



BMJ Open Tackling unmanaged oropharyngeal dysphagia in primary care: a behavioural science realist review of interventions

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ABSTRACT

Introduction Oropharyngeal dysphagia (OD) is difficulty manipulating a food bolus from the mouth to the throat. Up to 70% of older adults develop OD; however, it is unmanaged in primary care, leading to avoidable hospitalisation.

Objective This behavioural science realist review aimed to develop programme theories to describe how interventions facilitate primary care healthcare professionals (HCPs) to proactively manage OD.

Methods We developed initial programme theories (IPTs) inductively using the expertise of stakeholders and deductively using the theoretical domains framework (TDF). Databases were searched to identify evidence regarding contexts, behavioural mechanisms and outcomes related to proactive management of OD and comparative behaviours which offer transferrable learning. IPTs were tested with the evidence to confirm, refine or refute, to produce final programme theories.

Results 36 sources of evidence were included. Five final programme theories were generated explaining how primary care HCPs can be facilitated to proactively manage OD: (1) OD education and training, (2) checklists with OD signs and symptoms, (3) incorporating OD identification into existing workflow, (4) making HCPs aware that older adults and carers expect them to manage OD and (5) raising awareness of the adverse outcomes of OD.

Conclusion The five programme theories provide the behavioural mechanisms by which an intervention may facilitate primary care HCPs to proactively manage OD. Through the programme theories' linkage to the TDF, behaviour change techniques (BCTs) mapped to the relevant TDF domain can be selected for an intervention. Operationalisation of selected BCTs into a coherent intervention package should be undertaken using codesign methodology.

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INTRODUCTION

Oropharyngeal dysphagia (OD) is a swallowing difficulty characterised by impairments to manipulating and transporting a bolus (eg, food, drink or medicine) from the mouth to the oesophagus.^{1 2} Research into OD has previously focused on 'typical'

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Incorporation of behavioural science into this realist review provides recognised definitions of mechanisms that yield uniformity in data interpretation and reporting.
- ⇒ Combining realist methodology and behavioural science enables identified mechanisms to be conceptualised as theoretical behavioural constructs which are required in order to develop behaviour change interventions.
- ⇒ There was limited evidence underpinning Context-Mechanism-Outcome configurations for the behaviour 'Provide initial OD advice and support prior to formal assessment by a specialist', thus further exploration of the determinants of this behaviour is required

high-risk clinical groups, such as stroke survivors and people with Parkinson's, particularly in hospitals and nursing/care homes.³⁻⁵ As a result, there are clear guidelines stipulating a proactive approach to OD identification and management for these groups and healthcare settings.^{6 7} Within these populations early identification and management of OD has been shown to reduce the risk of adverse outcomes, such as aspiration pneumonia,^{8 9} and unnecessary health resource use such as avoidable hospital admissions.

However, the vast majority of people with OD are not stroke survivors and people with Parkinson's, they are the general older adult population (≥65 years).¹⁰ This population's main interaction with the health system is with primary care healthcare professionals (HCP).^{14 10-14} A 2022 meta-analysis estimated that up to 72.4% of older adults have some degree of OD.¹⁰ As the occurrence of OD positively correlates with increase in age, the prevalence of OD is expected to increase as the population ages.¹⁵ Unlike for stroke survivors and people with Parkinson's, there are

no guidelines or formal processes to facilitate early identification and management of OD for older adults living in their own homes.^{3 4 16 17} Furthermore, most older adults incorrectly perceive swallowing difficulties as a normal part of ageing and thus do not actively seek support from their primary care HCP.^{18–24} Left unmanaged, OD in older adults leads to adverse outcomes including aspiration pneumonia, malnutrition and hospitalisation.^{11 25–27} Low healthcare-seeking behaviour from older adults increases the need for primary care HCPs to proactively identify potential OD in older adults to ensure prompt management.^{28 29}

Currently, primary care HCPs, who are not OD experts, report overlooking and undermanaging OD.^{16 30–32} Only around 1 in 20 general practitioners (GP) and pharmacists working in primary care report routinely asking older adults about their swallowing.²³ Reported barriers include a lack of knowledge, skills and confidence to proactively manage OD.¹⁷

There is a global drive towards proactive and preventative care for older adults supported by policy changes which advocate an increased role for primary care to reduce avoidable hospital admissions.¹⁴ Introducing proactive OD management in primary care requires a change in HCPs' behaviour. The first step in changing behaviour is to define the target behaviour.³³ Once defined, behavioural science provides a lens for conceptualising barriers and enablers to undertaking the new behaviour(s). This provides the theoretical understanding for developing an intervention.^{34–36}

Realist reviews aim to understand the mechanisms by which interventions work, or do not work, in different contexts.^{37 38} They draw on evidence to describe contextual (C) factors that instigate a mechanism(s) (M) to produce an outcome(s) (O).³⁹

This realist review combined behaviour change theory with realist methodology to understand what works, for whom, under what circumstances and how, to facilitate primary care HCPs to proactively manage OD in older adults.

