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Citation for final published version:

Coulman, Elinor, Grant, Jen, Aburrow, Annemarie, Curran, Michael, Murphy, Jane, Murphy, Simon, Robinson-Miles, Tilly, Sewell, Nichola and Hawkins, Jemma 2024. The evaluation of the Scottish Borders/Food Train Eat Well Age Well implementation of the Patient Association Nutrition Checklist. Clinical Nutrition ESPEN 61, P506. 10.1016/j.clnesp.2023.12.125

Publishers page: <https://doi.org/10.1016/j.clnesp.2023.12.125>

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The evaluation of the Scottish Borders/Food Train Eat Well Age Well implementation of the Patients Association Nutrition Checklist

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Plain language summary

Background: The Patients Association Nutrition Checklist (Checklist) is a simple tool that can be used to identify older adults who may be at risk of malnutrition at an early stage and provide simple advice and signpost to additional support. The Scottish Borders Council, in partnership with the Eat Well Age Well Charity, have been implementing the Checklist across health and social care organisations since Autumn 2021.

Aims: To see if it was possible to use the Checklist in 12 organisations that work with older adults in the community, and to understand what the impact of the Checklist is for older adults and the staff who use it.

Methods: Information regarding how the Checklist was used and the experiences of staff who work in the organisations was collected using online surveys. Organisation staff and the Checklist trainer (Eat Well Age Well) were interviewed about their experiences of using the Checklist.

Key Findings: Use of the Checklist varied across organisations, data show it was completed with 461 older adults and that 7.4% were considered at risk of malnutrition. The Checklist: was easy to use; helped with difficult conversations and referrals to additional services (dietetics, GP); and was quick to deliver, costing £4.17-£6.83 per older adult. Things that made using the Checklist more difficult included: short appointment times; older adult capacity/communication issues; and staffing levels. As a result of using the Checklist, organisation staff developed improved skills and confidence spotting and managing malnutrition and health improvements were seen in older adults.

Patient and Public Involvement (PPI): PPI representatives, using lived experience, contributed to the study design and interpretation/dissemination of results.

Conclusions: Using the Checklist could help to increase awareness of malnutrition, improve conversations and prevent older adult ill-health. Recommendations for future use include embedding Checklist use at strategic level in organisations to support intended use of the Checklist.

Keywords: malnutrition; undernutrition, Patients Association Nutrition Checklist; older adults; social care; community.

1. Summary of research findings

1.1 Background

Malnutrition has been shown to affect over 1.3 million older adults (over the age of 65) in the UK¹ and this figure may be worse following the impact of the COVID-19 pandemic. Malnutrition has adverse effects on health and wellbeing outcomes, including increased risk of hospitalisation, increased falls and reduced independence. Furthermore, the levels of malnutrition in the community are largely undetected and untreated². Early identification of older adults, living in the community, who may be at risk of malnutrition, and subsequent treatment, may improve outcomes for these individuals.

The [Patients Association Nutrition Checklist](#) (referred to as the “Checklist”) is a simple, freely available tool that can be used by staff working with older adults in the community, across various sectors, to identify older adults at risk of malnutrition at an early stage and provide signposting to nutrition advice and support³. It was developed by the Patients Association in collaboration with several health, social care and voluntary sector providers including Bournemouth University, the Malnutrition Pathway (Managing Adult Malnutrition in the Community), and Wessex Academic Health Science Network (Wessex AHSN)⁴. In Scotland, Eat Well Age Well (EWAW) (as part of the Scottish charity Food Train) have successfully engaged with stakeholders to use the Checklist since 2019 and received positive feedback from service providers. The Scottish Borders Health and Social Care Partnership was approached to help EWAW facilitate a further consistent roll-out of the Checklist from September 2021, to various service provider partners (including social care, housing and voluntary sectors) across the Scottish Borders. An evaluation of the roll-out, to understand the impact of the Checklist on older adults and other stakeholders, and to assess the feasibility of the initiative, was designed to provide evidence to support future roll-out of the initiative in additional areas across Scotland and to potentially inform the Scottish Government’s Malnutrition Framework for Scotland and new UK clinical guidelines. Researchers at Cardiff University, as part of PHIRST Insight were allocated as the research team to evaluate the project by the National Institute of Health Research (NIHR).

1.2 Aims and Objectives

The primary aims of the evaluation were to:

- i. understand and evaluate the perceived impact of the Checklist for: i. older adults; ii. implementers (staff completing the Checklist with older adults) and iii. service provider partner organisations (SPPO) that the implementers work/volunteer for.
- ii. assess the feasibility of initial roll-out of the Checklist to support and inform the future implementation and strategic inclusion in a broader geographical area and nationally.

