

Nutrition Wheel

Report on the development and impact from conception to publication and beyond

Report by Wessex AHSN, September 2020

Introduction and background

It is estimated that 1 in 10 people over 65 are malnourished, underweight and/or are not taking in the right nutrients and calories to maintain their health and wellbeing. Most of these people are living in their own homes, and may become malnourished before having any formal contact with qualified health and social care professionals. Whilst NICE guidelines recommend regular nutrition screening (using a validated screening tool such as the Malnutrition Universal Screening Tool ('MUST') for all inpatients, guidelines in the community are less clear, suggesting that people should be screened as a result of 'clinical concern'.

From 2015 – 2018, Wessex Academic Health Science Network (AHSN) carried out several projects with non-medically trained staff groups (e.g. domiciliary carers and volunteers) as part of the 'Nutrition in Older People programme'. These projects highlighted the need to create tools to help these groups identify people likely to be at risk of malnutrition – tools which did not require training, equipment (e.g. weighing scales) or calculations (e.g. body mass index) to use¹.

Wessex AHSN worked with the Patients Association to develop the Patients Association Nutrition Checklist, which was launched in 2018. This paper-based tool comes in two sections; Section A consists of four key questions to determine whether the person is likely to be at risk of malnutrition, and Section B asks additional questions to understand the reasons the person may be malnourished, and provides simple advice and signposting. Section B also provides advice for someone to visit their GP or Practice Nurse for further investigation (and nutrition screening using a validated screening tool). It was specifically developed for staff / volunteers who work with older people in the community who may not be accessing traditional health and social care services, such as carers, care workers and volunteers. It provides a framework for guiding a conversation to explore the factors that could increase someone's risk of malnutrition in a pro-active way.

The Nutrition Wheel is an interactive version of the Patients Association Nutrition Checklist, intended to be used as a conversation starter to help identify potential risk of undernutrition and offer guidance, advice and signposting on next steps. It is also easy to use, and requires no specific training. The Nutrition Wheel is made from durable coated card and as such can be used multiple times.

Rationale

The need for an interactive tool came from the results of a project Wessex AHSN carried out with volunteers at Age

¹ Bracher M et al. (2019) Implementing professional behaviour change in teams under pressure – results from phase one of a prospective process evaluation (the Implementing Nutrition Screening in Community Care for Older People (INSCCOPe) project. *BMJ Open* 9, e025966



Concern Hampshire in 2016². The volunteers piloted the use of the PaperWeight Nutrition Armband³. The volunteers reported to like using armbands as it helped them to start a conversation around nutrition. However, the armband measures if someone is already thin, and whilst designed to be used in conjunction with questions to determine recent unintentional weight loss, our findings suggested that volunteers were not regularly always asking these questions and were using the armband in isolation. We concluded that there was a need for a colourful, engaging and interactive tool that volunteers could pick up and use with older people as a way of both starting a conversation on nutrition and guiding that conversation.

Development team

The development of the Nutrition Wheel was a collaboration between Wessex AHSN, Bournemouth University, the Patients Association and the Malnutrition Task Force. Key collaborators include:

- Annemarie Aburrow (Consultant Dietitian for Wessex AHSN)
- Kathy Wallis (Associate Director, Wessex AHSN)
- Dr Jane Murphy (Professor in Nutrition and Registered Dietitian, Bournemouth University, and Wessex AHSN Nutrition Clinical Lead)
- Lesley Carter (Clinical Lead, Malnutrition Task Force)
- Gloria Clark (Project Manager, The Patients Association)

In addition to the key collaborators, several other organisations were involved in the testing and development from initial prototype, including carers, volunteers and staff working in the third sector.

Development and testing of initial prototype: 2017

In 2017, a group of seven undergraduate healthcare students from Bournemouth University agreed to develop the Patients Association Nutrition Checklist into an initial prototype as part of their 'Service Improvement Project'. They named their prototype the 'Dietary Dial' (see Fig 1). The initial prototype consisted of five questions around the outer rim (rather than four as per the final version) – this was because the Patients Association Nutrition Checklist was still in development at the time, and had five initial questions prior to being tested and evaluated. They also developed an initial version of the advice sheet to use alongside it.

