

Final Report

Educating health professionals

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Project code:

AL16007

Project:

Educating health professionals AL16007

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Summary

Hort Innovation, the Almond Board of Australia and Nutrition Australia identified a significant opportunity to better inform health professionals about the benefits of daily almond consumption. This project aimed to increase health professionals' awareness of the role almonds play in a healthy diet, and to position Australian almonds as an important 'nutritional solution' that health professionals can recommend to their patients and clients.

The three-year project methodology was designed to reach a national audience of the target health professionals which were General Practitioner's (GP's), Practice Nurses, Dietitians and Nutritionists. Key project activities included attendance at five health professional conferences, development of twelve factsheets and six digital clips, delivery of two webinars for health professionals, delivery of a two-day orchard tour event for an invited group of influential health professionals, and promotion of project resources and key messages via social media. Key content areas included the health benefits of consuming almonds for good health, heart health, diabetes, weight management, gut health and mood and cognition.

The intended end of project outcome was increased capacity of health professionals to recommend almonds to clients as part of a healthy diet. This was underpinned by intermediate outcomes focused on increasing knowledge and awareness among health professionals of the nutritional profile and health benefits of almonds. These outcomes were aligned with Outcome 5 in Hort Innovation's Almond Industry Strategic Investment Plan 2017-2021. Evaluation of activities was both formative and summative and involved the use of surveys at various points over the course of the project. Four key evaluation questions were posed in the Monitoring and Evaluation plan under the themes of effectiveness, relevance, project appropriateness and efficiency, to measure the overall success of the project.

At the conclusion of the project, health professionals surveyed reported an increased likelihood to recommend almonds to patients and clients as part of a healthy diet, compared to health professionals surveyed at the beginning of the project. Furthermore, the majority of health professionals surveyed at the conclusion of the project reported that their knowledge of the health benefits of almonds increased after accessing the project resources and activities. Many insights and learnings were gathered during the delivery of this project as outlined in the report which could be used to inform future iterations of the Educating Health Professionals program for the Australian almond industry.

Keywords

Australian almonds, education, health benefits, health professional, dietitian, nutritionist, general practitioner, pharmacist,

Introduction

The demand for almonds worldwide has more than doubled in the past ten years and is at a record high¹. As a result, the Australian almond industry, which comprises a significant segment of the Australian horticulture industry, is rapidly expanding and continuing to grow¹. Consumption levels have reflected this growth and demand, with rates increasing annually by approximately 9% over the past decade¹.

Overweight and obesity, type 2 diabetes and cardiovascular disease remain a significant health issue in Australia². These chronic diseases can be prevented by reducing the exposure to modifiable risk factors of which a healthy diet is an example. The health benefits of almonds as part of a healthy diet are well documented but they are not necessarily recommended by health professionals. In Australia consumers have high levels of trust in health care providers³, and health professionals are identified as key influencers when it comes to health advice. Thus, there was a significant opportunity to raise the profile of almonds and encourage consumption, by engaging and educating health professionals.

At project onset, the Educating Health Professionals program for the almond industry was in its sixteenth year of delivery. Key achievements in the previous fifteen years include formation of sound relationships, increased credibility with health professionals through attendance at healthcare conferences, and increased advocacy of Australian almonds by key independent health professionals. For this project period Nutrition Australia's scope was the lifestyle medicine stream, which focused on a target audience of General Practitioners (GP's), Practice Nurses, Dietitians and Nutritionists. The Almond Board of Australia continue to lead the fitness and sports education stream as they have done for many years.

This project aimed to communicate the evidence on the health benefits of almonds and the important role they play in a healthy daily diet to key health influencers. It aimed to raise the profile of almonds by communicating additional aspirational health benefits of almonds, such as supporting chronic disease prevention, cognitive function and enhancing exercise recovery. In addition, new and emerging research on almonds was used to inform the ongoing creation of resources specific for health professionals including digital clips, fact sheets, website content and more.