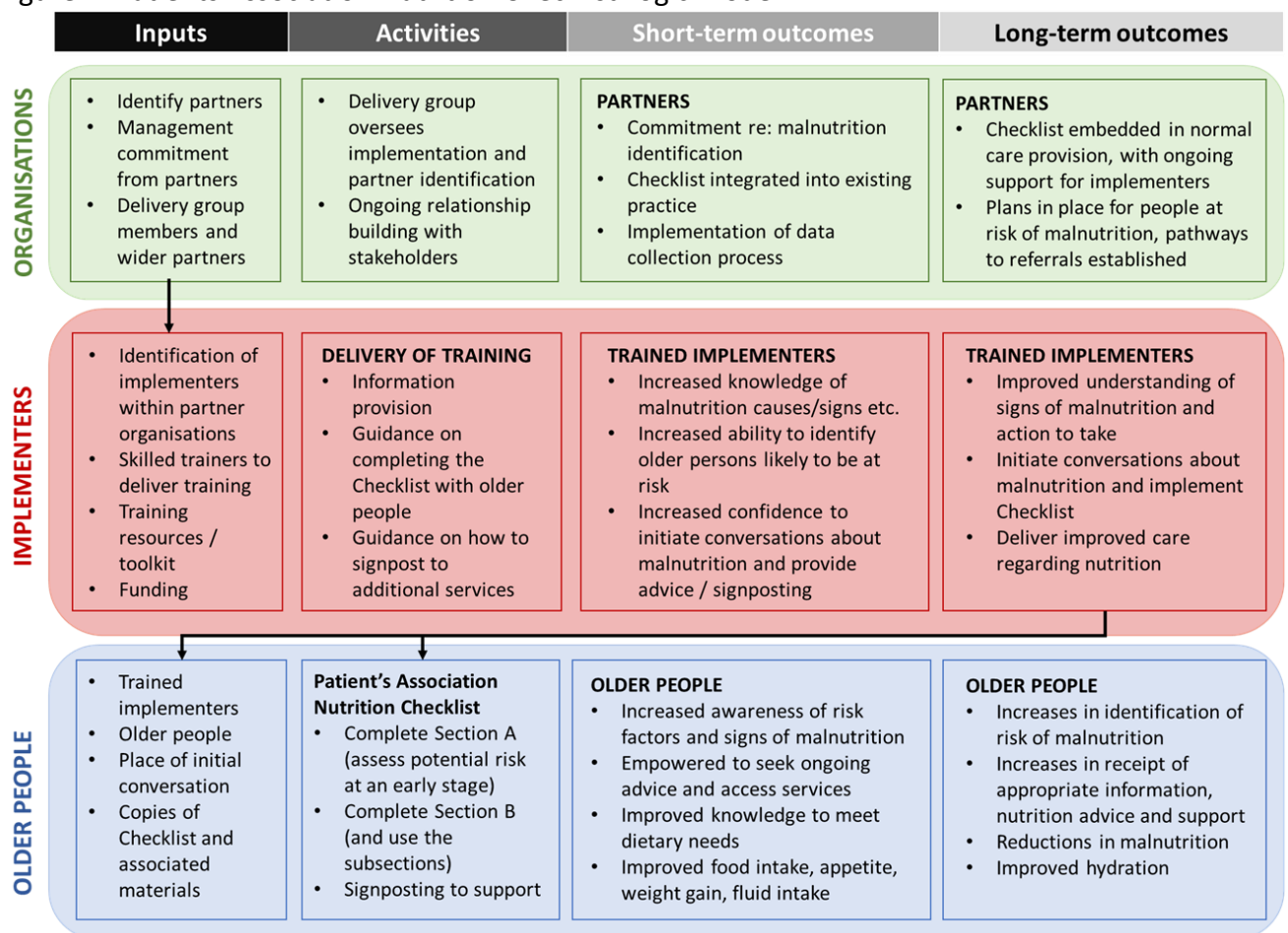
The objectives of the evaluation were:

1. to explore the barriers and facilitators of implementation of the initiative from the perspectives of implementers (staff completing the Checklist) and SPPOs (social care, housing and voluntary sector).

2. to evaluate the feasibility of implementation of the initiative in different SPPO contexts.
3. to explore the mechanisms of action through which the initiative may or may not achieve its outcomes in order to refine the intervention Logic Model (Figure 1).
4. to assess the feasibility of collecting unit cost data required for health economic evaluation in a potential future evaluation.
5. to assess the availability of NHS routinely-collected data on relevant outcomes.
6. to develop a report with recommendations for future working and to inform wider rollout, integrating with current systems.
7. to develop a dissemination plan and communicate findings to range of stakeholders including service users, service providers, commissioners and policymakers.

The evaluation had originally also aimed to explore outcomes and experiences with older adults in receipt of the Checklist. However, this was unfortunately not possible to accomplish due to a lack of referrals of older adults to the research team.

Figure 1: Patients Association Nutrition Checklist Logic Model



1.3 Methods

The EAWW delivery team collaborated with the Scottish Borders health and social care partnership to identify potentially suitable organisations within health, social care and the third sector to implement the Checklist. Following discussions with local NHS dietitians it was decided not to pursue using the Checklist with NHS teams e.g. physiotherapists, district nurses due to the existence of pathways around the detection and treatment of malnutrition, based on NICE guidelines and utilising the Malnutrition Universal Screening Tool (MUST)¹⁰ for screening purposes within NHS Borders. A total of 16 social care and third sector SPPOs were identified by health and social care partnership leads and key contacts (staff in director/managerial positions) within the organisations were approached by EAWW staff. A total of 4 organisations were unsuitable to implement the Checklist because of capacity issues or because the work didn't fit within their remit. EAWW administered SPPO-specific Checklist-implementation training sessions with SPPO staff from 12 organisations.

Study design

The study utilised a mixed-method design, incorporating observational and process evaluation of the Checklist implementation. Both quantitative and qualitative data were collected from research participants (see below), combined and mapped onto individual objectives.

The study was registered with Research Registry Reference number: researchregistry8420 (www.researchregistry.com).

Participants

There were three types of participant in this study:

1. Implementers* - staff who are in contact with older adults as part of their job role and complete the Checklist with them;
2. SPPO staff* in a managerial position or responsible for delivering/overseeing/supporting the implementation of the Checklist in their organisation; and
3. EAWW Trainer(s) responsible for providing training to implementers on how to use the Checklist.

* 1. and 2. are not mutually exclusive.

Participant recruitment

The main contact at each SPPO was asked to distribute an invite to all relevant implementers and SPPO staff to take part in the online survey or a qualitative interview. For the online survey, implementers and SPPO staff were provided with the survey link which incorporated online consent (an online participant information sheet was provided). A total of 38 implementers and SPPO staff completed the online survey. For the interviews, implementers and SPPO staff were asked to contact the research team directly if they wanted to participate. Interviewees were provided with an information sheet by email prior to the interview and

verbal consent was taken. Sufficient time was given for consideration of participation in all aspects of the study. A total of 8 implementers and SPPO staff were interviewed. A consent statement was included when respondents completed training data. Anonymous operational data and training data were provided to the research team by EAWW.

