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# An assessment of the educational value of service-learning community placements in residential aged care facilities

**Abstract:** *Aims:* The aim of this study was to determine whether dental hygiene students attending residential aged care facilities (RACFs) during a placement programme gained any knowledge about the oral care of elderly patients and the RACF environment. *Location:* Aged Care Facilities on the Central Coast of New South Wales, Australia. Methodology: Final year dental hygiene students undertook a 12-week placement, one day per week, in one of 17 residential aged care facilities on the NSW Central Coast. They were asked to complete pre-placement and post-placement questionnaires, which recorded their knowledge of medical, dental and environmental issues related to older people. The placement questionnaires used five point Likert scales, ranging from strongly agree to strongly disagree, pre- and post-mean scores were produced for each question and *P* values calculated using a paired *t*-test. *Results:* Thirty-three students attended the placement, 26 (79%) completed both the pre- and post-placement questionnaires. Post-placement mean scores as compared to pre-placement mean scores showed significant improvement in student knowledge of medical ($P < 0.05$) and dental ($P < 0.05$) conditions specific to the older person and improvement in knowledge ($P < 0.05$) about the residential aged care facility environment. *Conclusion:* The placement programme enhanced student knowledge across three subject categories; medical and dental conditions of the older person and the structure and services of the residential aged care environment.

**Key words:** dental hygienist; oral hygiene care; residential aged care facility; service-learning; student placement

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## Introduction

The University of Newcastle introduced a new service-learning student placement course in residential aged care facilities (RACFs) for dental hygiene students for the first time in 2009. Since then, final year students have been providing oral health advice to residents and staff at 17 RACFs on the New South Wales, Central Coast, Australia, as part of their undergraduate degree programme. Although the course was designed to promote student oral health promotion skills, this study assessed whether there would be a change in the students' medical and dental knowledge about older people and their knowledge about the RACF environment.

The opportunity to consolidate theoretical learning with a real world experience during service-learning is of benefit to students and the community. Jacoby (1) stated that service-learning is a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development. Many community student placement programmes exist and service-learning has been used by a number of organizations to provide students with a realistic learning experience (2, 3). Research into experiential learning shows that service-learning positively affects student attitudes towards community service (4) and increases their self-efficacy. Similar programmes at other dental schools positively influenced students' attitudes to community service and increased their motivation (5). Service-learning can create a mechanism by which dental hygiene students can acquire skills that enable them to become culturally competent by providing opportunities to work with ethnically diverse populations and individuals with special needs (6). Service-learning has become an important component of higher education and integrating service-learning into dentistry and dental hygiene curricula may well foster graduates who are better prepared to work effectively among diverse populations and able to function dynamically in the health policy arena (7).

The aged care student placement programme commenced in 2009, and all final year dental hygiene students at the University of Newcastle have since been required to attend a RACF one day a week for one semester. During the placement, students worked within a modified conceptual framework based on Yoder's (7) dental education structure. The students provided dental health education sessions for residents and staff, demonstrated cleaning of teeth and/or dentures, provided advice on dental products for dry mouth, ulcers and other minor oral ailments, and raised the profile of oral health in the RACFs. During the placement, students were required to submit a number of summative assessment tasks including reflective journal entries after each placement session to complete their Bachelor of Oral Health degree.

There were no Australian research studies in this area until the publication of the initial results of this programme in 2010 (8, 9). Both studies reported that the service-learning community placement had increased understanding of aged care oral health needs. This study assesses whether the placement programme improved students' knowledge of medical, dental and environmental issues pertaining to older people living in RACFs.

## Methodology

The RACF student placement programme was based on a modified conceptual framework based on Yoder's (7) dental education structure inclusive of clear service-learning objectives, student preparation, sustained service, reciprocal learning, guided reflection, community engagement and ongoing evaluation and student improvement in newly integrated concepts. All final year ($n$ = 33) dental hygiene students from the University of Newcastle attended a preplacement orientation programme that provided them with an overview of older people living in RACFs. The programme took the form of an one-day workshop, which included information about Dementia, Alzheimer's disease and oral health issues affecting the elderly and frail. The students were allocated to one of 17 RACFs for a 12-week placement. The placement was a compulsory course component for the Bachelor of Oral Health degree. All final year students were invited to join the assessment study; participation was voluntary, and they were made aware that their participation in the research had no influence on their final course mark. The study was approved by the University of Newcastle, NSW, Australia, Ethics Committee (Ethical approval number H2010 – 0036).