MATERIALS AND METHODS

Detailed methods are provided in the associated published realist review protocol.⁴⁰ The review was registered with PROSPERO (CRD42022320327), adhered to the Realist and Meta-narrative Evidence Syntheses: Evolving Standards quality and publication standards (see online supplemental file 1)^{41 42} and followed an approach for embedding behaviour change theory into realist review methodology.^{43 44} This combination of realist methodology and behavioural science is an emerging approach and is being increasingly used in both realist reviews^{43 44} and realist evaluations.^{45–47} There is often uncertainty within the field of 'traditional' realist review methodology regarding what defines a context(s) versus a mechanism(s).⁴⁸ A context may be cultural norms and social identity; however, mechanisms

by which behaviour change may be brought about are also cultural norms and social identity. Incorporating behavioural science into a realist review provides recognised definitions of mechanisms to drive uniformity in realist review data interpretation and reporting. This realist review will report on behavioural mechanisms defined as 'the process by which the active ingredients of an intervention affect behaviour'.⁴⁹ Context, therefore, is defined as how the mechanism is operationalised or experienced by the target audience of an intervention. For example, for the behavioural mechanism of 'Skills', the context may be a training session to the target audience to address a skills gap.^{43 50} Use of formal theory from disciplines such as behavioural science also provides a framework from which to generate and structure programme theories.⁵¹ This review used the theoretical domains framework (TDF), a synthesis of behaviour change theories, which can broaden the scope from which initial programme theories (IPT) are generated.^{44 52} It enables consideration of contextual influences at different environmental levels (eg, individual, interpersonal, institutional, etc).⁵¹

Patient and public involvement

For this realist review, we convened a stakeholder group which comprised an older adult with OD, a carer, three speech and language therapists, a GP, two geriatricians and two pharmacists.⁴⁰ The group contributed from study inception to inform review design and scope. Meetings with the stakeholder group occurred: prior to the review to inform review questions and refine the scope (see section 2.1), during IPT development and prioritisation (see section 2.2) and after testing of IPTs to evaluate final CMOcs (see section 2.6).

Defining the review questions and scope

The review questions and scope were first defined in the associated protocol,⁴⁰ in which the target behaviours were:

1. Recognising OD.
2. Initially diagnosing OD.

Following a workshop with the stakeholder group, the older adult with OD and carer stakeholder members expressed that they also expect HCPs to provide some level of support prior to the patient seeing a specialist. The group also expressed that 'recognising' and 'initially diagnosing' could be subsumed under one behaviour. However, they felt that primary care HCPs should not be required to formally diagnose OD as this is the domain of specialists, such as speech and language therapists. Accordingly, the two target behaviours were redefined as:

1. Proactively identifying potential OD in older adults.
2. Providing initial OD advice and support prior to formal assessment by a specialist.

The research questions were:

1. What are the barriers and enablers (determinants) to primary care HCPs undertaking the target behaviours?

2. What are the behavioural mechanisms by which interventions to facilitate the target behaviours result in their outcomes?
3. What contextual factors influence the behavioural mechanisms?

While the review focuses on OD in the primary care setting, the stakeholder workshop confirmed that evidence from OD in the hospital setting and cancer screening evidence offers transferrable learning.^{37 40}

IPT development and prioritisation

Development of IPTs drew on the following:

1. Initial scope of the evidence.

2. The experience within the research team and stakeholder group.
3. An a priori framework of behaviour change theories, the Theoretical Domains Framework.^{37 53 54}

With the stakeholder group, IPTs were generated inductively, describing the behavioural mechanisms by which interventions may facilitate the target behaviours. These were then mapped to relevant domains of the TDF (see table 1). Stakeholders also worked alongside the research team to generate additional IPTs deductively for any unmapped TDF domains. Deductive development of IPTs for any TDF domains not represented in the inductive

Table 1 The 14 domains of the theoretical domains framework reproduced from Atkins *et al*^{52 56}

Domain	Definition	Examples of domain constructs
Knowledge	An awareness of the existence of something.	<ul style="list-style-type: none"> ▶ Knowledge (including knowledge of condition/scientific rationale) ▶ Procedural knowledge
Skills	An ability or proficiency acquired through practice.	<ul style="list-style-type: none"> ▶ Competence ▶ Interpersonal skills ▶ Practice
Social/professional role and identity	A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting.	<ul style="list-style-type: none"> ▶ Professional identity ▶ Professional role ▶ Professional confidence
Beliefs about capabilities	Acceptance of the truth, reality or validity about an ability, talent or facility that a person can put to constructive use.	<ul style="list-style-type: none"> ▶ Self-confidence ▶ Self-efficacy ▶ Self-esteem
Optimism	The confidence that things will happen for the best or that desired goals will be attained.	<ul style="list-style-type: none"> ▶ Optimism ▶ Pessimism ▶ Unrealistic optimism
Beliefs about consequences	Acceptance of the truth, reality or validity about outcomes of a behaviour in a given situation.	<ul style="list-style-type: none"> ▶ Outcome expectancies ▶ Anticipated regret
Reinforcement	Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus.	<ul style="list-style-type: none"> ▶ Rewards ▶ Incentives ▶ Punishment
Intentions	A conscious decision to perform a behaviour or a resolve to act in a certain way.	<ul style="list-style-type: none"> ▶ Stability of intentions
Goals	Mental representations of outcomes or end states that an individual wants to achieve.	<ul style="list-style-type: none"> ▶ Goal priority ▶ Goal/target setting ▶ Action planning
Memory, attention and decision processes	The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives.	<ul style="list-style-type: none"> ▶ Memory ▶ Attention ▶ Decision-making
Environmental context and resources	Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behaviour.	<ul style="list-style-type: none"> ▶ Environmental stressors ▶ Resources/material resources ▶ Organisation culture/climate
Social influences	Those interpersonal processes that can cause individuals to change their thoughts, feelings or behaviours.	<ul style="list-style-type: none"> ▶ Social pressure ▶ Social norms ▶ Social support
Emotion	A complex reaction pattern, involving experiential, behavioural and physiological elements, by which the individual attempts to deal with a personally significant matter or event.	<ul style="list-style-type: none"> ▶ Fear ▶ Anxiety ▶ Stress
Behavioural regulation	Anything aimed at managing or changing objectively observed or measured actions.	<ul style="list-style-type: none"> ▶ Self-monitoring ▶ Breaking habit