Data collection methods

There were several forms of data collected within the study, detailed separately below. Due to the geographical distance between where the initiative was being implemented and where the research team were located, remote data collection was required for all forms of data. Interviews were conducted by telephone or video-conferencing (via Zoom or Microsoft Teams). For online survey data collection, an accessible data collection platform (Qualtrics) was utilised to allow data to be collected via laptops, tablets or phones as required. Operational data were collected by EAWW using Google forms, email or Jotform as appropriate.

1. Training evaluation data

Pre- and post-training evaluation surveys were completed on Google forms by implementers and SPPO staff at the EAWW training. The survey was designed by EAWW and contained questions on implementers' knowledge of dietary needs, confidence in identifying malnutrition risk in older adults, knowledge of available signposting to malnutrition support for older adults, knowledge of the availability of malnutrition screening tools and confidence to use the Checklist in their existing job role.

2. Operational data

Operational data collected by SPPOs were collated via EAWW including the number of older adults with which the Checklist was used, broken down into age categories, the number of older adults deemed at risk of malnutrition/in need of nutritional support by the Checklist and the number of older adults referred for additional support.

3. Semi-structured interviews

Semi-structured interviews were conducted with implementers, SPPO staff and EAWW Trainer(s). These interviews explored interviewees' perspectives on the barriers and facilitators of implementation of the initiative and the research process. Questions focused on:

Implementers

- a) views of the training provided, incorporation of the initiative into their existing job/volunteer role and ongoing support and supervision required for implementation;
- b) views regarding completion of the Checklist and delivery of the initiative;
- c) perceived impact of the initiative on short-term outcomes, as described by the initiative's Logic Model;
- d) views regarding provision of evaluation information and feasibility of outcome measures;
- e) usual practice/fit with other practice and services;
- f) impact of COVID-19 on provision of services.

SPPO staff

- a) barriers and facilitators to incorporating the initiative in the context of the SPPO;
- b) provision of ongoing support and supervision for implementation;
- c) usual practice/fit with other services;
- d) views regarding collation of organisational implementation data;
- e) plans/requirements/changes made to organisational practices for potential integration or future roll-out of the initiative;
- f) cost of implementing the initiative at organisational level;
- g) impact of COVID-19 on provision of services.

EWAW Trainer(s)

- a) barriers and facilitators of implementing the initiative with different SPPOs;
- b) experience of delivering training to SPPO staff;
- c) experience of collating operational data;
- d) barriers and facilitators to conduct research in the context of the SPPOs.

4. Online survey data from implementers and SPPO staff

To supplement qualitative interview data with implementers and SPPO staff, and to have broader reach from the data collected, an online survey was developed to cover similar questions to the interviews, including:

- a) views regarding training provided, incorporation of the initiative into their existing job/volunteer role and ongoing support and supervision required for implementation;
- b) barriers and facilitators to incorporating the initiative in the context of the SPPO;
- c) usual practice/fit with other services;
- d) plans/ requirements/changes made to organisational practices for potential integration or future roll-out of the initiative;
- e) impact of COVID-19 on provision of services.

5. Economic data

In order to assess the feasibility of collecting data required for a future health economics evaluation of the initiative, SPPO-associated costs of implementing the Checklist were identified in semi-structured interviews with SPPO staff, implementers and EWAW trainer (as above). Unit costs⁵ were collected to calculate resource inputs for implementation.

6. Routine data

By contacting sources in Scottish Borders, we sought to identify sources of local level and individual-level NHS routinely collected data that could be utilised in a future evaluation of the initiative.

All qualitative interviews were audio recorded using an encrypted external Dictaphone. The audio files from interviews were transcribed verbatim and anonymised during the transcription process.

Ethics

The study was granted ethical approval from Cardiff University's School of Social Sciences Research Ethics Committee (REF: 68).

Data Analysis

Qualitative data

Qualitative data were collected from interviews and open text responses in online surveys. Computer software (NVivo v12) was used to manage the qualitative data which were subject to thematic analysis, as outlined by Braun and Clarke⁶. Two qualitative researchers developed an inductive thematic framework, grounded in the data, which categorised themes and subthemes. The thematic framework was used to code each interview, with 20% of the interview transcripts double coded to ensure reliability of the framework. Qualitative online survey data were coded as described above.

Quantitative data (training, operational, economic and survey data)

Online survey data included both quantitative and qualitative data. All quantitative analyses were descriptive in nature and described means/medians/ranges as appropriate. Categorical data are reported as frequencies and proportions. No formal economic analysis was conducted, however, unit costs for resource inputs are summarised.

A qualitative synthesis across the interviews and open text survey responses was undertaken to provide an over-arching synthesis of SPPO staff's experiences of the implementation of the initiative and its perceived impacts. A triangulation exercise was conducted combining both qualitative and quantitative results and mapped onto the study objectives.

1.4 Findings/Discussion

Results are mapped on to the objectives of the study and are reported under the following main headings:

1. Characteristics of SPPOs and participants
2. Implementation of the initiative in different SPPO contexts (objectives 1 and 2)
3. Outcomes of the Checklist (objective 3)
4. Future research (objectives 4 and 5)
5. Recommendations for future roll-out (objectives 6 and 7)

1. Characteristics of service provider partner organisations and participants

SPPO staff interviewees described themselves as having mainly managerial positions within the SPPO and most were also in contact with older adults as part of their job role. Interviewees described how they had extensive experience, some for decades, of working

with older adults. However, the length of time in their current job role varied from a few months to more than 10 years.

Of the participants who completed the online survey, the majority worked in a position whereby they came into contact with older adults (n=26, 68.4%). Around one quarter line-managed members of staff who came into contact with older adults (n=10, 26.3%) and two worked in senior positions within SPPOs (n=2, 5.3%). Examples of the types of job roles undertaken by survey participants included: support/community link workers; coordinator roles (Local Area coordinators/Care/Sheltered housing); hospital liaison roles; dementia advisors; or manager roles. Two participants described themselves as administrative/clerical support who came into contact with older adults as part of their role.

