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Facing Dementia in Primary Care: Applying the COM-B Model to Develop a Complex Intervention to Improve Dementia Diagnosis Rates in General Practice

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Highlights

Public health relevance—How does this work relate to a public health issue?

- Dementia represents a significant public health challenge as it is one of the major causes of death, disability and de-pendency among older people worldwide.
- Dementia is often not diagnosed, and dementia action plans have identified the need to support general practitioners in dementia diagnosis and care.

Public health significance—Why is this work of significance to public health?

- Historically, specialists have been responsible for dementia diagnosis, this work explores how to share some of this responsibility with primary care.

Public health implications—What are the key implications or messages for practitioners, policy makers and/or researchers in public health?

- A public health approach to increasing timely diagnosis of dementia requires a co-designed, theory-informed multi-component primary care practice change program.
- The intervention needs to extend beyond education and training to address barriers to dementia diagnosis and promote behaviour change.

Abstract

As the population ages and new therapies become available, general practitioners will have a significant role in the early detection, diagnosis, and management of dementia. However, both in Australia and globally dementia remains under-recognised and under-diagnosed in primary care. The aim of this study is to develop a complex intervention, informed by behaviour change theory, to improve rates of dementia diagnoses in Australian primary care. Co-design participants included GPs, general practice nurses, practice managers and reception staff. A program logic model was used to describe the essential activities and mechanisms of the intervention. Six behaviour changes:

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education, training, enablement, modelling, persuasion, and environmental restructuring—were identified to address the identified barriers to dementia diagnosis in primary care. The intervention is comprised of seven activities – peer-led online dementia education and training, geriatrician 'drop-in' online support sessions, quality improvement in dementia care sessions, stand-alone videos, auditing and benchmarking, a dementia risk alert tool and a set of dementia diagnosis and management decision-making resources. Using behaviour change theory can assist in the development of complex interventions aimed at changing clinical practice and may assist in their evaluation.

Keywords: dementia diagnosis; primary care; general practitioner; behaviour change theory; complex intervention; practice change; co-design

1. Introduction

Optimal care and management of individuals living with dementia and their carers have been shown to mitigate the impact of symptoms and help maintain independence within the community for as long as possible [1]. The core principles of primary care include enhancing population health through health promotion and disease prevention, fostering long-term patient relationships, and providing coordinated person-centred care [2]. These principles position primary care to deliver cost-effective healthcare and potentially more holistic support for people living with dementia compared to secondary care settings [3]. Consequently, as the population ages and new therapies become available, primary care is expected to assume a significant role in early detection, diagnosis, and ongoing management of dementia [4].

Although general practitioners (GPs) are well-positioned to diagnose dementia and manage patient care [2] dementia remains under-recognised and under-diagnosed both in Australia and globally [5]. Documentation of a dementia diagnosis in primary care is lower than expected - 68% of that reported in the Australian Census data, and 48% of population estimates [6]. People living with dementia and carers report low satisfaction with GP care [7], that GPs are reluctant to diagnose dementia [8] and often dismiss concerns [9].

Practitioner, community and health system level barriers to the diagnosis and management of dementia in primary care are well documented [7,10–13]. Individual barriers from the perspective of GPs include diagnostic uncertainty [14], the belief that the negative consequences of diagnosis (impact on self-image and experiences of stigma) outweigh the modest effects of symptomatic treatments [15,16], and a perceived lack of support options for patients following a diagnosis [1,7]. Barriers from the patient and family perspective include a lack of awareness by older people and families of dementia symptoms, or denial, and delayed help-seeking [9]. Institutional barriers include a lack of time and funding [10,17] and limited communication between GPs and specialists (Low et al., under review). Strong interprofessional relationships and team-based care have been found to support GPs' willingness to initiate conversations about dementia and start the diagnostic process [15].

Within Australia, and internationally, dementia action plans have identified the need to support GPs in their delivery of dementia care and have advocated the development and roll-out of dementia educational programs for GPs [18–21]. However, research on educational interventions for dementia shows mixed effects on GPs' knowledge and confidence, with minimal demonstrated impact on clinical practice [22–24]. Guidelines and education increase knowledge but may not change motivations or opportunities. Similarly, introducing new policies such as financial incentives show mixed results in bringing about practice change [25]. Instead, multi-component approaches are often necessary to effect a change in clinical practice (Gandolfi et al., 2025). Globally, a variety of primary care models which combine education with additional strategies have been implemented to offer support to the GP to provide better dementia care for people. These models of care include case management models [26–28], integrated geriatrician-led memory clinics [29] and access to specialist

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dementia care nurses [30]. However, these models have had varying outcomes and have not been theoretically informed.

The Medical Research Council framework [31] emphasises the importance of a theoretical approach in the development and evaluation of complex interventions. Complex interventions refer to health or social care strategies that include multiple interacting elements and are designed to target multiple behaviours or operate across different levels, such as individuals or organisations [32]. Clinical practice as a form of human behaviour can be explained using behaviour change theories, which, in turn, can provide the foundation for systematically designing complex interventions aimed at clinical practice change [33].

The COM-B model and Behaviour Change Wheel (BCW) can be used to understand behaviour in the context in which it occurs. The model states that Capability (C), Opportunity (O) and Motivation (M) each exert an influence on Behaviour (B) [34].