Students completed pre- and post-placement questionnaires (Appendix 1), consisting of 40 questions, the format of which had been previously tested (9). The placement questionnaires used five point Likert scales, ranging from strongly agree to strongly disagree, with a marking allocation of one to strongly agree and five to strongly disagree. Pre- and post-placement mean scores with standard deviations were produced for each question, and $P$ values were calculated using a paired $t$-test.

The questionnaires were designed to assess specific outcomes; listed in three separate categories:

#### Category 1: Medical knowledge pertaining to the older person

To investigate student knowledge of medical conditions and pharmacology specific to the older person, including Alzheimer's disease, Dementia, Tardive Dyskinesia and comorbidities all of which have a negative impact on oral health.

#### Category 2: Dental knowledge specific to the older person

To consider student knowledge of the prevalence of dental caries, periodontal disease and oral mucosal lesions, as well as the availability of dental care and dental hygiene practices for older people living in RACFs.

#### Category 3: Knowledge of the RACF environment

To ascertain student knowledge of whether staff in RACFs receive training in oral health and whether the training provides them with the ability to provide appropriate oral health advice and oral hygiene care for residents. Students were also asked about the availability of oral hygiene care provided to residents and whether RACF staff could recognize dental problems and prescribe appropriate oral hygiene products for older people living in RACFs.

## Results

Thirty-three students attended the placements and 26 (79%) completed both pre- and post-placement questionnaires. The results are presented in three outcome categories:

**1** Category 1 – Medical knowledge pertaining to the older person.

Table 1 shows students reported improvement in the area of knowledge pertaining to medical conditions of residents in the RACF. Their knowledge improved significantly in the area of understanding that residents living in RACFs were at risk of developing complex oral diseases ($P < 0.01$) and that residents with Dementia were unable to report dental pain ($P < 0.05$). Knowledge of the impact of polypharmacy contributing to poor oral health also improved ($P < 0.01$). There was, however, no statistically significant change in knowledge relating to the connection between comorbid medical conditions influencing oral health for RACF residents, with most students having a sound understanding of this prior to the placement (Table 1).

**2** Category 2 – Dental knowledge specific to the older person.

Table 2 displays students reported improvement in the area of dental knowledge relevant to residents living in the RACF. There were improvements in reported knowledge that residents have a higher prevalence of oral mucosal lesions ($P < 0.05$) and that residents with Alzheimer's disease have reduced saliva flow ($P < 0.05$). The students reported prior to the placement that they believed most residents wore dentures, this was not the case and the realization that dentate patients are the norm rather than the exception was found to be significant ($P < 0.05$). Student knowledge about dental decay and periodontal disease being more common in older people living in RACFs, and residents experiencing dental pain more often did not change. The pre- and post-placement scores on these topics showing that prior learning in the preplacement orientation workshop had equipped them with high levels of relevant knowledge in these areas.

Table 1. **Category 1 – Pre- and post-placement mean Likert scale scores for student knowledge of medical issues of residents living in RACF**

| Question | Pre-placement Mean (SD) $n = 26$ | Post-placement Mean (SD) $n = 26$ | *P*-value |
|---|---|---|---|
| Residents in RACFs are at risk of developing oral diseases and dental problems | 1.6 (0.6) | 1.0 (1.0, 2.0) | *<0.01 |
| Most residents with Dementia are able to report dental pain | 3.4 (0.8) | 3.9 (0.8) | *<0.05 |
| Polypharmacy contributes to poor oral health | 2.1 (0.8) | 1.4 (0.6) | *<0.01 |
| Comorbid medical conditions rarely influence oral health in RACF residents | 3.9 (0.9) | 4.0 (0.8) | 0.8019 |

1 = Strongly agree 5 = Strongly disagree.
*Denotes a statistically significant change between pre- and post-placement Mean Likert scale scores.