In addition, one EAWW trainer, who delivered the Checklist training, was interviewed.

Organisational contexts

The organisational contexts, as described by interviewees, were varied in terms of organisation size, the setting and the services provided. Organisational caseloads were prone to fluctuation and ranged from less than 10 to over 200 older adults. Organisations provided both acute and long-term support services to older adults, including: assisted discharge from hospitals; personal care; assistance preparing food/meals and shopping; assistance with accessing appropriate financial support; meal services; befriending services; and opportunities for social interaction such as organisation of community social groups and operating transport services. Older adults were seen by staff in their own homes, assisted living accommodation or in community settings. The services provided to older adults were either established services or in some cases were relatively new (less than 1 year).

Usual practice and previous experience

Usual practice and experience of dealing with malnutrition was explored with SPPO staff interviewees, survey participants and with respondents who completed the pre- and post-training evaluation forms. Interviewees described feeling confident to deal with issues of malnutrition when required, whether or not they had attended the Checklist training. This included conducting referrals to GPs/district nurses or dietitians as necessary or requesting support from senior members of staff within their organisation. In the training evaluation forms, most respondents stated that their knowledge regarding malnutrition, prior to attending Checklist training, was “average” (71%), whilst 21% stated their knowledge was good and 8% had little knowledge. However, over one third of respondents (38%) stated that they were not confident spotting the signs of malnutrition and only 10% were previously aware of any screening tools to identify malnutrition.

Some SPPO staff interviewees described how nutritional assessments were incorporated into regular reviews with older adults, whereas others highlighted concern that nutritional support was not included in the organisation’s current care package. Training regarding malnutrition was lacking; SPPO staff interviewees described a lack of in-depth malnutrition training and most trainees (84%) had not received any malnutrition training.

"I've been on training, obviously, quite a bit over the years for various different things, and malnutrition has just been touched on and moved on from."
[Implementer 3, interview]

"We have no formal policies about malnutrition." [Implementer 1, interview]

2. Implementation of the initiative in different SPPO contexts

Implementation of the Checklist and engagement of SPPOs

Identification of SPPOs via the health and social care partnership was effective and most SPPOs involved in implementation were keen and engaged, as reported by the EAWW Trainer. Training specific to each SPPO to support implementation of the Checklist was delivered to 12 organisations (169 implementers) between 2nd September 2021 and 9th August 2022. Of these organisations, 7 provided operational data which gives insight into the level of implementation of the Checklist. However, some organisations reported that they were implementing the Checklist but did not return operational data to EAWW.

"(SPPOs) have said that they implemented it (Checklist), but we haven't got any (operational) data to back that up" [EAWW Trainer, interview].

The majority of these organisations were trained between September 2021 and January 2022) and took an average 3.5 months (range 1-7 months) to return operational data following Checklist training, something that was addressed by the EAWW Trainer:

"A couple just did take them a wee bit longer...there are various issues in the last year or so and its taken them a while to be in a position to actually implement this bit of work" [EAWW Trainer, interview].

Across the 7 SPPOs that provided operational data, the Checklist was used with 461 older adults between October 2021 and November 2022 (range 3-238 older adults). Of these older adults, 7.4% (n=34) were considered "at risk of malnutrition" (range 0-100%). Of these "at risk" older adults, 68% were >80 years old, 16% were 65-80 years old and 16% did not have a recorded age. Seven survey participants stated that the Checklist had been used with a mean of 9 older adults (range 1-25) within their organisation.

Implementation methods varied across the organisations: whilst some organisations completed the Checklist with all adults that they contacted (by incorporating the Checklist into monthly reviews or at the start of a new service provision), others only completed the Checklist with older adults where they had concerns regarding malnutrition. This was contrary to the advice provided in the EAWW training.

"so we did it when all the service users came, back, (when COVID-19 restrictions were lifted) which was around, I think it was around about a hundred people."
[SPPO staff 5, interview]

"..we'd only use it if we were feeling that there was, you know, something wrong, or something that's maybe not going quite right." [Implementer 3, interview]

"In the training I do spend the time to specify that its every single older person...and why it's important to screen everybody." [EAWW Trainer, interview]

Reasons for not using the Checklist included that staff had not received the necessary support or that the Checklist was not appropriate for the organisations' caseload of older adults.

"The Patients Association Nutrition Checklist is not appropriate for the older adults I see." [Implementer 20, online survey]

"Staff have not had the necessary support to use the Patients Association Nutrition Checklist." [SPPO staff 10, online survey]

Experience of attending the Checklist training

Implementers were invited to attend SPPO-specific Checklist training, delivered by EAWW, either face-to-face or remotely, depending on the preference of the organisations' key contact. Key contacts in SPPOs were generally keen for staff in their organisations to receive the EAWW training, as reported by the EAWW Trainer.

"They all recognised that yes that is a problem that they have seen and we don't do really anything about, so you know, they were really keen for the training." [EAWW Trainer, interview]

Overall, the training was well received by respondents who completed the post-training evaluation forms, online survey participants and interviewees. Of the survey participants who attended the training and responded (n=14), 78.6% (n=11) stated that the information was clear, 100.0% (n=14) stated that they were provided with the necessary information and guidance to use the Checklist with older adults and 92.9% (n=13) stated that they were provided with the necessary information and guidance to be able to provide advice and signpost the older adults to additional support. All respondents to the training evaluation forms rated the session either "good" or "excellent" and this was echoed in the interviews and online survey: the information provided was described as clear, pitched accordingly and effective for identifying signs of malnutrition. The EAWW Trainer reported that staff attending the training were generally very engaged and responsive. Post-training documentation provided was perceived as valuable and informative. One interviewee suggested that the training session could be condensed.