Dementia diagnosis comprises a set of behaviours, hence to improve diagnosis and care, primary care practitioners need to change their behaviours [33]. In this study, the COM-B model is used to identify potential levers for behaviour change that supports dementia diagnosis and to design a complex intervention for behaviour change for a geographical region. The application of the COM-B behaviour model involved three steps: (a) identification of barriers and facilitators to dementia diagnosis (b) identification of appropriate behaviour change techniques to improve rates of dementia diagnosis; and (c) involvement of key stakeholders in the co-design of an intervention. Using the COM-B model the barriers to dementia diagnosis are linked to specific behaviour change functions or strategies.

This study presents the design of the primary care practice change intervention from the Facing Dementia Together research project which aims to increase dementia help-seeking and diagnosis [35]. The other intervention involves a public campaign aimed at encouraging older adults and their families to seek timely help for dementia assessment [9]. Both interventions are being evaluated. This paper describes the development of a theory-based intervention to increase the frequency of a clinical behaviour among GPs: the diagnosis of dementia.

2. Methods

Aim

The aim of this study is to develop a complex intervention to improve rates of dementia diagnosis in Australian primary care informed by behaviour change theory.

Design

The Facing Dementia Together practice change intervention development is based on primary research (Low et al., under review) and co-design workshops with key stakeholders, supplemented with a rapid literature review (unpublished). Co-design is the process of active collaboration between stakeholders in designing context-specific solutions to a prespecified problem [36]. The reporting of the study followed the Standards for Reporting Qualitative Research (SRQR) [37] (see Table S1).

Using the BCW

The BCW is made up of the COM-B, Theoretical Domains Framework (TDF) and nine intervention strategies [34]. The COM-B model is used as a starting point to understand behaviour in the context in which it occurs. The TDF builds upon the components of the COM-B model and outlines 14 types of barriers and facilitators that individuals may encounter. There are nine intervention strategies that drive behaviour change identified in the BCW. Each strategy targets different aspects of capability, opportunity, and motivation to effectively influence behaviour. Figure 1 illustrates the relationships between the COM-B, TDF and intervention strategies. Using the BCW allowed for a systematic approach in the intervention development and evaluation.

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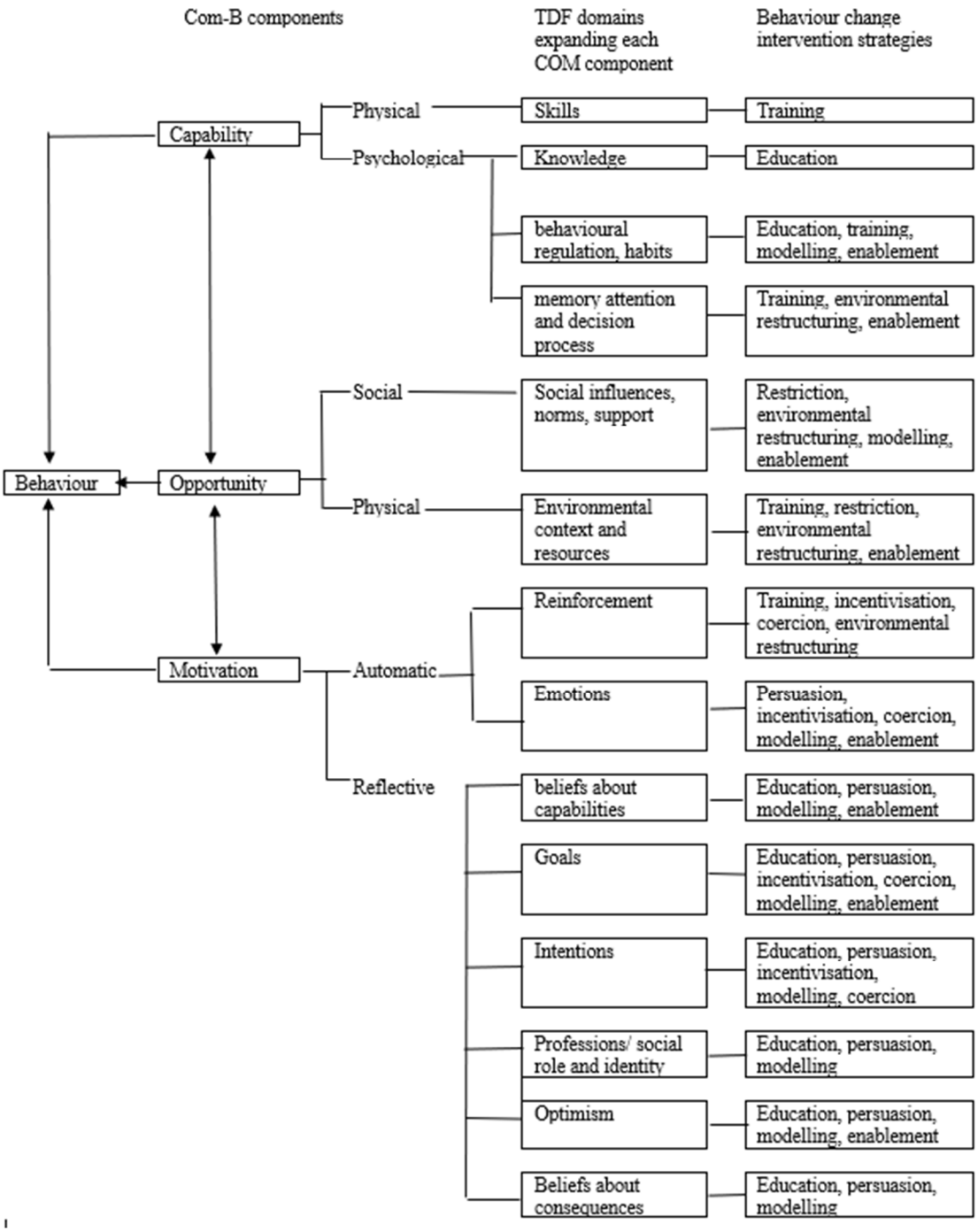
Figure 1 Links between Behaviour Change Wheel components - COM-B , TDF and behaviour change intervention strategies (34)