**3** Category 3 – Knowledge of the RACF environment.

Table 3 shows improvements were found in knowledge relating to the residential aged care environment showing student knowledge improved in numerous areas, discounting students preplacement notions that RACF staff provided good oral hygiene care to residents with Dementia ($P < 0.01$), that oral health risk assessments are undertaken yearly ($P < 0.05$), that qualified hygienists are providing patient care in RACFs ($P < 0.01$), that oral hygiene products were readily available for residents to purchase ($P < 0.001$), and that RACF staff cleaned dentures regularly ($P < 0.05$). The knowledge change revealed that students realized that their preconceived beliefs about RACFs and oral health care for residents were not supported by their placement experience and following the placement students were significantly more aware that there are numerous barriers for RACF staff providing oral hygiene care for residents ($P < 0.05$).

## Discussion

The outcomes of this study are consistent with a body of research that recognizes the link between classroom theory and service-learning community student placement programmes to progress student learning and consolidate theoretical concepts with 'real life' experiences enhancing knowledge (10–12).

Table 2. **Category 2 – Pre- and post-placement mean Likert scale scores for student knowledge of dental conditions of residents living in RACF**

| Question | Pre-placement Mean (SD) $n = 26$ | Post-placement Mean (SD) $n = 26$ | *P*-value |
|---|---|---|---|
| Residents in RACFs have a higher prevalence of oral mucosal lesions | 2.3 (0.8) | 1.7 (0.7) | *<0.05 |
| Residents with Alzheimer's disease have reduced saliva flow | 2.8 (0.6) | 2.3 (0.7) | *<0.05 |
| Most RACF residents wear dentures | 1.8 (0.7) | 2.4 (0.5) | *<0.05 |
| Periodontal disease is higher in residents in RACFs | 2.0 (0.7) | 1.7 (0.7) | 0.0951 |
| Dental decay is higher in residents in RACFs | 2.1 (0.7) | 1.7 (0.7) | 0.0830 |
| Residents in RACFs generally have good oral health | 3.8 (0.5) | 3.9 (0.9) | 0.5021 |
| Residents in RACFs have minimal interest in their oral health | 3.1 (0.8) | 2.9 (1.2) | 0.6402 |
| RACF residents often have dental pain | 2.5 (0.8) | 2.7 (1.1) | 0.6563 |

1 = Strongly agree, 5 = Strongly disagree.
*Denotes a statistically significant change between pre- and post-placement Mean Likert scale scores.

Table 3. **Category 3 – Pre- and post-placement mean Likert scale scores for student knowledge about the RACF environmental**

| Question | Pre-placement Mean (SD) ($n$ = 27) | Post-placement Mean (SD) ($n$ = 26) | $P$-value |
|---|---|---|---|
| Staff provide good oral hygiene care to residents with Dementia | 3.3 (0.6) | 4.0 (0.7) | *<0.01 |
| RACF residents are given an oral health risk assessment every 12 months | 3.0 (0.4) | 3.7 (1.1) | *<0.05 |
| Hygienists provide oral hygiene services at RACFs | 2.5 (0.7) | 3.4 (1.1) | *<0.01 |
| RACF staff provide good oral hygiene care to residents | 3.3 (0.6) | 3.7 (0.7) | *<0.05 |
| Oral hygiene products are available at RACFs for residents to purchase | 3.1 (0.6) | 4.0 (0.7) | *<0.001 |
| Residents have adequate access to appropriate dental services in RACFs | 3.2 (0.6) | 4.0 (0.8) | *<0.001 |
| Staff in RACFs have barriers to providing oral hygiene care for residents | 2.3 (0.8) | 1.8 (0.9) | *<0.05 |
| Residents have their teeth and dentures cleaned by RACF staff regularly | 2.8 (0.5) | 3.3 (1.2) | *<0.05 |
| Residents have their dentures cleaned after meals | 3.4 (0.6) | 3.9 (0.8) | *<0.05 |

1 = Strongly agree, 5 = Strongly disagree.
*Denotes a statistically significant change between pre- and post-placement Mean Likert scale scores.

Service-learning brings together the academic institution and the community in a relationship in which meaningful outcomes can occur for both the student and the community (13).

