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Evaluation of a nurse-led education program to improve cross-cultural care for older people in aged care

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ABSTRACT

Background: Cultural diversity is significant in aged care facilities. Registered nurses play a leading role in the care setting. Nurse-led education interventions to improve the cultural competence of aged care workers are in high demand.

Aim: The aims of the study were to evaluate the effect of a nurse-led cross-cultural care program on cultural competence of Australian and overseas-born care workers.

Design: A pre- and post-evaluation design and a sub-group analysis.

Settings and participants: This study was undertaken in four large-sized aged care facilities in Australia. Direct care workers were invited to participate in the study.

Methods: The intervention lasted 12 months. Data were collected at baseline, 6 months and 12 months using the Clinical Cultural Competency Questionnaire and site champion reports. One-way ANOVA was applied to determine the changes of outcomes over time for the whole group. A mixed effect linear regression model was applied in the sub-group analyses to compare the differences of outcomes between the Australian-born and overseas-born groups.

Results: One hundred and thirteen staff participated in the study including Australian-born (n = 62) and overseas-born (n = 51). Registered nurses were trained as site champions to lead the program. The results showed a statistically significant increase in participants' scores in Knowledge (p = .000), Skills (p = .000), Comfort Level (p = .000), Importance of awareness (p = .01) and Self-Awareness (p = .000) in a 12-month follow-up. The increased scores in the Skills (p = .02) and Comfort Level (p = .001) were higher in the Australian-born group compared to the overseas-born group. The results also showed a statistically significant increase in participants' overall satisfaction scores with the program at 12 months (p = .009). The overseas-born group demonstrated a higher score in Desire to Learn More (p = .016) and Impact of the Program on Practice (p = .014) compared to the Australian-born group.

Conclusion: A nurse-led cross-cultural care program can improve aged care workers' cultural competence.

1. Introduction

Fourteen Organisation for Economic Cooperation & Development (OECD) countries report that care workers from migrant backgrounds make up to 25% of the workforce (Fujisawa and Colomboand, 2009). In Australia, 32% of workers in aged care facilities in 2016 were overseas-born (Mavromaras et al., 2017). Older people receiving aged care services are increasingly culturally and linguistically diverse, reflecting post-World War II migration or family reunion programs (United Nations, 2015; World Health Organization, 2015). Studies on cultural and linguistic diversity of older people and care workers in aged care report care disparities for residents from culturally and linguistically diverse (CALD) groups and non-CALD groups (Runci et al., 2014; Xiao et al., 2018), negative attitudes towards specific cultural groups,

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communication difficulties and misunderstandings (Walsh and Shutes, 2013; Kim et al., 2014; Small et al., 2015). Registered nurses play a leading role in the sector where unlicensed personal care assistants are the majority of the workforce (Mavromaras et al., 2017). There is an urgent need to conduct nurse-led cross-cultural care education programs to mitigate poor cross-cultural care and foster culturally competent care.

2. Background

In Australia, the number of older people receiving aged care reached over a quarter of a million in 2017 (Australian Institute of Health and Welfare, 2018) and will be 3.5 million by 2050 (Australian Productivity Commission, 2011). More than half of the residents in aged care facilities have dementia and palliative care is an integral part of care requirements (Australian Productivity Commission, 2011). The number of older people from CALD backgrounds is increasing rapidly with predictions that by 2026 one in four who receive aged care services will be from CALD backgrounds (Gibson et al., 2001). The aged care workforce is also showing increased cultural diversity. In 2016, there were 235,764 care workers employed in aged care facilities and 32% of them were oversea-born (Mavromaras et al., 2017). Notably, the majority of overseas-born residents come from Europe, while the majority of overseas-born care workers come from South Asian and African regions (Mavromaras et al., 2017).

Cultural competence is defined as 'a set of congruent behaviors, attitudes, and policies that come together in a system, agency or among professionals and enable that system, agency or those professionals to work effectively in cross-cultural situations' (Cross et al., 1989, p. 7). This definition strongly suggests a systematic approach through organisational policies and leadership at every level to improve cultural competence for aged care workers. Nurses play a leading role in providing culturally competent care that is also culturally safe. Cultural safety is described as "The effective nursing practice of a person or family from another culture, and is determined by that person or family" (Nursing Council of New Zealand, 2011, p. 7). That is, the person or family receiving the care consider it to be safe. Although both cultural safety and cultural competence emphasize effective cross-cultural care, cultural safety acknowledges the unequal power between Indigenous clients and nurses due to the history of colonisation. When appropriate, this concept needs to be embedded into nursing education and practice. The lack of cultural competence is widely reported in aged care and is characterised by poor cross-cultural communication; alienation and conflict among care workers from different cultural groups; and an inability to identify and meet the individualised care needs of residents, especially for those living with dementia and/or in the end of life care period (Nichols et al., 2015; Runci et al., 2014; Xiao et al., 2018).

A nursing model of cultural competence (Campinha-Bacote, 2002) illustrates five attributes: cultural awareness, cultural knowledge, cultural skill, cultural encounters (comfort level) and cultural desire. This model has been widely applied in developing and measuring education interventions to improve culturally competent care (Krajic et al., 2005; Like, 2004). Raising cultural awareness is viewed as the first step towards cultural competence. In an aged care facility, care workers with a low level of cultural awareness are more likely to be ignorant of residents' and their co-workers' culture and unaware that they themselves are not culturally competent.

Cultural knowledge and skills incorporated into education interventions need to target participants' direct learning needs and practice priorities given the busy environment with time-constraints and to commit to education sessions (Gillham et al., 2018). Studies across the globe consistently demonstrate that cross-cultural communication is a real learning need for care workers in aged care facilities (Bourgeault et al., 2010; Walsh and Shutes, 2013; Xiao et al., 2018). Moreover, preserving residents' dignity, autonomy and enabling them to continue to enjoy their cultural lifestyle is widely recognised in government policies in aged care (Australian Government, 2019, OECD/European Commission, 2013).