The students obtained some initial feedback from seven volunteers and 12 service users (older people) at a lunch club in Dorset. The following feedback was received:

- Design was easy to understand and straightforward to use – with or without a volunteer
- The tool was a 'friendly' way to have the conversation
- The service users liked the signposting advice on the advice sheet, and especially liked the inclusion of national helpline numbers

² <https://wessexahsn.org.uk/projects/325/nutrition-in-older-people>

³ <https://www.ageuk.org.uk/salford/about-us/improving-nutrition-and-hydration/the-paperweight-armband/>

Figure 1: Initial prototype

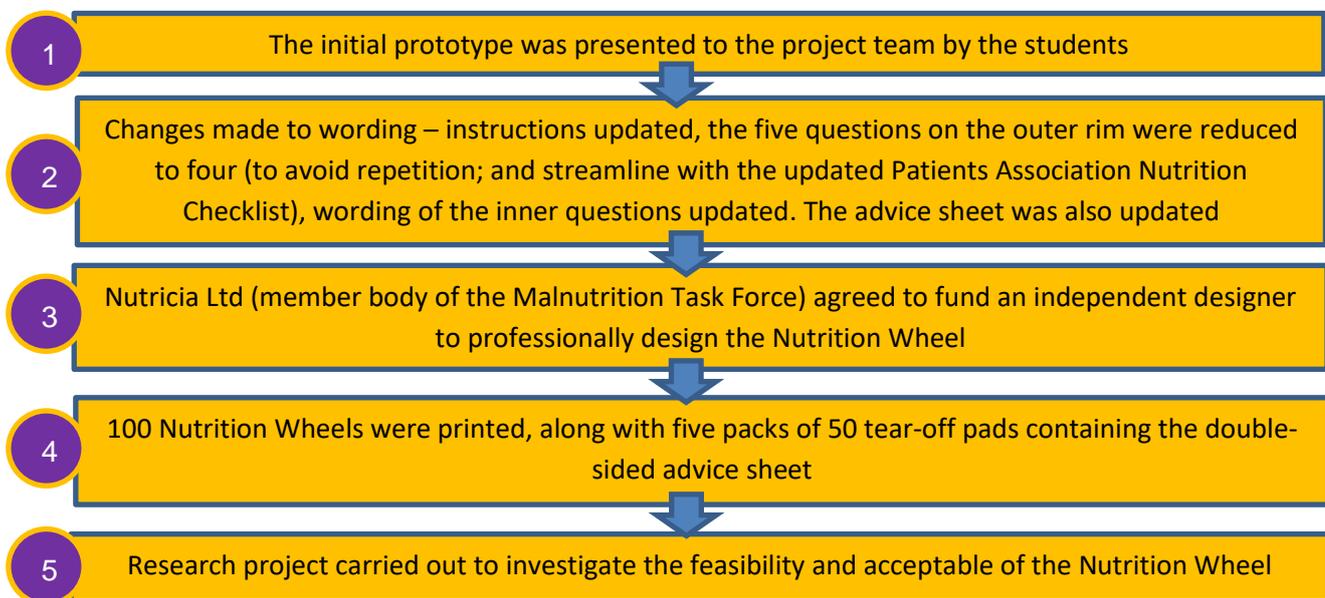


Development of initial prototype to draft product: 2018

The initial prototype was developed into a draft product that could be used to carry out a pilot research project (see Fig. 2 for the steps taken in this process and Fig. 3 for the draft product used in the research). A research project was then led by Bournemouth University in 2018 (having obtained Bournemouth University Research Ethics) to test and evaluate the feasibility and acceptability of the Nutrition Wheel⁴.