generation of IPTs was still guided by (1) evidence and (2) experience and is not, therefore, intended to be exhaustive.^{43 50}

The stakeholder group then prioritised IPTs for testing with the evidence according to their importance in facilitating the target behaviour(s). This was conducted through two phases; an online activity, using the JISC Discovery tool, followed by a 2-hour workshop.^{43 44} The online activity asked stakeholders to rate IPTs as 'important', 'not sure', 'not important' or 'the meaning of this statement is unclear'. IPTs with 100% rated as 'important' by all stakeholders in the online activity were automatically selected for testing in the review. IPTs with partial consensus, between 75% and 99% rated as 'important', were discussed in the stakeholder workshop.⁵⁵ Any IPTs with less than 75% agreement for 'important' were excluded from any further discussion or testing. If IPTs were rated by more than 25% of stakeholders as 'the meaning of this statement is unclear', then these were also discussed in the workshop. Stakeholders were also invited at the end of the online activity to provide comments on the IPTs and propose additional IPTs for discussion in the workshop.⁵⁶

Searching for evidence

We searched Medline, Google Scholar, PubMed, EMBASE, CINAHL, AMED, Scopus and PsycINFO from inception up to the time the primary search was conducted (June 2022). For full search strategies, see online supplemental file 2. This primary search was supplemented with snowballing by reviewing the reference lists of included evidence and performing targeted searches based on emerging evidence. Online supplemental file 3 provides the eligibility criteria for identified evidence.

Selecting and appraising evidence

Two reviewers (CS and KR) independently screened titles, abstracts and full texts for eligibility. Full text appraisal was based on:

(1) Methodological rigour.

Assessed using the Mixed Methods Appraisal Tool, the Critical Appraisal Skills Programme checklist for systematic reviews⁵⁷ and the Authority, Accuracy, Coverage, Objectivity, Date, Significance checklist.⁵⁸

(2) Relevance to the IPTs being tested.

See online supplemental file 4 for criteria used to rate evidence from high to no relevance.⁵⁹

(3) Richness of causal insights.^{31 41 60}

See online supplemental file 4 for criteria used to rate evidence from high richness to thin.⁶¹

Discrepancies were discussed and any disagreements resolved with a third reviewer (SS).

Data extraction

Included evidence was imported into NVivo for data extraction and analysis.^{40 62–64} The data extraction process was tested on a 10% sample of included evidence to ensure consistency. Evidence was then divided between

two reviewers (CS and CJ) for initial study and any text deemed relevant to the review was highlighted with a brief note attached on its pertinence to existing or emerging programme theories (eg, 'IPT 1, Context'). Once the reviewer read through and highlighted the paper, coding to the appropriate TDF domain and IPT was completed.

Title nodes were created in a hierarchical structure to organise codes under the relevant IPT and corresponding TDF domain and also to categorise the code as supporting or contradicting an IPT, for example, 'Skills' -> IPT 2 -> Supporting. Code names originated from the data itself (inductively) relating to the (1) context, (2) mechanism and/or (3) outcome and then mapped to an existing or new IPT and corresponding TDF domain (deductively). If numerous manuscripts provided the same supporting/contradicting evidence, it was then mapped to the same code. New IPTs were generated where there was sufficient evidence. Discrepancies in coding were resolved among the two reviewers, with any disagreements resolved with a third reviewer (SS).

Data analysis and synthesis

Coded data were used to create notes in a Microsoft Excel spreadsheet to record the key supporting and contradicting evidence for existing and emerging IPTs. The two reviewers (CS and CJ) met on a weekly basis to discuss the new evidence generated from analysed manuscripts and to discuss any queries or uncertainties in evidence coding and/or mapping. These data were then synthesised and used to refine or reject IPTs to accurately reflect the emerging evidence after discussions and agreement with the rest of the research team. Evidence synthesis comprised the following steps:

- ▶ Generating themes across the codes amid patterns among context, mechanism and outcomes, to confirm, refute or refine IPTs.
- ▶ Linking the patterns to refine programme theories.

IPTs supported by the evidence were then presented as CMOcs to explicitly express the relationship between context, mechanism and outcome. Refined IPTs and CMOcs were presented to the project's stakeholder group for feedback and refined where necessary.

