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Best practice recommendations for developing persuasive health and nutrition messages: a rapid review

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Review Article

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Abstract

Modifiable health behaviours, including suboptimal dietary patterns, contribute to the global burden of disease. Messaging to raise awareness about health and nutrition behaviours is an important first step toward behaviour change and promotion of healthy dietary patterns. The aim of this rapid review was to systematically identify best practice recommendations and evidence for the development and characteristics of persuasive health and nutrition messages for awareness raising among adults. Academic reviews and grey literature reports published in English after 2010 that focused on the development or characteristics of general health or nutrition-specific messaging for awareness raising were eligible. MEDLINE Complete, CINHAL, Global Health, Embase and websites of public health organisations were searched between April and July 2024. Data was synthesised narratively. From 12 507 records, 31 were included (27 reviews and 4 reports). There was consistent support for an audience-centred approach to messaging, including audience segmentation, message tailoring and testing with target audiences. It was recommended that messages be disseminated through multiple channels, including mass and social media to facilitate repeat exposure. Message characteristics, including use of narratives, simple language, keeping messages short, conveying the general gist rather than detailed information and utilising imagery, were considered best practice for persuasive messaging. Nutrition messages that are audience-centred, tailored, thoroughly tested and incorporate elements such as narratives, imagery and simple language are likely to be accepted and persuasive among adults. Findings can be used to inform effective nutrition messaging for awareness raising in research and nutrition promotion settings.

Introduction

Globally, unhealthy diets and other modifiable health behaviours contribute to the burden of non-communicable disease[1]. While systems level approaches are needed to promote healthful behaviours and diets, effective health and nutrition communication also play a crucial role[2]. In recent years, strategic health and nutrition communication have both been identified as key priorities for improving health behaviours and outcomes, with authoritative organisations including the World Health Organization (WHO) emphasising their importance[3–5]. Within health communication, awareness raising, which aims to make people conscious of a health issue, risk or behaviour, is considered an important first step towards behaviour change[3].

A range of challenges for health and nutrition communication for public health exist. Firstly, many people are exposed to advertising of unhealthy products including alcohol and discretionary and fast foods[6,7]. Commercial actors, including producers of discretionary foods, often have large advertising budgets and use sophisticated marketing techniques[8]. As a result, public health and nutrition messaging struggles to compete in visibility and persuasive impact, making it harder to encourage healthy choices[9]. Secondly, health and nutrition misinformation are widespread, which can lead to an inaccurate understanding of important health and nutrition concepts[10,11]. Misinformation has contributed to an erosion of trust in science and health organisations, institutions and experts, meaning that people are less likely to follow health advice from these sources[12]. In particular, the erosion of public trust in nutrition science has been highlighted as a major challenge for public health nutrition[13,14]. In addition, exposure to conflicting nutrition information in the media is associated with confusion about nutrition[15–17]. Such nutrition confusion is in turn associated with backlash and negative views towards nutrition science, which is linked to lower intakes of fruit and vegetables[15–17]. Thirdly, many individuals have limited health, nutrition and food literacy, with those experiencing greater disadvantage more likely to

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have limited literacy[5,18,19]. Low health literacy is associated with poor health outcomes and poor use of healthcare services[20], and similarly, low nutrition literacy is associated with unhealthy dietary patterns[21]. Furthermore, research has shown that low health literacy strongly predicts susceptibility to misinformation[22], and individuals with low food literacy also have low levels of scepticism toward food advertising[23].

Considering these challenges and the burden of preventable non-communicable disease, it is important that public health and nutrition messaging is accepted (understood and believed) and persuasive (inducive of a change in attitudes, beliefs, emotions or behaviours)[24,25]. Acceptance of a message is vital to it being persuasive and health and nutrition messages do not always result in acceptance or persuasion[24]. Messages must be designed and disseminated in ways that are likely to be persuasive. The characteristics of messages such as their style, wording, framing, length, tone and visual elements, and how messages are delivered, including communication channels and messengers can impact acceptance and persuasiveness. As such, it is important to understand the evidence and best practice approaches for developing and disseminating persuasive messages to inform health and nutrition communication efforts.

There are extant reviews in the literature that synthesise evidence regarding specific and narrow facets of health or nutrition messaging (for example, gain versus loss framing)[26,27]. However, to the knowledge of the authors, no review has comprehensively synthesised evidence regarding the development and characteristics of persuasive messages for raising awareness about health and nutrition issues. Therefore, the aim of this review was to systematically identify best practice recommendations and evidence for the development and characteristics of persuasive health and nutrition messages for awareness raising among adults. Findings from this review will contribute to the establishment of a communication framework to guide nutrition messaging for awareness raising in Australia.

Methods

This study used rapid review methodology to systematically review relevant literature. Rapid reviews follow the same process as systematic reviews; however, one or more steps is removed or simplified to expedite the process[28]. To manage time constraints, this review deviated from standard Cochrane review methodology in the following ways: only review articles and grey literature reports published in English were eligible, grey literature search results were screened by one author only, data extraction was completed by one author only, and risk of bias was not assessed. An extension of Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines is currently being developed to provide reporting requirements for rapid reviews and is not yet available[29,30]. In line with current advice for rapid reviews, the PRISMA checklist has been used (Supplementary File 1) and modifications to systematic review methodology are highlighted[30,31]. The protocol was registered with PROSPERO: CRD42024558146 (https://www.crd.york.ac.uk/prospero/display_record.php?RecordID = 558146) in June 2024.

