening of participation in tertiary education, students' academic literacy and English language capabilities have been identified as critical to their success and retention, particularly in clinically focused programs such as nursing (Andre and Graves, 2013; Hillege et al., 2014; Mikkonen et al., 2016; Roberts and Goss, 2009). Nursing programs require the use of high order literacy and language skills, as without these students are at risk of underperforming academically, may achieve unsatisfactory outcomes on clinical placements, and also fail to successfully progress in their nursing studies (Glew, 2013; Hillege et al., 2014; Mikkonen et al., 2016).

Global mobility of foreign students and the widening of participation in tertiary education in anglophone countries has contributed to growth in the number of nursing students needed to meet the imminent nursing shortage in these developed nations (Fenton-Smith et al., 2017; OECD, 2018; Tranter et al., 2018). In countries such as Australia, the increase in student participation in tertiary education programs has resulted in growing concern about the readiness of students for such studies, especially if they are from educationally disparate and linguistically and culturally diverse backgrounds (Dunworth, 2010; Murray, 2013). Notably, universities have been directed to use early identification of students at risk of not succeeding in a course and to provide targeted support (Tertiary Education Quality and Standards Agency, 2017). However, there is a need for program providers to develop an evidence base of academic literacy support strategies, which meet the needs of students who have gaps in literacy and language skills, as these are critical to their success in learning, progression and retention (Arkoudis et al., 2014).

2. Background

The widening of student participation and globally mobile foreign students commencing in university education in Australia, Canada, New

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Zealand, the United Kingdom and the United States has increased the numbers of students who were previously under-represented in higher education. As a result, courses such as nursing include international and mature age students, and domestic students from linguistically and culturally diverse (CALD) backgrounds who use English as an additional language (EAL) (Fenton-Smith et al., 2017; Mikkonen et al., 2016; Murray et al., 2016; OECD, 2018; Tranter et al., 2018). These students may commence in nursing studies through a range of entry pathways. For instance, nursing programs offer direct entry to international students who meet the essential education and language proficiency requirements for course commencement (Glew, 2013; Salamonson et al., 2012; Zheng et al., 2014). Both international and domestic students can be admitted into nursing programs at standards set by university providers based on completion of secondary schooling in Australia. Additional pathway programs for admission may also include relevant vocational studies, other tertiary studies and completion of a relevant diploma, certificate or foundation studies program (Hillege et al., 2014; Murray, 2013). Although all students who enter nursing programs would be expected to meet admission requirements, the range of entry pathways and the diverse cultural and linguistic backgrounds of students who use EAL can contribute to a lack of educational readiness and the necessary academic literacy and language skills vital to successful academic performance, progression and retention in a course (Glew, 2013; Salamonson et al., 2013).

Nursing students must meet rigorous professional standards for registration in countries such as Australia, Canada, the United Kingdom which includes having a proficiency in English language skills (British Columbia College of Nursing Professionals, 2018; Nursing and Midwifery Council, 2018; Nursing and Midwifery Board of Australia, 2015). Given the importance of graduate attributes in English for professions such as nursing, universities need to identify students who are at risk of not succeeding in a program due to learning and language abilities, and provide targeted support (Tertiary Education Quality and Standards Agency, 2017). Underpinning these requirements are findings that students from diverse cultural, linguistic and education backgrounds, such as students with EAL, can lack fundamental academic literacy and English language skills critical to university studies, resulting in increased risk of under-achievement and course withdrawal (Arkoudis et al., 2014; Dunworth, 2010; Fenton-Smith et al., 2017; Office for Learning and Teaching, 2013). There have been calls from the nursing profession, registration bodies and within academia for institution-wide approaches in anglophone countries including Australia, Canada, the United Kingdom and United States to specifically address the needs of tertiary students with EAL through learning support for academic literacy and English language skills (Anderson, 2015; Fenton-Smith et al., 2017; Murray and Nallaya, 2014). Some universities in these countries have trialed generic student support, online interventions, providing support through curricula and foundation courses in attempts to meet the needs of their increasingly culturally and linguistically diverse student cohorts. However, support which embeds academic literacy and language skills development in disciplines such as nursing has been identified as a best practice model (Glew, 2013; Hillege et al., 2014; Maldoni, 2018; Martin et al., 2018; Salamonson et al., 2019). Notably, Zheng et al. (2014) identified a need to support domestic students who use EAL in a study that revealed these domestic nursing students had lower grade point averages (GPAs) and an attrition rate which was almost twice that of international students. This highlighted that international students may be more prepared for a tertiary program such as nursing than domestic students from CALD backgrounds who use EAL.

