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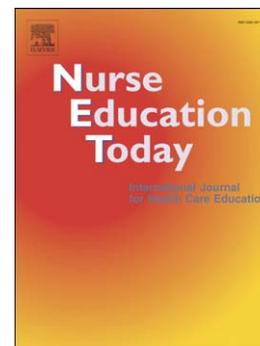
Evaluation of dementia education programs for pre- registration healthcare students – A review of the literature

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**Title: EVALUATION OF DEMENTIA EDUCATION PROGRAMS
FOR PRE- REGISTRATION HEALTHCARE STUDENTS – A REVIEW
OF THE LITERATURE**

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Highlights

- Nine studies of pre-registration education programmes on dementia were identified.
- Knowledge, confidence and attitudes to people with dementia were the target of interventions.
- Practice based experience proceeded by theory was most effective.
- There is a need for more rigorous studies to establish best practice in dementia education.

ABSTRACT

Objectives

In an aging society, the number of people living with dementia is rapidly increasing. Health care students receive little input on dementia during their pre-registration education, hence there is a requirement to improve education to work with this client group. The review aimed to focus on education on working with people with dementia for pre-registration healthcare students.

Design

A comprehensive review of the literature.

Data Sources

Online databases Medline, PsychInfo, CINAHL, Science Direct and PubMed were used.

Review Methods

The studies were selected according to the following criteria: main focus on education and training on working with people with dementia in pre-registration healthcare programs. Reports that described a training program but did not include evaluation were excluded. For inclusion, studies had to be published in English between January 2007 and March 2014. Identified papers were screened and reviewed by the three authors.

Results

Nine studies met the inclusion criteria. Most studies were based in North America, predominantly in nursing and medical education. Educational interventions chiefly aimed to improve students' knowledge, comfort level and attitudes towards people with dementia. It was shown that theoretical input alone did not give students the necessary skills to work with people with dementia. Educational interventions were most effective when a practice based experience was preceded by theoretical preparation.

Conclusion

Most of the findings were positive, demonstrating the potential to improve students' knowledge, attitude and comfort level, however methods and evaluation were not always sufficiently reported, making them difficult to use or replicate. This review highlights the need for studies with rigorous methods to determine evidence based best practice for all those working with people with dementia in order to provide effective care and improve their quality of life.

Key words

dementia, pre-registration education, healthcare student(s), literature review

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INTRODUCTION

With a rapidly growing aging population internationally, there is an increasing demand for healthcare professionals to have appropriate knowledge, skills and attitudes to care effectively for older people and people with dementia. According to the Alzheimer's Society (2012) it is estimated that there are 800,000 people living with dementia in the UK with predicted growth to over a million by 2021. These figures are reflected by the World Health Organization (WHO) (2012) who estimate 35.6 million people worldwide are living with dementia and anticipate that this figure will double by 2030. The global challenge that dementia presents has been recognized with 2013 seeing the G8 holding the first global dementia summit.

The WHO define dementia as "...a syndrome – usually of a chronic or progressive nature – in which there is deterioration in cognitive function (i.e. the ability to process thought) beyond what might be expected from normal ageing. It affects memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement. Consciousness is not affected. The impairment in cognitive function is commonly accompanied, and occasionally preceded, by deterioration in emotional control, social behaviour, or motivation. Dementia is caused by a variety of diseases and injuries that primarily or secondarily affect the brain, such as Alzheimer's disease or stroke." (WHO, 2012, no page).

It is evident in the health and education literature that interest in improving dementia education is increasing with a number of studies highlighting the importance of adapting a person-centered approach in order to maintain personhood as dementia develops (Chenoweth *et al.*, 2009).