Eligibility criteria

Academic review articles of any kind (for example, meta-analyses, systematic reviews and scoping reviews), as defined by Grant and Booth[32], and grey literature reports were eligible for inclusion. To be eligible, reviews must have either synthesised evidence or made recommendations about best practices for (i) the development (for example, audience segmentation, formative research, channels) or (ii) characteristics (for example, length, framing, tone) of persuasive health or nutrition messaging for awareness raising (see Table 1 for definitions). Grey literature reports that proposed communication frameworks or toolkits aimed at health or nutrition awareness raising were also eligible. Review articles and reports had to be focused on nutrition or general health communication aimed at the general population aged 18–65 years, written in English, peer-reviewed (in the case of review articles) and published since 2010. Studies and reports that focused on general health messaging were included to ensure a comprehensive

Table 1. Definitions of terminology relevant to the rapid review

Term	Definition
Best practice	The methods, strategies or approaches that are considered effective based on current evidence and experience.
Raise awareness	To increase knowledge or understanding of a health issue.
Message acceptance	To understand a message and agree with its premise.
Persuasive	Inducive of a change in attitudes, beliefs, emotions, intentions or behaviours.
Message development	The research phase and strategic decision making that informs how health messages are designed and disseminated (including formative research, defining message goals and audience segmentation).
Audience	The group or population that a message is intended to reach.
Dissemination	The process of spreading or delivering a message.
Channel	The medium used to deliver a message, such as television, radio and social media.
Messenger	The individual or entity that delivers a message (that is, a spokesperson).
Message characteristics	The specific features of a health message such as content, framing, tone and visual elements.
Framing	The strategic presentation of information within a message to highlight particular aspects over others in order to persuade, for example, emphasising the benefits of a behaviour (gain framing) or the negative outcomes of a behaviour (loss framing).
Style	The overall approach or manner in which a message is delivered (for example, use of narrative).
Wording	The language used in a health message.
Length	The amount of information conveyed in a health message, including the number of words or sentences and the time taken for the message to be read, heard or viewed.
Tone	The emotion or attitude conveyed in a message owing to the chosen characteristics of the message (for example, formal versus informal, serious versus humorous).
Visual elements	Any of the visual components of a health message (for example, infographics, diagrams, video).

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synthesis of relevant evidence, given the extensive body of academic and grey literature in health communication and public health that offers valuable insights into persuasive messaging strategies that have relevance to nutrition (for example, prevention behaviours). Reviews and reports that focused on communicating about specific health conditions, behaviour change or were for expert audiences were ineligible. Grey literature reports that did not have global scope or focused on regions that did not include Australia were excluded.

Information sources, search strategy and selection process

Four academic databases, MEDLINE Complete (EBSCOhost), CINAHL (EBSCOhost), Global Health (EBSCOhost) and Embase (Ovid), were systematically searched individually on 14 June 2024. The search strategy consisted of terms related to five concepts: health/nutrition; AND communication intervention type; AND best practice; AND review; AND messaging (Supplementary File 2). Relevant subject headings were included, and searches were conducted on titles and abstracts. The search strategy was chosen after consultation with a librarian and extensive testing using a list of articles that met the eligibility criteria. Search results were uploaded to Endnote (version 21·2, Clarivate), then imported to Covidence (Veritas Health Innovation) where duplicates were automatically excluded. Title and abstract screening were done independently in Covidence by two authors (E.D. and P.M.) and disagreements were discussed until consensus between the two screeners was reached.

Grey literature searches were conducted using the search function on the websites of health organisations in April–July 2024. A list of relevant international and Australian public health/nutrition organisations (for example, the WHO, the Food and Agriculture Organization and Australian Government health agencies) to search was determined *a priori* by the authors on the basis of their experience and knowledge of the field (Supplementary File 2). Four searches were conducted on each organisation's website: 'communication framework', 'communication toolkit', 'message framework' and 'message toolkit'. The searches were conducted by the lead author, or a research assistant, and resources were screened for inclusion at the time of searching. When searches generated many results, a minimum of the first 100 results were screened, and screening was stopped when the relevance of search results diminished. If it was unclear whether a report met the eligibility criteria, it was saved for discussion by E.D. and P.M. to determine eligibility. The approach to grey literature searching and screening was developed in collaboration with a health research librarian.

Data collection process, data items and synthesis methods

A data extraction template informed by the review aims was developed in Microsoft Excel (version 2407). Data extraction was completed by one author (E.D.), and if any component of an included review or report was unclear it was discussed with the senior author (P.M.) before data were extracted. The following data were extracted where relevant: review details (aims, review type, date of publication, number of included studies, study design), report details (organisation, type of report, global/regional/Australia), target audience, message topic, message medium (for example, written, verbal), focus of recommendations or evidence, that is, development (for example, audience segmentation, message testing, dissemination), characteristics (for example, framing, length, tone) and communication outcomes. Some eligible records also provided evidence for communication aimed at behaviour change, when this occurred only data relevant to awareness raising were extracted (for example, only data relevant to the impact of messaging on facets of awareness raising such as message acceptance, knowledge or understanding were extracted). Owing to the predominantly qualitative nature of the recommendations and evidence, data were synthesised narratively. Reviews were grouped for synthesis according to the type of evidence or recommendations provided: audience segmentation, formative research, dissemination (channels, messengers) and message characteristics (framing, style, wording, length, tone and visual elements). The number of included reviews and reports that provided each type of evidence, and the level of consistency between the evidence, was then described. All included reviews and grey literature reports were equally weighted in data synthesis and conclusions drawn.