Cross-cultural encounters necessitate that care workers learn about each resident's personhood, which is strongly shaped by their culture, significant life events and relationships (Soderman et al., 2018; Nichols et al., 2015). Cross-cultural encounters also challenge care workers to identify residents' care needs arising from their spiritual and religious practices that are particularly important in their final days of life (Foster et al., 2019; ten Koppel and al., 2019). In contrast, poor care outcomes are attributed to the lack of leadership to mitigate problems identified in cross-cultural encounters (Dauvrin and Lorant, 2015; Nhongo et al., 2018).

Cross-cultural interactions may be associated with ambiguity, anxiety and anticipated negative consequences (Ting-Toomey, 2010). Consequently, there is a tendency for care workers to avoid communicating with those from other cultures, alienating them, or preventing them from being included in activities. Cultural desire is viewed as the spiritual dimension of cultural competence which is defined as attitudes, values and drives in cross-cultural interactions to overcome difficulties (Campinha-Bacote, 2002). This attribute can only be developed through carefully facilitated cross-cultural encounters to gain positive experiences, feedback from colleagues and reflection on one's own performance (Blanchet Garneau and Pepin, 2015).

Aged care is perceived as a resource poor setting with constraints on care workers to participate in education programs (Gillham et al., 2018). Transformative learning defined as, the development of leadership attributes for the workforce in order "to produce enlightened change agents" (Frenk et al., 2010, p. 1924), may provide strategies that are applicable to the aged care setting. Organisational support is a crucial condition in this learning model to engage care workers in learning activities and to develop leadership at every level. Moreover, cultural competence can only be developed through experiential learning and critical reflection (Blanchet Garneau and Pepin, 2015), suggesting that a cross-cultural care program needs to create opportunities for care workers and residents to learn, share and mobilise cultural knowledge.

3. Methods

3.1. Aims

The aims of the study were to evaluate the effect of a nurse-led cross-cultural care program on cultural competence of aged care workers, with comparisons between the Australian-born and the overseas-born groups with a 12-month follow-up. We hypothesized that (1) the education program would improve cultural competence for participants; and (2) the program would have the same effect on the Australian-born and the overseas-born groups in a 12-month follow-up. The study was part of a large project that has been reported elsewhere (Xiao et al., 2017a, Xiao et al., 2018, Gillham et al., 2018).

3.2. Design

A pre- and post-study design using ANOVA repeated measure was applied to determine changes in outcome measures at baseline, 6-month and 12-month follow-ups for all participants in the program (see Fig. 1). This design addressed the hypothesis 1. Sub-group analysis was performed to compare the education effect on the Australian group and overseas group over baseline, 6-month and 12-month follow-ups (see Fig. 2). This design addressed the hypothesis 2. The study adhered to the Transparent Reporting of Evaluations with Non-randomized Designs (Centers for Disease Control and Prevention, 2018).

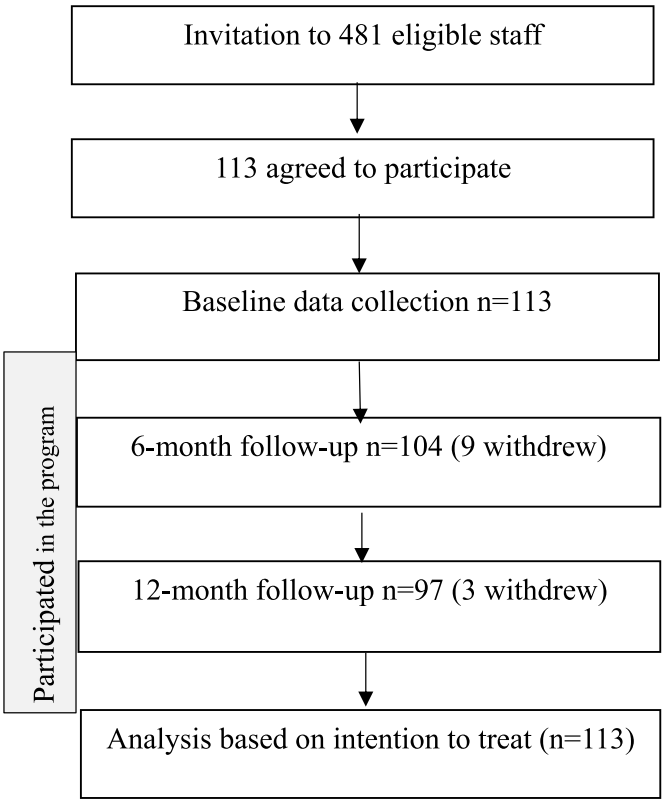

Fig. 1. Flow chart of all participants in the program.

3.3. Ethical consideration

This evaluation study was part of a larger study funded by the Australian Government Department of Health under the 'Service Improvement and Healthy Ageing Grants' in 2015. Participation in the program was part of professional development for staff. The program evaluation study was reviewed and approved by the Flinders (blinded for review) University Social and Behavioral Research Ethics Committee (Project number 6841) in Australia. Participants were informed that participating in the program evaluation was voluntary and they could refuse to undertake the evaluation activities, answer any survey questions or withdraw from the study at any time without any impact on their employment. Returning evaluation survey questionnaire indicated their consent to the evaluation study. To ensure anonymity of the survey, participants were not requested to provide their names, but their date of birth and their mother's maiden name to match the survey at three time points.