In this study, the response rate was good with 79% of the students completing the pre- and post-placement questionnaires. The preplacement questionnaires indicated most final year dental hygiene students started the RACF placement with an acceptable level of knowledge about dental and oral health conditions and a good understanding of the medical conditions commonly found in older people. This existing knowledge is in all probability linked to their exposure to older people during clinical training and general information gained from undergraduate lectures, tutorials and the preplacement orientation workshop.

The results indicate that most students prior to the placement thought that residents had yearly oral health risk assessments, received oral health care from hygienists and had their teeth and dentures cleaned regularly. However, in the post-placement questionnaire, they reported that residents were unable to access regular dental and oral health care, those residents with cognitive deficits were unable to report dental pain and cleaning of teeth and dentures was *ad hoc*. Students reported that RACF staff faced many barriers to providing residents with these basic oral health needs, including inadequate time, limited access to dental products and insufficient training to provide oral healthcare assessments and a lack of individualized oral healthcare plans.

This is highly significant and indicates that students existing knowledge and preplacement orientation do not provide them with a realistic idea of the placement structure and available RACF procedures and services.

The Likert scale method was used to provide quantitative data for this research, and a modified validated questionnaire (14) was used to quantify knowledge after the placement programme. The limitations of this study are in the small numbers of students and the fact that it is only an one-year cohort. The self-reporting questionnaires have the potential for bias; however, the structure of this questionnaire was focused on knowledge themes rather than student perceptions, and students were advised that their answers had no bearing on their final grades.

Students also completed reflective journals during their placement and the information from these entries confirmed the findings from the questionnaires. Their answers can therefore be taken to be a true reflection of their knowledge and experiences. To further explore student knowledge of their experiences in the RACF environment, a focus group study is underway.

Post-placement data showed that students were aware of the barriers staff face in providing residents with appropriate oral health care and the interdependency faced by residents in sustaining their own oral health. In general, the data indicated that the placement programme enlightened the students to the challenges of RACF living and the difficulties for older people living in RACFs in maintaining their oral health to a satisfactory standard.

The increase in follow-up knowledge of the RACF environment highlights the naivety of students prior to the placement and indicates that even with knowledge of older people's medical and dental needs, the RACFs and their workings are very unfamiliar environment for dental hygiene students.

In this study, students identified a lack of existing dental and oral hygiene care in RACF and highlighted obstacles to providing good oral hygiene care for residents. This is supported by an earlier Australian study (15) in which Hopcraft *et al.* identified that RACF residents face significant barriers to good oral hygiene care including the lack of trained staff with appropriate oral health knowledge and skills. With the Australian ageing population increasing (16, 17) and aged care a rapidly growing concern, the oral hygiene needs of residents are destined to increase dramatically over the next decade. The implementation of service-learning student placement programmes for dental hygiene students in RACFs was a new initiative for Australian Universities with the University of Newcastle instigating the first programme in 2009. The

programme was designed to provide oral hygiene care for residents, help RACF staff to increase their oral health knowledge and to support student learning by providing them with an experiential learning environment.

Data from this study show that students' dental and medical knowledge was at an acceptable level prior to the commencement of the placement, for them to benefit from the RACF experiential learning programme. However, Yoder 2006 (7) presented a framework for service-learning, detailing ten separate elements that constitute a successful context for service-learning. In element number four, Yoder described; 'Broad Preparation' – which emphasizes the importance of providing students with an understanding of the target group, the facility and the work required.

The results of this study indicate that students had a very limited understanding of the RACF workings prior to the placement and as such the educational value of the placement learning experience may have been reduced in the early weeks when students were orientating themselves to their new learning environment. This is supported by two earlier Australian studies (8, 9), where students reported being apprehensive and nervous during the first few weeks of the RACF placement programme. There is therefore scope to address the issue of preplacement orientation in more detail to ensure that students are more prepared for the RACF environment itself, enabling them to commence service-learning from the very beginning of the programme making the placement immediately more accessible and educationally more valuable.

## Conclusion

In this study, students reported considerable improvements in knowledge of medical and dental conditions common to older people living in RACFs and reported significant improvements in their knowledge about the RACF environment after the placement, including identifying the lack of organized oral health care for the majority of RACF residents. The results of this study confirm the value of service-learning in RACFs and its benefits for both students and residents with oral health gaining a higher profile in the RACFs during the student placement programme.