Results

Twenty-seven reviews published in academic journals and four reports published in grey literature between 2010 and 2024 were included (Fig. 1). Characteristics of included reviews are presented in Table 2 and reports in Table 3. From the twenty-seven reviews, fourteen (51·9%) were narrative reviews (three proposed communication frameworks), seven (25·9%) were systematic reviews with meta-analyses, three (11·1%) were systematic reviews without meta-analyses, three (11·1%) were scoping reviews and one (3·7%) was a rapid review. Of the four reports, there were two (50%) communication frameworks, one (25%) message guide and one (25%) communication playbook. Fourteen reviews reported on the number of included studies, with a median of 37·5 (± 43) and a total of 736 studies. From the thirty-one records included, twenty-two reviews and four reports (83·9%) were focused on general health messaging, and five (16·1%) on nutrition-specific messaging. A summary of the recommendations and evidence synthesised is provided in Table 4.

Evidence and recommendations regarding audiences, message tailoring and focus

Ten reviews and three reports provided evidence and recommendations about defining target audiences. There was consistent support for segmenting audiences into meaningful groups on the basis of their characteristics, such as demographics, values or motivations, then tailoring messages accordingly to increase persuasiveness[3,9,33–43]. Sherman *et al.*[38] acknowledged that there is a growing body of evidence indicating that message tailoring is most persuasive when audiences are segmented on the basis of characteristics such as values, attitudes and motivations, compared with more general characteristics such as age or gender. Similarly, one report recommended developing messages that centre on the target audience's values[41].

Included records also discussed the need for formative research to inform message development. It was recommended that message content should be credible and informed by scientific evidence[9,36,37]. The need for formative research to understand the target audience, for example, their knowledge and attitudes, was highlighted in WHO reports as important for informing the design and tailoring of messages[3,37]. There was also consistent support for messages to be tested with relevant interest-holders and the target audience and refined on the basis of feedback[34,36,37,42,44]. Overall, the included resources indicated that an audience-centred approach is best practice when developing health and nutrition messages and

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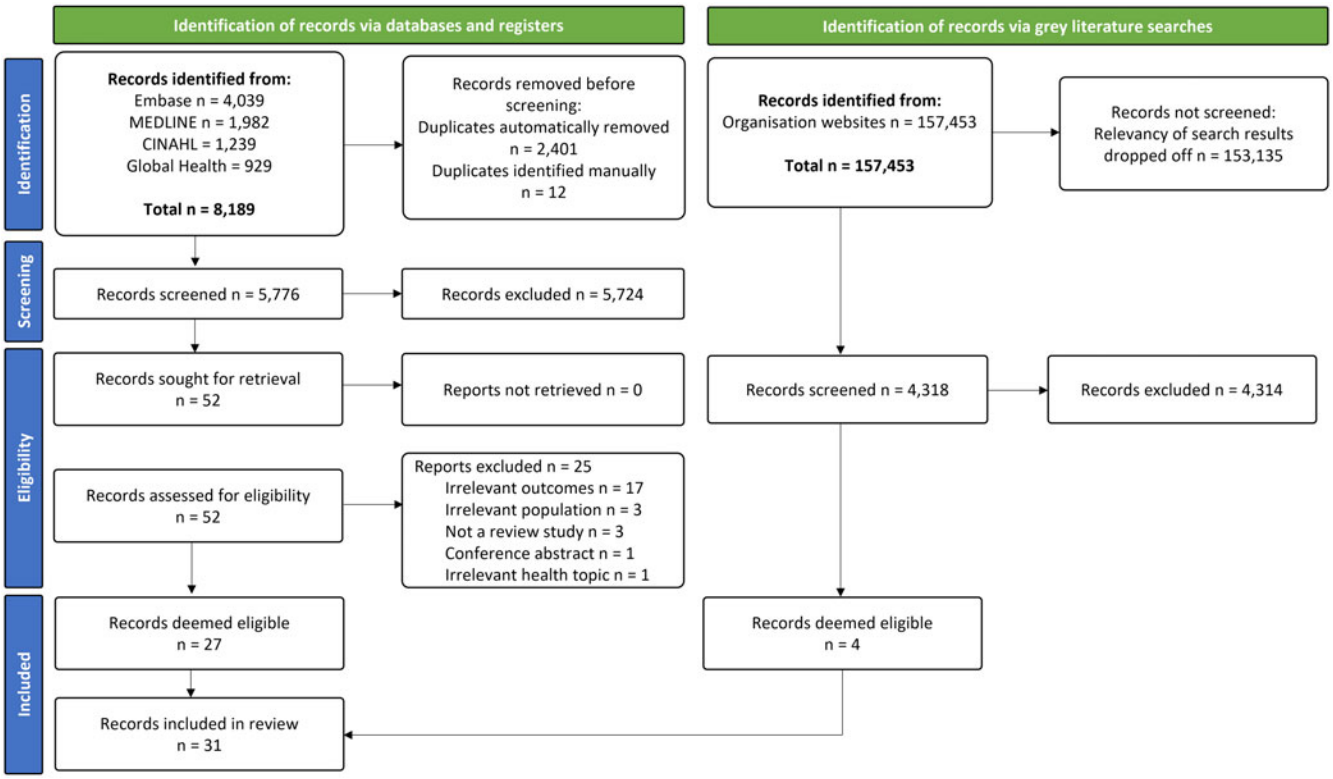


Fig 1. PRISMA 2020 flow diagram[73].

tailored messages are most persuasive. However, it was also acknowledged that general messages for broad audiences are also required in some instances (for example, on website home pages)[41].