"It was at the right pace, it was at the right level. ...it wasn't too overwhelming." [Implementer 1, interview]

"Maybe it could have been condensed a wee bit, it was maybe just a wee bit too long." [SPPO staff 2, interview]

Use of the Checklist

Interviewees and survey participants stated that the Checklist was easy and quick to use (57.1%, 14.3% and 28.6% of survey participants described the Checklist as extremely easy, somewhat easy and neither easy or difficult to use respectively) taking between approximately 5-15 minutes on average.

“It just was quite straightforward, relevant, and easy to use.” [SPPO staff 5, interview]

SPPO staff interviewees stated that the Checklist was a valuable addition to an existing toolkit, which was used by staff who came into contact with older adults. The Checklist provided a structure to facilitate a difficult conversation (regarding malnutrition) with older adults. Survey participants stated that older adults were happy to answer the questions in the Checklist.

“It’s just having that awareness of right, what... If I’m faced with this, what do I need to do? Alright, here I can use this.” [Implementer 1, interview]

“It allows me to have that conversation without me saying to somebody I don’t think you’re coping.” [Implementer 2, interview]

In addition to providing advice, operational data suggested that 7 older adults, of a total 34 deemed at risk of malnutrition, were referred to additional support services in the implementation period: 5 of which were to the GP, 1 to a dietitian, and 1 to a social worker. SPPO staff interviewees were asked to describe what signposting methods were or would be used if an older adult was deemed “at risk of malnutrition”. These included providing advice to the older adult or family/friends/carers or referral to: GPs or district nurses; the Food Foundation; or social care. Ongoing implementation support was provided to 4 out of 7 survey participants (57.1%) who used the Checklist and included discussion at team meetings and support from the EAWW Trainer. The EAWW Trainer, a registered dietitian, reported that they were contacted by implementers to provide advice on referral pathways and tailored advice for specific individuals.

Facilitators of implementation of the Checklist.

SPPO staff interviewees described how the questions in the Checklist were personal and how trust and rapport between a staff member and the older adult, developed over time, facilitated implementation of the Checklist. SPPO staff interviewees also described how longer appointment times allowed implementers to explore any concerns, without feeling rushed. Practical strategies, such as incorporating the Checklist in routine reviews or providing paper copies, which were more easily transported between appointments, were also considered facilitators to implementation. One interviewee also described how incorporating training into new staff members’ general induction maintained momentum for implementation.

“you do develop quite a good working relationship with people, and they do open up to you.” [Implementer 3, interview]

“incorporating that in induction was good, erm, because at that point, as I say, we had a new building, new staff team, so all very enthusiastic.” [SPPO staff 2, interview]

Interviewees also suggested that their role, and contacts with older adults, allowed them to identify signs of malnutrition easily. For example, if implementers contacted older adults sporadically, they were able to notice differences in the older adult’s appearance more easily than someone in daily contact and if implementers worked in community social group settings, they had opportunities to identify whether older adults were eating or not.

“We are a small team and work closely with our tenants to get to know them and we are all fairly experienced in noticing changes in behaviour or changes in appearance.” [SPPO senior staff 1, interview]

Furthermore, the EAWW Trainer highlighted the importance of management and line management staff within SPPOs being fully engaged and supporting/encouraging staff for the initiative to be a success and for SPPO staff to use the Checklist.

Barriers of implementation of the Checklist

SPPO staff interviewees and survey participants described how use of the Checklist was not appropriate with some older adults, because the older adults: were considered vulnerable; were unable to comprehend or answer questions; had dementia; or had provided a family member with Power of Attorney. Alternatively, some SPPO staff interviewees described how they had no concerns regarding malnutrition with the older adults that they come into contact with and therefore using the Checklist would not be appropriate.

“Getting family to contribute due to capacity of service user/question answering.” [SPPO staff 8, online survey]

“Patient communication difficulties: adapted question so they can understand them.” [Implementer 21, online survey]

“The people that we support were actually quite well, you know, kind of checked out for and were fairly well looked after” [SPPO staff 5, interview]

Some participants (both SPPO staff interviewees and survey participants) considered that the questions asked when using the Checklist could be considered as intrusive or offensive by older adults and not considered appropriate to ask if other family members were present. The success of the Checklist was seen to be dependent on how well the older adult engaged with the questions asked by the implementer.

“This would depend on the tenant and how much they engage with the team on site.” [Senior, online survey 1]

“Sometimes they don’t want to discuss things in front of their son and daughter that they might discuss with us.” [Implementer 2, interview]

An existing hectic workload for many staff and practical challenges including not having sufficient time at appointments with older adults or not regularly using the Checklist and becoming de-skilled, were also considered barriers to implementing the Checklist. In addition, lack of appropriate private space in community settings meant that either the Checklist could not be completed or a separate meeting was necessary.

“We don't have as much time to go out and visit as we would like but that's probably the biggest issue.” [SPPO staff 3, interview]

“No matter how much you try and make this streamlined and you know into the work that they are already doing, it's still an extra thing.” [EWAW Trainer, interview]

In some organisations, the Checklist may have not been implemented due to existing practices to address malnutrition. For example, some SPPO staff interviewees described that existing malnutrition referral pathways were established within their organisations. Furthermore, with some older adults, malnutrition interventions had already been arranged prior to the SPPO using the Checklist.

“The predominant referral pathway is social work so nine times out of ten, the intervention for malnutrition is already there.” [SPPO staff 4, interview]

Some participants described the Checklist as not fitting with the remit of their organisation or not suitable in the setting or for a particular group of staff members, for example drivers.