RESULTS

IPT development and prioritisation

10 inductive IPTs were developed and mapped to eight TDF domains. A further 12 IPTs were deductively generated for the remaining six TDF domains (see online supplemental file 5). Online supplemental file 6 provides the results from the stakeholder prioritisation online activity. Nine stakeholders completed the online activity. The number of participants rating an IPT 'important' in order to achieve partial consensus (75–99%) was set between 6 and 8. One IPT, mapped to the TDF domain 'Skills', was rated as important by 100% of the stakeholder group. 11 IPTs received partial consensus and one IPT,

Table 2 Prioritised initial programme theories

Prioritised IPT No	TDF domain	Prioritised IPT statement	Target behaviour
1	Knowledge	If HCPs are given education about the signs, symptoms and risk factors of OD (C), then they are more likely to proactively identify OD (O), because they have the <i>appropriate knowledge</i> (M).	Proactively identify potential OD in older adults.
2	Skills	If HCPs are trained to provide initial advice and support to older adults with suspected OD (C), then they are more likely to provide this (O), because they have the <i>necessary skills</i> to do so (M).	Provide initial OD advice and support prior to formal assessment by a specialist.
3	Memory, attention and decision processes	If HCPs have a screening tool to follow (C), then they will be more likely to proactively identify OD (O), because it <i>facilitates decision-making</i> (M).	Proactively identify potential OD in older adults.
4	Environmental context and resources	If there are websites, forums, information leaflets, etc to give to patients (C), then HCPs are more likely to provide initial advice and support for older adults with suspected OD (O), because they have the <i>required resources</i> (M).	Provide initial OD advice and support prior to formal assessment by a specialist.
5	Social, professional role and identity	If HCPs perceive that their role includes proactively identifying OD and providing initial advice and support for older adults with suspected OD (C), then they will be more likely to carry this out, because they <i>feel obligated</i> to (M).	<ul style="list-style-type: none"> ▶ Proactively identify potential OD in older adults. ▶ Provide initial OD advice and support prior to formal assessment by a specialist.
6	Beliefs about consequences	If the adverse outcomes that occur from unaddressed OD are highlighted to HCPs (C), then they will be more likely to proactively identify OD and provide initial advice and support to older adults with suspected OD (O), because they are <i>aware of the adverse consequences of not doing so</i> (M).	<ul style="list-style-type: none"> ▶ Proactively identify potential OD in older adults. ▶ Provide initial OD advice and support prior to formal assessment by a specialist.
7	Optimism	If HCPs hear about case studies of positive outcomes associated with proactively identifying OD and providing initial advice and support to older adults with suspected OD (C), then they will be more likely to carry this out (O), because they <i>will be confident that them undertaking the behaviour will also lead to positive outcomes</i> (M).	<ul style="list-style-type: none"> ▶ Proactively identify potential OD in older adults. ▶ Provide initial OD advice and support prior to formal assessment by a specialist.

HCP, healthcare professional; IPT, initial programme theory; OD, oropharyngeal dysphagia; TDF, theoretical domains framework.

mapped to the TDF domain Intentions, was rated as ‘the meaning of this statement is unclear’.

Online supplemental file 7 provides a summary of workshop discussions, with stakeholders’ rationale to prioritise or discard the remaining IPTs. Table 2 provides the seven IPTs which were prioritised for testing by the stakeholder group.

Search results

Figure 1 provides the PRISMA flow diagram.

Online supplemental file 8 provides the characteristics of included evidence from the primary search and online supplemental file 9 from snowballing. Most of the studies from the primary search were conducted across several

settings, for example, community, nursing homes and residential care,^{4 18 20 65–68} or in general practice/primary care.^{17 19 23 69} Cross-sectional questionnaire studies were the most common design for evidence included from the primary search. The majority of studies from the snowballing sample were conducted in a hospital setting.^{70–75} Predominantly qualitative and mixed methods studies were included through snowballing. Nurses were the most common HCP to be involved in proactively identifying OD and/or providing advice.