We wanted to carry out this initial research in order to inform the changes needed to be made to launch the final version, and also to confirm that the product would be acceptable and fit for purpose. 17 volunteers from community organisations across Hampshire and Dorset were recruited and asked to use the Nutrition Wheel with older people attending their lunch and activity groups. Evaluation was carried out through 10 focus groups and interviews. Transcriptions from interviews analysed using thematic analysis (see Fig. 4 for the results from this research).

Figure 2: Steps to developing the draft product



⁴ Aburrow A, Guestini A, Wallis K, Murphy J (2020) Evaluation of the usability of the Nutrition Wheel by volunteers to identify older people at risk of malnutrition. *Journal of Human Nutrition & Dietetics* 33 (Suppl 1) 6-15

Figure 3: Draft product showing both sides (100 units printed for research purposes)



Figure 4: Results on the feasibility and acceptability of the draft product (from 17 volunteers)

- All volunteers felt the Nutrition Wheel was an excellent conversation starter
- All volunteers liked the advice sheet, which provided a written copy of the advice given
- 5 volunteers gave positive feedback on the structure of the questions
- 4 volunteers felt that several questions were repetitive
- 3 volunteers felt the wording should be changed to make it less 'clinical'
- Several volunteers suggested that design changes were required to make the Nutrition Wheel easier to navigate, e.g. the addition of question numbering and use of contrasting colours

Validation of the four key questions: 2018

Ethical approval was received in early 2018 from Bournemouth University and the University of Southampton to validate the four key questions around the outer edge of the Nutrition Wheel against 'MUST' (Malnutrition Universal Screening Tool) – these are the same four questions that make up Section A of the Patients Association Nutrition Checklist. 312 older people were recruited from lunch and activity clubs in Hampshire & Dorset and were asked these four key questions, and were also screened using 'MUST'. Data was then analysed to look at agreement between the two tools.

This research has been published in the Journal of Human Nutrition and Dietetics, which is available with open access⁵. Key results were as follows:

- 22% of people were 'at risk' using the four questions, compared to 9.9% of people 'at risk' using 'MUST'
- There were four people at risk according to 'MUST' but not identified by the four questions – however these people reported no change in weight and that they had always been slim

⁵ Murphy J. L., Aburrow A., Guestini A., Brown R., Parsons E. & Wallis K. (2019) Identifying older people at risk of malnutrition and treatment in the community: prevalence and concurrent validation of the Patients Association Nutrition Checklist with 'MUST'. J Hum Nutr Diet. 33 31-37 <https://doi.org/10.1111/jhn.12710>

- The four questions had ‘moderate’ agreement with ‘MUST’ (sensitivity: 85.4%, specificity: 87.1%)
- The research concluded that the 4 questions were able to identify people who should be signposted to their GP / Practice Nurse for further advice and screening using a validated screening tool.

Draft product to final version

Findings from the research informed the development of the final product. The following key changes were made to the draft product to get to the final version (see Fig. 5 for the final version):

- The four questions around the outer rim were labelled 1-4
- Inner questions were labelled A-D
- Wording of the inner questions was updated to remove repetition
- Colours around the outer rim were changed to a gradient of purple to highlight movement around the wheel
- The advice box was changed to a mustard background, to add contrast and enable the advice to stand out.

Figure 5: Final version (showing both sides)



Development of Nutrition Wheel Toolkit

A Nutrition Wheel Toolkit was developed to accompany the Nutrition Wheel. The following resources were developed and uploaded to both the Wessex AHSN website (<http://wessexahsn.org.uk/nutritionwheel>) and the Malnutrition Task Force website (<https://www.malnutritiontaskforce.org.uk/nutrition-wheel>).