However it is also recognized that dementia education and training for pre-registration healthcare students is limited. These limitations are reported in reviews in medical pre-registration programs in the UK (StClair Tullo and Gordon, 2013), Europe (Tsolaki *et al.* 2010) and the USA (Nagle *et al.*, 2013) and other undergraduate health and social care programs in the UK (Pulsford *et al.*, 2007). In the study by Pulsford *et al.* (2007) social work, adult and learning disability nursing programs surveyed received a mean of three hours teaching related to dementia during their entire pre-registration program, and mental health nursing and occupational therapy received slightly more with 14 and seven hours respectively. In relation to healthcare delivery in England and Wales, the National

Institute for Health and Clinical Excellence (NICE) guidelines released in 2011 call for managers of people working with people with dementia in healthcare to ensure staff are given appropriate training to develop the skills they need. Training and development for the current qualified workforce is essential, but there is also a need to consider the future workforce. This requires embedding education and training earlier in pre-registration healthcare programs to carry forward appropriate attitudes and skills for working with people with dementia. As Miller et al (2010) purport, there are learning modules that all healthcare workers need to undertake regardless of their profession, working with people with dementia fits this model.

This literature review aimed to explore the range and variety of training programs designed to prepare future healthcare professionals to work with people with dementia to determine best practice in pre-registration education and identify the methods of evaluation used. The intention was to use this information to help design a program of education that could be used with pre-registration healthcare students from a number of disciplines to be taught either interdisciplinary or in individual disciplines.

METHODS

After the aim of the study was framed, the search was conducted between November 2012 and April 2014 and included literature from January 2007 until March 2014, in order to obtain the most recent and relevant literature on studies focusing on training programs on dementia. Furthermore, the NICE guidelines were issued in November 2006 in England and Wales, prompting the need to ascertain how these guidelines were being implemented and how they related to an international context. The focus of the search was on education and training on working with people with dementia in pre-registration healthcare programs. It did not however include studies focusing on education on medical treatment, diagnosis and management.

All educational interventions that mention dementia have been included regardless of the stage of dementia on which they focus. Reports that described a training program but did not include any evaluation were excluded. Education and training programs in qualified professionals and support workers were more prolific (for example Clare *et al.* 2013 and Goyder *et al.* 2012 in the UK; Kuske *et al.* 2009 in Germany; Beer *et al.* 2011 in Australia; Galvin *et al.* 2010 in USA). However as the learning starting point for the participants, as well as the context, were significantly different to pre-registration education, it was decided to exclude these studies for the purposes of this review.

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Nevertheless they provided a reference point as many focused on dementia awareness, attitudes, communication and quality of life in people with dementia.

Databases Medline, PsychInfo, CINAHL and PubMed were searched using the following search terms: healthcare students and dementia or Alzheimer's and education or training or program(me). We also used discipline specific search terms such as physiotherapy or nursing or medicine to expand our search. Grey literature using a 'Google' search and references cited in relevant publications were used to find further studies. The quality of identified studies was considered. Due to the limited number of studies fitting the criteria, it was decided not to exclude studies on the basis of quality but this is reported (in the table and in strengths and limitations of the studies). The evidence has been summarised and, within the limited scope of the studies, the findings have been interpreted.

RESULTS

There were a substantial number of studies in the field of medicine, but in many cases the focus was on treatment, diagnosis and management of patients with dementia, rather than on the skills or attitudes needed for working with people with dementia, these were outside the remit of this review. Studies identified were, academic, practice based or a combination of the two. It was decided to include a practice only study as "Placement education is a large and core component of the undergraduate learning experience." (Kell and Jones 2007: Page 273). Nine studies met the inclusion criteria (see Table 1). Seven were based in the USA, one in Canada and one in Australia. The interventions described were in medical programs (n=3), undergraduate nursing programs (n=5) and undergraduate audiology and speech and language pathology programs (n=1). Of the included studies, four used multiple methods, three were qualitative and two quantitative.

Aims of the education / training programs

The aims of the learning programs were reported in most cases, however there were some examples where they were not explicit but implied. For instance, Robinson and Cubit (2007) reported the findings from students' experience during a placement in an elder care setting without indicating what the aims/objectives of the interventions were. Similarly Paquette *et al.* (2010) implied that a simulation experience will prepare students for clinical practice. However some interventions were more specific and indicated that they were designed to improve participants' knowledge or understanding of dementia (Jefferson *et al.*, 2012; Paquette *et al.*, 2010). Ross (2012) on the other

hand aimed to describe the incorporation of service learning in an undergraduate Gerontology nursing course which was part of a Baccalaureate degree in nursing.

