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The effect of a Dementia Education Intervention on the confidence and attitudes of General Practitioners in Australia

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Title: **The effect of a Dementia Education Intervention on the confidence and attitudes of General Practitioners in Australia.**

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Abstract

Objectives: This study assessed the impact of a Dementia Education Workshop on the confidence and attitudes of GP Registrars (GPR) and GP Supervisors (GPS) in relation to the early diagnosis and management of dementia.

Design: Pre-test post-test research design.

Setting: Continuing medical education in Australia.

Participants: 332 GP Registrars and 114 GP Supervisors.

Interventions: Registrars participated in a three hour face to face workshop while Supervisors participated in a 2 hour modified version designed to assist with the education and supervision of registrars.

Main outcome measures: The General Practitioners Confidence and Attitude scale for Dementia (GPACS-D) was used to assess overall confidence, attitude to care and engagement. A Wilcoxon signed ranks test was used to identify potential differences from pre-workshop (T1) to post workshop (T2) for each GP group. A Mann Whitney U test was undertaken to ascertain differences between each workshop group. A Cohen's d was calculated to measure the effect size of any observed difference between T1 and T2 scores.

Results: Significant increases in scores were recorded for '*Confidence in Clinical Abilities'*, '*Attitude to Care'* and '*Engagement'* between pre and post-test periods. GP Registrars exhibited the greatest increase in scores for *Confidence in Clinical Abilities* and *Engagement*.

Conclusions: Targeted educational interventions can improve attitude, increase confidence and reduce negative attitudes towards engagement of participating GPs.

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Article Summary

Strengths and limitations of this study

- The sample of Registrars and Supervisors is representative of the broader GP population in Australia[1].
- While the workshop for GP Registrars was compulsory this was not the case for GP Supervisors, thus a self-selection bias is possible.
- Confidence, Attitudes and Engagement were measured via GPACS-D, a validated tool.
- While each of the subscales included items relating to early diagnosis, the survey did not fully capture attitudes towards disclosure or perceived self-efficacy with regard to communication.

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Introduction

General Practitioners (GPs) are central to the early diagnosis and management of dementia [2]. Early diagnosis provides the opportunity for patients, carers and family to be informed about the condition, its prognosis, treatment options and support [3, 4] and allows the patient to plan for their future and be active participants in decision-making [5, 6].

Obstacles to timely diagnosis and intervention may include a lack of diagnostic tests/certainty [7] and lack of confidence in diagnostic skills and management [8], while negative attitudes towards diagnosis, disclosure and treatment [9-11] may also affect diagnosis rates. Further, stigma may delay recognition and diagnosis through concealment, minimisation or dismissal of early signs and symptoms [12]. Patients often present with co-occurrent conditions, further complicating the clinical picture [4, 13].

It is estimated that one third of GP's lack confidence in their diagnostic skills, while two thirds lack confidence in the management of behaviours associated with dementia [8], or feel they have little or nothing to offer patients presenting with dementia [14], with a third of GPs failing to routinely disclose the diagnosis [8, 15, 16]. Relatedly, pessimism surrounding dementia prognosis, and inability to offer curative treatment [17] may lead to an attitude of 'therapeutic nihilism' among GPs [8, 12], which reflects a biomedical definition of treatment and an ethos centred around curing people [17], while simultaneously ignoring therapeutic interventions that may benefit people with dementia and their carers [18-20].

Illiffe (2003) argues that low rates of dementia diagnosis are not only a result of knowledge and skills deficits but also failure to transfer acquired knowledge into clinical practice [10]. Relatedly, Boise et al. (2005) state~~s~~ that attitude rather than knowledge is a key determinant

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of whether a GP undertakes a full assessment [3], and others argue that the diagnostic and management practices of GPs towards dementia may be significantly affected by underlying beliefs and attitudes [21, 22]. While social psychological theory suggests a relationship between perceptions of self-efficacy and effort, and avoidance [23], GPs hesitancy to diagnose dementia may not be explicit. Rather it may manifest in a reluctance to formalise a diagnosis or preferentially treat co-occurring conditions for which treatment options are available [11, 24], referring on because of limited treatment options [25], questioning the (traditional) role of the GP in treating dementia [26], or having insufficient resources [16].

Changing attitudes towards the early diagnosis of dementia has been identified as a significant task for medical educators, with the key to countering such attitudes being targeted educational campaigns [27]. Moreover, evidence suggests that the focus of GP training around dementia should encompass more than knowledge acquisition and aim to improve confidence and attitude [28]. While GP attitudes toward caring for people with dementia have been shown to be positive [29], fear of misdiagnosis [7] and lack of confidence in diagnostic and dementia management skills have been reported to be of particular concern in multiple studies with a lack of effective education and training frequently cited as an underlying cause [8, 22, 30].

Comprehensive dementia education for GPs should include epidemiological knowledge, communicating a diagnosis, symptom management, and support services for patients and their carers [31, 32]. Tullo (2011) emphasises the importance of personhood, quality of life and communication with patients [33], while Phillipson (2015) argues that training interventions should place an emphasis on the slow progression of the condition, the treatments available, and maintenance of quality of life [34].

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In Australia GPs typically are trained in an apprenticeship model with a key aspect of training involving experienced GPs (Supervisors) providing support to the GP registrar (GPR) within a general practice setting. Supervisors facilitate registrar learning through identifying learning needs, encouraging reflective learning and practice, guiding access to resources, providing advice on applying knowledge to specific patient cases and role modelling interactions with patients (22).

Tailored training workshops were developed specifically to augment this interaction and address dementia specific training needs. Directed at both Supervisors and GPRs, we have previously shown them to be effective in improving dementia knowledge [1]. Here we examine the impact of these workshops on attitudes and confidence toward dementia with a view to improving management of dementia in general practice.

Methods

Study aims and design

In Australia GP Registrars are required to engage in a learning program consisting of a number of learning units conducted by regional training providers in each state. "The Recognising, Diagnosing and Managing Dementia in General Practice" workshop was developed by the Wicking Dementia Research and Education Centre as a response to the expressed absence of appropriate dementia related content in GP Registrar training programs. The workshop consists of two 1.5-hour face to face presentations delivered by medical educators focusing on (a) recognising and diagnosing dementia and (b) managing dementia in General Practice, while the Supervisor's workshop is a modified version of that delivered to Registrars that seeks to support Supervisors to teach registrars the diagnosis

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and management content provided in the registrar program as discussed elsewhere[1]. The strong focus on providing a framework for decision making for the recognition, diagnosis and management of dementia is complemented by tools and resources that are aimed at improving both diagnostic capacity and providing ongoing care and support for people with dementia and their family and/or carers. There is a stronger focus on the lived experience of dementia and more in-depth coverage of some aspects of dementia diagnosis and management in the Registrar's workshop than in the Supervisors workshop.

Participants

GPs were recruited from dementia education workshops conducted in 4 Australian States between 2014 and 2017. The sample comprised 2 cohorts; those who undertook the GP Registrars Workshop (n=332) and those who undertook the Supervisors Workshop (n=114).

Process and measures

All workshop participants were invited to complete the GPACS-D survey [38] immediately before (T1) and immediately after (T2) the workshop. Participants were provided with an information sheet about the research, were informed that the survey was entirely voluntary and that completion of the survey implied consent. The impact of the workshops on confidence and attitude was measured using the GPACS-D which comprises 3 subscales; *Confidence in Clinical Abilities* (6 items), *Attitude to Care* (6 items) and *Engagement* (3 items) and validated using confirmatory factor analysis [35]. A Likert scale was employed scoring from 1 (strongly agree) to 5 (strongly disagree). Total subscale scores were standardised with a minimum score of 1 and a maximum score of 5 so that comparisons could be made between subscales [36].

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Analysis

We were interested in the impact of the respective workshops on GP Registrars (GPRs) and GP Supervisors. We hypothesised that the Supervisor group would differ from the GPR group in attitude and confidence given their experience as practicing GPs.

Non-parametric tests were employed to identify differences between groups (Mann Whitney U test for independent samples) and between time points for each group (Wilcoxon signed ranks test for paired samples). Cohen's d was calculated to measure the effect size of any observed difference between T1 and T2 scores for each group with d=0.2 equivalent to a 'small' effect size, 0.5 a 'medium' effect size and 0.8 a 'large' effect size [37]. All data analyses were conducted using SPSS (Version 22).

Ethics approval

A University Human Research Ethics Committee reviewed and approved this study (Reference Number: H0012046). Before the workshop commenced, the study was described to participants and all participants were given an Information Sheet. Return of the completed surveys at the end of the workshop implied their consent for use of the data.

Patient and Public involvement

There was no patient or public involvement in this study.

Results

446 respondents were included in the analysis comprising 332 attendees at GP Registrar workshops (the GPR group) and 114 attendees from the Supervisor workshop (the Supervisor group) (Table 1). Supervisors were significantly older than GPRs (U=2542; z=13.065; p<.000), and more had undertaken prior dementia education (x^2=20.263; p<.000),

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although this proportion was small for both groups. More Supervisors had provided professional care to someone with dementia than GPRs (x2=11.294; p=.001), while similar proportions of both groups had a family member with dementia.

Table 1: Sample Characteristics

Demographics	GP Registrars (n=332)	Supervisors (n=114)
Age	33.03 (sd=6.1)	49.8 (sd=10.5)
Male	40.2% (n=129)	50% (n=56)
Australian born	41.9% (n=139)	39.5% (n=45)
Previous dementia training	5.6% (n=18)	20% (n=22)
Provided professional care	87% (n=280)	98% (n=108)
Family member dementia	35.5% (n=114)	38.2 (n=42)

The GPACS-D assessed the impact of each of the workshops on three constructs; *Confidence in Clinical Abilities, Attitude to Care* and *Engagement.*

Items in the *Confidence in clinical abilities* subscale reflect a GP's perceptions of their capacity to diagnose, treat and manage dementia. Analysis of scores for each of the items comprising this subscale is shown in Table 2.