The impact of the COVID-19 pandemic was also a barrier to implementation of the Checklist in many SPPOs. A reduction in face-to-face appointments, as a result of the COVID-19 pandemic, reduced the number of opportunities whereby the Checklist could be completed with older adults. Although some older adults could complete appointments over the telephone, this was inappropriate for others. Community social groups were withdrawn and were slow to recommence. Additionally, some older adults had limited their social interactions following the COVID-19 pandemic. This resulted in a reduction in home visits (at the request of the older adult) and fewer older adults attending social community groups delivered by SPPOs.

“Clients are supposed to be reviewed every six months but really the face-to-face has only started up again I would say in the last few months.” [SPPO staff 3, interview]

“Older adults no longer have day care facilities.” [Implementer 22, online survey]

Resource challenges, as a result of COVID-19-related staff/volunteer absence, was also seen as a barrier to both service delivery and initiating Checklist implementation. Pressures on staff

due to changing service delivery as a result of COVID-19 restrictions meant that staff also had less time to implement new initiatives.

"We used to have a team of volunteers that would support us when running activities and groups. During lockdown a lot of volunteers, their health deteriorated." [Implementer 1, interview]

"The changing landscape of COVID was erm quite tricky for people because...a lot of kind of like third sector organisations that maybe ran day centres or lunch clubs or things like that that they weren't running and then they had to get those back up and running in a slightly different way because there were still restrictions." [EWAU Trainer, interview]

Impact of training

Staff awareness of malnutrition was increased as a result of attending the Checklist training. SPPO staff interviewees communicated a thorough understanding of both the aims and the importance of the Checklist, which mirrored that of the delivery team. Post-training, 98% of respondents to the training evaluation form described that they felt confident or very confident to spot the signs of malnutrition. Furthermore, all respondents described that they were both confident, and intended to use the Checklist in their job role. SPPO staff interviewees felt empowered to address concerns regarding malnutrition and confident to query older adults regarding the potential reasons for signs of malnutrition and to provide advice/referrals.

"I mean, it's all well and good having, you know, a sheet but you need to be able to know what way you support from, you know, after using it. You use it, you identify someone who's at risk, where do you go from there, it gave the full explanations as to how to do (that)." [SPPO staff 5, interview]

3. Outcomes of the Checklist

An important perceived outcome of implementation of the Checklist was implementers' improved skills and confidence managing malnutrition; it provided a means to identify and document cases of concern. The Checklist prompted the recording of more detailed information than in prior practice, which was subsequently used during the referral process to other health or social care professionals. This in turn facilitated improved multidisciplinary working.

"Whereas I might still make a referral to a dietitian, but at least I've got a little bit more information to include in that." [Implementer 1, interview]

"If we become more knowledgeable and more skilled then, for example, a dietitian's more likely to actually be interested in what I've got to say if they could see that I'm using something and I'm gathering the information that's relevant to them." [Implementer 2, interview]

Perceived outcomes for older adults, as observed by SPPO staff interviewees, included health improvements as a result of receiving advice following Checklist completion.

"There's been a couple that've been given low level advice on upping the, you know, their fat ...the deputy manager has said they've seen a difference in them since they've been doing that, they've seen that it's really helping them." [SPPO staff 5, interview]

In the online survey, the aims/process of the Checklist were briefly described to participants that had not previously heard of the Checklist. The majority of survey participants thought that use of the Checklist would have a positive impact of older adults deemed at risk of malnutrition (n= 18, 85.7%). A perceived benefit of incorporating the Checklist into organisations' care pathways was that it was considered to be looked at favourably by the Care Inspectorate Scotland, which is a scrutiny body supporting improvements in various services including health and social care.

4. Future research

Recruiting older adults to participate in evaluation of the Checklist

Of the SPPO staff interviewees who attended Checklist training, 78.6% (n=11) said that they were provided with sufficient information to refer older adults to the research team. However, no older adults were referred to the research team. Of the 34 older adults deemed "at risk of malnutrition", 21 were identified by organisations who did not receive research training concurrently with Checklist training and were offered this training at a later date, of which take up was poor.

When asked why older adults were not referred to the research team, survey participants stated that the older adults that they saw: did not require support; were not deemed "at risk of malnutrition"; or did not want to be referred.

When asked about the acceptability (to the older adult themselves) of referring older adults to the research team in a future project, interviewees stated that this would be dependent on the older adult's communication skills, ability to answer questions and willingness to take part.

"People are very much now you've done what I need you to do, thanks very much, off you pop, sort of thing." [SPPO staff 4, interview]

"We have a lot of dementia clients that would be unable to take part in that kind of thing." [SPPO staff 3, interview]

Identification of unit costs required for a future health economics evaluation

Due to there being no older adults recruited to the research, it was not possible to collect outcome measures required to conduct a health economics evaluation such as Quality of life (Health-related quality of life (EuroQoL EQ-5D)⁷, Social care-related quality of life (ASCOT)⁸ or a modified version of the Client service receipt inventory⁹, as planned.

Interviewees were asked for details of the associated costs of attending Checklist training and delivering the Checklist to older adults in the community. Training was conducted face-to-face in the SPPO or online, depending on the preference of the SPPO. There were therefore no venue-hire costs. An average of 8.45 SPPO staff members, per session, attended 20 sessions between 2nd September 2021 and 9th August 2022. Assuming 2021 health and social care costs⁵ each training session would cost £115.33 per support worker/home care worker to attend and £171.33 per manager (or similar role) to attend for staff time. Training packs for each trainee cost £4.50.

The Checklist was quick to deliver, taking approximately 5-15 mins to complete. Unit costs for completion of the Checklist would average £4.17 per older adult for a support worker/home care worker, £6.83 for a manager, as per 2021 health and social care costs⁵. However, if a separate home visit was required when older adults were identified in a social, community setting (due to lack of private space available) this would take approximately 1 hour to complete, costing £25 per support worker/home care worker and £41 for a manager to complete. In order to identify the cost of post-Checklist referral pathways, further work to collect unit costs for service use would be required. Comparison of the cost of using the Checklist in the community compared to the cost of screening older adults by healthcare professionals using the MUST¹⁰ would provide further information. Interviewees stated that other than staff time to attend EAWW-training and to deliver the Checklist, there were no significant additional implementation costs.