A number of studies specifically focused on training aimed to improve students' perceptions and attitudes to people with dementia (George *et al.*, 2013; George *et al.*, 2011; Kaf *et al.*, 2011), with one aiming to introduce students to career opportunities in working with older people (Jefferson *et al.* 2012). In relation to meeting the psychosocial needs of people with dementia, Jordan and Church (2012) aimed to increase the students' self-efficacy and Paquette *et al.* (2010) measured students' comfort in working with people with dementia. The intervention described in the Jonas-Simpson (2011) study aimed to help diminish unnecessary suffering experienced by people with dementia and their family members especially those linked with misunderstanding, judgment and stigma. Although all the studies inherently addressed communication skills by the nature of the learning activities, only one study specifically described aims to improve students' communication skills in working with people with dementia (Jefferson *et al.* 2012).

Educational content and teaching and learning methods

The interventions ranged in content, duration and organization of sessions. Two interventions were short duration or stand alone and did not involve practice based learning. Paquette *et al.*, (2010) described a simulation based session with a role player where students assessed, interacted and reflected on the process. In preparation, students were given reading material on delirium, depression and dementia. Jonas-Simpson (2011) developed a research based drama, and students (and healthcare professionals) attended a performance and contributed to reflective focus groups before and after the performance to explore images and understandings about dementia and dementia care.

Three studies described immersion in practice environments as the learning experience without any formal learning about dementia (Ross, 2012; Kaf *et al.*, 2011; Robinson and Cubitt, 2007). They varied from an eight-hour experience in a dementia specific day center (Ross, 2012) to 15 hour-long visits (Kaf *et al.*, 2011) and a three week placement (Robinson and Cubitt, 2007). In each of these studies, students interacted with people with dementia, and reflected on their experiences.

Other programs described a variable number of learning activities over time and included some preparatory theory elements using traditional lecture / tutorial format followed by practice based experience (George *et al.*, 2013; Jefferson *et al.* 2012; George *et al.*, 2011; Jordan and Church, 2013).

Jefferson *et al.* (2012) described a three hour formal lecture on Alzheimer's disease and dementia fundamentals followed by a monthly four-hour meeting with a person with dementia including social and cultural activities and students reported thoughts and feelings in journal entries. The papers by George *et al.* (2013) and George *et al.* (2011) present different evaluations of the same intervention. They describe a story telling program, where students met with a group of people with dementia (up to 10), in the community, on four occasions for up to 90 minutes. Led by a trained facilitator, students supported and encouraged residents and reflected on this in a debriefing session and written narrative.

Jordan and Church (2013) also used a mix of preparatory theory elements and practice based learning, they describe a framework that enables the intervention to be tailored based on the resident's stage of dementia. Students spent 45 minutes interacting with residents using a range of activities appropriate to the stage of dementia, and students were given verbal encouragement and feedback during and after the activity by an instructor.

Of the studies that included a practice based component, contact with people with dementia varied from four two-hour visits (George *et al.*, 2013) to 15 one hour visits (Kaf *et al.*, 2011). Further details of the type of learning activities are listed in Table 1.

EVALUATION OUTCOME MEASURES AND RESULTS

Attitude towards people with dementia

The outcome most frequently evaluated was students' attitude towards people with dementia (George *et al.*, 2013; Jefferson *et al.* 2012; George *et al.*, 2011; Kaf *et al.*, 2011; Jonas-Simpson 2011). A variety of evaluation methods were used, both qualitative and quantitative. For quantitative data, most used questionnaires, some using pre-existing validated tools such as Kogan's Attitudes Toward Old People Scale (Kaf *et al.* 2011) and the Dementia Attitude Scale (George *et al.*, 2013). All the studies measuring attitudes showed a statistically significant positive change in attitude when comparing measures before and after the education intervention. In the study by Kaf *et al.* (2011), students of audiology and speech and language pathology who completed visits in a nursing home (intervention groups), showed more positive attitudes compared to students who did not visit the home.