Table 2: *Confidence in Clinical Abilities. Pre and Post Workshop scores by Role.*

Confidence in Clinical Abilities	Role	Pre-test mean score(±sd)	Post-test mean score(±sd)	Z	P*	Cohen's D
Overall Score	GPR	2.67(0.62)	3.69(0.57)	15.04	<.000*	1.710
	GPS	3.28(0.75)+	4.03(0.53)+	8.17	<.000*	1.150
Frustration at not being able to effectively treat people with dementia	GPR	2.49(0.93)	3.55(0.87)	12.24	<.000*	1.177
	GPS	2.94(1.13)	3.94(0.84)+	6.96	<.000*	1.004
Confident in ability to discuss legalities	GPR	2.32(0.94)	3.25(0.88)	12.28	<.000*	1.021
	GPS	2.96(1.08)+	3.60(0.92)+	4.97	<.000*	0.637
Confidence in ability to diagnose	GPR	2.65(0.82)	3.82(0.71)	13.87	<.000*	1.525
	GPS	3.31(0.88)+	4.18(0.61)+	7.48	<.000*	1.149
Confident in ability to provide medical	GPR	2.86(0.78)	3.80(0.69)	13.24	<.000*	1.276

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care	GPS	3.52(0.88)+	4.21(0.56)+	6.67	<.000*	0.935
Confident in ability to provide advice about symptoms	GPR	2.70(0.78)	3.70(0.71)	13.41	<.000*	1.340
	GPS	3.23(0.87)+	3.95(0.71)+	6.52	<.000*	0.906
Confident in knowledge of local resources	GPR	2.43(0.84)	3.47(0.89)	13.03	<.000*	1.201
	GPS	3.04(0.92)+	3.79 (0.83)+	6.88	<.000*	0.856

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (Mann Whitney U test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (Wilcoxon signed ranks test for paired samples).

While both GPRs and Supervisors were significantly more confident after the workshops), Supervisors were significantly more confident in their clinical abilities than GPRs both before (U=9462; z=7.707; p<.000) and after their respective workshops (U=10962; z=5.327; p<.000), GPRs exhibited a significantly greater improvement in score than Supervisors (U=12051; z=4.014; p<.000), while the effect size of the change in *Confidence in clinical abilities* was strong for both groups and greatest for GPRs .Supervisors recorded a higher level of confidence than GPRs on all items both before and after the workshop, although both groups improved significantly across all items (Table 2). GPRs exhibited larger score changes on all items after the workshop.

Supervisors reported a higher score for 'confidence in ability to diagnose dementia' after the workshop (u=12477; z=4.643; p<.000) than GPRs. However, only 13.8% of GPRs were confident in their diagnostic ability before the workshop compared to 44.2% of Supervisors, rising to 60.4% GPRs post workshop compared to 62.6% post for Supervisors.

Confidence in 'ability to provide appropriate medical care' also increased significantly for both groups, with Supervisors recording a higher mean score both before and after the workshop (U=11599; z=5.455; p<.000), while a strong effect size was observed for score changes in both groups (GPR, d=1.276; Supervisors, d=.935). An increase in the proportion of GPRs agreeing with the statement (18.7% to 59.8%) was observed after the workshop.

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Confidence in 'providing advice about managing dementia related symptoms' improved markedly for both groups, with Supervisors recording a significantly higher score than GPRs (U=13804; z=3.182; p<.001). Only 13.8% of GPRs were confident pre-workshop increasing to 56.3% post workshop, with 9.5% strongly agreeing. Before the workshop 48.5% of Supervisors agreed that they were confident in providing advice (8.8% strongly agreed), increasing to 67% after the workshop (27.4% strongly agreed).

Attitude to Care

Items in the *Attitude to Care* subscale reflect aspects of the provision of care for patients and their families. Analysis of scores for each of the items comprising this subscale is shown in Table 3.

Table 3: *Attitude to Care. Pre and Post Workshop Scores by Role*

Attitude to Care	Role	Pre-test mean score(±sd)	Post-test mean score(±sd)	z	P**	Cohen's D
Overall Score	GPR	4.35(0.43)	4.70(0.40)+	12.98	<.000*	0.840
	GPS	4.35(0.44)	4.59(0.40)	6.37	<.000*	0.570
Much can be done to improve lives of patient	GPR	4.22(0.71)	4.54(0.61)	6.98	<.000*	0.483
	GPS	4.37(0.65)	4.61(0.54)	4.43	<.000*	0.401
Early detection benefits the patient	GPR	4.32(0.74)	4.73(0.59)+	8.38	<.000*	0.612
	GPS	4.21(0.84)	4.52(0.73)	3.92	<.000*	0.393
Important family/carers seek external support	GPR	4.56(0.58)	4.81(0.47)+	6.98	<.000*	0.473
	GPS	4.52(0.61)	4.67(0.53)	2.69	<.000*	0.262
Important family carers contact Alzheimer's Aust.	GPR	4.38(0.67)	4.69(0.54)	7.92	<.000*	0.509
	GPS	4.42(0.69)	4.64(0.57)	4.01	<.000*	0.347
GPs in best position to organise care	GPR	3.95(0.82)	4.40(0.70)	9.41	<.000*	0.59
	GPS	4.06(0.87)	4.44(0.66)	4.68	<.000*	0.492
Patients should be informed early so they can plan for the future	GPR	4.31(0.72)	4.82(0.51)+	9.92	<.000*	0.817
	GPS	4.28(0.77)	4.62(0.75)	4.25	<.000*	0.447

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (Mann Whitney U test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (Wilcoxon signed ranks test for paired samples).

Overall mean scores for *Attitude to Care* (Table 3) were equivalent for Supervisors and GPRs prior to the workshops and increased significantly for both GPRs and Supervisors following

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the workshop, with moderate effect sizes for the increases (Table 3). GPRs scored significantly higher than Supervisors post workshop (U=13896; z=2.578; p=.010).

Significantly higher mean scores were reported for GPRs compared to Supervisors for 'early detection benefits the patient' (z=3.21; p<.000) and 'Patients should be informed early, so they can plan for their future'(z=3.26; p=<.000; Table 3).

Both groups reported significant increases in agreement that 'early detection of dementia benefits the patient', which had a moderate effect size for GPRs and a weak effect size for Supervisors. The greatest difference reported was for those strongly agreeing. GPRs recorded an increase in those strongly agreeing (from 47.3% pre-workshop to 77.9% post workshop) compared to an 18 % increase for Supervisor's (44.2% to 62.6%) post workshop. Similar results were obtained for the item 'Patients with dementia should be informed early so they can plan for the future'. While both groups reported significant increases in those agreeing with the benefits of informing patients early, GPRs had significantly higher scores than Supervisors post workshop (4.82 versus 4.62; z=3.26; p=.001) and recorded a larger increase in score. A change with a strong effect size was observed for GPRs and with a moderate effect size for Supervisors.

Both GPR and Supervisor groups recorded increases in those agreeing that 'it is important that relatives/family/carers of dementia seek external support'. The post workshop mean score for GPRs was greater than for Supervisors (z=2.99; p<.003), while GPRs also exhibited the greatest improvement

Engagement

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Engagement measures a GP's perceptions towards treating dementia, and includes fear of communicating a diagnosis, frustration in managing dementia and a preference for treating other conditions (Table 4).

Both Supervisors and GPRs recorded a significantly higher score for *Engagement* post workshop, while Supervisors reported greater *Engagement* than GPRs at baseline (U=12055; z=5.549; p<.000) and after the workshop (U=11338; z=5.135; p<.000). A moderate effect size was observed for the score change shown for each group.

Table 4: *Engagement; Pre and Post Workshop Scores by Role*

Engagement	Role	Pre-test mean score(±sd)	Post-test mean score(±sd)	Z	P*	Cohen's D
Overall Score	GPR	2.98(0.70)	3.42(0.74)	10.25	<.000*	0.610
	GPS	3.44(0.76)+	3.84(0.74)+	6.16	<.000*	0.530
Managing dementia frustrating	GPR	3.00(.85)	3.51(0.94)	8.24	<.000*	0.569
	GPS	3.45(1.02)+	3.91(0.83)+	4.36	<.000*	0.494
Fear of communicating a diagnosis	GPR	3.88(0.98)	4.14(0.89)	4.78	<.000*	0.277
	GPS	4.16(0.97)+	4.53*(0.73)	3.43	<.000*	0.431
Preference for treating other diseases	GPR	2.77(0.96)	3.20(0.99)	7.83	<.000*	0.440
	GPS	3.27(0.97)+	3.64(0.95)+	4.47	<.000*	0.355

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (Mann Whitney U test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (Wilcoxon signed ranks test for paired samples).

Supervisors recorded significantly higher mean scores for each of the 3 items comprising engagement at both pre and post workshop periods.

Both GPR and Supervisor groups reported less frustration managing dementia post workshop, while Supervisors exhibited significantly less frustration at both pre and post workshop periods (u=12909; z=3.910; p>.000) than GPRs. The greatest improvement was reported by GPRs, with moderate effect sizes exhibited for both groups. The proportion disagreeing with the statement that 'dementia was frustrating to manage' increased from

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19.5% to 39.4% for the GPR group which was similar magnitude of change to Supervisors (31% to 50.5%). However, a significant proportion of both groups were still undecided about this statement post workshop (GPRs 33.1%,19.6% Supervisors). As with other aspects of the subscale, Supervisors reported less fear of communicating a diagnosis than GPRs at both pre and post workshop periods (u=12465; z=4.458: p<.000) with a moderate effect for Supervisors and a weak effect for GPRs.

Similar results were obtained for a preference to treat other diseases, with both groups recording significant improvement after the workshop. Supervisors recorded a higher mean score than GPRs at both pre and post workshop periods (u=12868; z=3.906; p<.000), while GPRs exhibited the greatest increase, with moderate effect observed for both groups. The proportion of GPRs agreeing to a preference for treating other diseases decreased from 32% pre-workshop to 18.6% post workshop, compared to 18.6% to 10.3% for Supervisors. However, a large proportion of each group were neutral to the statement before and after the workshop, with a decreased proportion of Supervisors (42.5% pre, 32.7% post) and a relatively unchanged proportion of GPRs (38.1% pre, 39% post) reporting neutral views on this item.

Discussion

This study examined the impact of tailored dementia education workshops on the attitudes and confidence of both GP Registrars and GP Supervisors towards dementia.

Attending tailored workshops resulted in significant improvements in attitudes, confidence and engagement of both groups. While increased confidence and reduced negative attitudes towards the management of dementia have previously been reported to correlate

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with a self-reported history of prior dementia training [18], unlike others this study demonstrates a direct and immediate impact of a training intervention.