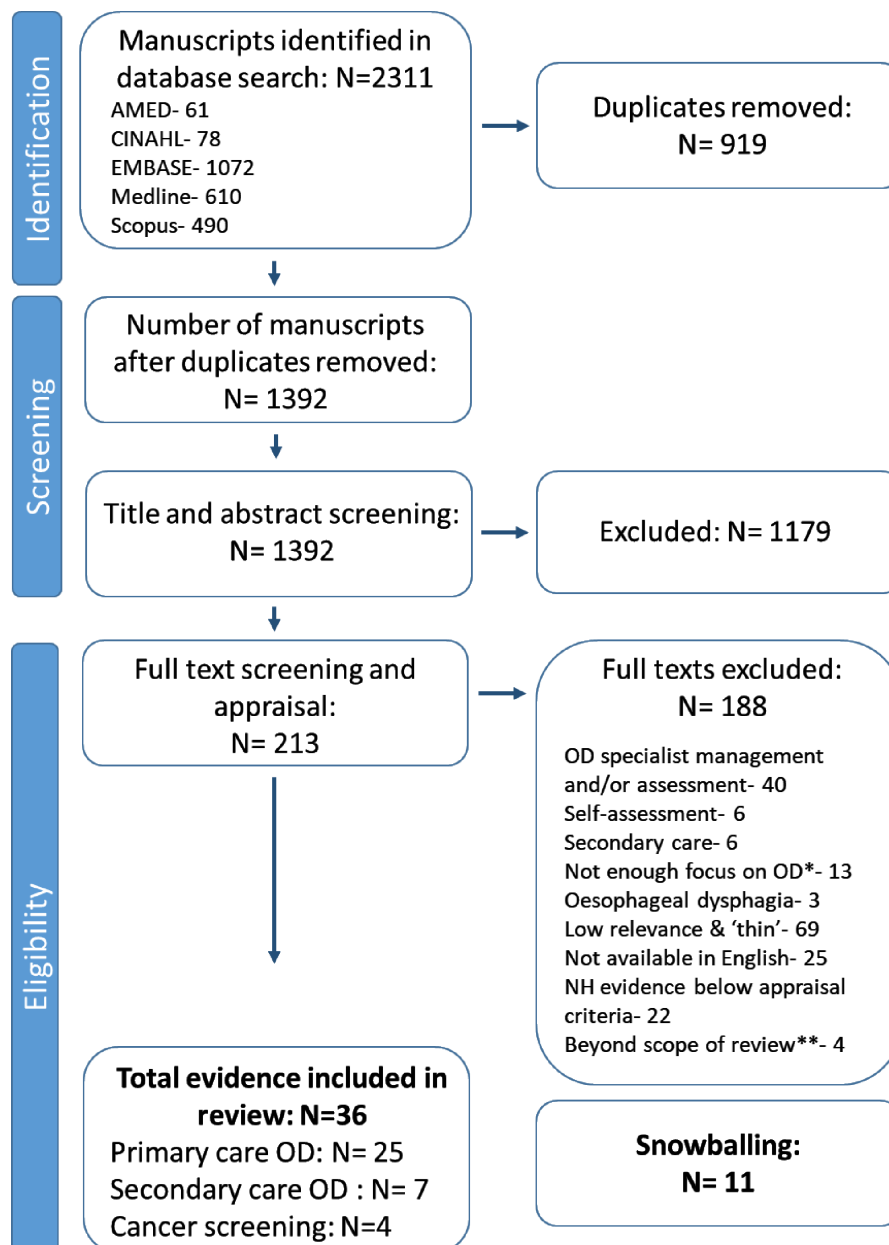


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of evidence search. *Evidence focused on interventions for conditions in which oropharyngeal dysphagia (OD) is a symptom. **Evidence which uses/reports on screening tools/identification processes which use observation and/or oral trials to detect potential OD. NH, nursing home.

Main findings

Table 3 shows the development of the seven prioritised IPTs and two new IPTs into five final programme theories and associated CMOcs.

CMOc 1: HCPs without OD education and training (C) will not have the required knowledge and skills (M) to proactively identify and provide initial advice and support to older adults with suspected OD (O)

HCPs who are not OD specialists lack the required 'Knowledge' and 'Skills' regarding how to identify OD and provide advice. A cross-sectional survey of primary care nurses and doctors in Spain reported almost 40% of respondents did not know the definition of dysphagia

and only 10% of respondents to a similar survey in Iran knew how to identify OD.⁷²⁻⁷⁶ A cross-sectional survey of primary care dieticians in Canada also found that 41% of respondents did not feel they had the competency or skill to provide advice to people with OD and 70% requested more training before feeling confident to identify OD.¹⁷

Education to address 'Knowledge' was provided through workshops,⁶⁹ lectures,⁷⁷ information pamphlets⁷⁸ and digital guides.⁷⁹ Content focused on the 'major concepts'⁷⁸ of OD, for example, symptoms and risk factors, and changes in swallowing physiology in older adults (*Knowledge*).^{65 68 78-81} One intervention provided a half-hour education session supplemented by an