Inadequate literacy and language skills have been linked to poor academic performance as indicated by lower GPAs (Berman and Cheng, 2010; Rienties et al., 2012; Salamonson et al., 2008). Poor progression rates and high attrition can have financial implications for students who fail subjects or withdraw from a program, and this also impacts on program providers (Zheng et al., 2014). This challenge is likely to escalate for university programs with more than twenty-eight percent of Australian residents born overseas, more citizens using English as an additional language (EAL), and twenty seven percent of commencing university students coming from CALD backgrounds and using EAL (Arkoudis et al., 2014; Australian Bureau of Statistics, 2017; Murray, 2013). Moreover, for the healthcare sector the successful completion of students in nursing programs remains critical to the current and future Australian healthcare workforce, with an increasing shortfall in healthcare professionals to care for a growing and increasingly diverse population (Council of Australian Governments, 2010; Erling and Richardson, 2010). Consequently, having a diverse cohort of students will better serve the future healthcare needs of a culturally diverse community. This highlights the need for all undergraduate nursing students, and particularly those from CALD backgrounds with EAL, to receive effective support that will facilitate successful course progression and completion of their nursing studies.

International and domestic students with EAL need to demonstrate that they meet national English language skill standards for nurse registration by the completion of a nursing program (Nursing and Midwifery Board of Australia, 2015). Research has shown that the oral communication skills of these nursing students can progressively improve with support interventions (Salamonson et al., 2019). Yet there remains a scarcity of research into effective and embedded support programs within education contexts in the important clinical practice discipline of nursing. Although program providers may recognise the need to support students at risk of under-performance and withdrawal from a course, there is a need to investigate the impact of embedded support programs that can facilitate the development of nursing students' academic literacy and language skills during their nursing studies (Baik and Greig, 2009; Borglin and Fagerström, 2012; Glew et al., 2015; Hillege et al., 2014; Salamonson et al., 2011). Moreover, as less is known about reducing student attrition, this present study examined the effectiveness of support interventions and its impact on retention.

3. Methods

3.1. Aim and design

This study used a correlational design to investigate the influence of students' engagement with Professional Communication Academic Literacy (PCAL) support. It examined student uptake of the support, the demographic characteristics of those who sought support, and the relationships between these with student retention and academic performance.

3.2. Study setting and participants

The study examined the impact of embedded academic support strategies on the academic success and retention of students at a large multi-campus program for nursing and midwifery located in Western Sydney, one of the most culturally and linguistically diverse regions of Australia. Administrative data used in the study were collected from undergraduate first, second and third year students (n = 4472) enrolled in nursing units. The data included demographic characteristics of age, gender, country of birth, enrolment category, first-in-family to attend university, residential address, and continuing enrolment in the nursing program. An Academic Literacy Support Initiative (ALSI) Access database was used to record and report on student uptake of the academic support, including one-on-one face-to-face individual consultations for PCAL support, face-to-face workshops, and online group support. This support was developed in collaboration with nursing academics and delivered by specialised tutors with qualifications and training in teaching literacy and English to speakers of other languages with the aim of improving student competence and confidence in academic writing and spoken communication for nursing assessments and clinical setting. Students identified as needing help in these areas were referred

Table 1
Group differences of BN students who sought PCAL Staff consults between January 2016 and May 2017 (n = 5182).