Several studies used qualitative methods analyzing a variety of data sources, learners' reflective essays, focus groups or written narratives (Jefferson *et al.*, 2012; George *et al.*, 2011, Jonas-Simpson, 2011; Ross, 2012). Jonas-Simpson (2011) reported that after engaging with the drama performance participants talked more positively in the narrative descriptions of images and understanding of dementia. Results for students were not examined separately. Similar themes of positive changes in attitude were noted in George *et al.* (2011) and Jefferson *et al.* (2012). Ross (2012) reported that students overcame negative stereotypes.

Knowledge of dementia

Another common measure assessed was learner knowledge of dementia (George *et al.*, 2013; Jefferson *et al.*, 2012; Parquette *et al.*, 2010). In all cases, the evaluation tools used were developed locally, for the needs of each study. The evaluation tool in the study by George *et al.* (2013), primarily assessed attitude toward people with dementia but also included subdomains of knowledge and comfort. Three studies used pre-post evaluation and demonstrated a significant increase in knowledge scores after the interventions, some changes were modest (George *et al.*, 2013; Jefferson *et al.*, 2012), while others were more substantial (Parquette *et al.*, 2010). Although not measured quantitatively, Ross (2012) suggests that a service learning experience enabled students to learn more about dementia.

Comfort, confidence and self-efficacy when interacting with people with dementia

Other measures focused on participants' self-perceptions of their confidence and abilities when interacting with people with dementia. For instance, one study referred to the perceived 'comfort levels' and evaluated this by using a Likert scale and asking students to rate statements such as 'comfortable talking with confused elders' (Paquette *et al.*, 2010). The qualitative findings from Paquette *et al.*, (2010) suggest that a lecture alone did not result in sufficient levels of comfort and knowledge to provide effective care to people with dementia. Moreover, students who were observing the simulation suggested at the debriefing discussion that an active role would have been beneficial. In the same study, there was a significant difference in the level of comfort in interacting with people with dementia before the simulation, with students who had already completed two clinical placements prior to the intervention being significantly more comfortable than students who had not completed any placements. Nevertheless, results also showed a significant increase in level of comfort after the simulation for both groups (*ibid*). Comfort was also a subdomain in the

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evaluation tool used by George *et al.* (2013) and they found a significant increase in comfort after the intervention.

In a related construct, Jordan and Church (2013) measured students' self-efficacy in meeting the psychological needs of people with dementia by using a modified version of the General Self-Efficacy Instrument developed by Schwarzer and Jerusalem (1995). In addition they held discussions with students before and after the intervention, and asked them to complete a log addressing thoughts and feelings during the activity. The results showed that students' self-efficacy was significantly increased after the completion of their placement in a nursing home. Clinical instructors also observed students during the psychosocial activity and reported that students seemed comfortable and enjoyed the interactions, however there was no report of systematic analysis of the qualitative data from the students' activity log.

In contrast, based on thematic analysis of focus group interviews Robinson and Cubit (2007) found that intimidation and fear were common feelings amongst students completing a 3-week placement in residential elder care facilities without prior training or preparation. From the weekly focus group discussions, students reported feeling inhibited in communicating with residents as well as with experienced mentors, therefore their support needs were not met.

DISCUSSION

The objectives of this study were to review the variety of training programs developed to prepare pre-registration students of healthcare to work with people with dementia and explore the methods and evaluation tools used. While the literature search demonstrated a number of studies evaluating training interventions for qualified and support staff in care home and hospital settings, studies focusing on pre-registration education was limited. Moreover, all the studies included in this review, were conducted in North America except one in Australia indicating the lack of studies reported outside western contexts. It was surprising that there were no studies in Europe or the UK given government policy and mandates which emphasize the need to prioritize dementia education (e.g. Department of Health, 2014).

Overall this review shows a range of content and methods used in pre-registration education on dementia. Three studies incorporated a practice based experience without any prior theoretical

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preparation (Ross, 2012; Kaf *et al.*, 2011; Robinson and Cubit, 2007) and the rest delivered theoretical sessions followed by a practice experience.