3.4. Setting and participants

This study was undertaken in four large-sized aged care facilities in Australia. All participants who provided direct services to residents were invited to the study. The sample size was based on an earlier randomized controlled trial to improve hospital nurses' cultural competence using the 'Clinical Cultural Competence Training Questionnaire' (CCCTQ) (Berlin et al., 2010). The sample size was calculated considering a relevant post-intervention average difference of 10.5 points measured on a self-rating scale, and a standard deviation of 16.3 points. This difference is equivalent to an effect size of 0.6. Assuming an alpha error of 0.05 and a beta error of 10%, a sample of 52 participants was required for each group to achieve 90% power at a

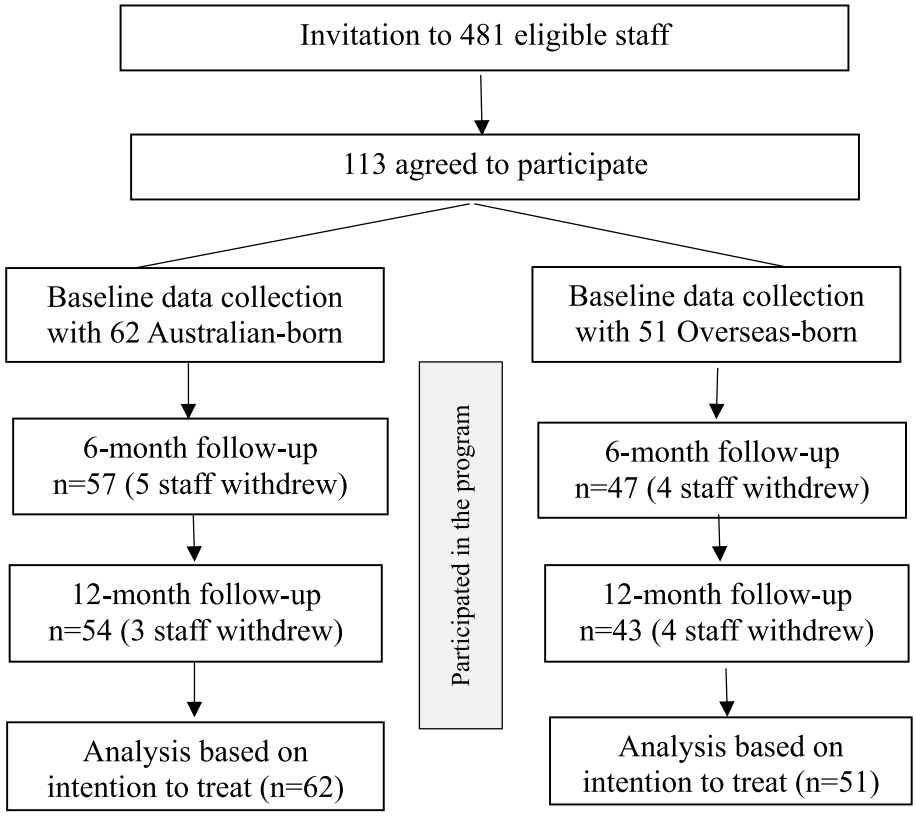

Fig. 2. Flow chart of two sub-group comparisons in the program.

Table 1
The outline of the cross-cultural care program.

Modules	Subject areas
Module 1: An introduction to cross-cultural care for new staff	1. Introduction to cross-cultural care for residents. 2. Introduction to fostering team cohesion and collaboration. 3. The application of 'Staff Cross-cultural Care Self-reflection Tool'. 4. Work related English language resources for staff.
Module 2: Cross-Cultural Communication	1. Principles, evidence and tips in cross-cultural communication in aged care homes. 2. Case studies to apply cross-cultural communication. 3. An unfolding case study with a short video to apply cross-cultural communication.
Module 3: Cross-cultural leadership	1. Introduction to the 'Australian Health Leadership Framework'. 2. Case studies to apply cross-cultural leadership. 3. The application of the Cross-Cultural Care Audit Tools. 4. An unfolding case study with a short video to apply cross-cultural leadership. 5. The application of 'Cross-Cultural Care: Leaders Self-Reflection Tool'.
Module 4: Cross-cultural dementia care	1. Introduction to the influence of culture on dementia care. 2. Case studies to apply a person-centered approach to cross-cultural dementia care. 3. An unfolding case study with a short video to apply cross-cultural communication.
Module 5: Cross-cultural end of life care	1. Introduction to evidence-based end of life care in cross-cultural interactions. 2. Case studies to apply cross-cultural end of life care. 3. An unfolding case study with a short video to apply cross-cultural end of life care.

0.05 alpha level to detect a significant change of at least 10.5 points in cultural skills. The inclusion criteria for participants were permanent staff who provided direct care services to residents in the four participating aged care homes. Exclusion criteria were agency staff and staff who had no direct contact with residents.

3.5. Education program

The program was co-designed, jointly implemented and evaluated by a University and two aged care industry partners and was based on the transformative learning and experiential learning principles. The majority of the project team members were from a nursing background. Executive managers of workforce development actively participated in the development of the program to consolidate their leadership in planning and implementing the program. A facilitator at an organisation level was engaged to undertake cross-cultural care audits and consultations with stakeholders to identify the learning needs and practice priorities of staff, collect typical cases to be redeveloped as case studies in the program and take action to embed the program to the organisation education programs during and after the project. The five modules in the program (see Table 1) emphasize nurse-led and culturally competent care for residents. The program was peer-reviewed, revised based the review and published as e-books (Xiao et al., 2017c) and an online program for national scale-up using a massive open online course (MOOC) (Xiao et al., 2017b) after the program evaluation.

A registered nurse was selected to be a site champion and dedicated two days per week to implement the program in each participating facility. The site champions received training through quarterly workshops, needs-based support via site visits and email or phone communications from the project team. They were required to undertake cross-cultural care audit activities and develop action plans to address issues in cross-cultural care. They implemented the program using various activities: in-service sessions, staff self-directed learning and group or on-on-one coaching at the point of care. Critical reflection tools included the 'Staff Cross-cultural Care Self-reflection Tool' (see Appendix 1) and the 'A Cross-cultural Care Self-Reflection Tool for Leaders' (see Appendix 2). These were developed in the project and used by site champions to engage staff in critical reflection. Each module required participants to undertake 2 h of reading and multiple activities over a 2-month period.