Table 3 Development of seven IPTs to five final programme theories and CMOcs

Prioritised IPT and TDF domain/mechanism	IPT	Refined/new IPT	Rationale for refinement	Final Context-Mechanism-Outcome configuration (CMOc)	Target behaviour
1 Knowledge	If healthcare professionals are given education about the signs, symptoms and risk factors of dysphagia, then they are more likely to proactively identify OD, because they have the appropriate knowledge.	If healthcare professionals are not provided with basic education about the signs, symptoms and risk factors of dysphagia, then they will be less likely to proactively identify and provide initial advice and support for older adults with suspected OD, because they do not have the appropriate knowledge.	Refined from IPTs 1 and 2. Evidence suggested HCPs require both knowledge and skills to proactively identify OD as well as provide initial advice and support. Negatively worded to reflect majority of evidence demonstrating healthcare professionals without required knowledge and skills did not undertake the target behaviour(s). Interventions which targeted knowledge and skills were pragmatic—brief and basic.	CMOc 1 Healthcare professionals without OD education and training (C) will not have the required knowledge and skills (M) to proactively identify and provide initial advice and support to older adults with suspected OD (O). <small>17 19–23 65 67–69 71 72 76–81 91</small>	<ul style="list-style-type: none"> ▲ Proactively identify potential OD in older adults. ▲ Provide initial OD advice and support prior to formal assessment by a specialist.
2 Skills	If healthcare professionals are trained to provide initial advice and support to older adults with suspected OD, then they are more likely to provide this, because they have the necessary skills to do so.	If healthcare professionals are not provided with basic training about how to identify signs, symptoms and risk factors of dysphagia, then they will be less likely to proactively identify and provide initial advice and support for older adults with suspected OD, because they do not have the appropriate skills.		Merged with CMOc 1	N/A
3 Memory, attention and decision processes	If healthcare professionals have a screening tool to follow, then they will be more likely to proactively identify OD, because it facilitates decision-making.	If healthcare professionals do not have the required knowledge and skills, then they will be less likely to proactively identify and provide initial advice and support for older adults with suspected OD, because they will not be able to make correct decisions around what and how to screen for OD.	Refined from IPT 3. Evidence suggested that screening tools address a lack of knowledge and skills required to make correct decisions regarding OD identification. Screening tools are a standardised approach to facilitating HCPs' (correct) decision-making.	CMOc 2 Healthcare professionals without the required knowledge and skills (C) will fail to make correct decisions (M) about proactively identifying and providing initial advice and support to older adults with suspected OD (O). <small>17 68 70 71 74 77 80–82 84 87 100 101</small>	<ul style="list-style-type: none"> ▲ Proactively identify potential OD in older adults. ▲ Provide initial OD advice and support prior to formal assessment by a specialist.
4 Environmental context and resources	If there are websites, forums, information leaflets, etc to give to patients, then healthcare professionals are more likely to provide initial guidance and support for older adults with suspected OD, because they have the required resources.	N/A	Discarded—insufficient evidence to support mechanism.	Merged with CMOc 1	N/A
NEW Environmental context and resources	N/A	If OD identification is incorporated into existing health reviews/assessments/systems used by healthcare professionals for older adults, such as medication reviews, then they will be more likely to proactively identify suspected OD in older adults, because of a more conducive work environment.	Evidence supported IPT without refinement.	CMOc 3 Incorporating OD identification into existing workflow (C) will create a conducive environment (M) for healthcare professionals to carry out this behaviour (O). <small>19 67 71 86–88</small>	Proactively identify potential OD in older adults.
5 Social, professional role and identity	If healthcare professionals perceive that their role includes proactively identifying OD and providing initial advice and support for older adults with suspected OD, then they will be more likely to carry this out, because they feel obligated to.	Discarded—insufficient evidence to support mechanism.	N/A	N/A	N/A

Continued



Table 3 Continued

Prioritised IPT No and TDF domain/mechanism	IPT	Refined/new IPT	Rationale for refinement	Final Context-Mechanism-Outcome configuration (CMOc)	Target behaviour
NEW Social influence	N/A	If healthcare professionals are aware that patients and carers expect them to address OD, then they will be more likely to proactively identify and provide initial advice and support for older adults with suspected OD, because they will be encouraged to address patient concerns/wishes.	Evidence supported IPT without refinement.	CMOc 4 Healthcare professionals who are aware that older adults and carers expect them to address OD (C) will be encouraged (M) to proactively identify OD and provide initial advice and support to older adults with suspected OD (O). 18 , 88 , 90	<ul style="list-style-type: none"> ▲ Proactively identify potential OD in older adults. ▲ Provide initial OD advice and support prior to formal assessment by a specialist.
6 Beliefs about consequences		N/A	Evidence supported IPT without refinement.	CMOc 5 Healthcare professionals who are aware of the adverse outcomes associated with OD (C) will recognise the importance (M) of proactively identifying OD and providing initial advice and support for older adults with suspected OD (O). 17 , 19 , 65 , 69 , 70 , 88 , 102	<ul style="list-style-type: none"> ▲ Proactively identify potential OD in older adults. ▲ Provide initial OD advice and support prior to formal assessment by a specialist.
7 Optimism		If healthcare professionals hear about examples of positive outcomes associated with proactively identifying OD and providing initial advice and support to older adults with suspected OD, then they will be more likely to carry this out, because they will be confident that them undertaking the behaviour will also lead to positive outcomes.	Discarded—insufficient evidence to support mechanism.	N/A	N/A

HCP, healthcare professional; IPT, initial programme theory; OD, oropharyngeal dysphagia; TDF, theoretical domains framework.

information pamphlet with key messages for participants to take away.⁷⁸ HCPs who received the intervention scored an 80% average on their dysphagia knowledge, compared with 50% in the control group.⁷⁸ The intervention group also reported being more likely to proactively identify OD in their practice compared with the control group.⁷⁸

Training to develop ‘Skills’ was delivered through case-based sessions^{69 70} and simulations for HCPs to practise.^{68 77 78 81} Sessions focused on developing HCPs’ ability to identify OD using appropriate tools/protocols and communicating a potential OD diagnosis with patients (*Skills*).^{68–70 77 78 81} Case-based sessions delivered to nurses and allied health professionals allowed HCPs to review and rehearse the use of an OD checklist which in turn increased OD screening from 43% to 74%.⁷⁰

All education training programmes were designed as one-off concise commitments to recognise HCPs’ limited time and competing priorities.