## Clinical relevance

### Scientific rationale for study

To identify knowledge gained by final year dental hygiene students during a residential aged care (RACF) student placement programme.

### Principal findings

Mean data scores showed improvement in student knowledge of medical and dental conditions specific to the older person and gained knowledge about the residential aged care facility environment.

### Practical implications

Students reported that they had a very limited understanding of the RACF prior to the placement and that because of this the educational value of the placement learning experience was reduced in the early weeks. This should be addressed to support early learning.

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# Appendix 1.

**Questionnaire**

A service-learning model of oral health promotion in the residential aged care environment for dental hygiene students:

Residential Aged Care Resident knowledge Survey

Residential aged care residents are defined as 'Older people living in residential aged care facilities (RACF) who require some level of care to assist them with daily life activities.'

| Question | Strongly agree | Agree | Uncertain | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| 1. Residents in RACF are at risk of developing complex oral diseases and dental problems | | | | | |
| 2. Dental care in RACF is available for Residents | | | | | |
| 3. Electric toothbrushes are the best oral health aid for RACF Residents | | | | | |
| 4. Residents in RACF have a higher prevalence of oral mucosal lesions | | | | | |
| 5. Staff provide good oral hygiene care to residents with dementia in RACF | | | | | |
| 6. RACF residents are given an oral health risk assessment every 12 months | | | | | |
| 7. Hygienists provide oral hygiene services at RACF | | | | | |
| 8. RACF Residents are happy to participate in the oral health placement program | | | | | |
| 9. Dental decay is higher in Residents in RACF | | | | | |
| 10. Periodontal disease is higher in Residents in RACF | | | | | |
| 11. RACF staff provide good oral hygiene care to Residents | | | | | |
| 12. Oral hygiene products are available at RACF for Residents to purchase | | | | | |
| 13. Residents have adequate access to appropriate dental services in RACF | | | | | |
| 14. Staff in RACF have barriers to providing oral hygiene care for Residents | | | | | |
| 15. Residents have their teeth and/or dentures cleaned by RACF staff regularly | | | | | |
| 16. Polypharmacy contributes to poor oral health | | | | | |
| 17. Residents in RACF generally have good oral health | | | | | |
| 18. Residents in RACF have minimal interest in their oral health | | | | | |
| 19. Comorbid medical conditions rarely influence oral health for RACF residents | | | | | |
| 20. Residents have their dentures cleaned after meals | | | | | |
| 21. Residents with Alzheimer's disease have reduced saliva flow | | | | | |
| 22. Residents in RACF manage their own oral health | | | | | |
| 23. Tardive dyskinesia is common in most RACF Residents | | | | | |
| 24. Most RACF Residents wear dentures | | | | | |
| 25. Private Dentists visit RACF Residents regularly | | | | | |
| 26. Residents in RACF have minimal interest in their oral health | | | | | |
| 27. Chaining helps Residents to clean their teeth | | | | | |
| 28. Embarrassment is a barrier to oral health in RACF | | | | | |
| 29. RACF Residents often have dental pain | | | | | |
| 30. RACF are trained to provide oral hygiene care for Residents | | | | | |
| 31. RACF staff attend training to support good oral hygiene strategies and practices in RACF | | | | | |
| 32. RACF Residents have access to information that helps them choose the best oral hygiene product for their needs | | | | | |
| 33. Public Dental services provide a good dental service for RACF Residents | | | | | |
| 34. Most Residents with Dementia are able to report dental pain | | | | | |
| 35. RACF staff have allocated time for Residents dental hygiene care | | | | | |

*(Continued)*

**(Continued)**

| Question | Strongly agree | Agree | Uncertain | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| 36. Providing oral hygiene care for the older person requires additional knowledge and skills | | | | | |
| 37. RACF Residents experience higher prevalence of oral mucosal lesions | | | | | |
| 38. RACF staff use Bridging strategies when providing oral hygiene care to Residents | | | | | |
| 39. Are RACF staff aware of the connection between oral health and general disease in the older person | | | | | |
| 40. Students find it easy to provide RACF Residents with oral hygiene information | | | | | |