3.6. Data collection

Data were collected at baseline, 6 months and 12 months. Socio-cultural demographic information of participants was collected. Site champions were required to submit their action plans and activity records to the project team quarterly as part of data. A validated instrument, Clinical Cultural Competency Questionnaire (CCCQ), developed by Like (2004) was used to measure outcomes. The CCCQ is a 54-item questionnaire and is rated on a 5-point Likert scale with higher scores indicating better Cultural Competence. The CCCQ includes five subscales: knowledge, skills, comfort level, importance of awareness and self-awareness. It has an acceptable internal consistency in all subscales (Cronbach's alpha $>$ 0.8) (Krajic et al., 2005). The CCCQ also includes a 3-item subscale of satisfaction with education and training in cross-cultural care that is added in the post-intervention survey. Survey packs were distributed to the pigeonholes of potential participants in the workplace. Survey drop-boxes were provided in staff rooms for participants to return their survey forms and for the research assistant to collect weekly during the survey period.

3.7. Data analysis

Data were entered to the Statistical Package for Social Science (SPSS) version 25 and STATA software version 14. Data analysis was based on the intention-to-treat principle. Baseline characteristics were expressed as frequencies and proportions for categorical variables, which were compared between two groups using standard Chi-square test for association with continuity correction, where appropriate. Mean and standard deviation (SD) for continuous data were also presented and an independent sample *t*-test was used to explore the significant differences of characteristics between two groups. Data normality was visually checked using frequency histograms and normal Q-Q plot. For non-normally distributed data, median and interquartile ranges (IQR) were also reported and Mann-Whitney *U* test was used for group differences.

One-way ANOVA repeated measure was applied to determine the changes over time for the combine data of the Australian group and the overseas group. A mixed effect linear regression model was performed to compare the differences of education effect on the Australian group and overseas group at 6 months and 12 months follow-up. The main effects were group (Australian group or overseas group), time (baseline, 6 and 12 months) and group $\times$ time interaction. Models were adjusted by confounders found at baseline. Inductive content analysis was used to identify categories from qualitative data submitted by site champions.

Table 2
Socio-cultural-demographic characteristics of participants at baseline.

Categories	Total n = 113	Australian n = 62 (55%)	Overseas n = 51 (45%)	P value
Gender				0.49
Male	15 (13.3)	7 (11)	8 (16)	
Female	98 (86.7)	55 (89)	43 (84)	
Age: mean (SD)	44.6 (11.8)	48.3 (11.5)	40.0 (10.6)	0.000
Years in the organisation: median (IQR)	3.5 (1.5–6.0)	4.5 (2–9)	3 (1–5)	0.02
Speak other than English	43 (38.1)	6 (10)	37 (73)	0.000
Education levels: n (%)				0.18
Diploma or above	52 (46.0)	25 (40)	27 (53)	
Aged care certificate	61 (54.0)	37 (60)	24 (47)	
Previous education/training in CCCQ: mean (SD)[A]	2.7 (1.1)	2.49 (1.1)	2.93 (1.08)	0.03
Positions n (%):				0.11
Registered nurses	27 (23.9)	13 (20.9)	14 (27.4)	
Enrolled nurses	9 (8.0)	7 (11.3)	2 (3.9)	
Personal care assistants	58 (51.3)	28 (45.2)	30 (58.8)	
Others	19 (16.8)	14 (22.6)	5 (9.9)	

CCCQ: Clinical Cultural Competency Questionnaire.
A: A subscale from CCCQ that includes 5 items on the cross-cultural care training experience rated at 5-Likert scale with higher scores indicating better education/training.
IQR Interquartile range (25th–75th percentile).
Data were presented as number and percentages unless stated otherwise. P value was based on Independent sample *t*-test for normally distributed interval scale data, Mann–Whitney Test for skewed interval scale data and chi-square test for nominal scale data.

4. Results

4.1. Socio-cultural demographics of participants

Of 481 eligible staff, 113 participated in the program evaluation (Fig. 1). Data collection was undertaken between February 2016 and May 2017. The demographic information of participants at baseline is summarized in Table 2. Unlicensed personal care assistants made up 51% of the participants while Registered and Enrolled Nurses made up 32% of the participants. The remaining participants were physiotherapists, clerical staff, maintenance staff, hospitality staff and house keepers. The overseas group made up 45% of the participants and was from 18 countries including: Bosnia and Herzegoving, China, India, Iran, Italy, Japan, Kenya, Malaysia, Nepal, Philippines, Poland, Russia, South Korea, Sri Lankan, Tanzania, The United Kingdom, Vietnamese, Zimbabwe. A higher proportion of the overseas participants could speak a language other than English fluently compared to the Australian group (73% Vs. 10%; p = .000).

4.2. Baseline scores of CCCQ

There was no statistically significant difference between the two groups in Knowledge and Self-awareness scores. However, the overseas group showed a statistically significant higher score in Skills (P = .01), Comfort Level (P = .01) and Importance of Awareness (P = .038) (see Table 3).

Table 3
Baseline CCCQ scores between Australian-born and overseas-born groups.

Items	Australian n = 62	Overseas n = 51	p values
Knowledge	2.87 (0.88)	3.07 (0.96)	0.25
Skills	2.09 (1.15)	2.75 (1.35)	0.001
Comfort level (Encounters)	2.71 (1.05)	3.31 (1.09)	0.001
Importance of Awareness	3.74 (1.30)	4.20 (1.09)	0.046
Self-awareness	3.59 (1.47)	3.80 (0.99)	0.38

CCCQ = Clinical Cultural Competency Questionnaire. The CCCQ included 5 subscales and was rated on a 5-point Likert scale with higher scores indicating better Cultural Competence.
Data were presented as Mean and Standard Deviation unless stated otherwise and compared between group using Independent Sample t-test.