CMOc 2: HCPs without the required knowledge and skills (C) will fail to make correct decisions (M) about proactively identifying and providing initial advice and support to older adults with suspected OD (O)

Without the required knowledge and skills and validated OD checklists, HCPs were less likely to correctly identify OD and provide appropriate advice.^{4 17 74 77 82 83}

A survey characterising OD identification and management practice in primary care dieticians found 75% of participants did not use a protocol to identify OD and 17% produced their own checklist/tool.¹⁷ Interviews with nurses identified a lack of consistency in what they considered to be OD and what signs and symptoms they looked out for.⁷³ A cross-sectional study of hospital doctors and nurses reported, respectively, 75% and 89% used informal processes to identify OD. When compared with a validated OD checklist, the use of informal processes/tools misses key indicators, such as a wet voice and ability to cough voluntarily.⁷⁴ In the absence of validated tools/protocols, HCPs also become more reliant on patients self-reporting their swallowing difficulties.^{71 82}

Checklists provide a standardised approach to HCPs’ ‘Memory, attention and decision processes’ to facilitate them to identify OD.^{4 17 73 74 80 82} They guide HCPs to gather the information required to identify OD and determine the likelihood of OD based on this information.^{4 77 80–82 84 85} Checklists can also highlight ‘red flags’⁸⁶ for potentially serious OD and indicate when to refer on to OD specialists. Simple checklists were defined as quick to use, easy to access, clear, comprised non-invasive patient assessment and appropriate for use by any HCP regardless of existing knowledge.^{81 82 84 85 87} After implementing an OD checklist in an intensive care setting referrals to speech and language therapy for suspected OD increased from 20% to 60%.⁷⁰ Evidence from cancer evidence further indicates that these tools act as a prompt for HCPs and guide decision-making.⁸⁷

CMOc 3: incorporating OD identification into existing workflow (C) will create a conducive environment (M) for HCPs to carry out this behaviour (O)

Addressing ‘Environmental context and resources’ by incorporating OD identification into relevant activities that HCPs already undertake may facilitate HCPs to undertake this target behaviour. One example is requiring HCPs to ask about OD during routine consultations with older people, facilitated by programming electronic health records to prompt HCPs during the consultation.^{67 71 87} Interviews with GPs identified that a prerequisite for incorporating cancer screening tools into routine workflow was embedding tools into existing information technology systems. This provided quick and easy access to the tool and meant assessments were automatically recorded in patients’ health records.⁸⁷

Existing contact with older adults who are likely to be at high risk of OD is a targeted opportunity to integrate OD identification.^{22 75} The comprehensive geriatric assessment (CGA) is a multidisciplinary diagnostic and treatment process with a requirement to investigate OD. Health reviews for older adults underpinned by CGA are over 40% more likely to include an OD investigation than those without.⁶⁷ Incorporating OD into existing processes that HCPs regard as important may also motivate HCPs who do not associate OD with adverse consequences in older adults.^{19 67 88}

CMOc 4: HCPs who are aware that older adults and carers expect them to address OD (C) will be encouraged (M) to proactively identify OD and provide initial advice and support to older adults with suspected OD (O)

CMOc 4 is mapped to ‘Social influence’ as older adults and informal carers expect HCPs to ask about OD and provide advice where necessary.¹⁸ Semistructured interviews exploring the experiences of 21 caregivers and 20 HCPs highlighted a disconnect between their expectations and that of HCPs.¹⁸ While caregivers to family members with dementia expected early identification of and education on OD, ‘I want [HCPs] to advise me. What do I do?’,¹⁸ the majority reported feeling alone in dealing with their care recipients’ swallowing difficulties, ‘I’m learning myself... and asking questions on the blog... I’ve learnt myself, you know.’¹⁸

HCPs are more likely to undertake a behaviour if they are made aware that it is an expectation from patients and caregivers.^{89 90} A cross-sectional survey of physicians in Canada found 88% said they would incorporate proactive identification of health conditions into their routine practice if they knew a patient expected them to do so.⁹⁰ This was reinforced by the review’s patient and public involvement advisors who felt strongly that HCPs, rather than patients and carers, are responsible for proactively identifying OD.

CMOc 5: HCPs who are aware of the adverse outcomes associated with OD (C) will recognise the importance (M) of proactively identifying and providing initial advice and support to older adults with suspected OD (O)

HCPs may 'trivialise' OD as an inevitable and minor consequence of ageing.^{65 78 91} Emphasising the seriousness of OD beyond a 'secondary or minor disorder' may shift HCPs' 'Beliefs about consequences' to recognise the importance of proactively identifying OD.⁹¹ This was observed in evidence which raised awareness of adverse outcomes from unaddressed OD in older adults.^{69 78} Following attendance at workshops involving patient cases, used to convey the prevalence and impact of OD, HCPs reported an increase in their perception of the importance of proactive OD care.⁶⁹ Similarly, on receipt of education on the aetiology of OD, an increase in the extent to which nurses proactively identified OD signs and symptoms was observed.⁷⁸ Stakeholders also highlighted the importance of emphasising the positive consequences of HCPs proactively identifying and providing initial advice and support.