In some respects the predisposing positive *Attitude to Care* and improvement post workshop was not surprising given that GPs are reported to have a positive attitude with respect to their role in providing care and early diagnosis for people with dementia [29, 38]. Indeed, our findings highlight the effectiveness of the workshop's focus on early warning signs, and the importance of diagnosis and management approaches, which are intended to influence participants to more effectively engage people with dementia and their families. These results suggest that workshop attendance is useful in preparing GP registrars for practice and experienced GPs who act as their Supervisors.

The confidence of the GP registrar group, while not as high as Supervisors, significantly improved post workshop, albeit from a notably low level which provides insight into the implications of the traditional bio-medical focus of much medical education[17], often with minimal focus on therapeutic interventions [18-20]. Differences in pre-test confidence between the cohorts are not surprising given GPR's are generally younger and less experienced [22]. The greater magnitude of change for GP Registrars in this study would suggest that elements of the workshop, especially diagnostic skills, providing appropriate medical care and managing dementia related symptoms, may particularly impact on confidence, again highlighting its applicability to GP specialty training.

However, it is interesting that only 44% of Supervisors reported confidence to diagnose dementia pre workshop, rising to only around 60% post workshop. Similar findings were evident in the items related to confidence providing advice and appropriate medical care. It was also notable that at both pre and post workshop periods Supervisors had more negative

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attitudes to the benefits of early diagnosis. This finding may be influenced by the Supervisors underlying beliefs and attitudes [21, 22], which in turn may delay diagnosis in practice given attitudes rather than knowledge have been identified as a key determinant of whether a GP undertakes a full assessment [3]. Addressing these gaps is essential if GP Supervisors are to effectively support GPRs to develop their dementia diagnostic and management skills in the clinic in the context of apprenticeship model of GP training utilised in Australia[39, 40].

A positive impact on engagement was also observed with both groups recording significantly improved scores after each of the workshops. The higher score for the GP Supervisors group may in part reflect their level of exposure and experience to dementia. However, it is concerning that pre workshop only 31% of Supervisors disagreed with the statement 'dementia is frustrating to manage', with 19.5 % of GPRs disagreeing. While these scores improved post workshop this does suggest a high level of frustration [36]. Indeed, the literature suggests GP's perceptions of their capacity to diagnose, communicate a diagnosis and manage dementia may impact on the extent to which they engage with a person with suspected or actual dementia or how much effort they apply to it [36].

Of note, GPRs commenced the workshop with a low likelihood of having experienced any prior dementia training, despite 87% having provided professional care to people with dementia, with a similar experience for supervisors. The lack of training certainly has implications for the GPs' knowledge of dementia, as we have previously demonstrated [1]. Results reported recently suggest that particularly for GPRs, the workshop increases their base knowledge of dementia [1] together with their confidence levels as demonstrated in this analysis.

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Improved knowledge, in association with enhanced confidence and attitude suggests that tailored workshops have the potential to not only increase diagnosis rates and improve management of dementia but also enhance in-practice training particularly where both Registrar and Supervisor have received targeted dementia training.

Conclusion

Targeted educational interventions can improve attitude, increase confidence and reduce negative attitudes towards engagement of participating GP registrars and supervisors. Findings highlight a clear need for GPs to have access to targeted workshops especially given the growing numbers of people with dementia.

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Contributor Information

Study design: MW AR; Data Collection: RM; Data analysis and interpretation: RM, KD, CE; Drafting the article: RM; Critical revision of the article: RM, KD, CE, MW,ML, AR; Final approval: all authors.

Guarantor Information

Andrew Robinson

Competing Interests Declaration

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: all authors had financial support from the Victorian and Tasmanian Dementia Training Study Centre (DTSC) until 2016 and Dementia Training Australia (DTA) from 2016 for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Transparency Declaration

The authors affirm that this manuscript is an honest, accurate and transparent account of the study being reported and that no important aspects of the study have been omitted.

Role of the Funding Source

This project was funded by the Australian Government Department of Health through the Victorian and Tasmanian Dementia Training Study Centre (DTSC) until 2016 and then Dementia Training Australia (DTA) from 2016. The study design was developed by the Wicking Dementia Research and Education Centre (WDREC) and submitted to the funder (DTSC and DTA) for approval. Data collection, analysis, interpretation and reporting was undertaken by the WDREC in partnership with Dr Margaret Winbolt from La Trobe University, who was Director of the DTSC and is the Director of DTA. All authors had full access to all the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

Data Sharing

The data set is not available as ethics approval does not allow release.

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Title: **The effect of a Dementia Education Intervention on the confidence and attitudes of General Practitioners in Australia. A pre-test post-test study.**

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Abstract

Objectives: This study assessed the impact of a Dementia Education Workshop on the confidence and attitudes of GP Registrars (GPR) and GP Supervisors (GPS) in relation to the early diagnosis and management of dementia.

Design: Pre-test post-test research design.

Setting: Continuing medical education in Australia.

Participants: 332 GP Registrars and 114 GP Supervisors.

Interventions: Registrars participated in a three hour face to face workshop while Supervisors participated in a 2 hour modified version designed to assist with the education and supervision of registrars.

Main outcome measures: The General Practitioners Confidence and Attitude scale for Dementia (GPACS-D) was used to assess overall confidence, attitude to care and engagement. A t test for paired samples was used to identify potential differences from pre-workshop (T1) to post workshop (T2) for each GP group. A t test for independent samples was undertaken to ascertain differences between each workshop group. A Cohen's d was calculated to measure the effect size of any observed difference between T1 and T2 scores.

Results: Significant increases in scores were recorded for '*Confidence in Clinical Abilities'*, '*Attitude to Care'* and '*Engagement'* between pre and post-test periods. GP Registrars exhibited the greatest increase in scores for *Confidence in Clinical Abilities* and *Engagement*.

Conclusions: Targeted educational interventions can improve attitude, increase confidence and reduce negative attitudes towards engagement of participating GPs.

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Article Summary

Strengths and limitations of this study

- The sample of Registrars and Supervisors is representative of the broader GP population in Australia.
- While the workshop for GP Registrars was compulsory this was not the case for GP Supervisors, thus a self-selection bias is possible.
- Confidence, Attitudes and Engagement were measured via GPACS-D, a validated tool.
- While each of the subscales included items relating to early diagnosis, the survey did not fully capture attitudes towards disclosure or perceived self-efficacy with regard to communication.

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Introduction

General Practitioners (GPs) are central to the early diagnosis and management of dementia [1]. Early diagnosis provides the opportunity for patients, carers and family to be informed about the condition, its prognosis, treatment options and support [2, 3] and allows the patient to plan for their future and be active participants in decision-making [4, 5].

Obstacles to timely diagnosis and intervention may include a lack of diagnostic tests/certainty [6] and lack of confidence in diagnostic skills and management [7], while negative attitudes towards diagnosis, disclosure and treatment [8-10] may also affect diagnosis rates. Further, stigma may delay recognition and diagnosis through concealment, minimisation or dismissal of early signs and symptoms [11]. Patients often present with co-occurrent conditions, further complicating the clinical picture [3, 12].

It is estimated that one third of GPs lack confidence in their diagnostic skills, while two thirds lack confidence in the management of behaviours associated with dementia [7], or feel they have little or nothing to offer patients presenting with dementia [13], with a third of GPs failing to routinely disclose the diagnosis [7, 14, 15]. Relatedly, pessimism surrounding dementia prognosis, and inability to offer curative treatment [16] may lead to an attitude of 'therapeutic nihilism' among GPs [7, 11], which reflects a biomedical definition of treatment and an ethos centred around curing people [16], while simultaneously ignoring therapeutic interventions that may benefit people with dementia and their carers [17-19].

Illiffe (2003) argues that low rates of dementia diagnosis are not only a result of knowledge and skills deficits but also failure to transfer acquired knowledge into clinical practice [9]. Relatedly, Boise et al. (2005) state that attitude rather than knowledge is a key determinant

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of whether a GP undertakes a full assessment [2], and others argue that the diagnostic and management practices of GPs towards dementia may be significantly affected by underlying beliefs and attitudes [20, 21]. While social psychological theory suggests a relationship between perceptions of self-efficacy, effort and avoidance [22], GPs hesitancy to diagnose dementia may not be explicit. Rather it may manifest in a reluctance to formalise a diagnosis or preferentially treat co-occurring conditions for which treatment options are available [10, 23], referring on because of limited treatment options [24], questioning the (traditional) role of the GP in treating dementia [25], or having insufficient resources [15].

Changing attitudes towards the early diagnosis of dementia has been identified as a significant task for medical educators, with the key to countering such attitudes being targeted educational campaigns [26]. Moreover, evidence suggests that the focus of GP training around dementia should encompass more than knowledge acquisition and aim to improve confidence and attitude [27]. While GP attitudes toward caring for people with dementia have been shown to be positive [28], fear of misdiagnosis [6] and lack of confidence in diagnostic and dementia management skills have been reported to be of particular concern in multiple studies with a lack of effective education and training frequently cited as an underlying cause [7, 21, 29].

Comprehensive dementia education for GPs should include epidemiological knowledge, communicating a diagnosis, symptom management, and support services for patients and their carers [30, 31]. Tullo (2011) emphasises the importance of personhood, quality of life and communication with patients [32], while Phillipson (2015) argues that training interventions should place an emphasis on the slow progression of the condition, the treatments available, and maintenance of quality of life [33].

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In Australia GPs typically are trained in an apprenticeship model with a key aspect of training involving experienced GPs (Supervisors) providing support to the GP registrar (GPR) within a general practice setting. Supervisors facilitate registrar learning through identifying learning needs, encouraging reflective learning and practice, guiding access to resources, providing advice on applying knowledge to specific patient cases and role modelling interactions with patients (22).

Tailored training workshops were developed specifically to augment this interaction and address dementia specific training needs. Directed at both Supervisors and GPRs, we have previously shown them to be effective in improving dementia knowledge [34]. Here we examine the impact of these workshops on attitudes and confidence toward dementia with a view to improving management of dementia in general practice.