Setting

The study setting is general practices located in two Primary Health Network (PHN) regions in western Victoria and western Sydney. PHNs are regionally based, government-funded organisations which work to improve the efficiency, coordination and effectiveness of primary care. The PHNs were partners in co-design and delivery of this intervention.

Co-design participants

Purposeful and convenience sampling were used to identify and invite individuals with knowledge and experience on primary care in dementia and contextual knowledge of the intervention regions. The sample of primary care stakeholders, including GPs, general practice nurses

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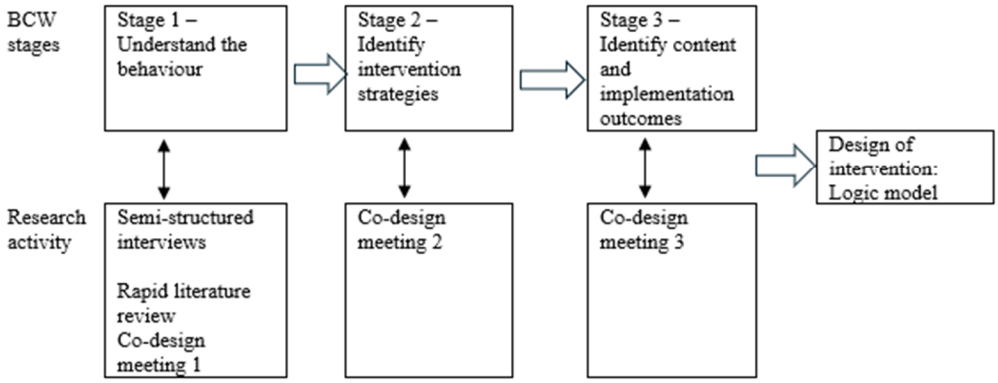
(GPNs), practice managers and PHN practice facilitators, was recruited through the Western Victoria and Western Sydney PHNs, as well as the research team's networks. GPNs work within general practices and assist GPs with patient care. Practice managers, who are often registered nurses, oversee the day-to-day operations of general practices. PHN practice facilitators support general practices in implementing quality improvement initiatives and to access government incentives and funding, digital health tools, and professional development activities.

The research team sent each potential participant an email invitation to participate in the co-design process. This email invitation included a link to the online participant information and consent form (PICF) hosted on Qualtrics (Provo, UT).

Intervention Development Process

Development of the Facing Dementia Together practice change intervention was guided by the stages described in the BCW process [34]. The intervention development process is summarised in Figure 2.

Figure 2 Facing Dementia Together practice change intervention development stages



The co-design process involved three one-hour meetings conducted online using the ZOOM platform. These meetings took place between May and July 2023.

Stage 1 - Understand the Behaviour (Co-Design Meeting 1)

Before co-design meeting 1, foundational research was carried out to understand the problem and identify what needs to change to increase rates of dementia diagnosis. The foundational research involved qualitative semi-structured interviews with important primary care stakeholders in both study locations. Its aim was to identify barriers to dementia diagnosis and provide context for developing the Facing Dementia Together intervention (Low et al., under review). Foundational research also included a rapid literature review (unpublished) and the identification of relevant Australian policies and guidelines to inform the development of the intervention. The review examined interventions, in Australia and internationally, aimed at improving dementia diagnosis rates in primary care and identified intervention components and factors that influenced their implementation and outcomes.

The first co-design meeting focused on the first stage of the BCW theoretical framework to 'understand the behaviour'[34]. During this meeting, participants were presented the foundational research findings describing the barriers to dementia diagnosis (Low et al., under review) to provide context for the development of the intervention. The co-design participants then identified the target audiences for the intervention (i.e., GPs, GPNs, etc) and the behaviours needed to increase dementia diagnosis rates. Behaviours were defined as functionally equivalent to specific actions [34]. The marketing and communication conceptual framework, "Know, Believe, Do' was used as a pragmatic approach to structure the discussion. The co-design group described what each audience needed to know to have the capability to support dementia diagnosis, what they needed to believe and or feel

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to motivate them to change behaviour, and what they needed to do and when could they do it. Current versus desired behaviours were explored. Following the co-design meeting, the research team summarised and categorised the discussion outcomes into the COM-B model.

Stage 2 - Identify Intervention Strategies (Co-Design Meeting Two)

The capabilities, opportunities, and motivations for each audience group were presented to the co-design group in meeting two for checking. Building on these, the co-design group provided input into the intervention's main messages and generated ideas for activities to influence behaviour by each audience.

Following the second co-design meeting, the research team mapped the activities generated during the co-design meeting and identified from the literature review to the BCW intervention strategies [34]. This process identified the suite of intervention activities likely to bring about the desired behaviour change.