DISCUSSION

This behavioural science realist review, undertaken collaboratively with stakeholders, has determined that an intervention is required to facilitate primary care HCPs to (a) proactively identify potential OD in the general older population and (b) provide initial advice and support to those with suspected OD while they wait for formal assessment by a specialist. Interventions should provide education and training (Knowledge and Skills), facilitate HCPs' decision-making (Memory, attention and decision processes), incorporate OD identification into existing workflow (Environmental context and resources), increase HCP awareness of older adults and carers' expectations (Social influences) and raise awareness of the adverse outcomes of OD (Beliefs about consequences). All CMOcs, apart from CMOc 3 (Environmental context and resources), are relevant to both target behaviours.

The initial barrier for HCPs appears to be a lack of awareness of patient/carer expectations, as well as the size and nature of the problem in older adults. Therefore, interventions need to address 'Social influence' to make HCPs aware of the patient/carer expectations and 'Beliefs about consequences' that OD is inconsequential. A systematic review of interventions to increase HCPs' awareness of patient expectations indicates several characteristics which influence HCP behaviour.⁹² Characteristics of successful HCP behaviour change include perceived credibility of the information source conveying patient expectations, congruency of information with self-perceptions and performance expectations and encouraging HCPs to reflect on the extent their practice aligns with patient expectations.⁹²

Once awareness of a required change in practice has been established, equipping them with the 'Knowledge' and 'Skills' to identify OD and provide initial advice

and support is necessary. While the evidence consistently demonstrated improved knowledge and skills, the extent to which these findings are replicable beyond the research setting is unclear. However, it was notable that burden to HCPs was minimised in all provided education and training by focusing on the core concepts of OD.

Implementing validated checklists is a recognised strategy to improve the quality of care and patient outcomes.⁹³ Evidence supporting the use of checklists in OD indicates that they address knowledge and skill gaps and are thus useful for HCPs with limited OD knowledge and skills. Additionally, checklists facilitate 'Memory, attention and decisions processes' by acting as a prompt and guiding decision-making. They, therefore, have a place in interventions delivered even to HCPs with the required knowledge and skills.⁷¹

Successful interventions adapted to recognise resource limitations. Increasingly, the healthcare literature reports on the additional time pressures experienced by primary care health services.⁹⁴ Incorporating OD identification into existing workflows used existing 'Environmental context and resources' and aligns with initiatives such as the 'Make Every Contact Count' campaign in the UK, which supports using any day-to-day patient interactions to make positive health changes.⁹⁵ Embedding OD identification into existing work patterns may also minimise the negative perceptions of an increase in practitioner workload, often associated with mass population screening.⁹⁶ For older adults who perceive OD to be a natural part of ageing, a separate process to identify OD may be viewed as an annoyance. Avoiding an additional stand-alone service for identifying OD may thus lead to better engagement.^{71 96}

The application of behavioural science to conceptualise mechanisms is a strength of this realist review. A relatively new and novel approach to evidence syntheses, underpinning this review with a behavioural science framework, the TDF, ensured all potential mechanisms of action of behaviour change were considered when generating IPTs. Through the TDF's linkage to a taxonomy of behaviour change techniques, future research can identify and select the 'active ingredients' of an intervention to be delivered via these behavioural mechanisms.⁹⁷ Due to the nature of realist reviews,³⁷ learning from different contexts (eg, care homes and hospitals) and clinical groups (eg, stroke, cancer, etc) was drawn on. The review process was supported throughout by the stakeholder group, ensuring the review remained pertinent to primary care HCPs, patients and the primary care context.

The review was, however, limited by the richness of the evidence underpinning some CMOcs. While evidence related to the target behaviour of proactively identifying OD was rich, evidence to support CMOcs describing how to support HCPs to provide initial advice and support lacked richness. For example, CMOc 3 only relates to the first target behaviour, proactively identify OD. This may be because the behavioural mechanism is not applicable to both target behaviours. However, further exploration

is required to enhance the richness of evidence related to the determinants of the second target behaviour of providing initial advice and support. Other limitations are shared with those of many evidence syntheses, for example, the included evidence predominantly originated from higher income countries, potentially limiting the applicability of findings to low- and middle-income settings. Realist evaluations may be used to confirm, refine or refute programme theories which have been developed from realist reviews.⁹⁸ This approach allows for enrichment of the evidence supporting the causal assumptions described by CMOcs and thus more accurate prediction of the likely outcomes from an intervention, developed from CMOcs, prior to its implementation.^{98 99}

CONCLUSION

The review identified five programme theories across six domains of the TDF explaining how primary care HCPs can be supported to proactively identify OD in older adults and provide initial advice for those with suspected OD.

This understanding of why intervention components work enables different operationalisations according to the resource and infrastructure of an organisation. However, no one intervention included in this review addresses all six behavioural mechanisms, further work is required by service delivery teams to operationalise the behavioural mechanisms into a comprehensive complex intervention. By developing these programme theories using 'recognised' behavioural mechanisms, this facilitates intervention development through the linkage between the TDF and the corresponding behaviour change techniques for each domain.⁴⁶ Selection and operationalisation of behaviour change techniques as intervention components may be achieved via codesign with patients, HCPs and other professions in the health-care system.

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