4.3. Education effect on the whole group

1) The CCCQ scores: Participants showed a statistically significant increase score in Knowledge (F = 13.3; p = .000), Skills (F = 24.4; p = .000), Comfort Level (F = 17.4; p = .000), Importance of awareness (F = 5.2; p = .01) and Self-Awareness (F = 10.6; p = .000) in a 12-month follow-up (see Table 4).
2) Satisfaction with the program scores: Participants showed a statistically significant increase score on Overall Satisfaction (Z = 2.6; p = .009), Desire to Learn More (Z = 7.1; p = .000) and The Impact of the Program on Practice (Z = 0.87; p = .001) in a 12-month follow-up (see Table 5).

4.4. Comparisons of the Australian group and overseas group

1) The CCCQ scores: Overall the Australian groups showed a statistically significant higher increase in Skill (+1.28 adjusted mean scores, 95% CI 0.93–1.64, p = .02) and Comfort Level (+0.95 adjusted mean scores, 95% CI 0.68–1.23, p = .001) compared to the overseas groups (see Table 6; Appendix 3). However, the overseas group showed a statistically significant higher increase in Self-awareness (+0.65 adjusted mean scores, 95% CI 0.25–1.04, p = .000) compared to the Australian groups (see Table 6;

Table 4
Comparison of CCCQ scores across three time points of all participants (n = 113).

Subscales	Baseline	6-month (95%CI)	12-month (95%CI)	F-Value	P value
Knowledge	2.96 (0.92)	3.30 (0.93)	3.52 (0.75)	13.3	0.000
Skills	2.39 (1.28)	2.54 (1.21)	3.35 (0.90)	24.4	0.000
Comfort level	2.98 (1.10)	3.09 (0.91)	3.63 (0.65)	17.4	0.000
Importance of Awareness	3.95 (1.23)	4.30 (0.96)	4.31 (0.72)	5.2	0.001
Self-awareness	3.69 (1.27)	3.75 (1.45)	4.32 (0.73)	10.6	0.000

CCCQ = Clinical Cultural Competency Questionnaire. The CCCQ included 5 subscales and was rated on a 5-point Likert scale with higher scores indicating better Cultural Competence.
Data were presented as Mean and Standard Deviation unless stated otherwise and compared between time using ANOVA repeated measures.

Table 5
Participant satisfaction with the program at 6-month and 12-month follow-up.

Items	Time	The whole group median (IQR) n = 113	*Z value*	*p* value[A]	Australian median (IQR) n = 62	Overseas median (IQR) n = 51	*U value*	*p* value[B]
Overall satisfaction	6 M	3.0 (0–4.0)	2.60	0.009	2.25 (0–3.0)	4.00 (2.0–4.0)	2.19	0.000
	12 M	3.2 (3.0–4.0)			3.20 (2–4.25)	3.40 (3.0–4.0)	1.66	0.658
Desire to learn more	6 M	3.0 (3.0–4.0)	7.08	0.000	3.00 (3.0–4.0)	4.00 (3.0–4.0)	1.86	0.090
	12 M	4.0 (3.0–4.0)			3.60 (3.0–4.0)	4.00 (3.0–4.0)	1.98	0.016
The impact of the program on practice	6 M	3.0 (0–4.0)	0.87	0.001	2.30 (0–3.0)	3.00 (0–4.00)	1.90	0.058
	12 M	4.0 (3–4.0)			3.10 (2.0–4.0)	4.00 (3.0–5.0)	2.00	0.014

The satisfaction with the program included 3 items and was rated on a 5-point Likert scale with higher scores indicating better satisfaction.
M = Months.
IQR Interquartile range (25th–75th percentile).
[A] *p* value was based on one-sample Wilcox Signed Rank Test for the whole group at time 2 and time 3.
[B] *p* value was based on independent two-sample (Australian-born and overseas-born) Mann–Whitney Test for between-group comparisons at time 2 and time 3.

Appendix 3). There was no statistically significant difference of score in Knowledge, Importance of Awareness between the two groups (see Table 6).

2) Satisfaction with the program scores: The overseas group showed a statistically significant higher score in Desire to Learn More (U = 1.98; *p* = .016) and Impact of the Program on Practice' (U = 2.00; *p* = .014), compared to the Australian group at 12 months (see Table 5).

4.5. Activities facilitated by site champions and barriers encountered

Four categories were identified from analyses of site champions' activity reports. These were (1) Engaging residents in the project; (2) Engaging staff in the project; (3) Cultural exchanges between residents and staff; and (4) Barriers encountered. Examples of activities led by site champions and barriers they mentioned are summarized in Table 7.

5. Discussion

Findings from our study reveal that a nurse-led cross-cultural care program has a positive impact on participants' cultural competence. Moreover, the program demonstrated a greater education effect on Skills and Comfort Level in the Australian group compared to the overseas group. However, the program showed a greater education effect on Self-awareness in the overseas group compared to the Australian group. In addition, the most significant changes in cultural competence scores were observed in the 12 months follow-up. Participants were satisfied with the program. The overseas group demonstrated a greater desire to learn and perceived a greater impact on their practice compared to the Australian group. Activities the site champions conducted reflect transformative learning and experiential learning principles where they engaged staff in leading, acting and reflecting on cross-cultural care improvements. This study is significant as it generates new knowledge to inform culturally competent care in the increasingly important setting led by registered nurses in the context of an ageing population and the diversity of residents and care workers.

In this study, the baseline CCCQ scores for staff were higher than those reported by Krajic et al. (2005) in the survey with 122 health professionals in seven hospitals in Europe; by Mareno and Hart (2014) in a survey with 365 registered nurses in the USA (Mareno and Hart, 2014) and by Wang et al. (2018) in a survey with 677 nursing students in China in a multicultural region. The proportion of participants from CALD backgrounds in our study was 45%, higher than the 17% in the study by Mareno and Hart. It is also evidence in our study that the overseas group exhibited higher score in skills, comfort level and importance of awareness subscales compared to the Australian group. The findings support previous studies that people who are exposed to other culture(s) and those who are bilingual usually demonstrate higher cultural competent scores (Bezrukova et al., 2016; Cruz et al., 2016; Wang et al., 2018). Work experiences in multicultural care settings

Table 6
Mixed effect linear regression model of outcome measures between Australian group and overseas group over baseline, 6-month and 12-month follow-up.