Stage 3 - Identify Content and Implementation Outcomes (Co-Design Meeting Three)

During the third co-design meeting, participants described in more detail and prioritised intervention activities. This included discussion of promotional methods for the practice change intervention.

The research team worked with stakeholders to further detail the Facing Dementia Together practice change intervention activities, balancing costs, effectiveness and potential ongoing use of resources post-research project. The intervention activities were developed between January to September 2024.

Following co-design meeting three the research team developed a logic model to describe the essential activities and mechanisms of the intervention. Logic models are recommended in the planning, implementation, and evaluation of complex interventions [38].

Reflexivity

The researchers are a multidisciplinary team with experience in primary care clinical dementia care, complex intervention design and/or dementia research. CG (PhD, primary care nurse, female), MY (MBBS, geriatrician, male); DP (PhD, general practitioner, female); SD (general practitioner, female); JJ (health researcher, female); LP (PhD, public health researcher, female); KL (PhD, occupational therapist, female); MG (PhD, occupational therapist, female); ET (PhD, pharmacist, male); HB (dementia researcher, psychiatrist, male); JS (PHN health analytics researcher, male); SF (health researcher, female) and LFL (PhD, psychologist, female). The team engaged in continuing discussions and challenged each other's assumptions in developing the interventions.

Trustworthiness

Checking interpretation of results were achieved by clarifying meaning within the co-design discussions. A synthesis of the discussion in each co-design meeting was presented and checked for accuracy of interpretation with co-design participants in each subsequent meeting. An audit trail describing decision-making processes and outcomes were maintained throughout the intervention development process.

Patient and Public Participation

People living with dementia and their family carers contributed to the conceptualisation and design of the broader Facing Dementia Together project; however, they did not participate directly in this intervention design.

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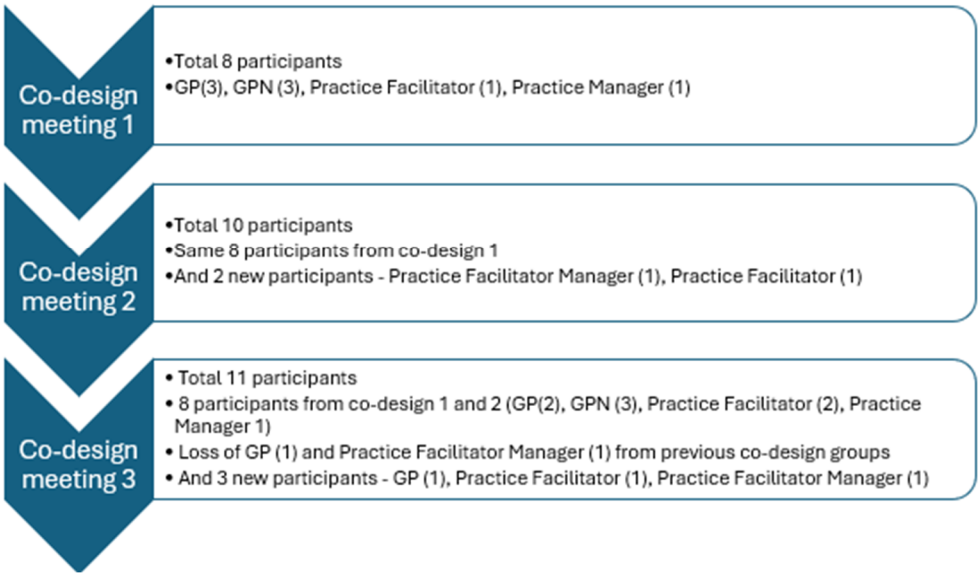
3. Results

Study Participants

Study participants were primary care stakeholders (n = 15, 100%), including GPs (n = 5, 33%), GPNs (n = 4, 27%), a practice manager (n=1, 6%), PHN practice facilitators (n = 3, 20%) and PHN Practice Facilitator Managers (n=2, 13%). Participants came from Western Sydney (n = 7, 46%) and Western Victoria (n = 8, 53%). Ten (n=10, 67%) participants identified as female, and five (n=5, 33% as male. Figure 3 shows the participation in each co-design meeting.

Figure 3 Participation in co-design meetings



Stage 1 - Understand the Behaviour

The Target Audience

GPs and GPNs were identified through co-design as the main audiences for the intervention. Changing the behaviour of these two groups was seen as having the greatest impact on increasing dementia diagnosis rates in primary care. Practice managers and receptionists were identified as secondary audiences who could support the practice change. Practice managers were described as the usual group who would oversee the implementation of practice improvement initiatives. Receptionists were identified as a secondary target audience as they have opportunities to notice patient behaviours that might indicate possible cognitive impairment.

PHN practice facilitators were identified as key stakeholders to drive change, as their role includes supporting practice improvement in primary care. This group was described as important in promoting the intervention, distributing resources and communicating intervention progress and outcomes.

A list of target behaviours that contribute to increasing the rate of dementia diagnosis for each audience group was generated. For the GP audience, these behaviours could be demonstrated by actions such as notice potential cognitive changes, initiate conversations about cognitive changes, document diagnosis of dementia in patient medical record, refer to a specialist for assessment when needed and communicate diagnosis well. The capabilities, opportunities, and motivations to support each target audience to adopt the desired behaviours as part of the Facing Dementia Together practice change intervention are described in Tables 1a – b.

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Table 1a COM-B for each audience for the Facing Dementia Together practice change program (General practitioners and General practice nurses).