Evidence and recommendations for message channels and dissemination

Communication channels were discussed in seven reviews and two reports. The WHO[3] emphasised the importance of repeat exposure for raising awareness and recommended the use of mass and social media channels to facilitate repeat exposure. Evidence synthesised in narrative reviews and frameworks demonstrated that dissemination of health and nutrition messages through multiple channels increases the likelihood of repeat exposure and is more effective than the use of one channel[9,36,39]. Included records discussed the importance of selecting appropriate channels and recommended they are chosen on the basis of the target audience and the channels they use[36]. Social media was a recommended channel for nutrition messaging and communicating with young adults[34,45,46]. Furthermore, social media and other online channels offer a practical way of targeting audience segments on the basis of more than demographic characteristics (for example, digital segmentation on the basis of interests or online behaviour)[39,46,47]. One systematic review assessed the effectiveness of song-based health messaging, finding that songs are an effective medium for educating and raising awareness about health issues, particularly when audiences have limited literacy[48]. The communication framework proposed by Noar[36] acknowledged the implications that communication channels and their properties have for the design of messages (for example, social media favours short video content) and certain messages may be more suited to certain channels. As such, the framework recommended that the channel is considered when developing messages, and vice versa, that the message is considered when choosing the appropriate channel.

The importance of carefully selecting appropriate messengers was discussed in nine reviews and three reports. Findings from these records indicated that health and nutrition messages should be disseminated by well-known, credible and trusted figures[3,9,33,34,36,49]. It was suggested that messengers should be chosen with the target audience in mind and be relevant to the audience[36,41]. Three reviews stated that narrative messages are more persuasive and produce fewer counter-arguments when the storyteller has strong ties or similarities to the audience (for example, existing parasocial relationships, the same ethnicity or sexual orientation)[42,44,50]. Leveraging parasocial relationships by delivering health and nutrition messages via social media influencers was suggested in a further three reviews because influencers already have a communication style that resonates with their audience and tend to have a trusting follower-base[43,46,47]. Health and nutrition professionals were also suggested as messengers who are likely to be trusted by audiences and have the additional benefit of relevant content knowledge[9,45,49].

Evidence and recommendations for message characteristics

Message style, wording, length and tone

Four reviews (two meta-analyses, one narrative review and one scoping review) synthesised evidence regarding the use of narrative messaging (that is, storytelling). One of the meta-analyses investigated the effectiveness of narrative versus statistical messaging, concluding that narrative messaging was significantly more persuasive for prevention messaging[51]. Similarly, the literature and scoping reviews both concluded that narratives are well accepted, more persuasive and lead to better recall compared with didactic

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Table 2. Summary of characteristics of included review articles

First author (year published)	Review type	Included studies (*n*) and publication years	Study designs eligible for inclusion	Target audience	Health message topic	Message medium of focus	Focus of recommendations or evidence	Communication outcomes
Akl *et al.*[26]	Cochrane review	35 1996–2007	RCTs, quasi-randomised controlled trials, cross-over studies	General population	General	Applicable to any medium	• Message characteristics (framing)	Understanding, perception of effectiveness and persuasiveness
Brust-Renck *et al.*[52]	Narrative literature review	Not reported	Not reported	General population	General (health risks)	Visual, verbal and written	• Message development • Message characteristics (content, wording, visual elements)	Understanding
Campbell *et al.*[49]	Narrative literature review	Not reported	Not reported	General population	Climate change and health	Not reported	• Message dissemination • Message characteristics (content)	Understanding and persuasiveness (attitudes, behavioural intentions)
Ceretti *et al.*[33]	Systematic review	78 2011–2021	All	General population	General	Internet-based (websites and social media)	• Message dissemination • Message characteristics (framing, length, content, wording, visual aspects)	Persuasiveness (attitudes, behavioural intentions)
Chen and Bell[50]	Meta-analysis	16 Before April 2020	Lab based experimental studies	General population	General	Verbal	• Message characteristics (wording)	Persuasiveness (perceived severity, perceived susceptibility, attitudes, behavioural intentions, perceived effectiveness of message)
Covey[57]	Meta-analysis	47 1990–2012	Experimental studies	General population	General	Not reported	• Message characteristics (framing)	Persuasiveness (attitudes, behavioural intentions)
Culliford *et al.*[34]	Rapid review	59 2012–2022	All	General population	Nutrition	Written (food-based dietary guidelines)	• Message development • Message channels • Message characteristics (framing, length, content, tone, wording, visual aspects)	Understanding, persuasiveness (attitudes, beliefs) of food-based dietary guidelines
Dudley *et al.*[42]	Scoping review	253 2000–2020	All	General population	General	Applicable to any medium	• Message development • Message dissemination • Message characteristics (framing, structure, wording)	Acceptance
Gallagher and Updegraff[27]	Meta-analysis	94 Before March 2011	Original research	General population	General (prevention and detection)	Not reported	• Message characteristics (framing)	Persuasiveness (attitudes, behavioural intentions)
Gaysynsky *et al.*[47]	Narrative literature review	Not reported	Not reported	General population	General	Internet-based (websites and social media)	• Message dissemination • Message channel	Persuasiveness (attitudes, beliefs)

(*Continued*)

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Table 2. (*Continued*)