Sub-scales	Time	Australian (n = 62) (95%CI)	Overseas (n = 51) (95%CI)	Education effect[§]	*P* Education effect	*P* overall interaction
Knowledge	Baseline	2.83 (2.63–3.04)	3.11 (2.88–3.34)	–	–	0.98
	6-month Δ	0.35 (0.08–0.63)*	0.32 (0.02–0.62)*	−0.03 (−0.44–0.37)	0.88	
	12-month Δ	0.58 (0.31–0.86)***	0.54 (0.24–0.84)**	−0.05 (−0.45–0.36)	0.83	
Skills	Baseline	2.15 (1.88–2.41)	2.68 (2.38–2.97)	–	–	0.02
	6-month Δ	0.19 (−0.16–0.55)	0.09 (−0.30–0.49)	−0.10 (−0.63–0.43)	0.71	
	12-month Δ	1.28 (0.93–1.64)***	0.57 (0.18–0.96)**	−0.71 (−1.24–0.18)	0.001	
Comfort level	Baseline	2.76 (2.55–2.97)	3.26 (3.02–3.49)	–	–	0.001
	6-month Δ	0.24 (−0.03–0.52)	−0.06 (−0.37–0.24)	−0.31 (−0.72–0.11)	0.15	
	12-month Δ	0.95 (0.68–1.23)***	0.28 (−0.03–0.59)	−0.67 (−1.09–0.26)	0.001	
Importance of Awareness	Baseline	3.79 (3.57–4.02)	4.14 (3.89–4.40)	–	–	0.06
	6-month Δ	0.79 (0.19–0.79)**	0.18 (−0.15–0.52)	−0.31 (−0.76–0.15)	0.18	
	12-month Δ	0.61 (0.31–0.91)***	0.07 (−0.27–0.40)	−0.54 (−1.00–0.09)	0.02	
Self-awareness	Baseline	3.62 (3.35–3.88)	3.77 (3.48–4.07)	–	–	0.000
	6-month Δ	−0.37 (−0.73–0.02)*	0.59 (0.20–0.98)**	0.97 (0.44–1.49)	0.000	
	12-month Δ	0.63 (0.28–0.98)***	0.65 (0.25–1.04)**	0.02 (−0.51–0.54)	0.96	

Δ = Adjusted mean change between baseline, post-test and follow-up for Australian and overseas groups from the mixed effect linear regression model (The models were adjusted for potential confounders including age, years in the organisation, speak other than English, previous education/training in CCCQ and baseline outcome measures.
[§] Education effect was the interaction between time *x* group effect.
* $P < .05$.
** $P < .01$.
*** $P < .001$ in within-group comparison.

Table 7
Examples of activities facilitated by site champions and barriers encountered.

Engaging residents in the project

- Large world map in Main Hall. Identifies "where in the world" our residents come from.
- Residents' armchair travel to Italy in main hall.
- Talk with the resident and identify their important treasure (artefact).
- Take a photo of the important treasure and write up the residents' story about it.
- Read the story written to the resident to gain their input and ensure accuracy of information.
- Produce an A4 poster including the story and the picture of the important treasure.
- Display the poster in the residents' room for staff, residents and important others to access.

Engaging staff in the project

- Staff were allowed 2 weeks to learn the module 2. Then, staff were approached by site champions individually and in informal group settings to discuss the case studies within the workbooks. Open discussions allowed staff comments and concerns listened to.
- Site champion worked with small groups introducing learning module 3 and encouraged conversation and reflection.
- Poster display with regarding cross-cultural communication on notice board in staff room and nurse's stations.
- Site champion provided staff with Aussie Slang dictionary and nurse/care and patient language helper.
- Group activity: 30 mins during mandatory training day for module 4.
- Site Champion was approached by management for one on one mentoring for new staff members.
- Site champion discussed with staff regarding implementing a self-reflection tool that would offer staff the opportunity to reflect on their performance.
- Site champion identified unmet diet needs for Mrs. XXX (resident's name), from audit. Mrs. XXX is originally from Philippines and would like to have rice. Site champion discussed with the housekeeping coordinator about the case and also used a case scenario in the workbook (module three) as an example to discuss how to make changes to meet Mrs. XXX' diet needs.

Cultural exchanges between residents and staff

- Placement of maps and info to all residents and staff how to mark
- Where in the world map placed in the staff room. Coloured pins to identify staff's country of origin.
- Visit by resident Greek family for questions and answers, Greek lunch.
- Lifestyle set up hall. Hospitality to prepare afternoon tea menu in liaison with Chinese staff.
- Liaise with staff on afternoon shift re sharing of meal.
- Lunch 11 am -1 pm to celebrate. Staff to bring a traditional plate; T shirts printed to promote the occasion.
- Asked staff to wear cultural dress or something orange.
- Video recording of staff activity utilising signs expressing personal cultural information.
- Poster has been displayed to inform the residents for the upcoming event.
- Multicultural board reflected Mexican Day with varieties of pictures and decorations including Mexican traditional clothes and hats, food and Music.

Barriers encountered

- The hard part is maintaining staff interest in this project.
- Until there was a face to face discuss in groups, staff may not be interested in the workbooks.
- Staff are so busy. They don't have time to learn during the shift.
- Site champions need to identify every gap during the shift to work with staff on the project.
- Staff didn't read a book. They don't have time. Paid study hours are needed.

might also explain the higher scores in our study compared to the study by Wang et al. (Wang et al., 2018) in which participants were nursing students lacking work experience.