The availability of NHS routinely-collected data on relevant outcomes

The acceptability of collecting routinely collected NHS data, from the view of the older adults themselves, or the feasibility of consenting older adult research participants to allow collection of routinely collected data from NHS sources was not assessed as no older adults were recruited to the research. Routinely collected NHS data are accessible from the Scottish Government and Business Intelligence Services within NHS Borders are able to provide routine data within the implementation area. Reports for malnutrition diagnoses are not provided routinely, but ad-hoc reports can be requested. Diagnostic codes, under the malnutrition classification code, include ICD-10 (E40:E46). The dietetics team within the Scottish Borders do not code outpatient entries with malnutrition diagnoses. However, assessment of the feasibility of using the above malnutrition classification codes in NHS routinely collected hospital discharge data as an outcome should be addressed in future research with this cohort.

5. Recommendations for future roll-out

The aims/process of the Checklist were briefly described to survey participants who had not previously heard of the Checklist. The majority of survey participants thought that the Checklist would be something that could be used in their organisation (n=12, 57.1%); however, one participant thought that it couldn't be used (4.8%) and 38.1% (n=8) were unsure or did not respond. Of the survey participants who attended training and/or used the Checklist with older adults, no-one stated that the Checklist did not fit in with the usual practice of their organisation (60% (n=9) said that the Checklist fitted in very/extremely well, 26.7% (n=4) said it fitted moderately well and 13.3% (n=2) did not answer) or with the wider

work of their organisation (80% (n=12) said that the Checklist fitted with the wider work of the organisation and 20% (n=3) did not answer or were unsure). All SPPO staff interviewees stated that continued use of the Checklist within their SPPO was likely.

Interviewees suggested that development of a digital format/app would improve ease of use of the Checklist. In addition, survey participants and interviewees suggested the need for further training in the form of refresher training sessions provided by EAWW or reminders/malnutrition updates to be forwarded to SPPO staff. Interviewees also expressed the importance of strategically embedding the Checklist within the SPPO's care pathway at national level.

Dissemination of research findings

A Dissemination, Impact, Involvement, Communication and Engagement (DIICE) plan was co-produced with key stakeholders and detailed planned activities and the proposed impact of the DIICE activity. Target audiences include the research community, older adults within the implementation area and in Scotland, public health practitioners, third sector organisations and participants.

1.5 Conclusions

The findings from this project suggest that the Checklist was acceptable to most SPPOs and implementing staff and that most understood and valued the aims and importance of the Checklist. The Checklist had perceived positive outcomes for older adults, including improved health following receiving first line advice. The SPPO staff valued the Checklist, including its ease and speed of use. Outcomes for SPPO staff included increased awareness of malnutrition and improved skills and confidence to identify malnutrition and provide advice or signpost to additional support.

The operational data received suggest that the Checklist was used with 461 older adults in 7 organisations across 14 months. However, it is unclear whether the 5 SPPOs who didn't return operational data in fact did use the Checklist and therefore this figure may be higher. This figure demonstrates that implementation is feasible in the SPPOs. However, SPPOs took approximately 4 months to initiate using the Checklist following EAWW training. This suggests that it may have been prudent to delay assessment of implementation of the initiative to a time when more organisations had been given sufficient time to initiate implementation.

Engagement by the SPPOs was reduced as a result of workload and resource issues, as identified by the EAWW trainer. Additionally, the impact of the COVID-19 pandemic on the sector was apparent. SPPOs described increased COVID-19-related staff and volunteer absence, reduced opportunities to contact older adults due to closure of community groups and a reduction in face-to-face visits. Some SPPOs stated that some restrictions and impacts of the COVID-19 pandemic were still being felt during the implementation period and that things were only just "getting back to normal".

The findings also suggest that the Checklist was not implemented as planned in all SPPOs and that SPPO staff did not use the Checklist with all older adults seen in the community. Only some organisations incorporated the Checklist into routine contacts with older adults, such as regular care reviews or initiation of care packages with new clients, despite this being the implementation approach encouraged in the Checklist training. Instead, SPPO staff often only used the Checklist when they had concerns regarding malnutrition with a particular older adult. This may result in the Checklist being used as a tool to effectively document concerns (something considered as a strength by some SPPO staff), rather than a tool to identify older adults who may not otherwise be identified as at risk of malnutrition.

The number of older adults that the Checklist was completed with who were deemed at risk of malnutrition was reported at 7%, lower than expected from prevalence data previously reported (21.8%, 17-21%)¹⁰. However, over half of the Checklists completed with older adults, as per operational data, was completed by one SPPO, perhaps due to the method of implementation or enthusiasm of the SPPO. The remit of this organisation was social prescribing and encouraging older adults to become more active in their communities. This may represent a more able and mobile population of older adults and therefore less likely to be at risk of malnutrition and not representative of the population as a whole.

This project also aimed to assess the feasibility of collecting self-reported outcome measures and conducting qualitative interviews with older adults to inform future research with this population. However, engagement of the SPPO staff with the research was challenging, despite encouragement from EAWW. Research training was planned to occur concurrently with implementation training. However, research training was only initiated after 5 SPPOs had already been trained by EAWW and it was difficult to arrange catch-up training sessions. Few SPPO key contacts and implementers provided consent to be involved in the research following the training. Furthermore, in order for older adults to be referred to participate in the research, they needed to be identified as at risk of malnutrition by the Checklist, and the operational data suggest that only 34 older adults were identified as at risk during the implementation period of the study. There were also perceived barriers to involving older adults in self-reported data collection as part of the research; many older adults seen by the SPPOs were described as having cognitive impairment due to dementia or other conditions or having issues with hearing, making telephone contact difficult, resulting in few older adults being approached to take part in the research. Despite this, SPPO staff stated that some older adults would be able and willing to complete questionnaires, particularly with the assistance of carers or family members and therefore for future research to be successful, a larger population pool would be necessary, which requires implementation within a greater number of organisations or within a larger geographical area.