The outcomes of this project align to Outcome 5 in Hort Innovation's Almond Industry Strategic Investment Plan 2017-2021: Market research and insights to help industry increase domestic almond consumption through potential deliverables such as 'Health research outcomes that link almond consumption to improved human health communicated to health professionals. Health research outcomes will be based on new Australian research and summaries of the international literature'.

The potential long-term impacts of this program include:

- Health professionals with increased confidence talking about the benefits of almonds with patients and clients.
- Health professionals with a preference for recommending almonds as a snack as part of a healthy balanced diet.
- Increased consumption of Australian almonds by Australian consumers.

References:

1. Hort Innovation Almond Fund Snapshot: <http://horticulture.com.au/grower-focus/almond/>
2. Australian Institute of Health and Welfare. Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011. Canberra ACT. AIHW; 290p. Series no 3. BOD 4.
3. Hardle EA, Christine RC. Public perceptions of Australia's doctors, hospitals, and health care systems. Med J Aust. 2008;189(4):210-214.

Methodology

Nutrition Australia designed the project methodology to reach a national audience of the target health professionals which were GP's, Practice Nurses, Dietitians and Nutritionists. The methodology consisted of several phases across the three-year project period as outlined below:

- Year 1 (May 2018 - April 2019): Literature review, Planning, Development
- Year 2 (May 2019 – April 2020): Implementation, Ongoing Development
- Year 3 (May 2020 – April 2021): Ongoing Development, Ongoing Implementation
- All years: Evaluation and Reporting

Table 1 provides a more detailed breakdown of each project phase and related activities completed.

Table 1: The Educating Health Professionals (AL16007) project methodology across the three-year project period.

Phase	Activity	Description
Literature review (Year 1)	Literature review on the benefits of almond consumption for diabetes	Nutrition Australia commissioned Dr. Alan Barclay, Accredited Practising Dietitian and Research Associate at the University of Sydney, to conduct a literature review on the effect of almond consumption on diabetes prevention and management.
Planning (Year 1)	Develop plan for updating resources and information promoting almond consumption	Nutrition Australia engaged Fenton, an external PR and communications agency, to develop a Communication, Engagement and Content plan. This document outlines the content plan and key messages for the update of existing resources and development of new resources and information.
	Develop communications and stakeholder engagement plan	It also outlines the communication and engagement plan for dissemination of project resources.
	Scope relevant health related conferences to exhibit at	Scoping was undertaken by Nutrition Australia to identify health professional conferences in Australia, that would reach an audience of the target health professionals.
	Develop conference survey	A conference survey was developed by Nutrition Australia and disseminated to health professionals at the first two conferences of the project.
	Develop program logic and monitoring and evaluation plan.	An external evaluation expert was contracted by Nutrition Australia to develop a monitoring and evaluation plan and program logic.
	Develop project risk register	The Nutrition Australia project team completed a risk register and SWOT