Our study also shows a higher post-intervention score across four subscales compared to those reported by Krajic et al. (2005) and a higher post-intervention score in knowledge and awareness subscales compared to the scores reported by Berlin et al. (2010). The fact that staff had prolonged engagement in the program (12 months) in our study compared to the 10 h and 3 days training in the studies by Krajic et al. (2005) and Berlin et al. (2010) respectively may contribute to the results. However, our study had lower subscale scores in skills and comfort level in the 12 months follow-up compared to those reported by Berlin et al. (2010). The higher education levels of registered nurses in the study than in our study may explain this difference. Previous studies reported positive association between education levels and cultural competence (Jeffreys and Dogan, 2012; Mareno and Hart, 2014).

A greater improvement of scores in Skills and Comfort Level in the Australian group was identified compared to the overseas group at 12 months in our study. The finding may indicate that this program targeted more learning needs for the Australian group than those of the overseas group in these two subscale areas. Moreover, the desire to know more from the overseas group compared to the Australian group may further confirm that the overseas group has specific learning needs. The perceived greater impact of the program on practice by the overseas group compared to the Australian group may reflect their view that their cultural and linguistic assets are valued, shared and mobilised in the program.

There are limitations in the study. The pre- and post-study design may not ascertain causal relationships between the program and the changes of cultural competence scores in the study, although this design is viewed appropriate when there is no other intervention similar to the program during the study (Polit and Beck, 2017). This study design also has affected the generalisation of the results.

6. Conclusions

Our study revealed that a nurse-led cross-cultural care program had a positive impact on participants' cultural competence scores. Findings support registered nurses' leadership in leading culturally competent care in aged care and their capabilities to facilitate care workers to translate cross-cultural care knowledge into everyday care activities using the transformative learning and experiential learning principles. The different impact of the program on the Australian and overseas groups identified in the study has implications for future studies.

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Ethical approval

Ethical approval for this project was gained from the Social & Behavioral Research Ethics Committee of Flinders University (Project number: 6841).

CRediT authorship contribution statement

Lily Dongxia Xiao:Conceptualization, Methodology, Writing - original draft.**Shahid Ullah**:Conceptualization, Methodology, Writing - review & editing.**Wendy Morey**:Project administration, Writing - review & editing.**Lesley Jeffers**:Project administration, Writing - review & editing.**Anita De Bellis**:Writing - review & editing.**Eileen Willis**:Writing - review & editing.**Ann Harrington**:Writing - review & editing.**David Gillham**:Writing - review & editing.

Declaration of competing interest

None declared.

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Appendix 1

Staff Cross-cultural Care Self-reflection Tool.

The Staff Cross-cultural Care Self-reflection Tool was designed for use by all staff including those in direct care, non-direct care and those in management, education and supervision roles. It has been developed using principles from 'Cultural Humility' which is described as developing a reciprocal and equal partnership when engaging in cross-cultural interactions. When you undertake self-reflection using this tool, please take notes to help you recognise your strengths and areas that need further development.

Cultural humility & it's attributes	Self-reflection cues	Notes
Respect for differences in values • Capacity for reflection on cultural values and beliefs • Demonstrates self- awareness around cultural values and beliefs. • Ability to understand different values and beliefs • Explores, tolerates reconciles and respects others values and beliefs	1. How would I describe my values to another person? 2. How might someone else's values differ to my own? 3. How do I engage with someone else who has different values to my own? 4. What do I do to ensure I don't impose my values on others? 5. How do I tolerate my co-workers' cultural values? 6. How do I encourage others to maintain their cultural and ethnic needs? 7. How do I celebrate with others their values and beliefs that are associated with culture and ethnicity? 8. How do I accommodate residents' values and beliefs and foster their health and well-being? 9. How do I actively seek out information about cross-cultural care? 10. How do I participate in cross-cultural activities and events? 11. How do I embrace working in a multicultural team as something to broaden my learning?	
Effective communication with residents and staff in cross-cultural interactions • Ability to use a range of means to communicate with residents and staff from culturally and linguistically diverse (CALD) backgrounds • Able to engage with residents, their families and staff in English • Actively seeks knowledge and skills in cross-cultural communication	1. Am I aware that I need to speak English in a clear way to minimise communication errors in cross-cultural interactions? 2. Should I use slang? Which slang? Why should I not use slang? 3. Do I use appropriate eye contact, body language, sign language and cue cards to assist with communication? 4. Is there a time when it is appropriate to use a language other than English in the workplace? 5. Am I aware that my accent might make it difficult for others? 6. Do I encourage the understanding of my own and other cultural norms, beliefs and common terms? 7. Do I seek confirmation that others have understood the conversation and how do I do show this aspect? 8. Do I practice or encourage others to practice English to improve communication? 9. Do I have patience to listen to residents and staff from culturally and linguistically diverse (CALD) backgrounds without interruption? 10. Am I willing to learn a few words from residents from culturally and linguistically diverse (CALD) background and communicate with them?	
Positive attitudes and actions in cross-cultural interactions with residents, families and staff • Fosters high-quality cross-cultural care and services by working in partnership with residents and families • Contributes to an inclusive, cohesive workforce by supporting peers	1. Do I actively seek and provide support for residents to preserve their cultures and beliefs that have positive outcomes for their well-being? 2. Could my interactions ever be interpreted as arrogant, or humiliating? 3. Do I actively seek to understand diverse cultures and beliefs of the residents and staff? 4. How can I include family members in care decisions to ensure I meet residents' cultural needs? 5. Where appropriate, how do I engage with visitors of residents from culturally and linguistically diverse (CALD) backgrounds to support their and the residents' needs? 6. How do I ensure resident's decision making is respected without imposing my values? 7. Do I contribute to resolve cross-cultural issues or cultural clashes in the workplace that have positive outcomes for residents' care and for workforce cohesion? 8. Do I know the process required to report and investigate a 'cultural' issue in the workplace? 9. Am I aware of workplace policies, legislation and standards that support cultural inclusion, equal opportunity, anti-discrimination and zero tolerance of racism? 10. Are there any continuous improvement opportunities related to high-quality cross-cultural care services 11. Are there any continuous improvement opportunities related to workforce cohesion in the multi-cultural workplace?	