First author (year published)	Review type	Included studies (*n*) and publication years	Study designs eligible for inclusion	Target audience	Health message topic	Message medium of focus	Focus of recommendations or evidence	Communication outcomes
Lee *et al.*[43]	Narrative literature review	Not reported	Not reported	General population	Nutrition (weight related)	Applicable to any medium	• Message development • Message dissemination	Understanding
Lewis *et al.*[35]	Narrative literature review (proposes conceptual framework)	Not reported	Not reported	General population	General	Applicable to any medium	• Message development	Persuasiveness
Miller *et al.*[56]	Systematic review	13 2010–2020	Original research	General population	General	Applicable to any medium	• Message characteristics (content)	Persuasiveness (attitudes, behavioural intentions)
Nabi[55]	Narrative literature review	Not reported	Not reported	General population	General	Applicable to any medium	• Message characteristics (content, structure, wording)	Persuasiveness
Noar[36]	Narrative literature review (proposes conceptual framework)	Not reported	Not reported	General population	General	Applicable to any medium	• Message development • Message dissemination • Message channel	Persuasiveness
Okuhara *et al.*[53]	Narrative literature review	40 1980–2015	All	General population	General	Written	• Message characteristics (content, wording)	Understanding (processing fluency)
Rogers *et al.*[46]	Scoping review	11 2016–2021	All grey literature	General population	Nutrition	Social media	• Message dissemination • Message characteristics (length, content, structure, tone, wording, visual elements)	Persuasiveness
Ruxton *et al.*[9]	Narrative literature review	Not reported	Not reported	General population	Nutrition	Applicable to any medium	• Message development • Message dissemination • Message channel • Message characteristics • (framing, content)	Persuasiveness
Shaffer *et al.*[44]	Narrative literature review (proposes conceptual framework)	Not reported	Not reported	General population	General	Not reported	• Message development • Message dissemination • Message characteristics (framing, structure, wording)	Persuasiveness (attitudes, beliefs, behavioural intentions)
Sheffield and Irons[48]	Systematic review	10 2000–2020	Original studies	General population	General	Songs	• Message development • Message dissemination	Understanding
Sherman *et al.*[38]	Narrative literature review	Not reported	Not reported	General population	General	Not reported	• Message development • Message characteristics (framing)	Message acceptance, persuasiveness (attitudes, behavioural intentions)

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Table 2. (*Continued*)

Stokes[39]	Narrative literature review	Not reported	Not reported	General population	Nutrition and general health	Applicable to any medium	• Message development • Message channel • Message characteristics (content, wording)	Persuasiveness (knowledge, attitudes, beliefs)
Van 't Riet *et al.*[58]	Narrative literature review	Not reported	Not reported	General population	General	Not reported	• Message characteristics (framing, wording)	Persuasiveness
Wang *et al.*[59]	Meta-analysis	22 2004–2019	Lab based randomised experimental studies	General population	General	Not reported	• Message characteristics (framing)	Persuasiveness (attitudes, behavioural intentions)
Wansink and Pope[40]	Narrative literature review	Not reported	Not reported	General population	General	Not reported	• Message development • Message characteristics (framing)	Persuasiveness
Xu[51]	Meta-analysis	50 2010–2021	Experimental studies	General population	General	Print and video	• Message characteristics (wording)	Persuasiveness (attitudes, behavioural intentions)
Xu and Guo[54]	Meta-analysis	8 2004–2016	Experimental studies	General population	General	Text and picture	• Message characteristics (content)	Persuasiveness (attitudes, behavioural intentions)

N/A, not applicable; RCT, randomised controlled trial.
See Table 1 for relevant definitions.

messages[42,44]. A meta-analysis by Chen and Bell[50] investigated the impact of point of view on the persuasive impact of health messages, finding that first-person narratives were significantly more persuasive than third-person narratives, which also aligned with findings from the narrative and scoping reviews[42,44]. Furthermore, the use of narratives and case studies to deliver health messages was advocated in the four included reports[3,37,41,45]. In summary, there was consistent support for narrative health messaging.

Use of short, simple and accessible health messaging, constructed in plain, familiar language and avoiding the use of jargon was recommended in eight reviews and three reports[3,9,33,34,39,41,44–46,52,53]. For example, it was suggested that complex health and nutrition information should be broken down into manageable segments and messages should be kept to approximately three points to facilitate processing and recall[9,53]. Furthermore, two narrative reviews synthesised evidence regarding use of 'fuzzy-trace theory' in health messaging, both concluding that messaging that conveys the general gist of the information is more persuasive and comprehendible when compared with precise, detailed messaging[44,52].

Message tone refers to the emotion or attitude that is conveyed and included resources discussed the use of emotion to persuade audiences. One systematic review found that factual social media messaging had greater engagement when messages included emotion[33]. Similarly, a meta-analysis found a significant positive effect of guilt-based written messages on attitudes and intentions[54]. However, the rapid review by Culliford *et al.*[34] suggested that nutrition messages should aim to generate pleasurable emotions to associate healthy food with pleasure. A narrative review by Nabi *et al.*[55] suggested both positive and negative emotions can be addressed. They argued that messages with 'emotional flow', which target a range of emotions in sequence (for example, from fear to hope), are more persuasive than messages that target a singular emotion. In their scoping review, Rogers *et al.*[46] highlighted evidence that nutrition messages from popular social media influencers tend to highlight the role of bad actors (for example, harmful industries), and the narrative review by Campbell *et al.*[49] found that emphasising the role of bad actors promotes emotional engagement with messaging.