		analysis at project commencement.
Development (Year 1)	Review and update 4 fact sheets and web content	Nutrition Australia scoped the current literature and developed a base content document on each fact sheet topic. Key messages were developed from the base content. Nutrition Australia engaged Fenton to lead the creative development of four fact sheets covering the topics of 'Almonds and Good Health' and 'Almonds and Heart Health'. Two fact sheets were developed for each topic, one as a professional development resource for health professionals, and a complementary educational fact sheet for health professionals to use with clients. The fact sheets were uploaded onto the health professional section of the Australian Almonds website for digital download and printed as hard copies for dissemination at events.
	Develop 2 digital clips	Nutrition Australia engaged Fenton to develop 2 digital clips, one on 'Almonds and Good Health' and one on 'Almonds and Heart Health'. A brief was developed by the project team outlining key messages and video style. Fenton led the creative development of the clips. The finished digital clips were uploaded onto the health professional section of the Australian Almonds website.
	Attendance at 2 conferences	Conference 1 was attended in November 2018. Conference 2 was attended in April 2019. Project personnel from Nutrition Australia staffed the conference exhibits.
	Develop and deliver 1 educational webinar communicating the latest research on almonds and meeting relevant professional development accreditation points.	Webinar 1 was delivered in May 2019 on the topic of Almonds and Heart Health. Two expert speakers were engaged to present. Webinar hosting was sub-contracted to an external provider to minimise the risk of any technical issues. The webinar was delivered live and also recorded. The recording was uploaded to the Australian Almonds website and disseminated to attendees. An informal professional development quiz was provided to attendees.
	Health professional resource photoshoot of 4 images for use on collateral	A recipe photo shoot was completed to develop high quality images for use on project collateral. An external food stylist and food photographer were commissioned to deliver the shoot.
Implementation (Year 2)	Dissemination of information (new fact sheets, digital clips,	Project information and resources were disseminated via multiple channels to reach the target audience of health

	website) to health professionals and key industry stakeholders	professionals and key stakeholders. This included at conference exhibits, promotion during webinar events, social media (Nutrition Australia, Australian Almonds and Hort Innovation social media channels), and electronic direct mail (eDM) to health professional subscribers.
	Attendance at 1 conference	Conference 3 was attended in August 2019. Project personnel from Nutrition Australia and the Almonds Board of Australia staffed the conference exhibit.
	Conference survey completed	The conference survey data was synthesized and translated into key insights and learnings. These were used to inform the development to subsequent project resources.
Ongoing development (Year 2-3)	Development of 4 fact sheets	Nutrition Australia scoped the current literature and developed a base content document on each fact sheet topic. Key messages were developed from the base content. Nutrition Australia engaged Fenton to lead the creative development of four fact sheets covering the topics of 'Almonds and Diabetes' and 'Almonds and Weight Management'. Two fact sheets were developed for each topic, one as a professional development resource for health professionals, and a complementary educational fact sheet for health professionals to use with clients. The fact sheets were uploaded onto the health professional section of the Australian Almonds website for digital download and printed as hard copies for dissemination at events.
	Content research on 'Almonds and Gut Health' and 'Almonds and Mood/Cognition' and development of 4 fact sheets	Following the project variation in October 2020, an additional four fact sheets were added to the project outputs. Nutrition Australia sub-contracted nutrition research and communications firm, Nutrition Research Australia (NRAUS), to undertake the literature research on the two new content themes. NRAUS also developed the fact sheet content. The Almond Board of Australia led the creative development of the fact sheets to be in line with their new branding style. The fact sheets were uploaded onto the health professional section of the Australian Almonds website for digital download
	Development of 4 digital clips	Nutrition Australia engaged Fenton to develop 2 digital clips, one on 'Almonds and Diabetes' and one on 'Almonds and

		Weight Management’. A brief was developed by the project team outlining key messages and video style. Fenton led the creative development of the clips. The finished digital clips were uploaded onto the health professional section of the Australian Almonds website. Nutrition Australia engaged advertising agency, Balance, to develop one digital clip on ‘Almonds and Gut Health’, and one digital clip on ‘Almonds and Mood/Cognition’. A brief was developed, and from these scripts were developed. Two researchers from NRAUS who led the literature research were engaged to record a face-to-camera piece based on the script. This footage was then edited by Balance to produce the final digital clip. The finished digital clips were uploaded onto the health professional section of the Australian Almonds website.
	Develop content for a ‘State of the Science’ document and advise on innovative presentation	Nutrition Australia developed content for a ‘State of the Science’ document based on a resource created by the Almond Board of California. Nutrition Australia’s in house graphic designer developed a mock-up of the finished document, to demonstrate innovative presentation of the information. Recommendations for dissemination were also developed based on project learnings and included in the Dissemination and Promotion Plan.
Ongoing implementation (Year 3)	Develop and deliver 1 educational webinar communicating the latest research on almonds and meeting relevant professional development accreditation points	As approved by Hort Innovation, the delivery of webinar 2 was delayed to September 2020.. Two expert speakers were engaged to present. The recording was uploaded to the Australian Almonds website and disseminated to attendees. An evaluation survey was disseminated to attendees following the event.
	Develop and deliver an ‘Orchard Tour’ for an invited group of influential nutrition professionals	Nutrition Australia collaborated with colleagues at the Almond Board of Australia to deliver a two-day ‘Orchard Tour’ event visiting almond orchards throughout regional Victoria and South Australia in March 2020. Attendees were selected based on profile within the nutrition industry and social media reach. A social media kit was developed for attendees which outlined event key messages and official hashtags.