Direct contact or immersion in practice without prior preparation was not sufficient as it can lead to feelings of inhibition and intimidation when interacting with people with dementia (Robinson & Cubit, 2007). All the studies that included both theoretical sessions and practice experience in their interventions showed a positive effect in both qualitative and quantitative data in relation to the levels of comfort when interacting with people with dementia. Not surprisingly the practice element appears to improve perceived levels of comfort more than knowledge scores (e.g. George *et al.*, 2013). These studies suggest that an intervention designed to prepare pre-registration students for working with people with dementia is more likely to have an impact if some practice based experience is preceded by an element of preparatory training.

The duration of interventions in the studies is also important to consider. Where present, taught sessions and preparatory learning activities tended to be approximately two to three hours in total. However the practice based experience varied considerably. For instance, one described several hour-long visits to a placement site, another provided an eight-hour service learning experience and others described a placement of three weeks duration. As most of the studies reported positive results it is not possible to suggest what is the optimal length of intervention. On the other hand it was suggested that students with prior practice experience, not necessarily specifically with people with dementia, had more significant gains compared to students who had not (Paquette *et al.* 2010). This indicates that students benefit more from dementia specific practice based experience after other practice placements.

Although studies described interventions with the aim of improving students' attitude, knowledge and level of comfort, it is perhaps surprising that none specifically addressed the need to improve communication skills. Only Jefferson *et al.*, (2012) included communication skills as part of their 3-hour formal lectures but the time dedicated or tools used to enhance communication skills are not mentioned. Communication deficits, such as loss of verbal fluency and concentration, are common in people living with dementia (Woodward, 2013), indicating that advanced communication skills are required to communicate well and provide care effectively. Therefore this is an area needing development and evaluation in pre-registration education to ensure the future healthcare workforce is equipped with the necessary skills. This review did not intend to review studies on communication unless they had a specific focus on dementia. There may be some studies that evaluate teaching and

learning methods for advanced or complex communications skills with obvious transferability to working with people with dementia, and it is acknowledged that this is a limitation of this review.

None of the studies described the interventions as part of a dedicated dementia teaching module or unit in courses apart from the studies that described clinical placements or service learning experiences (Ross 2012, Robinson and Cubitt, 2007). This gave the impression that dementia had not been a priority in curricula development but was something that could be added in at some later point. In addition, most of the studies were conducted in nursing programs; therefore it may be difficult to apply the interventions directly in other disciplines as there may be substantial differences in curricula and length of study.

Strengths and limitations of the Studies

The evaluation methods included qualitative, quantitative and some mixed approaches with varied quality of reporting of methods and findings. With such a small number of papers reporting on the evaluation of educational interventions all have been included although the diversity of interventions, methodology and quality has made it challenging to reach firm conclusions.

Quantitative evaluation tools were rarely validated, making it difficult to assess the overall impact of the outcomes. This demonstrates the need for validated evaluation tools which can be used to assess levels of knowledge and confidence in working with people with dementia. Power analysis to determine sample size was not mentioned in any of the included studies. Although many of the studies indicated that they were effective, it is important to consider the criteria in relation to an evaluation framework such as the one originally described by Kirkpatrick and recently adapted by Praslova (2010) for higher education. Most of the studies in this review included a direct measure of learning which satisfy level two 'learning criteria' (Praslova, 2010). However, none of the studies attempted to measure actual 'on the job' performance of working with people with dementia or service user satisfaction, related to levels three (behavior) and four (results) respectively, in this framework (ibid). These are the most desirable criteria to assess as they directly relate to impact on care, yet they are also the most difficult to measure. To counter this, there were some attempts in the reviewed studies to measure perceptions of performance such as levels of comfort in communicating with people with dementia (Paquette *et al.* 2010), and self-efficacy (Jordan and Church, 2013). The wide variety of methods and evaluation tools used made it difficult to compare

results from each study. Furthermore, most studies examined the effect of interventions in the short-term, without evidence of the sustainability of these gains.