Evidence regarding other elements of message tone, such as humour and formality, was also discussed in the included reviews. Findings from a systematic review indicate that humour can promote sustained attention and influence attitudes and behavioural intentions[56]. Although, Miller *et al.*[56] note the impact of humour depends on the audience and most research has used university student cohorts, indicating that humour may be a useful strategy for this group. Complementary to this, VicHealth[45] endorse the use of humour in online messaging for young adults, and Rogers *et al.*[46] found that humour was a popular tactic used by influencers in nutrition messaging. Use of tone that is empathetic and empowering, rather than prescriptive and authoritative, was suggested for nutrition messaging[34], and Rogers *et al.*[46] found that nutrition influencers tended to use a positive and motivational tone. VicHealth[45] also recommended a positive tone in messaging for young adults, and further recommended tone to be casual, inclusive and authentic.

Message framing

Ten reviews synthesised evidence regarding the impact of loss- versus gain-framed messages, including one Cochrane review and two meta-analyses. The Cochrane review found loss framing led

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Table 3. Summary of characteristics of included reports

Organisation (year published)	Report type	Region	Report end user	Target audience	Health message topic	Message medium of focus	Focus of recommendations or evidence	Communication outcomes
WHO regional office for the Western Pacific[72]	Communications framework	Western Pacific	Public health practitioners, policy makers, WHO member states	General population	General	Applicable to any medium	• Message development • Message characteristics (framing, content)	Acceptance, persuasiveness
WHO[3]	Communications framework	Global	WHO member states, WHO staff	General population	General	Applicable to any medium	• Message development • Message dissemination • Message channels • Message characteristics (length, content, structure, wording, visual aspects)	Acceptance, persuasiveness
VicHealth[45]	Communications playbook	Australia	Public health practitioners	Young adults	General (including some nutrition-specific)	Social media	• Message dissemination • Message channels • Message characteristics (framing, length, content, tone, wording, visual aspects)	Persuasiveness
Wellbeing SA, NSW health and Queensland health[41]	Message guide	Australia	Workplace leaders	General population	General	Applicable to any medium	• Message development • Message dissemination • Message characteristics (content, structure, wording, visual aspects)	Acceptance, persuasiveness

NSW, New South Wales; SA, South Australia; WHO, World Health Organization.
See Table 1 for relevant definitions.

to better understanding of messages; however, this was on the basis of a single study[26]. Conversely, gain framing led to greater perception of effectiveness, although the quality of evidence was low and effect size was small, and there was no benefit of loss or gain framing on the persuasiveness of messages. Meta-analyses by Covey[57] and Gallagher *et al.*[27] both found no significant effect of framing on attitudes or behavioural intentions. Similarly, an additional four reviews (two narrative, one scoping and one rapid) concluded that the evidence is mixed and there is no clear advantage of loss or gain framing[9,34,42,58]. Considering the mixed evidence, Akl *et al.*[26] and Culliford *et al.*[34] recommend a balanced approach through the use of both gain and loss framings. In contrast, Wansink and Pope's[40] narrative review posits that gain-framed messages are more persuasive because most audiences are unlikely to be interested in health messages.

Six reviews acknowledged there was evidence that the persuasive impact of loss and gain framing may vary on the basis of the message topic[42] and audience's characteristics[9,34,38,40,57]. Covey[57] found that although there were differences in the impact of gain versus loss framing on the basis of individuals' motivations, these findings were inconsistent and no recommendation for framing on the basis of individual motivations could be made. Loss-framed messages were reported as slightly more effective for prevention-focused individuals[34] and for those from collectivist cultures[38]. Two reviews reached opposing conclusions regarding the impact of audience knowledge on the effectiveness of framing, with Wansink and Pope[40] concluding that gain-framed messages are more persuasive when the audience has limited knowledge of the topic, while Ruxton *et al.*[9] concluded that loss-framed messages are more persuasive in this instance. Message channels were also considered in the context of framing. Ceretti *et al.*[33] concluded that gain framing on websites and social media leads to greater engagement and perception of source credibility. Similarly, two included reports recommended the use of gain-framed messages, specifically for young adults[45] and in workplaces[41]. Wang *et al.*[59] conducted a meta-analysis investigating the persuasive impact of temporal framing of messages. Their analysis indicated that present-oriented messages (focused on immediate/short-term outcomes) had a greater impact on behavioural intentions than future-oriented messages (focused on long-term outcomes). They also investigated gain and loss framing as moderators and found that gain framing did not significantly moderate the persuasive effects of temporal framing[59]. Overall, the evidence and recommendations about how to frame health and nutrition messages was mixed leading to the recommendation of a balanced approach. In addition, decisions about framing should be made according to audience characteristics and preferences.

Visual elements

Three reports recommended that imagery should be incorporated into messaging to attract attention and humanise the message[3,41,45]. Imagery that depicts people who are relatable to the target audience and culturally appropriate elements (for example, symbols, foods) were recommended in the three reports to enhance message relatability and acceptance. Practical recommendations about imagery were also made in these reports, including avoiding the use of stock images, keeping graphics simple and clutter free and using illustrations or photo stories to present technical information to enhance comprehensibility[3,41,45]. Use of imagery to improve message understanding was also evidenced as a useful tactic in one narrative and one

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rapid review[34,52]. Furthermore, one systematic and one scoping review found that imagery with consistent layout and branding can attract attention and engagement on social media[33,46]. In summary, included resources indicate that imagery can enhance the acceptance, understanding and accessibility of messaging.