Characteristics	Non-PCAL consult students n = 3090	PCAL consult students n = 2092	P value
Age, mean (*SD*) years	25.39 (7.84)	28.16 (8.60)	< 0.001[a]
Sex (Female), %	79.0	85.4	< 0.001[b]
Country of birth: Overseas-born, %	62.3	75.3	< 0.001[b]
Enrolment category: International student, %	14.6	22.3	< 0.001[b]
First-in-family to attend university, %	60.9	60.2	0.647[b]
Residential address: Low socio-economic status, %	55.8	57.1	0.346[b]
Continuing enrolment in the nursing program, %	72.4	95.2	< 0.001[b]

[a] Mann-Whitney U test.
[b] Pearson χ^2 test.

to the support by tutors; however, the support was made available to all students in the program using self-referral. The PCAL curriculum was designed to build the capacities of all students who accessed the support by incorporating discipline specific academic writing skills focussing on the oral communication skills of students with EAL, with speaking support in fluency, pronunciation, and use of grammar and vocabulary including nursing and medical terminology. In addition, colloquialisms and role-plays were used in simulating staff and patient interactions in healthcare.

3.3. Data collection

Administrative data were collected for the nursing students (n = 4472) enrolled at one of three campuses of the Australian university during the 17-month study period from January 2016 until May 2017. Student attendance at PCAL consultations were recorded during the study period using the ALSI Access database. At the end of the recruitment period, these PCAL support consultation data were linked with administrative data, including academic grades and enrolment status from the University's Student Management System, in Microsoft Excel and imported into SPSS for analysis. The University Human Research Ethics Committee approved the study (H10338) as a sub-project of research on student transition, success and retention. For this program of research all commencing students were informed by their student email and learning management system site with participant information on the purpose of the research program, including the voluntary nature of participation. They were provided with an opt-out opportunity so that their de-identified administrative data were not included in this research program. Ethics approval for this sub-project included the retrieval of: i) nursing student demographic and GPA data; and ii) their attendance at PCAL support consultations and workshops in the first and second semesters of 2016 and 2017.

3.4. Data analysis

Quantitative data analyses were conducted using the SPSS Version 24.0 software (SPSS Inc., Chicago, IL). The variable of attendance to PCAL support was used for group comparisons of those who sought support and those who did not (non-PCAL consult students), along with age (School leavers or Non-school leavers, 21 or older), gender, country of birth (Australian or Overseas-born), enrolment category (Domestic or International), first-in-family to attend university, residential suburbs (Low or High socio-economic status), and continuing enrolment in the nursing program. This study included the administrative data of student GPA which represents academic performance in a unit of study in the program as follows: 0 is a fail; 3 is a conceded pass; 4 is a pass; 5 is a credit; 6 is a distinction; and 7 is a high distinction and the highest score possible.

For bivariate group comparisons, chi-square tests were used for categorical variables, and Mann-Whitney U and Kruskal-Willis H tests were used to evaluate median values of continuous variables that were non-normally distributed. Simultaneous logistic regression analysis was used for five socio-demographic variables as predictors of those who sought PCAL support. These results are presented as adjusted odds ratios with 95% confidence interval (CI) and Hosmer-Lemeshow test to measure the goodness-of-fit for the logistic regression model. A p value of < 0.05 was considered statistically significant.

4. Results

The findings revealed that over a 17-month period from January 2016 until May 2017, there were a total of 11 290 PCAL consultations recorded. This included one-on-one face-to-face consultations for PCAL support (n = 3522, 31%) and face-to-face or online group support or workshops (n = 7768, 69%). These results for the consultations and workshops included students who accessed the support on one or more occasions.

There were a total of 2827 individual undergraduate students who sought PCAL support, some on multiple occasions, ranging from 1 to 66 times (mean: 4, median: 2, SD: 6) over the 17-month period. Of all students who sought PCAL support, 2029 (72%) were students enrolled in the standard entry Bachelor of Nursing (BN) program.

4.1. Profile of BN students who sought PCAL support

Table 1 shows the group comparisons of those who sought PCAL support and those who did not (non-PCAL consult students). Those who sought PCAL support were likely to be: i) older (mean: 28.16 versus 25.39, $p < 0.001$); ii) female (85.4% versus 79.0%, $p < 0.001$); iii) overseas-born (75.3% versus 62.3%, $p < 0.001$); iv) international students (22.3% versus 14.6%, $p < 0.001$); and v) continued to remain enrolled in the nursing program (95.2% versus 72.4%, $p < 0.001$).