Method

Study aims and design

In Australia GP Registrars are required to engage in a learning program consisting of a number of learning units conducted by regional training providers in each state. "The Recognising, Diagnosing and Managing Dementia in General Practice" workshop was developed by the Wicking Dementia Research and Education Centre as a response to the expressed absence of appropriate dementia related content in GP Registrar training programs. Training was conducted at regional training offices in 6 Australian states (Tasmania, New South Wales, Victoria, Queensland, Australian Capital Territory and South Australia). The GP registrar workshop consists of two 1.5-hour face to face presentations delivered by medical educators focusing on (a) recognising and diagnosing dementia and (b)

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managing dementia in General Practice. The Supervisor's workshop, also conducted face-to-face and for similar durations, is a modified version of that delivered to Registrars in that it seeks to support Supervisors to teach registrars the diagnosis and management content provided in the registrar program (see Tierney et al 2019 [34]). The strong focus on providing a framework for decision making for the recognition, diagnosis and management of dementia is complemented by tools and resources that are aimed at improving both diagnostic capacity and providing ongoing care and support for people with dementia and their family and/or carers. There is a stronger focus on the lived experience of dementia and more in-depth coverage of some aspects of dementia diagnosis and management in the Registrar's workshop than in the Supervisors workshop.

Sampling and Participants

Purposive sampling methods were employed to recruit participants from 18 dementia education workshops conducted in six Australian States between 2014 and 2018. The sample comprised 2 cohorts; those who undertook the GP Registrars Workshop (n=355) and those who undertook the Supervisors Workshop (n=121). Of these groups, 332 GPRs and 114 Supervisors completed the survey, representing a response rate of 93% and 94% respectively. The GP Registrar workshop comprised recently graduated GPs (GP Registrars) who were undertaking vocational training within a General Practice setting, while the Supervisor group comprised medical educators (n=9), supervisors (n=87) and GPs (n=18).

Process and measures

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A research assistant not associated with delivery of the workshop administered the survey. All workshop participants were invited to complete the GPACS-D survey [38] immediately before (T1) and immediately after (T2) the workshop. Participants were provided with an information sheet about the research, were informed that the survey was entirely voluntary and that completion of the survey implied consent. The impact of the workshops on confidence and attitude was measured using the GPACS-D which comprises 3 subscales; *Confidence in Clinical Abilities* (6 items), *Attitude to Care* (6 items) and *Engagement* (3 items) and validated using confirmatory factor analysis [35]. The GPACS-D is a reliable and valid measure of attitude and confidence change before and after targeted dementia education. A Likert scale is employed scoring from 1 (strongly agree) to 5 (strongly disagree). Total subscale scores are standardised with a minimum score of 1 and a maximum score of 5 so that comparisons can be made between subscales [36]. The scoring system is described in detail in Mason et al (2019)[35].

Analysis

We were interested in the impact of the respective workshops on GP Registrars (GPRs) and GP Supervisors. We hypothesised that the Supervisor group would differ from the GPR group in attitude and confidence given their experience as practicing GPs.

Descriptive statistics were generated for demographic characteristics. Means and confidence intervals were calculated for subscale scores and the individual items that made up each of the subscales, for both Registrar and Supervisor groups. We conducted t-tests for independent samples to identify differences between groups, while t-tests for paired samples were used to identify any significant differences in scores for each group between T1 and T2. T-tests are robust to violations of assumptions of normality [37, 38]. We applied

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Levene's test of equality of variance to establish homogeneity of variance. Adjusted 'p' values were reported where heterogeneity of variance was identified.

Cohen's d was calculated to measure the effect size of any observed difference between T1 and T2 scores for each group with *d*=0.2 equivalent to a 'small' effect size, 0.5 a 'medium' effect size and 0.8 or above a 'large' effect size [39]. All data analyses were conducted using SPSS (Version 22).

Ethics approval

A University Human Research Ethics Committee reviewed and approved this study (Reference Number: H0012046). Before the workshop commenced, the study was described to participants and all participants were given an Information Sheet. Return of the completed surveys at the end of the workshop implied their consent for use of the data.

Patient and Public involvement

There was no patient or public involvement in this study.

Results

446 respondents were included in the analysis comprising 332 attendees at GP Registrar workshops (the GPR group) and 114 attendees from the Supervisor workshop (the Supervisor group) (Table 1). Supervisors were significantly older than GPRs (t(414)=21.121; p<.000), and more had undertaken prior dementia education ($_{\chi}^{2}$=20.263; p<.000), although this proportion was small for both groups. More Supervisors had provided professional care to someone with dementia than GPRs ($_{\chi}^{2}$2=11.294; p=.001), while similar proportions of both groups had a family member with dementia.

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We compared age and gender in our sample (GPACS-D) with other samples containing registrars and or supervisors to gauge the representativeness of our sample. These included; The General Practice Supervisors Australia Survey (GPSA) (2017)[40] for Supervisor characteristics, and The Australian General Practice Training Program Survey (AGPT) (2018)[41] and Registrars' Clinical Encounters in Training (ReCEnT) (2018)[42] for Registrars. An examination of these samples revealed that the GPACS-D sample is broadly representative of the GP population. A slightly larger proportion of females was found in the Supervisor group in the GPACS-D sample, while minimal differences emerged for age in both Registrars and Supervisor groups.

Table 1: Sample Characteristics

Demographics	GP Registrars (n=332)	Supervisors (n=114)
Age	33.03 (sd=6.1)	49.8 (sd=10.5)
Male	40.2% (n=129)	50% (n=56)
Australian born	41.9% (n=139)	39.5% (n=45)
Previous dementia training	5.6% (n=18)	20% (n=22)
Provided professional care	87% (n=280)	98% (n=108)
Family member dementia	35.5% (n=114)	38.2 (n=42)

The GPACS-D assessed the impact of each of the workshops on three constructs; *Confidence in Clinical Abilities, Attitude to Care* and *Engagement*.

Items in the *Confidence in clinical abilities* subscale reflect a GP's perception of their capacity to diagnose, treat and manage dementia. Analysis of scores for each of the items comprising this subscale is shown in Table 2.

Table 2: *Confidence in Clinical Abilities. Pre and Post Workshop scores by Role.*

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Confidence in Clinical Knowledge	Role	PreTest Score	95% CI	Post Test Score	95% CI	t	p*	Mean Difference	Cohen's D
Overall Score	GPR (n=332)	2.67	2.61-2.74	3.69	3.63-3.76	17.61	0.000	1.06	1.71
	Super (n=114)	3.28+	3.14-3.42	4.03+	3.93-4.13	7.58	0.000	0.76	1.15
Frustration at not being able to effectively treat people with dementia	GPR (n=332)	2.49	2.39-2.59	3.55	3.46-3.65	17.56	0.000	1.07	1.177
	Super (n=114)	2.94+	2.73-3.15	3.94+	3.78-4.11	9.42	0.000	0.8	1.004
Confident in ability to discuss legalities	GPR (n=332)	2.32	2.22-2.42	3.25	3.16-3.35	17.65	0.000	0.95	1.021
	Super (n=114)	2.96+	2.75-3.16	3.6+	3.42-3.77	5.73	0.000	0.4	0.637
Confidence in ability to diagnose	GPR (n=332)	2.65	2.56-2.73	3.82	3.74-3.90	23.85	0.000	1.19	1.525
	Super (n=114)	3.31+	3.15-3.47	4.18+	4.06-4.29	11.11	0.000	0.88	1.149
Confident in ability to provide medical care	GPR (n=332)	2.86	2.77-2.94	3.8	3.73-3.88	20.31	0.000	0.94	1.276
	Super (n=114)	3.52+	3.36-3.69	4.21+	4.10-4.32	8.66	0.000	0.7	0.935
Confident in ability to provide advice about symptoms	GPR (n=332)	2.70	2.61-2.78	3.70	3.62-3.78	22.02	0.000	1.01	1.34
	Super (n=114)	3.23+	3.07-3.39	3.95+	3.82-4.09	8.24	0.000	0.74	0.906
Confident in knowledge of local resources	GPR (n=332)	2.43	2.33-2.52	3.47	3.37-3.57	20.26	0.000	1.07	1.201
	Super (n=114)	3.04+	2.86-3.21	3.79+	3.63-3.95	9.38	0.000	0.79	0.856

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (t test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (t test for paired samples).

While both GPRs and Supervisors were significantly more confident after the workshops, Supervisors were significantly more confident in their clinical abilities than GPRs both before (t(438)=8.424; p<.000)) and after their respective workshops (t(420)=5.328;p<.000), GPRs exhibited a significantly greater improvement in score than Supervisors (t(414)=3.797; p<.000)), while the effect size of the change in *Confidence in clinical abilities* was strong for both groups and greatest for GPRs .Supervisors recorded a higher level of confidence than GPRs on all items both before and after the workshop, although both groups improved significantly across all items (Table 2). GPRs exhibited larger score changes on all items after the workshop.

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Supervisors reported a higher score for 'confidence in ability to diagnose dementia' than GPRs both before and after the workshop . However, only 13.8% of GPRs were confident in their diagnostic ability before the workshop compared to 44.2% of Supervisors, rising to 60.4% GPRs post workshop compared to 62.6% post for Supervisors.

Confidence in 'ability to provide appropriate medical care' also increased significantly for both groups, with Supervisors recording a higher mean score both before ($t(439)=4.150$; $p<.000$) and after the workshop ($t(421)=4.053$;$p=<.000$), while a strong effect size was observed for score changes in both groups (GPR, $d=1.276$; Supervisors, $d=.935$). An increase in the proportion of GPRs agreeing with the statement (18.7% to 59.8%) was observed after the workshop.

Confidence in 'providing advice about managing dementia related symptoms' improved markedly for both groups, with Supervisors recording a significantly higher score than GPRs ($t(421)=4.662$;$p<.000$). Only 13.8% of GPRs were confident pre-workshop increasing to 56.3% post workshop, with 9.5% strongly agreeing. Before the workshop 48.5% of Supervisors agreed that they were confident in providing advice (8.8% strongly agreed), increasing to 67% after the workshop (27.4% strongly agreed).

Attitude to Care

Items in the *Attitude to Care* subscale reflect aspects of the provision of care for patients and their families. Analysis of scores for each of the items comprising this subscale is shown in Table 3.