- **Advice sheet** – this double-sided sheet is designed to be given out to anyone who’s identified as likely to be at risk from using the Nutrition Wheel
- **Explanatory guide** – simple overarching guide about using the Nutrition Wheel. This included a table (see Table 1 below) showing the settings which the Nutrition Wheel could be used in (compared to the Patients Association Nutrition Checklist)
- **Nutrition FAQ** – series of FAQs, for example why we are focussing on malnutrition rather than obesity
- **Information for GPs and Practice Nurses** – as the Nutrition Wheel signposts people to see their GP or Practice Nurse to discuss the results, this information sheet shows GPs and Practice Nurses what they should do if someone comes to see them and they’re not familiar with the Nutrition Wheel. This sheet was developed in

consultation with Nurse Facilitators from Mid and West Hampshire Clinical Commissioning Group

- **OPEN leaflet** – developed as an output from the OPEN Eastleigh project, this leaflet is suitable for anyone at risk of malnutrition and contains some tips and recipes (<http://wessexahsn.org.uk/open-leaflet.pdf>). It is also available as a double-sided easy-print version, more suited for printing in black and white
- **Development of the Nutrition Wheel** – PowerPoint slides showing a summary of how it was developed and the research behind it
- **Nutrition Wheel 'how to' video** – showing a volunteer using the Nutrition Wheel with an older person at an activity group (<https://wessexahsn.org.uk/videos/show/291>).

Table 1: Community settings the Nutrition Wheel and Patients Association Nutrition Checklist are ideally suited for

	Patients Association Nutrition Checklist	Nutrition Wheel
General Practice	<input checked="" type="checkbox"/> To identify 'clinical concern' to triage when someone requires screening / advice, e.g. could be used by receptionist, Healthcare Assistant, phlebotomist	<input checked="" type="checkbox"/> By patients themselves in the waiting room
Community health and social care teams , e.g. integrated community teams, community nursing, older people's mental health, allied health professionals	<input checked="" type="checkbox"/> By social care if not screening (refer to local policy)	
Care homes (nursing and residential)		<input checked="" type="checkbox"/> For family/carers at open days and coffee mornings
Community clinics e.g. Podiatry, diabetic eye screening, dentist	<input checked="" type="checkbox"/> In a consultation role	<input checked="" type="checkbox"/> By patients themselves while waiting
Community pharmacy	<input checked="" type="checkbox"/> In a consultation role- to offer advice on services and guide to further help as required	<input checked="" type="checkbox"/> By other staff or in waiting area
Domiciliary care	<input checked="" type="checkbox"/>	
Volunteers and community groups , e.g. lunch clubs, activity groups, day centres, churches, community centres, events	<input checked="" type="checkbox"/> In a consultation role – to offer advice on services and guide to further help as required	<input checked="" type="checkbox"/> Especially if used for one-off contact
Care Navigators	<input checked="" type="checkbox"/>	
Dementia Advisors		<input checked="" type="checkbox"/>
Wardens in assisted housing		<input checked="" type="checkbox"/>
Other community services , e.g. shops, libraries, barbers, hairdressers, opticians		<input checked="" type="checkbox"/>

Launch of the final product

A 'soft launch' was carried out within the Wessex region in July 2019. To facilitate this Wessex AHSN and Bournemouth University jointly funded the printing of 1000 copies of the Nutrition Wheel. An order form was set up on the Wessex AHSN website, and news of the launch was shared to our local contacts through a newsletter and email communications. In addition, copies were sent proactively to organisations across Wessex.

Agreement was sought and received from the Malnutrition Task Force to 'own' the Nutrition Wheel going forward, and be responsible for sending out further Nutrition Wheel orders. The Malnutrition Task Force funded 1,000 copies for this launch. The final Nutrition Wheel was launched at the Malnutrition Task Force annual conference in September 2019.

At the national launch all participants (approx. 50) were provided with a Nutrition Wheel, and three workshops were held during the afternoon where Wessex AHSN led a session about the development and use of the Nutrition Wheel, gave people a chance to role-play using different scenarios, and provide their initial feedback on the Nutrition Wheel using printed comments cards. Feedback on comments cards was received from 33 people. Feedback was largely positive with some concerns about the time required to get familiarised with the Nutrition Wheel before using it (see Fig. 6 for some quotes received). The majority of people identified settings where they felt they could introduce the Nutrition Wheel, e.g. domiciliary care, Meals on Wheels services, pre-assessment, activity groups and other community settings.