	Dissemination of new information to health professionals and key industry stakeholders over the life of the project Engagement with public health educators who work in the areas of heart health, diabetes prevention and healthy weight. Provision of support to research and public health educators	Project information and resources were disseminated via multiple channels in order to reach the target audience of health professionals and key stakeholders. This included at conference exhibits, promotion during webinar events, social media (Nutrition Australia, Australian Almonds and Hort Innovation social media channels), and electronic direct mail (eDM) to health professional subscribers. Support to research and public health educators has occurred throughout the project via collaboration with industry bodies e.g. Nuts for Life, and representation on the project reference group.
Evaluation (Year 1-3)	Evaluate project efficiency in line with monitoring and evaluation plan	The monitoring and evaluation plan has been implemented across the entire three-year project period to ensure robust data collection to demonstrate impact.
Reporting (Year 1-3)	Develop 6 monthly milestone status reports outlining current achievements, activities and upcoming priorities	Nutrition Australia have written and submitted 6-monthly milestone reports to Hort Innovation in accordance with the research agreement.
	Develop final report including key findings, outcomes, and recommendations	Nutrition Australia have written and submitted the final report to Hort Innovation in accordance with the research agreement.

Outputs

The outputs for the project have been listed below:

Program logic and Monitoring and Evaluation plan

At the commencement of the project a Monitoring and Evaluation plan including a program logic was developed (Appendix 1).

Project Risk Register

At the commencement of the project a Risk Register and SWOT analysis was completed listing potential risks and appropriate mitigation strategies (Appendix 2).

Stakeholder Engagement / Communication plan

At the commencement of the project a Communication, Engagement and Content plan was developed (Appendix 3).

Report outlining recommendations for updated resources and web content

The content plan sits within the Communication, Engagement and Content plan developed (Appendix 3). The content plan outlines the resources that were to be updated and created to disseminate the project key messages.

Nutritional research and educational resources developed

A literature review was conducted on the effect of almonds consumption on diabetes prevention and management, which informed the development of educational resources (Appendix 4).

6 digital clips for health professionals (increased from 4 to 6 as per project variation)

Six digital clips have been developed during the project.

These can be viewed directly on the Australian Almonds website

1. Almonds and good health:
<https://australionalmonds.com.au/resources/almonds-for-good-health-3/?v=6cc98ba2045f>
2. Almonds and heart health:
<https://australionalmonds.com.au/resources/almonds-for-heart-health-3/?v=6cc98ba2045f>
3. Almonds and diabetes:
<https://australionalmonds.com.au/resources/almonds-and-diabetes-2/?v=6cc98ba2045f>
4. Almonds and weight management:
<https://australionalmonds.com.au/resources/almonds-for-weight-management-2/?v=6cc98ba2045f>
5. Almonds and gut health:
<https://www.dropbox.com/sh/9uxq0meqxwc9mbg/AAA-rLj7zRbgHisBir21DUQba?dl=0>
6. Almonds and mood/cognition:
<https://www.dropbox.com/sh/9uxq0meqxwc9mbg/AAA-rLj7zRbgHisBir21DUQba?dl=0>

12 fact sheets (increased from 8 to 12 as per project variation)

Twelve factsheets have been developed during the project. Six fact sheets were developed for health professionals as a professional development resource. A further six shorter fact sheets were developed to complement these, for health professionals to use as an educational tool with their clients and patients in practice.