Audience	Capability What knowledge/ skills are needed to do target behaviours?	Opportunity What are the opportunities to adopt the target behaviours:	Motivation What beliefs/ feelings/ intentions/goals lead to adoption of the target behaviours:	Behaviour What action demonstrates the behaviour
General practitioners	Have the skills to have conversations about possible cognitive changes with a patient/ family Understand why conversations about brain health are important Understand why diagnosis, even in moderate to late stages of dementia is important Know how to undertake assessments for dementia and when to refer to specialist Have the skills to communicate diagnosis well Know how to treat and manage MCI or dementia, as well as manage other chronic conditions when the person has dementia Have knowledge of the service system to support management and support of people with cognitive changes and family	All patient contacts, including when the presenting issue does not relate to cognition or function Government rebated team-based chronic condition management care plans Government rebated routine older person health assessments (include cognitive assessments as usual practice) Health policy and community expectations that diagnosis and management of dementia can occur in primary care	I have an important role as a GP to assess, diagnose and help manage dementia Treating and managing dementia makes a difference to my patients' lives I have the skills to raise cognitive and functional changes with my patients I have the support I need to diagnose and manage dementia I have a range of support services to refer my patients and their families to The PHN will support my training and resource needs for assessment and management of dementia	Notice potential cognitive changes Initiate conversations about cognitive changes Document diagnosis of dementia in patient medical record Refer to a specialist for assessment when needed Communicate diagnosis well Make appropriate referrals for treatments, supports and care for patients with MCI or dementia and carers Work collaboratively with the practice team to support dementia assessment and management
General practice nurses	Know the signs that may indicate dementia Have the knowledge and skills to assess for cognitive changes Understand the value of including the family in gathering information about cognitive change Know the available support services and referral pathways	All patient contacts, including when the presenting issue does not relate to cognition or function Government rebated team-based chronic condition management care plans Government rebated routine older person health assessments (include cognitive assessments as usual practice) Health policy and community expectations that diagnosis and management of dementia can occur in primary care	I have an important role in noticing cognitive changes in my patients Managing dementia makes a difference to my patients' lives I have the skills to raise cognitive and functional changes with my patients I have a range of support services to refer my patients and their families to The PHN will support my training and resource needs for assessment and management of dementia	Notice potential cognitive changes Informally assess for cognitive/functional changes assessments in all patient contacts Initiate conversation about suspected cognitive changes with GP and patients Use older person health assessments to complete cognitive assessment tolls Develop and follow up on dementia informed chronic disease management plans

Table 1b COM-B for each audience for the Facing Dementia Together practice change program (Practice Managers and Receptionists).

Practice Managers	Understand the important role that the General Practice team plays in detecting, diagnosing and managing dementia Know that the Face Dementia practice change program is available in region	PHN promotions and interactions	Dementia is a priority for primary care There is a benefit for the practice team members and patients, to participate in the practice change program	Sign practice up for Facing Dementia Together practice change program Support the General Practice team to reflect, monitor and improve practice around dementia.
Receptionists	Know the signs that may indicate cognitive changes Have the skills to communicate appropriately with the patient with cognitive changes.	Interactions with patients and families when making appointments and payments, and managing patient requests (e.g. for scripts)	I have a role in primary care team in noticing cognitive changes I am confident I can communicate with clinicians if I observe cognitive or functional difficulties in a patient	Be alert for potential cognitive changes Talk with GP/nurse about cognitive changes Use strategies to communicate effectively with patients with cognitive difficulties

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The Intervention Strategies

Six out of the nine intervention strategies described in the BCW (refer Figure 1) are identified as relevant based on the outcomes of co-design, and mapped from the COM-B. These intervention functions are education (increasing knowledge and understanding), training (imparting skills), persuasion (using communication to promote action), environmental restructuring (changing the physical or social context), enablement (increasing means and reducing barriers to the behaviour) and modelling (providing an observable example of the action) (Refer Tables 2a-c).

Table 2a Using the BCW to link the COM-B component 'Capacity' and behaviour change strategies with intervention activities

COM-B component	Theoretical domain (TDF) describing COM component	Target audience	Examples (from Tables 1a and b)	BCW - Intervention strategy	Facing Dementia Together practice change intervention activity
Capacity	**Physical capacity**				
	Physical skills	GP	Dementia assessment skills	Training	On-line dementia education – embedded videos and case studies
		GPN	Dementia assessment skills	Training	On-line dementia education – embedded videos and case studies
	Psychological capacity				
	Knowledge	GP	Knowing how to diagnose and manage dementia	Education	On-line dementia education Short informative articles in PHN newsletter
		GPN	Recognising signs of cognitive change	Education	On-line dementia education
		Receptionist	Know the signs that may indicate cognitive change	Education	Stand-alone short videos
	Cognitive & interpersonal skills	GP	Initiating potentially difficult conversations	Training	On-line dementia education – videos and case studies
		GPN	Asking questions about cognitive change	Training	DTA on-line dementia education – videos and case studies
		Receptionist	Skills to communicate concerns with GP/GPN	Training	Stand-alone short video of a receptionist discussing communication strategies
	Memory, attention & decision-making processes	GP	Some patients have chronic conditions putting them a higher risk of developing dementia	Environmental restructuring	Risk alert in EMR
	Behavioural regulation, habits	GP	Knowing what to do in dementia diagnosis and management	Modelling	On-line dementia education – embedded video demonstrating desired behaviour by a GP