CONCLUSION

The need to consider education and training is prompted by the increasing population of people living with dementia. There is evidence that the current workforce have insufficient training and skills to work with people with dementia (Gandesha *et al.* 2012, Royal College of Nursing 2011) suggesting that their pre-registration education is inadequate. This literature review demonstrated that due to the heterogeneity of the educational interventions it was difficult to establish best practice of content and delivery, but some principles have been identified. Generally, all the studies included in this review focused on three main domains for the educational intervention including: improvement in dementia knowledge, attitude and comfort when working with people with dementia. These findings have implications for the delivery of dementia education in pre-registration healthcare disciplines. In order to facilitate a positive change in working with people with dementia, it is important to implement a staged approach to interventions that include both class based sessions in a non-threatening environment, followed by immersion in practice. Methods of evaluation were not always sufficiently reported making them difficult to use or replicate. More research into educational interventions with rigorous evaluation is required in order to determine the most effective methods of preparing future healthcare professionals to improve care, treatment and quality of life for people with dementia.

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Study	Participants	Educational intervention	Study Design/Evaluation	Key Findings	limitations
George <i>et al.</i> (2013) Pennsylvania, USA	22 fourth year medical students	<ul style="list-style-type: none"> • "TimeSlips: 4 week (4 visits) creative group-based storytelling program • 2 hour classroom session interacting with people with dementia using Validation Technique. 	Quasi-experimental design, pre-post evaluation Dementia Attitude Scale (DAS).	<ul style="list-style-type: none"> • significantly more positive attitude after intervention on 12 of 20 items. 	<ul style="list-style-type: none"> • Small sample size for quantitative study. • Internal consistency of DAS only preliminary. • students self-selecting.
George <i>et al.</i> (2011) Pennsylvania, USA	15 fourth year medical students	<ul style="list-style-type: none"> • TimeSlips: 4 week (4 visits) creative group-based storytelling program • 2 hour classroom session interacting with people with dementia using Validation Technique. 	Qualitative. (No specific methodology identified) Data = Written student course evaluations with open ended questions. Grounded theory approach to evaluation.	Themes <ul style="list-style-type: none"> • enjoyable, good learning opportunity • affected students personally & could affect future interactions with older patients • Students appreciated change of pace in teaching methodology. 	<ul style="list-style-type: none"> • Students self-selecting. • Cross sectional research, unsure of longitudinal efficacy.
Jefferson <i>et al.</i> (2012) Nashville, USA	45 first year medical students	<ul style="list-style-type: none"> • 3 hour lecture on advanced dementia, fundamentals of dementia and communication skills • PAIRS program – students paired with an early-stage dementia "buddy", met monthly minimum 4 hours for 6 months. • Monthly meetings for supplemental training & share experiences 	Quasi-experimental design, pre-post evaluation <ul style="list-style-type: none"> • The Buddy Program Dementia Knowledge Test 33-item measure • Boston University Program Dementia Knowledge Test 64-item measure • Qualitative Data = Reflective essay Coding=Consensual Qualitative Strategy 	<ul style="list-style-type: none"> • Significant improvement in dementia knowledge, skills and positive attitude post intervention Qualitative themes: <ul style="list-style-type: none"> • greater understanding of AD • aware care partner burden and human side, hopeful outlook • educational value of monthly meetings • impact on clinical practice 	<ul style="list-style-type: none"> • Small sample • Purposeful selection of enthusiastic and committed students. • Tools not validated