Table 3: *Attitude to Care. Pre and Post Workshop Scores by Role*

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Attitude To Care	Role	Pre test Score	95% CI	Post Test Score	95% CI	t	p*	Mean difference	Cohen's D
Overall Score	GPR (n=332)	4.35	4.30-4.39	4.70	4.65-4.74	17.6	0.000	0.34	0.84
	Super (n=114)	4.35	4.26-4.43	4.59	4.51-4.66	7.58	0.000	0.25	0.57
Much can be done to improve lives of patient	GPR (n=332)	4.22	4.14-4.30	4.54	4.47-4.61	6.98	0.000	0.32	0.483
	Super (n=114)	4.37+	4.25-4.50	4.61	4.51-4.72	4.43	0.000	0.26	0.401
Early detection benefits the patient	GPR (n=332)	4.32	4.24-4.40	4.73+	4.67-4.80	8.38	0.000	0.39	0.612
	Super (n=114)	4.21	4.06-4.37	4.52	4.38-4.66	3.92	0.000	0.3	0.393
Important family/carers seek external support	GPR (n=332)	4.56	4.50-4.63	4.81+	4.76-4.86	6.98	0.000	0.23	0.473
	Super (n=114)	4.52	4.41-4.64	4.67	4.57-4.77	2.69	0.007	0.14	0.262
Important family carers contact Alzheimer's Aust.	GPR (n=332)	4.38	4.30-4.45	4.69	4.63-4.75	7.92	0.000	0.31	0.509
	Super (n=114)	4.42	4.30-4.45	4.64	4.53-4.75	4.01	0.000	0.21	0.347
GPs in best position to organise care	GPR (n=332)	3.95	3.86-4.04	4.4	4.33-4.48	9.41	0.000	0.46	0.59
	Super (n=114)	4.06	3.90-4.22	4.44	4.33-4.48	4.68	0.000	0.42	0.492
Patients should be informed early so they can plan	GPR (n=332)	4.31	4,23-4.39	4.82+	4.76-4.88	9.92	0.000	0.48	0.817
	Super (n=114)	4.28	4.14-4.43	4.62	4.47-4.76	4.25	0.000	0.35	0.447

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (t test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (t test for paired samples).

Overall mean scores for *Attitude to Care* (Table 3) were equivalent for Supervisors and GPRs prior to the workshops and increased significantly for both GPRs and Supervisors following the workshop, with moderate effect sizes for the increases (Table 3). GPRs scored significantly higher than Supervisors post workshop (t(420)=2.463;p=.014).

Significantly higher mean scores were reported for GPRs compared to Supervisors for 'early detection benefits the patient' (z=3.21; p<.000) t(422)=2.965;p=.003)and 'Patients should be informed early, so they can plan for their future'(t(422)=3.135;p=.002) Table 3).

Both groups reported significant increases in agreement that 'early detection of dementia benefits the patient', which had a moderate effect size for GPRs and a weak effect size for Supervisors. The greatest difference reported was for those strongly agreeing. GPRs recorded an increase in those strongly agreeing (from 47.3% pre-workshop to 77.9% post workshop) compared to an 18 % increase for Supervisor's (44.2% to 62.6%) post workshop.

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Similar results were obtained for the item 'Patients with dementia should be informed early so they can plan for the future'. While both groups reported significant increases in those agreeing with the benefits of informing patients early, GPRs had significantly higher scores than Supervisors post workshop (4.82 versus 4.62) and recorded a larger increase in score. A change with a strong effect size was observed for GPRs and with a moderate effect size for Supervisors.

Both GPR and Supervisor groups recorded increases in those agreeing that 'it is important that relatives/family/carers of dementia seek external support'. The post workshop mean score for GPRs was greater than for Supervisors (t(422)=2.530; p=.012), while GPRs also exhibited the greatest improvement

Engagement

Engagement measures a GP's perceptions towards treating dementia, and includes fear of communicating a diagnosis, frustration in managing dementia and a preference for treating other conditions (Table 4).

Both Supervisors and GPRs recorded a significantly higher score for *Engagement* post workshop, while Supervisors reported greater *Engagement* than GPRs at baseline (t(439)=5.877; p<.000) and after the workshop (t(422)=5.091; p<.000). A moderate effect size was observed for the score change shown for each group.

Table 4: *Engagement; Pre and Post Workshop Scores by Role*

Fears and Frustrations	Role	Pre test Score	95% CI	Post Test Score	95% CI	t	p*	Mean difference	Cohen's D
Overall Score	GPR (n=332)	2.98	2.90-3.06	3.42	3.34-3.50	12.06	0.000	0.44	0.61
	Super (n=114)	3.44+	3.30-3.58	3.84+	3.70-3.99	6.97	0.000	0.41	0.53

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Managing dementia frustrating	GPR (n=332)	3.00	2.91-3.10	3.51	3.40-3.61	9.23	0.000	0.37	0.569
	Super (n=114)	3.45+	3.26-3.64	3.91+	3.75-4.07	4.721	0.000	0.27	0.494
Fear of communicating a diagnosis	GPR (n=332)	3.88	3.77-3.99	4.14	4.04-4.24	4.79	0.000	0.27	0.277
	Super (n=114)	4.16+	3.98-4.34	4.53+	4.39-4.67	3.63	0.000	0.36	0.431
Preference for treating other diseases	GPR (n=332)	2.77	2.66-2.87	3.2	3.09-3.31	8.87	0.000	0.42	0.44
	Super (n=114)	3.27+	3.09-3.45	3.64+	3.46-3.31	5.09	0.000	0.4	0.355

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (t test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (t test for paired samples).

Supervisors recorded significantly higher mean scores for each of the 3 items comprising engagement at both pre and post workshop periods.

Both GPR and Supervisor groups reported less frustration managing dementia post workshop, while Supervisors exhibited significantly less frustration at both pre ($t(439)=4.570$; $p<.000$) and post workshop periods ($t(422)=3.914$; $p<.000$) than GPRs. The greatest improvement was reported by GPRs, with moderate effect sizes exhibited for both groups. The proportion disagreeing with the statement that 'dementia was frustrating to manage' increased from 19.5% to 39.4% for the GPR group which was similar magnitude of change to Supervisors (31% to 50.5%). However, a significant proportion of both groups were still undecided about this statement post workshop (GPRs 33.1%,19.6% Supervisors). As with other aspects of the subscale, Supervisors reported less fear of communicating a diagnosis than GPRs at both pre ($t(439)=2.603$; $p=.010$) and post workshop periods ($t(422)=4.120$; $p<.000$) with a moderate effect for Supervisors and a weak effect for GPRs.

Similar results were obtained for a preference to treat other diseases, with both groups recording significant improvement after the workshop. Supervisors recorded a higher mean score than GPRs at both pre ($t(439)=4.869$; $p<.000$) and post workshop periods ($t(422)=4.053$; $p<.000$), while GPRs exhibited the greatest increase, with moderate effect

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observed for both groups. The proportion of GPRs agreeing to a preference for treating other diseases decreased from 32% pre-workshop to 18.6% post workshop, compared to 18.6% to 10.3% for Supervisors. However, a large proportion of each group were neutral to the statement before and after the workshop, with a decreased proportion of Supervisors (42.5% pre, 32.7% post) and a relatively unchanged proportion of GPRs (38.1% pre, 39% post) reporting neutral views on this item.

Discussion

This study examined the impact of tailored dementia education workshops on the attitudes and confidence of both GP Registrars and GP Supervisors towards dementia. Attending tailored workshops resulted in significant improvements in attitudes, confidence and engagement of both groups. While increased confidence and reduced negative attitudes towards the management of dementia have previously been reported to correlate with a self-reported history of prior dementia training [17], this study demonstrates a direct and immediate impact of a training intervention.

In some respects the positive *Attitude to Care* at baseline was not surprising given that GPs are reported to have a positive attitude with respect to their role in providing care and early diagnosis for people with dementia [28, 43]. However, the further improvements in this subscale shown after the workshop highlight the effectiveness of the workshop's focus on early warning signs and on the importance of diagnosis and management approaches, all of which are intended to influence participants to more effectively engage people with dementia and their families. These results suggest that workshop attendance is useful in preparing GP registrars for practice and may enhance practice in experienced GPs who act as their Supervisors.

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The confidence of the GP registrar group, while not as high as Supervisors, significantly improved post workshop, albeit from a notably low level. This improvement provides insight into the importance of targeting education beyond the traditional bio-medical focus typical of much medical education[16], often with minimal focus on therapeutic interventions [17-19]. Differences in pre-test confidence between the cohorts are not surprising given GPR's are generally younger and less experienced [21]. The greater magnitude of change for GP Registrars in this study would suggest that elements restricted to the Registrars' workshop, and perhaps in particular elements that teach skills in diagnosis, provision of appropriate medical care and management of dementia related symptoms, may particularly impact on confidence, again highlighting its applicability to GP specialty training.

However, it is interesting that only 44% of Supervisors reported confidence to diagnose dementia pre-workshop, rising to only around 60% post-workshop. Similar findings were evident in the items related to confidence providing advice and appropriate medical care. It was also notable that at both pre and post workshop periods Registrars had more positive attitudes about the benefits of early diagnosis than Supervisors. This finding may be influenced by the Supervisors' underlying beliefs and attitudes [20, 21], which in turn may delay diagnosis in practice, particularly given attitudes rather than knowledge have been identified as a key determinant of whether a GP undertakes a full assessment [2]. Addressing these gaps is essential if GP Supervisors are to effectively support GPRs to develop their dementia diagnostic and management skills in the clinic in the context of the apprenticeship model of GP training utilised in Australia [44, 45].

A positive impact on engagement was also observed, with both groups recording significantly improved scores after each of the workshops. The higher scores for the GP

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Supervisors group may in part reflect their level of exposure and experience to dementia. However, it is concerning that pre workshop only 31% of Supervisors disagreed with the statement 'dementia is frustrating to manage', with 19.5 % of GPRs disagreeing. While these scores improved post workshop this does suggest a high level of frustration [36]. Indeed, the literature suggests GPs' perceptions of their capacity to diagnose, communicate a diagnosis and manage dementia may impact on the extent to which they engage with a person with suspected or actual dementia or how much effort they apply to it [36].

Of note, GPRs commenced the workshop with a low likelihood of having experienced any prior dementia training, despite 87% having provided professional care to people with dementia. This lack of training has implications for the GPs' knowledge of dementia, as we have previously demonstrated [1]. Results reported recently suggest that particularly for GPRs, the workshop increases their base knowledge of dementia [1]. It is possible that this is related to their increased confidence levels as demonstrated in this study. Educational and health literature indicates that knowledge is typically correlated with both attitudes and perceptions of self-efficacy [46]. Taken together, the positive impacts of these workshops may translate to improved diagnosis rates and/or support to people with dementia.