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Table 2b Using the BCW to link the COM-B component 'Opportunity' and behaviour change strategies with intervention activities

Opportunity	**Physical opportunity**				
	Environmental context and resources	GP, GPNs, Practice Manager	Government rebated routine older person health assessments include cognitive assessments as usual practice	Enablement	Resources – quality improvement templates, business case PHN practice change intervention promotion as an opportunity to improve practice around dementia
		GP	Appointment when presenting issue does not relate to cognition or function Have a trigger/ prompt	Environmental restructuring	Risk alert in EMR
	Social opportunity				
		GP, GPN	Dementia diagnosis in primary care to be usual practice	Environmental restructuring	Tailored data - Auditing and benchmarking
		GP	Have support from others – not alone	Enablement	Geriatrician drop-in support sessions

Table 2c Using the BCW to link the COM-B component 'Motivation' and behaviour change strategies with intervention activities

Motivation	**Reflective motivation**				
	Professional role and identity	GP, GPN, Receptionist	I have a role in assessment, diagnosis and management of dementia	Education	On-line dementia education sessions Stand-alone short videos
	Beliefs about capabilities	GP, GPN	Confidence that I can make a difference	Persuasion	Tailored data - Auditing and benchmarking
	Optimism	GP, GPN	Confidence that person living with dementia/ family can access appropriate services	Education	On-line dementia education sessions
	Beliefs about consequences	GP, GPN	Belief that making a diagnosis is beneficial	Education	On-line dementia education sessions
	Automatic motivation				
	Reinforcement	GP, GPNs, Practice Manager	Gap in care - diagnoses rates in the GP Clinic are less than expected	Environmental restructuring	Tailored data - Auditing and benchmarking

The Intervention Activities

The co-design participants generated a list of activities aimed at supporting the intervention audiences to engage in the behaviours that predicted to contribute to increasing the rate of dementia diagnosis. The co-design group then described and prioritised the activities that comprise the intervention. Tables 2a-c lists the intervention activities and how they align with the COM-B and selected BCW intervention strategies. The Facing Dementia Together practice change intervention is available on a website (https://facingdementiatogether.au/en/general-practice/) which provides intervention information and access to the intervention's resources.

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Each activity included in the Facing Dementia Together practice change intervention covers multiple behaviour change strategies (refer Tables 2a-c). For example, peer delivered online education sessions align with the behaviour change strategies of education and training, enablement, persuasion and modelling. Modelling and persuasion are addressed with the use of videos demonstrating health practitioner roles in the diagnosis of dementia. The main activity for each behaviour change strategy in the intervention is outlined below.

Online Dementia Education

An existing dementia in primary care education program was identified. This education program is funded through Dementia Training Australia (DTA). DTA is a government funded organisation that has been delivering dementia education for GPs and other members of the primary care team, notably GPNs, since 2013. This education program was identified as appropriate as it has a good reputation, is peer-led, is free of charge to attend and contributes to GP and GPN Continuing Professional Development hours. The content and delivery of information was modified by the research team in collaboration with the DTA GP trainers based on the co-design outcomes. For example, content is included on why diagnosis is important even in late stages of dementia, the skills to have conversations about possible cognitive changes with a patient/ family and managing difficult problems such as driving and changed behaviour. Case studies and videos were included. Online delivery was selected in co-design as it was thought it would make it easier for time-poor primary care practitioners to attend.

The online dementia education primarily addressed 'capability' and aimed to increase audience knowledge and skills. Lack of knowledge and confidence in diagnosing dementia was recognised as a barrier to dementia diagnosis in the foundational research (Low et al., unpublished). In addition to 'education' and 'training' the online dementia education program aligned with several other behaviour change strategies as shown in Tables 2a-c. The use of peers to deliver the education employs the behaviour change strategy of 'persuasion' and the use of videos such as a video of a GP 'breaking the bad news' to a patient harnesses the behaviour change strategy of modelling. In the intervention the education program is promoted and hosted by the PHN.

Geriatrician 'Drop-In' Support Sessions – Problem Solving with a Geriatrician

This activity aligned with the COM-B component 'opportunity' (social). It aims to give GPs an opportunity to discuss complex cases or raise diagnostic questions. The ZOOM platform will be used to optimise access, especially for GPs who are time poor and geographically disparate. The barrier this intervention activity aims to mitigate is "uncertainty about diagnosis" by harnessing the intervention strategy "enablement" by providing support.

A set of dementia diagnosis and management decision-making resources were developed aligning with the COM-B components of capability (knowledge) and opportunity (physical). The corresponding intervention strategies are education and enablement. The resources include a 'brain health checklist ', 'pre-diagnosis management checklist', post-diagnosis management checklist', decision chart for when to refer to a specialist', take home post-diagnostic patient information' and 'receptionist information on managing patients with cognitive changes'.

Practice development resources including quality improvement templates and a business case describing the opportunity to improve practice around dementia will also be included. A 'Medicare Benefits Schedule (MBS) item pathway for dementia diagnosis and care' was provided to demonstrate opportunities for funded dementia care to address the barrier of a lack of funded time to provide dementia care. The MBS is a listing of the health care services subsidised by the Australian Government.

The resources will be available on the Facing Dementia Together practice change website. Printed versions of the resources will also be available. The version tailored to general practices in the Western Victoria PHN can be viewed at https://facingdementiatogether.au/en/wp-content/uploads/sites/2/2024/05/Face-Dementia-GP-Resource-Pack-Western-Victoria.pdf.