Discussion

This rapid review synthesised evidence and best practice recommendations regarding the development and characteristics of persuasive health and nutrition messaging for awareness raising. Twenty-seven reviews and four grey literature reports were included. Results showed that there was consistent evidence in the literature for an audience-centred approach to health and nutrition messaging. Data synthesis also resulted in identification of key characteristics that can be used to enhance the persuasiveness of awareness raising messaging, including the use of narrative messaging, simple language, conveying the general gist of information and incorporating imagery. Findings can be used to inform health and nutrition promotion messaging in public health and research settings.

Included literature recommended an audience-centred approach to health and nutrition messaging. Key aspects of this approach include audience segmentation, formative research to inform the tailoring of messages to the audience, testing messages with interest-holders and target audiences, and refining messages on the basis of feedback. These elements are commonly used in health and nutrition communication and align with a social marketing approach, which has been widely used in health and nutrition promotion for many years[60]. Furthermore, the mixed findings regarding some message characteristics such as framing observed in this review highlight the importance of segmenting audiences, testing messages and refining them to ensure they are persuasive. While an audience-centred social marketing approach may improve the persuasiveness of messages, it should be acknowledged that it can be resource intensive, and health and nutrition promotion often faces funding and resourcing constraints[61]. As such, it may not always be feasible for organisations to follow all the recommendations outlined in this review. Potential solutions may include use of existing research, reports and open-access data to inform audience segments, communication channels and message tailoring. Examples of open-access resources include the DataReportal annual reports that provide global and regional data on digital communication channel usage (to inform channel selection)[62], the Communicating Health Toolkit, a resource developed by Australian universities and health organisations that provides information and templates for health communication[63], and values-based messaging resources and messaging guides by Common Cause (to inform message development and design)[64]. In addition, establishing partnerships with researchers and not-for-profit organisations with similar goals may assist with formative research and message testing when resources are limited. The Commission on Excellence and Innovation in Health provide a four-step process and strategic framework for developing meaningful collaborative partnerships in public health, which may be useful for organisations seeking to establish partnerships for health or nutrition communication[65].

Some messaging characteristics and tactics that are effective and persuasive may risk unintended consequences. For example, three included reviews recommended working with social media influencers to disseminate health and nutrition messaging[43,46,47]. While, as their name suggests, influencers are good at persuading their audiences, they may contribute to body dissatisfaction, disordered eating and weight stigma[66,67]. As such, care should be taken when working with influencers to ensure messages do not inadvertently promote weight bias and stigma. Influencers and their content should be thoroughly vetted and guidance from eating disorder organisations should be considered when communicating about food[68]. In addition, Gaysynsky *et al.*[47] recommended digital segmentation and microtargeting in online environments to target key groups. They note that this approach shows promise for persuasive and audience-centred messaging; however, it raises ethical issues regarding utilisation of user data to inform segments and risk of harm from targeted messaging on potentially sensitive topics (for example, pregnancy messages are likely to reach people who recently experienced pregnancy loss)[47]. When communicating about sensitive topics, content warnings and referrals to sources of support could be included to mitigate the risk of harm. While digital segmentation raises ethical questions that must be considered, it is also important to consider that most commercial industries, including harmful ones, use this method to advertise[69,70], and public health messaging may be unable to compete without adopting similar approaches to target audience segments. More broadly, health and nutrition messaging can lead to psychological distress, anxiety, fear, guilt or stigma[71], and careful consideration of ethical practice and risk of unintended consequences is required when designing and disseminating persuasive public health and nutrition messages. Co-design, message testing and consultation with interest-holders, which are key recommendations from this review, can help to minimise potential harms[71]. Consultation with the intended audience and interest-holders before large-scale dissemination provides an opportunity to receive meaningful feedback about potentially negative impacts of messages (for example, reinforcing stigma) and refine them accordingly so they are less likely to result in unintended consequences[71].

This review is novel because it synthesised evidence and recommendations regarding broad facets of awareness-raising messaging, from development to message characteristics, and has implications for practice and research. Evidence was synthesised to provide actionable advice to inform persuasive messaging (for example, summary in Table 4). This advice can be used by health and nutrition promotion organisations and researchers to guide their messaging and may be particularly useful for small organisations without dedicated communications staff. Findings will be used to inform the development of a framework to guide nutrition messaging for awareness raising in Australia, which will be disseminated to relevant organisations. While this review is intended to inform a communication framework for the Australian context, most reviews and reports that were captured had an international focus, and findings are also relevant to regions outside of Australia, particularly English-speaking populations and high-income countries. However, some evidence from non-English-speaking and low- and middle-income countries was also captured, and findings may also have relevance to these settings. Furthermore, outcomes from this review have relevance to other health topics and can be used to guide the development of awareness raising messages in other contexts. Future research should explore the novel approaches to health and nutrition communication that were recommended in the included studies, such as working with influencers and use of digital segmentation, as research in this area is in its infancy. To date, most studies have been small pilot studies and relied on measures such as social media engagement and reach to measure impact[47], and future research should therefore employ

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Table 4. Synthesis of best practice recommendations and evidence for persuasive health and nutrition messages for awareness raising