An article was written for Complete Nutrition Focus magazine (whose audience is mainly dietitians and nutritionists) as part of the launch⁶.

Figure 6: A selection of quotes from the comments cards

- "Once you know how to use it, it's good!"
- "Quick and easy"
- "A little bit confusing to use - needs a good amount of time to get used to it first before using practically"
- "Visual prompt which seems easy to use as a conversation starter"
- "Watching video would probably aid understanding and how to use"
- "Very useful tool that would guide you to ask correct questions"
- "Easy to use, good signposting"

Research and evaluation work since launch

Following the national launch of the Nutrition Wheel we have carried out some work to further evaluate the impact and effectiveness of the Nutrition Wheel. This has been done in two ways to date. A survey was sent to all the people who had requested and been sent a Nutrition Wheel through the order form on the Wessex AHSN website and at conferences and event that Wessex AHSN had attended (between June and December 2019, excluding the MTF

⁶ Aburrow A (2019) A new, simple and interactive tool to help identify risk of undernutrition in older people in the community and provide advice and signposting. CN Focus. 11 (2) 56-58

<https://wessexahsn.org.uk/img/publications/NutritionWheelCN.pdf>

conference where the comments cards were used). Secondly, another research project, led by Bournemouth University, was commenced in 2019 to evaluate the impact the effectiveness of the Nutrition Wheel.

Post-launch survey

A survey was created using Survey Monkey and consisted of 24 questions, with a mixture of open and closed questions. It was emailed out to a total of 52 people, and responses were received from a total of 17 people, from a range of roles (e.g. community nurses, administrators, social prescribers, dietitians/nutritionists, falls service instructor). Key results from this survey are shown in Figs. 7 and 8 below.

Figure 7: Key results from the survey

- Five respondents had used the Nutrition Wheel in the preceding six months (others gave reasons for not yet using it, e.g. not yet used but intend to; hadn't had the time; not directly supporting service users; preference towards the Patients Association Nutrition Checklist). Of these five respondents:
 - The majority (80%) found the Nutrition Wheel 'very easy' or 'easy' to use
 - Two respondents had followed up an older person having previously used the Nutrition Wheel with them and found them to be 'at risk'. Both respondents said the person had made dietary changes. In addition, one respondent said that an older person went to see their GP/nurse and one older person started going to a lunch / activity club
 - All respondents found the Nutrition Wheel to be an effective conversation starter
 - All respondents felt the Nutrition Wheel was effective at guiding them towards giving appropriate advice and signposting to people at risk
- 64% said they would recommend the Nutrition Wheel to colleagues

Figure 8: Quotes received from respondents with additional information

- "We thought it was a bright, visual aid and would promote its use in other provider services"
- "It's easy to use. Anything going online needs to be as simple as possible, and you could consider making it available to be added to online documentation packages"
- "Good idea, well designed, a useful tool"
- "We shared the Nutrition Wheel at service user groups. It was useful but most people said obesity is more of a problem than malnutrition. Do you have any information on this?"
- "I feel the Nutrition Wheel was slightly clumsy to use compared to the Checklist. I also feel the Wheel may be too basic now in terms of advice"

Research on impact and effectiveness

In 2019, Bournemouth University ethics was obtained to carry out research into the acceptability and feasibility of the Nutrition Wheel to identify older people living in the community at risk malnutrition. We engaged with three organisations in Hampshire, Dorset and Hertfordshire who received training on how to use the Nutrition Wheel and what data forms to complete as part of the research. A total of 27 staff / volunteers who used the Nutrition Wheel with 153 older people. We carried out 16 interviews and one focus group with nine staff / volunteers. The data has been analysed and findings have been written up and will be submitted for publication.