It is clear that effective educational interventions involve more than knowledge and skills acquisition [27]. In particular, designing educational initiatives requires a cognisance of not only clinical issues but the values, attitudes and experiences of those being trained. In this context findings from this study can be used to identify specific components of attitude and confidence that may be able to be targeted in future workshops. This point is especially important given the importance placed on attitudes in relation to how a GP approaches dementia. GPs tend to be knowledgeable about dementia [9, 26], but low rates of diagnosis

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persist[10], suggesting that more than simply knowledge is involved, and that a GP's attitude towards the benefits of diagnosis, support and management is essential for effective clinical practice.

In consideration of this, educational interventions should aim to change the way GPs view dementia and their role in managing the condition. Such interventions should support GPs adoption of therapeutic approaches to treatment and management rather than a purely medical one with a curative focus, with the overall aim of increasing engagement between the GP, the person with dementia and their families or carer.

While this study provides insights into confidence and attitudes as these relate to the diagnosis and management of dementia and the effectiveness of educational interventions on confidence and attitudes there were some limitations. For Supervisors, there was the likelihood of self-selection bias given that they volunteered for the workshop. For registrars, while training is compulsory, the choice of modules undertaken is purely voluntary.

The study design was pre and post, measuring impact of the workshop. It is possible, as with any pre-post survey research, that response bias may have resulted from the perceived need for socially desirable responses on the part of the participant. However, there were no incentives for bias, survey responses were anonymous, and items were non-leading.

Our study was focussed on the immediate impact of the workshops on the confidence and attitudes of participants. Future research should focus on providing evidence of the impact of the workshop on changes in behaviour as it relates to the diagnosis and management of dementia. Additionally, communication has been identified as a crucial part of the diagnostic procedure. While we did address some aspects of communication, survey items

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did not fully capture the construct [35], therefore more work is required in this area given its importance in relation to not only providing a diagnosis but also the doctor-patient relationship.

Conclusion

Targeted educational interventions can improve attitude, increase confidence and reduce negative attitudes towards engagement of participating GP registrars and supervisors. Findings highlight a clear need for GPs to have access to targeted workshops especially given the growing numbers of people with dementia.

Contributor Information

Study design: MW AR; Data Collection: RM; Data analysis and interpretation: RM, KD, CE; Drafting the article: RM; Critical revision of the article: RM, KD, CE, MW,ML, AR; Final approval: all authors.

Guarantor Information

Andrew Robinson

Competing Interests Declaration

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: all authors had financial support from the Victorian and Tasmanian Dementia Training Study Centre (DTSC) until 2016 and Dementia Training Australia (DTA) from 2016 for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Transparency Declaration

The authors affirm that this manuscript is an honest, accurate and transparent account of the study being reported and that no important aspects of the study have been omitted.

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Winbolt from La Trobe University, who was Director of the DTSC and is the Director of DTA. All authors had full access to all the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

Data Sharing

The data set is not available as ethics approval does not allow release.

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The effect of a Dementia Education Intervention on the confidence and attitudes of General Practitioners in Australia. A pre-test post-test study.

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Title: **The effect of a Dementia Education Intervention on the confidence and attitudes of General Practitioners in Australia. A pre-test post-test study.**

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Abstract

Objectives: This study assessed the impact of a Dementia Education Workshop on the confidence and attitudes of GP Registrars (GPR) and GP Supervisors (GPS) in relation to the early diagnosis and management of dementia.

Design: Pre-test post-test research design.

Setting: Continuing medical education in Australia.

Participants: 332 GP Registrars and 114 GP Supervisors.

Interventions: Registrars participated in a three hour face to face workshop while Supervisors participated in a 2 hour modified version designed to assist with the education and supervision of registrars.

Main outcome measures: The General Practitioners Confidence and Attitude scale for Dementia (GPACS-D) was used to assess overall confidence, attitude to care and engagement. A t test for paired samples was used to identify differences from pre-workshop (T1) to post workshop (T2) for each GP group. A t test for independent samples was undertaken to ascertain differences between each workshop group. A Cohen's d was calculated to measure the effect size of any difference between T1 and T2 scores.

Results: Significant increases in scores were recorded for '*Confidence in Clinical Abilities'*, '*Attitude to Care'* and '*Engagement'* between pre and post-test periods. GP Registrars exhibited the greatest increase in scores for *Confidence in Clinical Abilities* and *Engagement*.

Conclusions: Targeted educational interventions can improve attitude, increase confidence and reduce negative attitudes towards engagement of participating GPs.

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Article Summary

Strengths and limitations of this study

- The sample of Registrars and Supervisors is representative of the broader GP population in Australia.
- While the GP Registrars' workshop was compulsory this was not the case for GP Supervisors, thus self-selection bias is possible.
- Confidence, Attitudes and Engagement were measured via GPACS-D, a validated tool.
- While each of the subscales included items relating to early diagnosis, the survey did not fully capture attitudes towards disclosure or perceived self-efficacy regarding communication.

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Introduction

General Practitioners (GPs) are central to the early diagnosis and management of dementia [1]. Early diagnosis provides the opportunity for patients, carers and family to be informed about the condition, its prognosis, treatment options and support [2, 3] and allows the patient to plan for their future and be active participants in decision-making [4, 5].

Obstacles to timely diagnosis and intervention may include a lack of diagnostic tests/certainty [6] and lack of confidence in diagnostic skills and management [7], while negative attitudes towards diagnosis, disclosure and treatment [8-10] may also affect diagnosis rates. Further, stigma may delay recognition and diagnosis through concealment, minimisation or dismissal of early signs and symptoms [11]. Patients often present with co-occurrent conditions, further complicating the clinical picture [3, 12].

It is estimated that one third of GPs lack confidence in their diagnostic skills, while two thirds lack confidence in the management of behaviours associated with dementia [7], or feel they have little or nothing to offer patients presenting with dementia [13], with a third of GPs failing to routinely disclose the diagnosis [7, 14, 15]. Relatedly, pessimism surrounding dementia prognosis, and inability to offer curative treatment [16] may lead to an attitude of 'therapeutic nihilism' among GPs [7, 11], which reflects a biomedical definition of treatment and an ethos centred around curing people [16], while simultaneously ignoring therapeutic interventions that may benefit people with dementia and their carers [17-19].

Illiffe (2003) argues that low rates of dementia diagnosis are not only a result of knowledge and skills deficits but also failure to transfer acquired knowledge into clinical practice [9]. Relatedly, Boise et al. (2005) state that attitude rather than knowledge is a key determinant

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of whether a GP undertakes a full assessment [2], and others argue that the diagnostic and management practices of GPs towards dementia may be significantly affected by underlying beliefs and attitudes [20, 21]. While social psychological theory suggests a relationship between perceptions of self-efficacy, effort and avoidance [22], GPs hesitancy to diagnose dementia may not be explicit. Rather it may manifest in a reluctance to formalise a diagnosis or preferentially treat co-occurring conditions for which treatment options are available [10, 23], referring on because of limited treatment options [24], questioning the (traditional) role of the GP in treating dementia [25], or having insufficient resources [15].

Changing attitudes towards the early diagnosis of dementia has been identified as a significant task for medical educators, with the key to countering such attitudes being targeted educational campaigns [26]. Moreover, evidence suggests that the focus of GP training around dementia should encompass more than knowledge acquisition and aim to improve confidence and attitude [27]. While GP attitudes toward caring for people with dementia have been shown to be positive [28], fear of misdiagnosis [6] and lack of confidence in diagnostic and dementia management skills have been reported to be of particular concern in multiple studies with a lack of effective education and training frequently cited as an underlying cause [7, 21, 29].

Comprehensive dementia education for GPs should include epidemiological knowledge, communicating a diagnosis, symptom management, and support services for patients and their carers [30, 31]. Tullo (2011) emphasises the importance of personhood, quality of life and communication with patients [32], while Phillipson (2015) argues that training interventions should place an emphasis on the slow progression of the condition, the treatments available, and maintenance of quality of life [33].

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In Australia GPs typically are trained in an apprenticeship model with a key aspect of training involving experienced GPs (Supervisors) providing support to the GP registrar (GPR) within a general practice setting. Supervisors facilitate registrar learning through identifying learning needs, encouraging reflective learning and practice, guiding access to resources, providing advice on applying knowledge to specific patient cases and role modelling interactions with patients (22).

Tailored training workshops were developed specifically to augment this interaction and address dementia specific training needs. Directed at both Supervisors and GPRs, we have previously shown them to be effective in improving dementia knowledge [34]. Here we examine the impact of these workshops on attitudes and confidence toward dementia with a view to improving management of dementia in general practice.

Method

Study aims and design

In Australia GP Registrars are required to engage in a learning program consisting of a number of learning units conducted by regional training providers in each state. "The Recognising, Diagnosing and Managing Dementia in General Practice" workshop was developed by the Wicking Dementia Research and Education Centre as a response to the expressed absence of appropriate dementia related content in GP Registrar training programs. Training was conducted at regional training offices in 6 Australian states (Tasmania, New South Wales, Victoria, Queensland, Australian Capital Territory and South Australia). The GP registrar workshop consists of a three hour face to face presentation delivered by medical educators focusing on (a) recognising and diagnosing dementia and (b)

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managing dementia in General Practice. The Supervisors' workshop, also conducted face-to-face and for similar durations, is a modified version of that delivered to Registrars in that it seeks to support Supervisors to teach registrars the diagnosis and management content provided in the registrar program (see Tierney et al 2019 [34]), with a more in-depth coverage of some aspects of dementia diagnosis and management in the Registrars' workshop than in the Supervisors workshop.

A strong focus on providing a framework for decision making for the recognition, diagnosis and management of dementia is complemented by tools and resources that are aimed at improving both diagnostic capacity and providing ongoing care and support for people with dementia and their family and/or carers. In an attempt to address GPs reluctance to diagnose dementia [35] there is a strong focus on highlighting lived experience in order to situate people with dementia and their carers as central to the process, and to consider diagnosis and management through a biopsychosocial lens [36, 37]. The intent is to facilitate GPs to engage with the process of diagnosis and associated management in a timely and supportive fashion.

Sampling and Participants

Purposive sampling methods were employed to recruit participants from 18 dementia education workshops conducted in six Australian States between 2014 and 2018. Lists of GPs attending the GP Registrar and Supervisor workshops were provided by each regional training organisation and used as the sample frame for each region. The list comprised the GP's name and a unique id number to ensure that each pre and post survey matched with the individual.