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Short Informative Articles in PHN Newsletter

The PHNs email an online newsletter to all general practices fortnightly. The newsletter includes healthcare information, available opportunities and new resources. In co-design, three topics relevant to GP practice were identified as commonly challenging. These topics are (1) Mild Cognitive Impairment in General Practice (2) BPSD in General Practice and (3) Driving and Dementia in General Practice. The goal is to offer practical advice on these topics, supporting capability (knowledge) using the behaviour change function of education. Each article includes a QR code to the Facing Dementia Together website. The articles are brief, at 300 words in length, and written in a conversational tone.

Stand-Alone Short Videos

Four stand-alone YouTube videos were made for the Facing Dementia Together practice change intervention website. They are titled, (1) 'Detecting dementia – The role of medical receptionists' (2:58), (2) 'Supporting people living with dementia – The role of medical receptionists' (2:30), (3) 'Detecting dementia – Raising the issue in general practice' (5:25) and (4) 'Driving and dementia in general practice' (5:30). These videos featured a GP, GPN, practice manager, receptionist and geriatrician, all from Western Victoria.

The purpose of the first 3 videos is to provide education to support a whole-of- practice approach in dementia diagnosis describing how GPs, GPNs and receptionists all have a role. The COM-B component is motivation (professional role and identity). In co-design, receptionists were recognised as having an essential role in supporting patients who present with cognitive changes. Two videos are directed to the receptionist to increase capability (knowledge) in recognising cognitive changes, strategies to support people with cognitive changes and communicating concerns to the GP and or GPN. The fourth video provided education to increase GPs capability (knowledge and skills) to have a conversation on driving and dementia. This topic was identified in the foundational research as a barrier to diagnosis as GPs were reluctant to raise this topic (Low et al., under review).

Tailored Data - Auditing and Benchmarking

General practices will be able to review their own documented record of dementia diagnoses and compare this to the expected prevalence using data from the Australian Institute of Health and Welfare (AIHW) [39] by provision of a PHN-generated report. Figure 4 shows the report the general practice will receive. This will be accompanied by an invitation to the education program and links to Facing Dementia Together resources.

Figure 4 Auditing and benchmarking report

Practice Data extracted [date]

<Practice Name> Statistics

Number of patients 65 years and over	xx
Current number of those with a coded diagnosis of dementia	xx
Expected number of patients diagnosed with dementia (as per AIHW) *	xx
Number of possibly undiagnosed patients	xx

This intervention activity supports dementia diagnosis through the COM-B component 'motivation' (belief about capabilities). It uses the intervention strategy of 'persuasion' by using a credible source and feedback to show that the GP can make a difference to the diagnosis of dementia.

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The auditing and benchmarking activity also aligns with 'social opportunity' (norms) by providing comparison with prevalence data and motivation (reinforcement) through supporting new habits.

Risk Alert in Electronic Medical Record

This invention activity was available for Western Victoria PHN general practices only. A pop-up Population Level Analysis and Reporting (POLAR) data tool was developed by the Western Victoria PHN providing a dementia risk alert for a patient using the Walrus point of care tool. Walrus is a point of care tool which prompts the GP about missing data, clinical prompts and risk scores for the patient on-screen. If the patient meets the criteria to be considered for a dementia risk assessment, the dementia risk tool alerts the GP via a pop- up notification. Depending on the patient's age and indigenous status, a combination of factors will trigger the Dementia Prompt, namely, active smoker, alcohol consumption of 10+ drinks per week, diabetes Type 1 (active or inactive) or Type 2 diagnosis (active) and an active diagnosis of depression or atrial fibrillation or stroke or hypertension or insomnia or traumatic brain injury. The combination of data to inform the triggering of the risk alert tool is adapted from the validated CogDrisk risk assessment tool. The CogDrisk assessment tool assesses individual exposure to risk factors known to be associated with an increased risk of developing dementia [40]. GPs are given the option to follow a link to the full CogDrisk assessment tool for use with or by patients, when risk for Dementia has been identified by the dementia risk tool.

This intervention activity aligns with the COM-B component capability (memory, attention and decision-making processes) and the intervention strategy, 'environmental restructuring' as it provides an on-screen prompt. The risk alert tool will support GPs being alert to patients with chronic conditions being at a higher risk of developing dementia.

This intervention activity will not be developed in the Western Sydney PHN setting as general practices in this region use different software incompatible with the risk alert being developed for use in Western Victoria. It was cost prohibitive within this research project to develop the risk alert in the other software platform.

Logic Model

The essential elements and mechanisms of the Facing Dementia Together practice change intervention were brought together and are presented in the logic model shown in Figure 5. This logic model will assist in the implementation and evaluation of this complex intervention.