Simultaneous logistic regression analysis revealed that among BN students, of the seven socio-demographic and academic variables, five of these emerged as predictors of those who sought PCAL support, and these were: i) non-school leavers [adjusted odds ratio (AOR): 1.88 (95% CI: 1.64 to 2.17); ii) female (AOR: 1.72, 95% CI: 1.45 to 2.05); iii) overseas-born (AOR: 1.62, 95% CI: 1.39 to 1.88); iv) international students (AOR: 1.24, 95% CI: 1.04 to 1.49); and v) those who continued to enrol in the nursing program (AOR: 7.81, 95% CI: 6.18 to 9.86) as shown in Table 2. This regression model suitably fitted the data as shown by the Hosmer-Lemeshow goodness-of-fit test (χ^2: 9.77, 7 df, n = 4472, p = 0.202), accounting for 18.2% of the variance (Nagelkerke's R^2 = 0.182).

4.2. Predictors of continuing BN students with high (GPA > 4.4) academic performance

Table 3 shows that among BN students who remained enrolled in the program (n = 3739) for at least 12 months, seven variables emerged as predictors of high academic performance, and these were: i) non-school leavers (AOR: 1.24, 95% CI: 1.08 to 1.43); ii) female (AOR: 1.30, 95% CI: 1.09 to 1.54); iii) Australian-born (AOR: 1.24, 95% CI: 1.06 to 1.44); iv) domestic students (AOR: 1.22, 95% CI: 1.02 to 1.46);

Table 2
Logistic regressions of students' characteristics associated with PCAL support in the Bachelor of Nursing program (n = 4472).

Variable	Coefficient (B)	Standard error (SE)	Adjusted odds ratio (95% CI)	P value
Students' profile in BN program who had: No PCAL support (n = 2663, 60%) versus PCAL support (n = 1809, 40%)				
Age group: Non-school leavers (21 years or older)	0.63	0.07	1.88 (1.64–2.17)	< 0.001
Gender: Female	0.54	0.09	1.72 (1.45–2.05)	< 0.001
Country of birth: Overseas-born, %	0.48	0.08	1.62 (1.39–1.88)	< 0.001
Enrolment category: International student, %	0.22	0.09	1.24 (1.04–1.49)	0.018
First-in-family to attend university: Yes, %	0.03	0.07	1.03 (0.90–1.17)	0.702
Residential address: Low socio-economic status, %	0.04	0.07	1.04 (0.91–1.19)	0.546
Continuing enrolment in the nursing program, %	2.06	0.12	7.81 (6.18–9.86)	< 0.001

CI denotes confidence interval.
Hosmer-Lemeshow goodness-of-fit for the model, chi-square = 9.77, 7 *df* (P = 0.202).

v) not first-in-family to attend university (AOR: 1.24, 95% CI: 1.08 to 1.42); vi) classified to have residential addresses in high socio-economic status (SES) areas (AOR: 1.39, 95% CI: 1.22 to 1.59); and vii) those who sought PCAL support (AOR: 1.58, 95% CI: 1.38 to 1.81). This regression model suitably fitted the data as shown by the Hosmer-Lemeshow goodness-of-fit test (χ^2: 10.17, 8 *df*, n = 3739, p = 0.253), accounting for 4% of the variance (Nagelkerke's R^2 = 0.040).

4.3. Relationship between PCAL consults and GPA

A positive and dose-related relationship was seen between frequencies of PCAL consultations and mean GPA in continuing BN students (Fig. 1). Results of the non-parametric Kruskal-Wallis H test revealed that the relationship between frequencies of PCAL consultations and the mean for students' GPA was statistically significant (p = 0.012). Those who did not seek PCAL support had the lowest GPA (mean: 3.9), while those who sought PCAL support between 1 and 3 times had a higher GPA (mean: 4.3). Notably, students who sought PCAL support on more than 3 occasions during the 17-month period had the highest GPA (mean: 4.4) as shown in Fig. 1.