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The sample comprised 2 cohorts; those who undertook the GP Registrars Workshop (n=355) and those who undertook the Supervisors Workshop (n=121). Of these groups, 332 GPRs and 114 Supervisors completed the survey, representing a response rate of 93% and 94% respectively. The GP Registrar workshop comprised recently graduated GPs (GP Registrars) who were undertaking vocational training within a General Practice setting, while the Supervisor group comprised medical educators (n=9), supervisors (n=87) and GPs (n=18).

Process and measures

The workshop was evaluated using a pre-test post-test framework which employed two measures. Changes in knowledge of dementia were assessed using the Dementia Knowledge Assessment Survey (DKAS) (see Tierney et al. 2019[34]). This paper reports the second arm of the evaluation which utilised the GPACS-D survey [38] to evaluate the impact of the workshops on confidence and attitudes.

The GPACS-D comprises 3 subscales: *Confidence in Clinical Abilities* (6 items), *Attitude to Care* (6 items) and *Engagement* (3 items); and is validated using confirmatory factor analysis [38]. The GPACS-D is a reliable and valid measure of attitude and confidence change before and after targeted dementia education. A Likert scale is employed scoring from 1 (strongly agree) to 5 (strongly disagree). Total subscale scores are standardised with a minimum score of 1 and a maximum score of 5 so that comparisons can be made between subscales [39]. The scoring system is described in detail in Mason et al (2019)[38].

A research assistant not associated with delivery of the workshop administered the surveys. Pre-test surveys were provided to each participant as they signed in along with an information sheet about the research. Attendees were informed that survey completion

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was entirely voluntary and that completion implied consent. Participants completed the surveys immediately before (T1) and immediately after (T2) the workshop, with each pre and post survey matched via the unique ID for each attendee.

Ethics approval

The Tasmania Social Sciences Human Research Ethics Committee (University of Tasmania) reviewed and approved this study (Reference Number: H0012046).

Patient and Public involvement

There was no patient or public involvement in this study.

Analysis

We were interested in the impact of the respective workshops on GP Registrars (GPRs) and GP Supervisors. We hypothesised that the Supervisor group would differ from the GPR group in attitude and confidence given their experience as practicing GPs.

Descriptive statistics were generated for demographic characteristics. Means and confidence intervals were calculated for subscale scores and the individual items that made up each of the subscales, for both Registrar and Supervisor groups. We conducted t-tests for independent samples to identify differences between groups, while t-tests for paired samples were used to identify any significant differences in scores for each group between T1 and T2. T-tests are robust to violations of assumptions of normality [40, 41]. We applied Levene's test of equality of variance to establish homogeneity of variance. Adjusted 'p' values were reported where heterogeneity of variance was identified.

Cohen's d was calculated to measure the effect size of any observed difference between T1 and T2 scores for each group with d=0.2 equivalent to a 'small' effect size, 0.5 a 'medium'

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effect size and 0.8 or above a 'large' effect size [42]. All data analyses were conducted using SPSS (Version 22).

Results

446 respondents were included in the analysis comprising 332 attendees at GP Registrar workshops (the GPR group) and 114 attendees from the Supervisor workshop (the Supervisor group) (Table 1). Supervisors were significantly older than GPRs ($t(414)=21.121$; $p<.001$), and more had undertaken prior dementia education ($\chi^2=20.263$; $p<.001$), although this proportion was small for both groups. More Supervisors had provided professional care to someone with dementia than GPRs ($\chi^2=11.294$; $p=.001$), while similar proportions of both groups had a family member with dementia.

We compared age and gender in our sample (GPACS-D) with other samples containing registrars and or supervisors to gauge the representativeness of our sample. These included; The General Practice Supervisors Australia Survey (GPSA) (2017)[43] for Supervisor characteristics, and The Australian General Practice Training Program Survey (AGPT) (2018)[44] and Registrars' Clinical Encounters in Training (ReCEnT) (2018)[45] for Registrars. An examination of these samples revealed that the GPACS-D sample is broadly representative of the GP population. A slightly larger proportion of females was found in the Supervisor group in the GPACS-D sample, while minimal differences emerged for age in both Registrars and Supervisor groups.

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Table 1: Sample Characteristics – Mean age and frequencies for gender, dementia training, providing professional care and family member with dementia.

Demographics	GP Registrars (n=332)	Supervisors (n=114)
Age	33.03 (sd=6.1)	49.8 (sd=10.5)
Male	40.2% (n=129)	50% (n=56)
Australian born	41.9% (n=139)	39.5% (n=45)
Previous dementia training	5.6% (n=18)	20% (n=22)
Provided professional care	87% (n=280)	98% (n=108)
Family member dementia	35.5% (n=114)	38.2 (n=42)

The GPACS-D assessed the impact of each of the workshops on three constructs; *Confidence in Clinical Abilities, Attitude to Care* and *Engagement.*

Items in the *Confidence in clinical abilities* subscale reflect a GP's perception of their capacity to diagnose, treat and manage dementia. Analysis of scores for each of the items comprising this subscale is shown in Table 2.

Table 2: *Confidence in Clinical Abilities. Pre and Post Workshop scores by Role.*

Confidence in Clinical Knowledge	Role	PreTest Score	95% CI	Post Test Score	95% CI	t	p*	Mean Difference	Cohen's D
Overall Score	GPR (n=332)	2.67	2.61-2.74	3.69	3.63-3.76	17.61	<.001	1.06	1.710
	Super (n=114)	3.28+	3.14-3.42	4.03+	3.93-4.13	7.58	<.001	0.76	1.150
Frustration at not being able to effectively treat people with dementia	GPR (n=332)	2.49	2.39-2.59	3.55	3.46-3.65	17.56	<.001	1.07	1.177
	Super (n=114)	2.94+	2.73-3.15	3.94+	3.78-4.11	9.42	<.001	0.8	1.004
Confident in ability to discuss legalities	GPR (n=332)	2.32	2.22-2.42	3.25	3.16-3.35	17.65	<.001	0.95	1.021
	Super (n=114)	2.96+	2.75-3.16	3.6+	3.42-3.77	5.73	<.001	0.4	0.637
Confidence in ability to diagnose	GPR (n=332)	2.65	2.56-2.73	3.82	3.74-3.90	23.85	<.001	1.19	1.525
	Super (n=114)	3.31+	3.15-3.47	4.18+	4.06-4.29	11.11	<.001	0.88	1.149
Confident in ability to provide medical care	GPR (n=332)	2.86	2.77-2.94	3.8	3.73-3.88	20.31	<.001	0.94	1.276
	Super (n=114)	3.52+	3.36-3.69	4.21+	4.10-4.32	8.66	<.001	0.7	0.935
Confident in ability to provide advice about symptoms	GPR (n=332)	2.70	2.61-2.78	3.70	3.62-3.78	22.02	<.001	1.01	1.340
	Super (n=114)	3.23+	3.07-3.39	3.95+	3.82-4.09	8.24	<.001	0.74	0.906
Confident in knowledge of local resources	GPR (n=332)	2.43	2.33-2.52	3.47	3.37-3.57	20.26	<.001	1.07	1.201
	Super (n=114)	3.04+	2.86-3.21	3.79+	3.63-3.95	9.38	<.001	0.79	0.856

GPR, n=332; GPS (Supervisor), n=114.

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+Indicates a significant difference between groups at the .05 level of significance (t test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (t test for paired samples).

While both GPRs and Supervisors were significantly more confident after the workshops, Supervisors were significantly more confident in their clinical abilities than GPRs both before ($t(438)=8.424$; $p<.001$)) and after their respective workshops ($t(420)=5.328$;$p<.001$). GPRs exhibited a significantly greater improvement in score than Supervisors ($t(414)=3.797$; $p<.001$). The effect size of the change in *Confidence in clinical abilities* was strong for both groups and greatest for GPRs.

Before the workshop, only 13.8% of GPRs were 'confident (either strongly agreed or agreed) in their ability to diagnose' compared to 44.2% of Supervisors, rising to 60.4% for GPRs post workshop (62.6% post for Supervisors). A similar change occurred in the confidence of GPRs in their 'ability to provide appropriate medical care', with an increase in agreement (those strongly agreeing or agreeing) from 18.7% to 59.8% after the workshop. Further, only 13.8% of GPRs agreed or strongly agreed that they were confident in 'providing advice about managing dementia related symptoms' pre-workshop, compared with 48.5% of Supervisors (8.8% strongly agreed), increasing to 56.3% post workshop for GPRs (9.5% strongly agreed) and 67% for Supervisors (27.4% strongly agreed).

Attitude to Care

Items in the *Attitude to Care* subscale reflect aspects of the provision of care for patients and their families. Analysis of scores for each of the items comprising this subscale is shown in Table 3.

Table 3: *Attitude to Care. Pre and Post Workshop Scores by Role*

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1

Attitude To Care	Role	Pre test Score	95% CI	Post Test Score	95% CI	t	p*	Mean difference	Cohen's D
Overall Score	GPR (n=332)	4.35	4.30-4.39	4.70	4.65-4.74	17.6	<.001	0.34	0.840
	Super (n=114)	4.35	4.26-4.43	4.59	4.51-4.66	7.58	<.001	0.25	0.570
Much can be done to improve lives of patient	GPR (n=332)	4.22	4.14-4.30	4.54	4.47-4.61	6.98	<.001	0.32	0.483
	Super (n=114)	4.37+	4.25-4.50	4.61	4.51-4.72	4.43	<.001	0.26	0.401
Early detection benefits the patient	GPR (n=332)	4.32	4.24-4.40	4.73+	4.67-4.80	8.38	<.001	0.39	0.612
	Super (n=114)	4.21	4.06-4.37	4.52	4.38-4.66	3.92	<.001	0.3	0.393
Important family/carers seek external support	GPR (n=332)	4.56	4.50-4.63	4.81+	4.76-4.86	6.98	<.001	0.23	0.473
	Super (n=114)	4.52	4.41-4.64	4.67	4.57-4.77	2.69	0.007	0.14	0.262
Important family carers contact Alzheimer's Aust.	GPR (n=332)	4.38	4.30-4.45	4.69	4.63-4.75	7.92	<.001	0.31	0.509
	Super (n=114)	4.42	4.30-4.45	4.64	4.53-4.75	4.01	<.001	0.21	0.347
GPs in best position to organise care	GPR (n=332)	3.95	3.86-4.04	4.4	4.33-4.48	9.41	<.001	0.46	0.590
	Super (n=114)	4.06	3.90-4.22	4.44	4.33-4.48	4.68	<.001	0.42	0.492
Patients should be informed early so they can plan	GPR (n=332)	4.31	4,23-4.39	4.82+	4.76-4.88	9.92	<.001	0.48	0.817
	Super (n=114)	4.28	4.14-4.43	4.62	4.47-4.76	4.25	<.001	0.35	0.447

2 GPR, n=332; GPS (Supervisor), n=114.

3 +Indicates a significant difference between groups at the .05 level of significance (t test for independent samples).