The following key themes were identified:

- The Nutrition Wheel can be used as part of overall holistic assessments
- It is an effective conversation starter – meaningful to identify changes; a conversation which may otherwise have been difficult, e.g. a lady who had lost weight but would not have normally told the volunteer
- Gives people a chance to ‘tell their story’ – it opens the way for people to share other issues or difficulties they are facing, e.g. loneliness, health problems, physical difficulties
- It provides a way to raise awareness and confidence. People who answered ‘no’ to the four outer questions were still interested to know more and discuss the problems relating to poor nutrition
- It is portable, easy to use and user friendly
- It is not time-consuming to complete - time to complete tended to be between five and ten minutes
- Volunteers / staff felt it was an important part of role (when asked how important they felt it was, answers ranged from as 6/10 to 10/10)
- Volunteers / staff felt it was effective at identifying people (when asked how effective they felt it was, answers ranged from as 7/10 to 10/10)
- Volunteers / staff liked the advice sheet that accompanies the Nutrition Wheel and is given to people found to be at increased risk.

Development of a digital version

Feedback from users during the testing suggested that having a digital version of the Nutrition Wheel / Patients Association Nutrition Checklist would be well received. We started working with Bournemouth University in 2019 to consider this, and an undergraduate computing student started working on an initial prototype at the beginning of 2020. The project team met with the student to explain what was needed and the student produced a draft prototype. The prototype is a web-based programme (rather than an app due to the complexities involved in producing and updating apps). The progress was halted due to the onset of Covid-19, and we are awaiting the draft prototype. We are looking to pick this up again as soon as a meeting can be arranged with the student’s supervisor, which is planned for Autumn 2020.

Conclusions and next steps

The findings from research to date demonstrates that the Nutrition Wheel works well as a conversation starter, which was one of the key aims of the tool. Feedback also suggests it is easy to pick up and use with older people. The benefits of carrying out research and working with intended users (i.e. carers and volunteers) meant that changes (e.g. those required to the design and wording) could be made to ensure that the final product was user-friendly and fit for purpose to support a conversation around nutrition.

The research carried out on the four questions on the outer rim (the same as those featured on the Patients Association Nutrition Checklist) have been validated against ‘MUST’, showing moderate agreement. As such, the Nutrition Wheel supports NICE guidance (predominantly CG32)⁷ by identifying ‘clinical concern’ to then prompt nutrition screening and monitoring by a qualified health professional using a validated screening tool such as the Malnutrition Universal Screening Tool (‘MUST’). It is recognised that whilst everyone in the community should be

⁷ NICE Clinical Guideline 32 available from: <https://www.nice.org.uk/guidance/cg32>



screened, there are many barriers to screening. There are also many staff / volunteers working with patients in the community who are not qualified health professionals, and therefore are unable to screen for malnutrition. Thus, the Nutrition Wheel supports the NICE guidelines significantly by supporting the wider workforce to identify malnutrition and at an earlier stage.

To date, the Nutrition Wheel has only been tested with carers and volunteers. Since the launch, we have become aware that it is being used by a range of community settings. Therefore, further research is needed to test its use in other community settings e.g. GP practices and care agencies.

Next steps

- ***Seeking endorsement from the National Institute of Clinical Excellence (NICE)*** – we are working with the Patients Association and the Malnutrition Task Force to apply for endorsement from NICE. One of our aims is looking at how to influence national guidelines and pathways. Whilst NICE Clinical Guideline 32 (nutrition support for adults) is not due for a review anytime in the near future, getting the tool endorsed will be a step in the right direction and be featured on their website as an endorsed tool. This should help spread and increase uptake of use
- ***Write up the research findings and submit for publication*** – the acceptability and feasibility research has been analysed and will be written up and submitted for formal publication. We hope to have this published in 2020/2021
- ***Further research is needed*** - to understand who is using the Nutrition Wheel, and its impact and effectiveness in other community settings. We are considering working with Bournemouth University and the Malnutrition Task Force to review the options and funding for this
- ***Progressing the digital version*** – continue to work with Bournemouth University to test an initial digital prototype and develop this into a final product to launch in 2021.