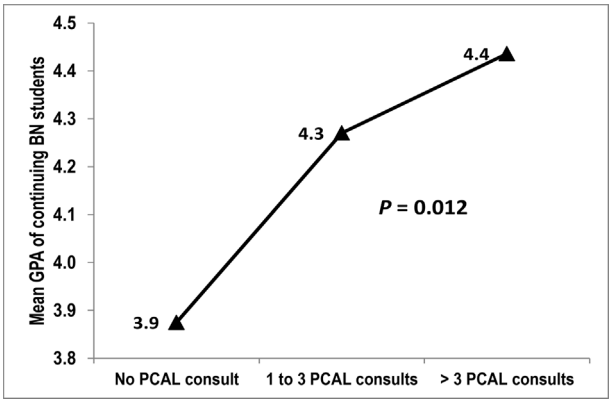

Fig. 1. Mean GPA of continuing Bachelor of Nursing students and frequencies of PCAL consults over 17-month period (n = 4331).

5. Discussion

The uptake of support consultations and workshops revealed a high level of student demand for PCAL support embedded in the nursing program with 11 290 student consultations recorded in the 17-month period. These student consultations were initiated by 2827 individual students who accessed PCAL support between 1 and 66 times. Among the undergraduate nursing students who commenced over a 3-year period (n = 4472), those who sought PCAL support were over 7 times more likely (Adjusted Odds Ratio: 7.81, 95% CI: 6.18 to 9.86) to continue in the nursing program, taking into consideration age and enrolment category of students. In relation to student retention and performance, the students who accessed the support often were not only more likely to remain enrolled in the nursing program, but they may have continued in their studies because they had achieved passing or higher grades. Notably, in terms of student academic performance, the study identified that those with the lowest GPA (mean 3.9) did not access any PCAL support during the period of the study. Given their lower academic performance based on GPA, it is possible that these students also were less motivated and engaged in their studies. Compared to students who did not access support at all, those who accessed PCAL support between 1 and 3 times had a higher GPA (mean 4.3). It is possible that these students may have more readily self-identified their own need for support, or were recommended to access PCAL support as a referral, such as those from CALD backgrounds with EAL. Of the students who sought PCAL support (median: 2 PCAL consults) some attended on multiple occasions, even up to 66 times with these repeated visits suggesting that students valued the support. Other studies have found that international and domestic overseas-born students were more likely than other students to seek support (Crawford and Candlin, 2013; Jeong et al., 2011; Salamonson et al., 2008). Significantly, students who accessed support on more than 3 occasions had even higher GPAs (mean 4.4). Overall, this suggests that frequency of engagement with PCAL support influenced academic performance and this may have indirectly influenced student achievement, progression and retention in the course.

The study highlighted that many of the students in the nursing

Table 3
Predictors of high (GPA > 4.4) academic performance in the Bachelor of Nursing program among those continuing students (n = 3739).

Variable	Coefficient (B)	Standard error (SE)	Adjusted odds ratio (95% CI)	P value
Age group: Non-school leavers (21 years or older)	0.21	0.07	1.24 (1.08–1.43)	0.003
Gender: Female	0.26	0.09	1.30 (1.09–1.54)	0.003
Country of birth: Australian-born, %	0.21	0.08	1.24 (1.06–1.44)	0.007
Enrolment category: Domestic student, %	0.20	0.09	1.22 (1.02–1.46)	0.033
First-in-family to attend university: No, %	0.21	0.07	1.24 (1.08–1.42)	0.002
Residential address: High socio-economic status, %	0.33	0.07	1.39 (1.22–1.59)	< 0.001
Sought PCAL support, %	0.46	0.07	1.58 (1.38–1.81)	< 0.001

CI denotes confidence interval.
Hosmer-Lemeshow goodness-of-fit for the model, chi-square = 10.17, 8 *df* (P = 0.253).

program were first-in-family and from culturally diverse backgrounds and many had come from low SES areas which may have accounted for why they sought the opportunity for PCAL support. As stated previously, some of these students accessed support up to 66 times over the 17-month period. Our findings showed that these students were more likely to be a non-school leaver (i.e. mature aged) and female. This is not surprising taking into consideration the widening of participation in higher education (Gale and Parker, 2013; Jones and Lau, 2010; Murray, 2013) and that nursing remains a predominately female profession (Ross, 2017). It is possible that older students were also able to more readily self-identify a need for support due to having an extended time away from formal learning, and this alone may have motivated them to seek help (Kenny et al., 2011).