4 * Indicates a significant difference between pre and post intervention periods at the .05 level of significance (t test for
5 paired samples).

6

7 Overall mean scores for *Attitude to Care* (Table 3) were equivalent for Supervisors and GPRs
8 prior to the workshops and increased significantly for both GPRs and Supervisors following
9 the workshop, with moderate effect sizes for the increases. GPRs scored significantly higher
10 than Supervisors post workshop (t(420)=2.463;p=.014).

11 Both groups reported significant increases in agreement that 'early detection of dementia
12 benefits the patient', though the effect size for Supervisors was weak. The greatest
13 difference reported was for those strongly agreeing, with a 30.6% change for GPRs (47.3%
14 pre-workshop to 77.9% post workshop), and only an 18 % increase for Supervisors (44.2% to
15 62.6%). Similar results were obtained for the item 'Patients with dementia should be
16 informed early so they can plan for the future', while both GPR and Supervisor groups

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recorded increases in those agreeing or strongly agreeing that 'it is important that relatives/family/carers of dementia seek external support'.

Engagement

Engagement measures a GP's perceptions towards treating dementia, and includes fear of communicating a diagnosis, frustration in managing dementia and a preference for treating other conditions (Table 4). Both Supervisors and GPRs recorded a significantly higher score for *Engagement* post workshop, while Supervisors reported greater *Engagement* than GPRs at baseline (t(439)=5.877; p<.001) and after the workshop (t(422)=5.091; p<.001). A moderate effect size was observed for the score change shown for each group.

Table 4: *Engagement; Pre and Post Workshop Scores by Role*

Engagement	Role	Pre test Score	95% CI	Post Test Score	95% CI	t	p*	Mean difference	Cohen's D
Overall Score	GPR (n=332)	2.98	2.90-3.06	3.42	3.34-3.50	12.06	<.001	0.44	0.610
	Super (n=114)	3.44+	3.30-3.58	3.84+	3.70-3.99	6.97	<.001	0.41	0.530
Managing dementia frustrating	GPR (n=332)	3.00	2.91-3.10	3.51	3.40-3.61	9.23	<.001	0.37	0.569
	Super (n=114)	3.45+	3.26-3.64	3.91+	3.75-4.07	4.721	<.001	0.27	0.494
Fear of communicating a diagnosis	GPR (n=332)	3.88	3.77-3.99	4.14	4.04-4.24	4.79	<.001	0.27	0.277
	Super (n=114)	4.16+	3.98-4.34	4.53+	4.39-4.67	3.63	<.001	0.36	0.431
Preference for treating other diseases	GPR (n=332)	2.77	2.66-2.87	3.2	3.09-3.31	8.87	<.001	0.42	0.440
	Super (n=114)	3.27+	3.09-3.45	3.64+	3.46-3.31	5.09	<.001	0.4	0.355

GPR, n=332; GPS (Supervisor), n=114.

+Indicates a significant difference between groups at the .05 level of significance (t test for independent samples).

* Indicates a significant difference between pre and post intervention periods at the .05 level of significance (t test for paired samples).

Both Supervisors and GPRs showed an increase in the proportion disagreeing or strongly disagreeing with the statement that 'dementia was frustrating to manage' (19.5% to 39.4% for GPRs; 31% to 50.5%). However, a significant proportion of both groups were still undecided about this statement post workshop (GPRs 33.1%; 19.6% Supervisors).

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The proportion of GPRs agreeing or strongly agreeing to a 'preference for treating other diseases' decreased from 32% pre-workshop to 18.6% post workshop, compared to 18.6% to 10.3% for Supervisors. However, a large proportion of each group were neutral to the statement before and after the workshop, with a decreased proportion of Supervisors (42.5% pre, 32.7% post) and a relatively unchanged proportion of GPRs (38.1% pre, 39% post) reporting neutral views on this item.

Discussion

This study examined the impact of tailored dementia education workshops on the attitudes and confidence of both GP Registrars and GP Supervisors towards dementia. Attending tailored workshops resulted in significant improvements in attitudes, confidence and engagement of both groups. While increased confidence and reduced negative attitudes towards the management of dementia have previously been reported to correlate with a self-reported history of prior dementia training [17], this study demonstrates a direct and immediate impact of a training intervention.

In some respects the positive *Attitude to Care* at baseline was not surprising given that GPs are reported to have a positive attitude with respect to their role in providing care and early diagnosis for people with dementia [28, 46]. However, the further improvements in this subscale shown after the workshop highlight the effectiveness of the workshop's focus on early warning signs and on the importance of diagnosis and management approaches, all of which are intended to influence participants to more effectively engage people with dementia and their families. These results suggest that workshop attendance is useful in preparing GP registrars for practice and may enhance practice in experienced GPs who act as their Supervisors.

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The confidence of the GP registrar group, while not as high as Supervisors, significantly improved post workshop, albeit from a notably low level. This improvement provides insight into the importance of targeting education beyond the traditional bio-medical focus typical of much medical education[16], often with minimal focus on therapeutic interventions [17-19]. Differences in pre-test confidence between the cohorts are not surprising given GPR's are generally younger and less experienced [21]. The greater magnitude of change for GP Registrars in this study would suggest that elements restricted to the Registrars' workshop, and perhaps in particular elements that teach skills in diagnosis, provision of appropriate medical care and management of dementia related symptoms, may particularly impact on confidence, again highlighting its applicability to GP specialty training.

However, it is interesting that only 44% of Supervisors reported confidence to diagnose dementia pre-workshop, rising to only around 60% post-workshop. Similar findings were evident in the items related to confidence providing advice and appropriate medical care. It was also notable that at both pre and post workshop periods Registrars had more positive attitudes about the benefits of early diagnosis than Supervisors. This finding may be influenced by the Supervisors' underlying beliefs and attitudes [20, 21], which in turn may delay diagnosis in practice, particularly given attitudes rather than knowledge have been identified as a key determinant of whether a GP undertakes a full assessment [2]. Addressing these gaps is essential if GP Supervisors are to effectively support GPRs to develop their dementia diagnostic and management skills in the clinic in the context of the apprenticeship model of GP training utilised in Australia [47, 48].

A positive impact on engagement was also observed, with both groups recording significantly improved scores after each of the workshops. The higher scores for the GP

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Supervisors group may in part reflect their level of exposure and experience to dementia. However, it is concerning that pre workshop only 31% of Supervisors disagreed with the statement 'dementia is frustrating to manage', with 19.5 % of GPRs disagreeing. While these scores improved post workshop this does suggest a high level of frustration [39]. Indeed, the literature suggests GPs' perceptions of their capacity to diagnose, communicate a diagnosis and manage dementia may impact on the extent to which they engage with a person with suspected or actual dementia or how much effort they apply to it [39].

Of note, GPRs commenced the workshop with a low likelihood of having experienced any prior dementia training, despite 87% having provided professional care to people with dementia. This lack of training has implications for the GPs' knowledge of dementia, as we have previously demonstrated [1]. Results reported recently suggest that particularly for GPRs, the workshop increases their base knowledge of dementia [1]. It is possible that this is related to their increased confidence levels as demonstrated in this study. Educational and health literature indicates that knowledge is typically correlated with both attitudes and perceptions of self-efficacy [49]. Taken together, the positive impacts of these workshops may translate to improved diagnosis rates and/or support to people with dementia.

It is clear that effective educational interventions involve more than knowledge and skills acquisition [27]. In particular, designing educational initiatives requires a cognisance of not only clinical issues but the values, attitudes and experiences of those being trained. In this context findings from this study can be used to identify specific components of attitude and confidence that may be able to be targeted in future workshops. This point is especially important given the importance placed on attitudes in relation to how a GP approaches dementia. GPs tend to be knowledgeable about dementia [9, 26], but low rates of diagnosis

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persist[10], suggesting that more than simply knowledge is involved, and that a GP's attitude towards the benefits of diagnosis, support and management is essential for effective clinical practice.

In consideration of this, educational interventions should aim to change the way GPs view dementia and their role in managing the condition. Such interventions should support GPs adoption of therapeutic approaches to treatment and management rather than a purely medical one with a curative focus, with the overall aim of increasing engagement between the GP, the person with dementia and their families or carer.

While this study provides insights into confidence and attitudes as these relate to the diagnosis and management of dementia and the effectiveness of educational interventions on confidence and attitudes there were some limitations. For Supervisors, there was the likelihood of self-selection bias given that they volunteered for the workshop. For participating registrars, the workshop was a part of their compulsory training program.

The study design was pre and post, measuring impact of the workshop. It is possible, as with any pre-post survey research, that response bias may have resulted from the perceived need for socially desirable responses on the part of the participant. However, there were no incentives for bias, survey responses were anonymous, and items were non-leading.

Our study was focussed on the immediate impact of the workshops on the confidence and attitudes of participants. Future research should focus on providing evidence of the impact of the workshop on changes in behaviour as it relates to the diagnosis and management of dementia. Additionally, communication has been identified as a crucial part of the diagnostic procedure. While we did address some aspects of communication, survey items

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did not fully capture the construct [38], therefore more work is required in this area given its importance in relation to not only providing a diagnosis but also the doctor-patient relationship.

Conclusion

Targeted educational interventions can improve attitude, increase confidence and reduce negative attitudes towards engagement of participating GP registrars and supervisors. Findings highlight a clear need for GPs to have access to targeted workshops especially given the growing numbers of people with dementia.

Contributor Information

Study design: MW AR; Data Collection: RM; Data analysis and interpretation: RM, KD, CE; Drafting the article: RM; Critical revision of the article: RM, KD, CE, MW,ML, AR; Final approval: all authors.

Guarantor Information

Andrew Robinson

Competing Interests Declaration

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: all authors had financial support from the Victorian and Tasmanian Dementia Training Study Centre (DTSC) until 2016 and Dementia Training Australia (DTA) from 2016 for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Transparency Declaration

The authors affirm that this manuscript is an honest, accurate and transparent account of the study being reported and that no important aspects of the study have been omitted.

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had full access to all the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis.

Data Sharing

The data set is not available as ethics approval does not allow release.

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