Component	Key findings
Target audience, message tailoring and focus	• Segment audiences into meaningful groups on the basis of their characteristics. When possible, segment on the basis of personal characteristics (for example, values, motivations, beliefs), rather than general characteristics (for example, gender, age). • Conduct formative research to inform message content. Messages should be credible and based on current, high-quality evidence. • Conduct formative research to understand the needs and characteristics of the target audience. • Test messages with representatives from the target audience and refine according to feedback. • Test messages with interest-holders and refine according to feedback. • Message channels should be considered when developing messages.
Message dissemination – channels	• Audiences should be repeatedly exposed to awareness raising messages. • To facilitate repeat exposure, awareness raising messages should be disseminated through mass media and/or social media channels. • Messages should be disseminated through multiple channels. • Channels should be selected according to target audience and the channels they regularly engage with (for example, young adults for social media). • Social media is a useful channel for facilitating audience segmentation. • The message should be considered when selecting appropriate channel(s).
Message dissemination – messengers	• Messages should be delivered by well-known, credible and trusted figures. • Messengers should be relevant to the target audience. • Narrative messages are more persuasive when the messenger has similarities/strong ties to the target audience. • Social media influencers and nutrition/health professionals are suggested messengers.
Message characteristics – framing	• There is mixed evidence about the benefit of loss- versus gain-framed messages. Use of a combination of loss and gain frames and selecting frames on the basis of target audience characteristics and preferences is suggested. • Present oriented messaging is more persuasive than future oriented messaging.
Message characteristics – style, wording, length & tone	• Narrative messaging (storytelling) is persuasive and widely recommended. • Keep messages short, simple, accessible and written in plain language. • Limit messages to ~3 key points/recommendations. • Convey the general gist of health information over precise and detailed information. • Use of humour or emotion can increase persuasiveness of messages. • Highlight the role of bad actors (for example, harmful industries). • Health/nutrition messages should be actionable. • Centre message content on target audience values. • Message tone should be positive, authentic, inclusive, empathetic and empowering. Avoid a prescriptive/authoritative tone.
Message characteristics – visual elements	• Include imagery in messages wherever possible. • Depict people who are relatable to the target audience. • Depict culturally appropriate and relevant elements (for example, symbols, foods). • Avoid use of stock images. • Keep graphics simple, clutter free. • Use illustrations, graphics or photo stories to communicate information. • Use a consistent look and feel in imagery for social media.

larger samples and measures of persuasion, such as changes in attitudes, beliefs and intentions. Case studies that investigate partnerships between influencers and health organisations would also be useful to inform future communication campaigns with influencers.

Limitations of this rapid review should be acknowledged. The search strategy used may have missed some relevant literature; however, it was thoroughly tested and developed in consultation with a librarian and members of the research team highly experienced in research synthesis. Only one researcher conducted grey literature screening, which could have also resulted in relevant reports being missed. Similarly, only one researcher was responsible for data extraction, which may have led to mistakes or errors in the interpretation and extraction of data. To help ensure reliability in grey literature screening and the extraction of data from reviews and reports, any resources that were ambiguous or difficult to judge were flagged for discussion with the senior author who then assisted with screening and extraction decisions. Reviews and grey literature reports that were written in languages other than English, or published by public health organisations that did not include Australia as a region of focus, were excluded from this review, which may limit the generalisability of findings to non-English-speaking populations and low- and middle-income countries. However, importantly, some of the literature that was captured did include evidence for non-English-speaking populations and low- and middle-income countries, for example, the WHO and WHO Western Pacific communication frameworks[3,37]. Another limitation is that the risk of bias of included reviews was not assessed, and therefore, the quality of the evidence was not considered. Finally, there was some overlap between the topics covered in the included reviews (for example, ten reviews covered gain- versus loss-framed messages) and this review may have captured the same piece of original research multiple times because it was included in multiple reviews. However, the overall impact of this is likely to be small.

This review also has some important strengths. To the knowledge of the authors, it is the first review to synthesise evidence regarding broad facets of health and nutrition messaging for awareness raising. The inclusion of review articles and general health topics enabled synthesis of a large scope of evidence about

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many aspects of awareness raising messaging from over 700 studies. Furthermore, the inclusion of grey literature extended the scope of content captured beyond academic evidence to also include experience and recommendations from prominent public health organisations. The breadth of evidence and recommendations captured in this review makes it a valuable contribution to the field and it provides a resource to inform awareness raising messaging in research and practice, which has been highlighted as a priority area for health and nutrition[3,4]. While the risk of bias of included reviews was not assessed, ten systematic reviews (including one Cochrane review and seven meta-analyses) were included. Compared with reviews that use non-systematic methods, these review types are more rigorous, with Cochrane reviews considered the gold standard, indicating that high-quality evidence was captured. In addition, there was a high degree of consistency in the findings and key recommendations of the included resources, further increasing confidence in the findings of this rapid review.

Conclusions

This rapid review provides a synthesis of evidence and recommendations for the development of persuasive and health and nutrition messages for awareness raising. Results showed that there was consistent support in academic and grey literature for an audience-centred approach to health and nutrition messaging that uses social marketing principles to segment audiences, tailor messages and test them with audiences and interest-holders. Characteristics related to the style, wording, length, tone and visual elements of awareness raising messages were identified and summarised to provide practical guidance to inform health and nutrition communication in research and health promotion settings.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0954422426100328

Data availability statement. No new data were generated from this research. The extracted data from included studies will be made available upon reasonable request to the corresponding author.

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Authorship. E.D. conducted the literature searches, screening, data extraction, synthesis and prepared the first draft of the manuscript. P.M. acquired the funding, conceptualised the research, contributed to methodological decisions, screening of literature and critically reviewed the manuscript for important intellectual content. C.G.R., N.K. and S.A.M. acquired the funding, contributed to the conceptualisation of the research, methodological decisions and critically reviewed the manuscript for important intellectual content. K.W. contributed to methodological decisions and critically reviewed the manuscript for important intellectual content.

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