Findings from this project suggest that implementation of the Checklist brought about, or had the potential to bring about, outcomes as described in the intervention Logic Model (Figure 1). However, suggested amendments to the Logic Model include:

- Activities: ongoing information provision in the form of reminders/refresher training.
- Activities: alternate formats for use of the Checklist including digital version/app.
- Implementer short-term outcome: understanding the prevalence of malnutrition in older adults (as described by both SPPO staff interviewees and survey participants).

- Implementer short-term outcome: increased confidence to document concerns regarding malnutrition.
- Implementer long-term outcome: improved multidisciplinary working and referral pathways.

In summary, the Checklist was well-received by SPPO staff and perceived to be well received by the older adults completing the Checklist and receiving advice/signposting. However, despite the Checklist being considered to be “easy to use”, it was considered inappropriate for a number of older adults due to capacity/ communication issues. In some organisations, SPPO staff only used the Checklist with older adults that they were concerned about, highlighting a training need to ensure that SPPOs understand the aims of the Checklist and how it should be used. Implementation of the Checklist was feasible in SPPOs (social care, housing and voluntary sector) within Scottish Borders and is likely to be feasible in a wider geographical area. However, despite easing of COVID 19-related barriers to implementation, as discussed above, resource issues within this sector are likely to be an ongoing challenge. Further research is required to assess the impact of the Checklist for older adults in the community. It was not possible to assess the feasibility of collecting outcome measures, including measures required for a cost effectiveness evaluation, due to lack of engagement of the SPPOs in research and too few older adults deemed at risk of malnutrition and therefore eligible to take part in the research. In addition, the acceptability of using routinely collected data in this population was not able to be assessed. However, future research may utilise routinely collected NHS data to assess resource use associated with malnutrition diagnoses at hospital discharge in older adults in the Scottish Borders via Business Intelligence Services (NHS Borders) and in Scotland as a whole via the Research Data Scotland (RDS). Recommendations for further implementation include additional training for key contacts within SPPOs to encourage implementation of the Checklist at strategic level and use of the Checklist by implementers with all older adults, as intended.

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2. Patient and public involvement

2.1 Aim

To use a principles-driven co-production approach, with all stakeholders, by incorporating meaningful coproduction and PPI activities throughout the duration of the project.

2.2 Methods

Patient and Public Involvement (PPI) was integrated into the main governance and research development processes of the study. The research protocol was developed via a collaborative Task and Finish Group (TFG) process, including representatives from EAWW (Food Train), NHS Borders, Scottish Borders Council, NHS Borders, The Patients Association, the University of Glasgow and Bournemouth University. The TFG formed the foundations of the Project Management Group (PMG), who met regularly throughout the project.

PPI representatives were recruited via the NIHR's People in Research resource. Both one-to-one consultation and focused PPI representative meetings were arranged at key points throughout the project and attended by 3 PPI representatives, (>65 years old, all with experience or an interest in malnutrition and sampled to ensure a spread of research experience and location) and the researcher. PPI representatives attended the project management group to ensure shared decision making at project management level.

2.3 Study results

The TFG and PMG process involved shared decision making between relevant stakeholders, who provided expert knowledge and experience of the intervention, the delivery partners and the Scottish Borders context.

PPI representatives worked collaboratively with the research team during the study design process, providing feedback on methodology. The research team were guided by the PPI representatives on a number of potentially sensitive topics areas including age, frailty and malnutrition. Participant-facing materials, including information sheets and questionnaires, were co-developed and piloted with the PPI representatives in order to minimise any potential negative impacts of the study. PPI representatives advised on the amendments to study design due to recruitment issues and assisted in interpretation of the research findings.

2.4 Discussion and conclusions

Meaningful co-production activities, throughout the study, provided additional valued expertise to the research team from stakeholders involved in the intervention design and service delivery. Key relationships were developed between the research team and TFG/TMG members during regular and continued contact throughout the project and support was offered throughout.

PPI representatives, using lived experience, contributed to the study design and acceptability of study processes, participant information and outcome measures for older adults and interpretation of results. PPI representatives were regularly updated on study progress and

all key project decisions were made collaboratively. Dissemination of the research findings will continue beyond the scope of this project and the co-production ethos, developed during this project, will be maintained.

2.5 Reflective/Critical perspective

The NIHR People in Research proved to be a useful resource to identify PPI representatives, whose input was invaluable. However, in addition to the PPI representatives, a local representative, identified via the Borders Older Peoples Planning Partnership (BOPPP), would have been able to provide insight in the context of the implementation area. However, we were unable to recruit an individual via this group and timings of existing BOPPP meetings did not align with the project timetable.

Furthermore, effective collaboration with SPPOs was essential for successful Checklist implementation and the evaluation. Due to the geographical distance between where the initiative was being implemented and where the research team were located, remote contact with SPPOs was necessary, which was a barrier to developing effective collaborations with delivery stakeholders. The research team took advantage of local meetings that were taking place via Zoom or Teams, but were unable to attend face-to-face, which was requested by some stakeholders. The pressures of the COVID-19 pandemic-induced restrictions and resource issues on the SPPOs meant that meaningful collaboration had to be balanced with limiting burden on these organisations.

3. Data sharing statement

All available data can be obtained by contacting the corresponding author.
The full trial protocol can be obtained by contacting the corresponding author.

4. Disclaimer

This project is funded by the National Institute for Health and Care Research (NIHR) under its PHIRST Programme (Grant Reference Number NIHR135412). The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

This project was carried out between January 2022 and December 2022. This final report has not been peer-reviewed. The report was examined by the Programme at the time of submission to assess completeness against the stated aims. These reports do not undergo a peer review process.