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Jonas-Simpson <i>et al.</i> (2011) Canada	8 nursing students and 50 healthcare professionals	Attendance at a performance of “I’m Still Here” drama based on ethnographic research	Qualitative (No specific methodology identified) Data = focus groups pre-post performance Thematic analysis	A phenomenological shift in descriptions from: <ul style="list-style-type: none"> • diminishing humanness to discerning humanness • disengaged care/mundane relating to reflexive relating in the now • terrifying portrayals of loss to awakening to hopeful opportunity. 	<ul style="list-style-type: none"> • Most participants were white middleclass • Differences between participants’ age profession, gender not examined; • Findings not separated for students.
Jordan & Church (2013) Arkansas, USA	39 junior level Baccalaureate nursing students	<ul style="list-style-type: none"> • Clinical placement in a 104-bed nursing home • Reading assignment on importance of holism in caring for people with dementia • 45-minute psychosocial activity with classmates involving residents 	Quasi-experimental design, pre-post evaluation Pre-post evaluation with 10-item, validated & modified General Self- Efficacy Instrument Qualitative (No specific methodology identified) Data = Clinical log addressing thoughts and feelings about experience. Discussion about the activity before and after. Analysis approach unidentified	<ul style="list-style-type: none"> • significant improvement in self-efficacy. • before the experience negative feeling regarding engaging in the activity and discomfort with the process. • From observation, students comfortable & enjoying interactions. 	<ul style="list-style-type: none"> • Method of analysis for qualitative data not reported. • Assumption that negativity surrounding dementia care comes from low self-efficacy.
Kaf <i>et al.</i> (2011) Springfield, USA	33 first and second year audiology and 42 speech and language pathology (SLP) students 14 audiology and 18 speech-language pathology students, control group	Intervention group Service learning experience 2 hearing evaluations on people with dementia (2-3hrs, n=19 audiology students) 15 visits (15hrs, n=24 speech-language pathology students) paired with 24 people with dementia in nursing home Control group (used in qualitative analysis)- No intervention	Quasi-experimental design, pre-post evaluation with validated tool Kogan’s Attitudes Toward Old People Scale Qualitative (No specific methodology identified) Data = journal entries pre and post Approach - Content analysis	Results analyzed separately for audiology and SLP students. <ul style="list-style-type: none"> • more positive attitudes post intervention in both groups • significant difference between intervention & control groups. Qualitative analysis of audiology and SLP combined <i>prior to experience:</i> <ul style="list-style-type: none"> • 53% responses: idea of task & communication difficulty. • 32% concerns about being around people with dementia experiencing health decline. • 21% nervousness about working with older adults <i>after experience:</i>	<ul style="list-style-type: none"> • Time spent with people with dementia both current and in the past not taken into account. • Two disciplines not comparable as different interventions

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				<ul style="list-style-type: none"> • 47% learning from experience • 42% bonding with residents • 21% desire to work with older clients • 21% difficulty/challenge of testing older adults • 79% positively shifted attitudes • 10.5% negative • 10.5% no shift 	
Paquette <i>et al.</i> (2010) Milwaukee, USA	100 First year baccalaureate nursing students (50 students each semester) Active Group: 14 Observers Group : 86	<ul style="list-style-type: none"> • Lecture on delirium, depression and dementia. • Elder care simulation 	Quasi-experimental design, pre-post evaluation 6-item questionnaire developed by faculty members assessing <ul style="list-style-type: none"> • comfort communicating with confused adults • knowledge in assessing elders' cognitive problem 	<ul style="list-style-type: none"> • Significant increase in comfort & knowledge in active and observer groups. • Observers learned from watching but practical experience would have been helpful • commented positively on simulation experience 	<ul style="list-style-type: none"> • No clear distinction between those who were active & observers. • Evaluation survey not mandatory, but reasonable response rate 63%
Robinson & Cubit (2007) Tasmania, Australia	87 second year Bachelor of Nursing students	3-week clinical placements in 8 residential elder care facilities.	Qualitative (No specific methodology identified) Data = separate weekly focus groups for students & mentors. Thematic analysis of focus group discussions.	<ul style="list-style-type: none"> • Tension and communication problems between needs of nursing students, with little or no prior experience & limited knowledge of dementia, level of support students received from nurse mentors. 	<ul style="list-style-type: none"> • Lack of description of approach to analysis
Ross (2012) Texas, USA	76 undergraduate baccalaureate level Gerontology nursing course.	8 hours service learning in community Reflection on service learning	Post intervention evaluation (No specific design or methodology identified) 10-item questionnaire for the community staff 9-item questionnaire for students both slightly modified from Bender (2008). 2-page paper reflection from the students, method of analysis not reported.	<ul style="list-style-type: none"> • Positive feedback from students & staff. Students experienced the service learning as an opportunity to: • interact with people with dementia • learn theory in practice • overcome negative stereotypes • develop greater empathy & insight. 	<ul style="list-style-type: none"> • Adapted questionnaire not validated. • Only 6 out of 10 items of community staff questionnaire described in paper. • Method of analysis of qualitative data not reported.

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ACCEPTED MANUSCRIPT