Appendix 2

A Cross-cultural Care Self-reflection Tool for Leaders.

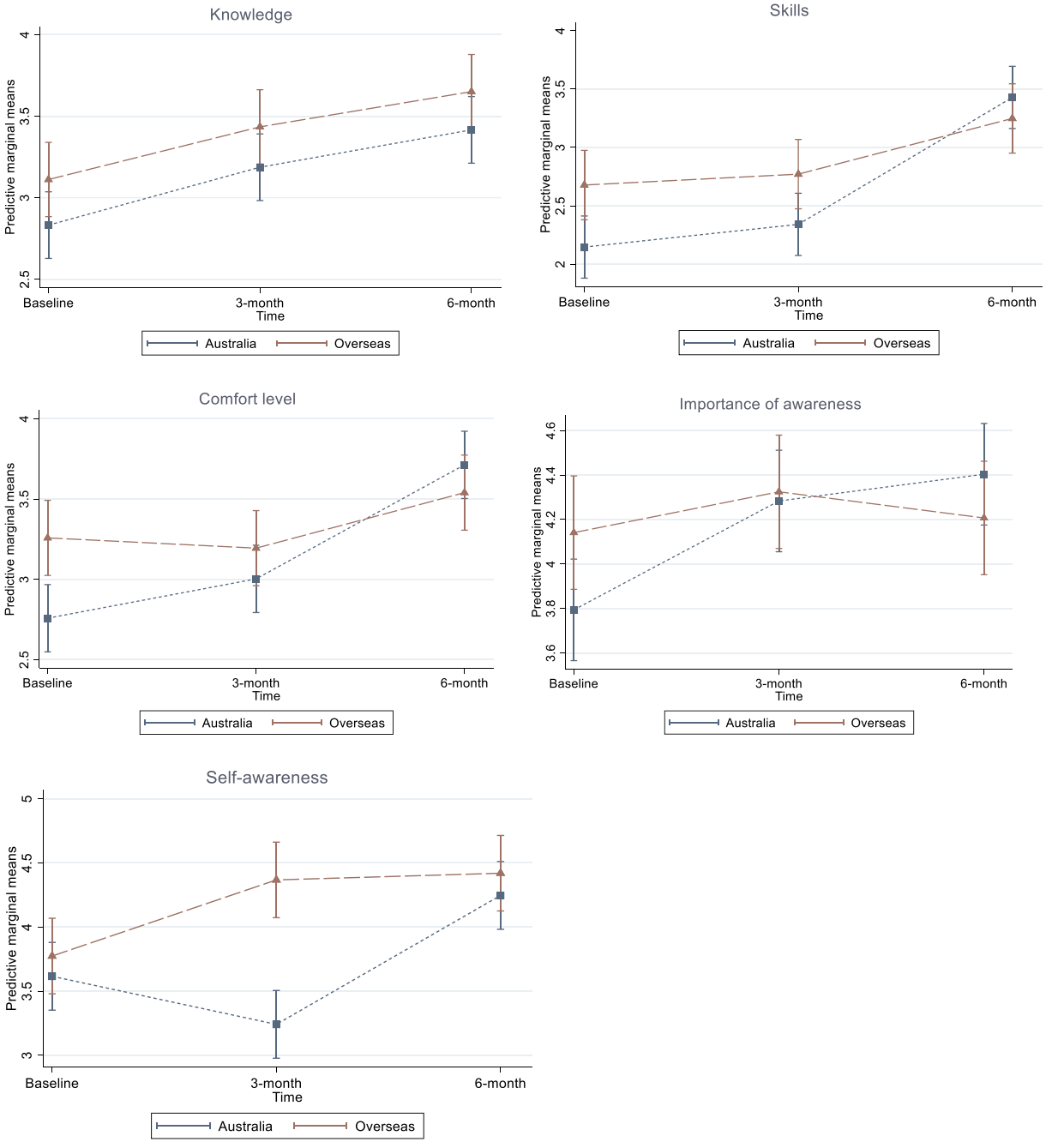
This tool is designed for use by staff who are in management, supervision and team leader roles. It has been developed using the 'Australian Health Leadership Framework' (Health Workforce Australia 2013). When you use self-reflection tools, please take notes to help you recognise your strengths and areas that need further development.

Domains	**Self-reflection Cues**	**Notes**
Leads self	1. Am I aware of my own cultural values and beliefs and how these may impact on my practice in leading the team? 2. Do I understand and manage the impact of my cultural background, assumptions, values & attitudes on myself and others? 3. Do I promote understanding, respect and trust between different cultural individuals and groups?	
Engages others	1. Do I engage with others and act in accordance with values, beliefs and skills that facilitate cross-cultural communication? 2. Am I approachable and do I listen to differing cultural needs of both staff and residents? 3. Do I listen, inspire and enable staff and others to share ideas in improving cross-cultural care and services?	
Achieves outcomes	1. Do I work in collaboration with residents, their families and staff to set goals for cross-cultural care and services? 2. Do I motivate self and others to provide culturally appropriate care that contributes to continuous quality improvement? 3. Do I monitor and evaluate progress and am I accountable for culturally sensitive care?	

(*continued on next page*)

Appendix 2 (*continued*)

Domains	Self-reflection Cues	Notes
Drives innovation & improvement	1. Do I champion the need for innovation and improvement in cross-cultural care and services? 2. Do I build support for change, encourage diverse voices and consumer involvement in providing culturally appropriate care? 3. Do I communicate system and negotiate within and across care teams in providing culturally appropriate care?	
Shapes systems	1. Do I explore, implement and disseminate new care practices in regard to cross-cultural care and services? 2. Do I systematically maximise the potential benefit of change while minimising unintended consequences in providing culturally appropriate care?	



Appendix 3. Mixed effect linear regression model of outcome measures between Australian group and overseas group over baseline, 6-month and 12-month follow-up.

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