Not surprisingly, Australian born and domestic students were likely to have a high GPA (mean > 4.4) and also remained enrolled in the program. It is probable that these students were native English speakers or more proficient in English than other overseas born domestic and international students. Further, the findings showed that these students were not likely to be first-in-family to attend university, and thus may have had a good understanding of the demands and expectations of university studies. Interestingly, based on residential suburb using postcodes these higher achieving students were also more likely to live in high SES areas; therefore, making it possible to have had more educational opportunities and access to immediate family members to support them during their studies.

Specifically, the study revealed that international and overseas-born domestic students were most likely to access PCAL support. This finding was likely due to their diverse cultural and linguistic backgrounds, and use of EAL. They may have accessed PCAL support to improve oral and written academic literacy capacities, as well as their skills in using English language for nursing studies. Other studies that explored similar nursing student cohorts have also identified that students from CALD backgrounds with EAL are often likely to need some support in academic literacy and English language skills to meet the demands of a nursing program (Glew et al., 2015; Salamonson et al., 2008, 2013; Zheng et al., 2014). These students may more frequently seek opportunities for face-to-face discussion in settings with other students and tutors about the meaning of subject content and may highly value opportunities to engage in a communicative and interactive learning environment (Conole et al., 2008; Johnson et al., 2000; Rienties et al., 2012). Such supportive interactive learning contexts that facilitate student development of academic literacy and language skills are likely to be key to the academic achievement and retention of students in nursing programs (Glew, 2013; Glew et al., 2015; Hillege et al., 2014).

Although this study was limited to a single site, the multi-campus structure enrolled nursing students from both traditional English-speaking as well as culturally and linguistically diverse backgrounds living in the western Sydney regions. Furthermore, the large complete dataset of administrative information collected over a 17-month period captured all nursing students enrolled in the program as well as those who accessed PCAL support.

5.1. Recommendations for future research

Evidence from this study affirms the positive influence an embedded PCAL support approach has on improving the academic performance and retention of students in a nursing program. However, there is a need for further research to examine the impact of PCAL support on student learning over the duration of a course from commencement, along with qualitative insights from students about their supported learning experiences. A longitudinal investigation could provide increased understanding of the impacts of PCAL support on learning based on the demographic, linguistic and cultural differences of students. It may also allow an investigation of course outcomes and offer understanding of the experiences of students who actively engage with support compared with those who do not. This may help in designing future support interventions that promote positive study behaviours and academic effort of all nursing students.

6. Conclusion

This study highlighted the relationships that exist between student uptake of embedded academic literacy support, student retention and academic performance. The PCAL support strategies had an impact on student retention with those who took up the support being significantly more likely to continue in the nursing program. In regard to academic performance, students who did not engage with this support had a lower level of academic achievement. Significantly, frequent engagement with PCAL support was shown to positively influence academic performance, and this may also have contributed to student progression and retention in their studies. The findings illustrate the importance of having an explicitly embedded approach to academic literacy support in a program such as nursing. It can benefit mature age students, those who are first in family at university, and students from CALD backgrounds with EAL who may self-identify their need for support. Specifically, PCAL support can improve the academic performance of students who are motivated to access this support on a regular basis to develop critical academic literacy skills and English language skills for nursing studies.

Author contributions

YS and PJG were responsible for the study conception, design and organisation of the data collection, PJG, MS, KR and HC collated the data and YS performed the data analysis. YS, PJG, LMR, MS, KR, and HC were responsible for drafting the manuscript. YS, PJG, LMR, MS, KR and HC made critical revisions to the paper for important intellectual content.

Conflicts of interest

No conflict of interest has been declared by the authors.

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Ethical approval details

This research was approved by the University Human Research Ethics Committee (H10338).

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Appendix A. Supplementary data

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