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Figure 5 Logic model for Facing Dementia Together Practice Change Intervention Program

Problem: Dementia is not diagnosed in a timely way

Inputs	Output activities	Output participation	Short-term outcomes	Medium-term outcomes	Long-term outcomes
Funding Research team expertise Project partners (PHNs, DTA) Key stakeholder co-design participants	Primary care practice change intervention functions and activity Education and training - On-line training - Geriatrician 'drop-in' support sessions - 4 stand-alone videos - Short informative articles in PHN newsletter - On-line and printed resources Persuasion - Geriatrician 'drop-in' support sessions - Tailored data – auditing and benchmarking Modelling - Use of cases and videos in education and training - 4 stand-alone videos Enablement - On-line training - Videos - Risk alert in EMR - Geriatrician 'drop-in' support sessions - On-line and printed resources Environmental restructuring - Risk alert in EMR	Attendance at education sessions Engagement with geriatrician 'drop-in' sessions Views of videos Downloads of resources Tailored data	Increased GP, GPN and receptionist awareness of cognitive and functional changes Increased GPN and receptionist conversations with GP about suspected cognitive and functional changes in patients Increase in the number of GP conversations with the patient about suspected cognitive and functional changes Increased GP and GPN invitations to attend older person health checks with a cognitive assessment included Increased rate of GP diagnosis of advanced dementia Increase in GP appropriate referrals to geriatricians	Increased GP initiation of dementia assessment Increased referrals to specialists in dementia diagnosis	Increased rates of dementia diagnosis - documentation in patient's medical record - increased use of cholinesterase inhibitors Increased dementia assessment - specialists visit and CT/MRI

4. Discussion

Using the COM-B model and BCW, six behaviour change strategies—education, training, enablement, modelling, persuasion, and environmental restructuring—were identified to address barriers to dementia diagnosis in primary care. The Facing Dementia Together practice change intervention comprised seven activities – peer-led on-line dementia education and training, geriatrician 'drop-in' on-line support sessions, quality improvement in dementia care sessions, stand-alone videos, auditing and benchmarking, a dementia risk alert tool and a set of dementia diagnosis and management decision-making resources.

Education is an essential element for facilitating behavioural change, although it is often not sufficient on its own [41]. Education and training activities included in the intervention include elements known to be effective. For instance, peer-led online sessions utilising practice relevant case studies have been shown to increase participants' self-reported knowledge and confidence regarding dementia care [42]. The online GP-led education and training sessions are supplemented with a variety of additional educational opportunities, including lunchtime educational outreach sessions

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in which a geriatrician visits the general practice, written resources and videos. Evidence from an Australian randomised trial demonstrated that a single, one-to-one session delivered by a peer could significantly improve GP recognition of dementia [24]. Furthermore, interactive educational outreach has been widely used to promote evidence-based clinical practice, and peer-to-peer visits have proven effective in fostering stakeholder engagement and commitment to practice changes [43].

As part of the behaviour change intervention, concise videos are provided to outline the opportunities of various primary care team members, including GPs, GPNs and receptionists in supporting dementia diagnosis. These videos serve a dual purpose: providing information and modelling the desired behaviours to be adopted within primary care teams. Social learning theory posits that people acquire new behaviours, attitudes, and emotional reactions by observing others within a social context [44]. Modelling was employed in the intervention to reinforce the practical application of improved dementia diagnosis practices within a collaborative team approach.

Pathways to provide integrated care with a clear knowledge of who does what, when and where are recognised to support practice change [12]. Easily accessible printed resources, such as symptom checklists and diagnostic pathways, were made available.

All members of the primary care team were included in the education program, as interprofessional education contributes to enhanced teamwork and collaboration [45]. Team-based care is a foundational element of high-performing primary care [46] and was described as a facilitator to dementia diagnosis in the foundational research (Low et al., under review).

Persuasion and enablement were identified as important behaviour change functions to be included in the Facing Dementia Together practice change intervention. Provision of tailored data, auditing and benchmarking have been shown to prompt health practitioners to modify their practice when given data showing that their clinical practice is inconsistent with a desirable target [47]. Using patient documentation tools such as prompts and risk alerts has been shown to enhance practitioner awareness, support clinical decision-making, and improve communication across the care team [12].

An intervention's impact relies on how well it is implemented; thus, implementation outcomes are key to achieving the desired clinical or service changes [48]. Following the introduction of the Facing Dementia Together practice change intervention, the implementation outcomes will be systematically assessed. Such evaluations provide insight into how and why implementation strategies either succeed or fail, particularly within complex health contexts [34].

Limitations and Strengths

The study was set in two Australian regions potentially limiting the generalisability of findings. However, one setting was regional and the other was metropolitan multi-cultural setting which is a strength of the study. Additionally, a strength of the study was the development of an intervention tailored to local barriers to dementia diagnosis in primary care.

Using a purposive and convenience sample may limit generalisability to all practices, but every participant had prior experience in primary care, enabling them to reflect and offer valuable insights into the research question. The study did not gather information about participants' levels of practitioner experience or their previous training in dementia, which could have contributed further to the findings. Despite this, all participants shared experiences from their own backgrounds, which supported strong internal validity, and there was a high level of agreement among the participants.

5. Conclusions

To improve dementia diagnostic rates in primary care, complex interventions should be tailored to the specific context and informed by behaviour change theory. This approach enhances practitioners' capability, opportunity, and motivation to engage in the desired clinical practice of diagnosing dementia.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org, Table S1: Standards for Reporting Qualitative Research (SRQR).

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Abbreviations

The following abbreviations are used in this manuscript:

AIHW – Australian Institute of Health and Welfare
BPSD – Behaviours and psychological symptoms of dementia
BCW – Behaviour Change Wheel
COM-B – Capability, Opportunity, Motivation - Behaviour
GP – General practitioner
GPN – General Practice Nurse
DTA – Dementia Training Australia
PHN – Primary Health Network
SRQR – Standards for Reporting Qualitative Research

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