These can be viewed directly on the Australian Almonds website

Health professional fact sheets:

1. Almonds and good health (Appendix 5)

<https://australionalmonds.com.au/wp-content/uploads/2021/03/Factsheet-Good-Health-HP.pdf?v=6cc98ba2045f>

2. Almonds and heart health (Appendix 6)

<https://australionalmonds.com.au/wp-content/uploads/2021/03/Factsheet-Heart-Health-HP.pdf?v=6cc98ba2045f>

3. Almonds and diabetes (Appendix 7)

<https://australionalmonds.com.au/wp-content/uploads/2021/03/Factsheet-Diabetes-HP.pdf?v=6cc98ba2045f>

4. Almonds and weight management (Appendix 8)

<https://australionalmonds.com.au/wp-content/uploads/2021/03/Factsheet-HP-Weight-Management.pdf?v=6cc98ba2045f>

5. Almonds and gut health (Appendix 9)

https://australionalmonds.com.au/wp-content/uploads/2021/04/ABA5268-Almond-Fact-Sheet-HP-Gut-Health_V2.pdf?v=6cc98ba2045f

6. Almonds and mood/cognition (Appendix 10)

https://australionalmonds.com.au/wp-content/uploads/2021/04/ABA5268-Almond-Fact-Sheet-HP-Brain-Health_V2.pdf?v=6cc98ba2045f

Client fact sheets:

7. Almonds and good health (Appendix 11)

<https://australionalmonds.com.au/wp-content/uploads/2020/07/Factsheet-Good-Health-clients.pdf?v=6cc98ba2045f>

8. Almonds and heart health (Appendix 12)

<https://australionalmonds.com.au/wp-content/uploads/2020/07/Factsheet-Heart-Health-clients.pdf?v=6cc98ba2045f>

9. Almonds and diabetes (Appendix 13)

<https://australionalmonds.com.au/wp-content/uploads/2020/07/Factsheet-Diabetes-clients.pdf?v=6cc98ba2045f>

10. Almonds and weight management (Appendix 14)

<https://australionalmonds.com.au/wp-content/uploads/2020/07/Factsheet-almonds-for-weight-management.pdf?v=6cc98ba2045f>

11. Almonds and gut health (Appendix 15)

https://australionalmonds.com.au/wp-content/uploads/2021/04/ABA5268-Almond-Fact-Sheet-CNSMR-Gut-Health_V2.pdf?v=6cc98ba2045f

12. Almonds and mood/cognition (Appendix 16)

https://australionalmonds.com.au/wp-content/uploads/2021/04/ABA5268-Almond-Fact-Sheet-CNSMR-Brain-Health_V2.pdf?v=6cc98ba2045f

Conference survey

An electronic survey was developed as part of the formative evaluation outlined in the Monitoring & Evaluation plan. The survey was conducted at the first two conferences of the program. The results of the conference survey are outlined in Appendix 17.

Attendance at 5 conferences

Five health professional conferences were attended during the project, as outlined below:

Table 2: Overview of the project conference schedule.

	Date	Conference	Location	Delegates
1	Nov 2018	General Practice Conference & Exhibition (GPCE)	Melbourne	General Practitioners (GPs)
2	Apr 2019	Diabetes Expo	Melbourne	GPs, Diabetes Educators, Pharmacists
3	Aug 2019	Dietitians Association of Australia National Conference	Gold Coast	Dietitians and Nutritionists
4	Oct 2019	GP19 – Royal Australian College of General Practitioners	Adelaide	GPs
5	Dec 2019	Nutrition Society of Australia	Newcastle	Dietitians and Nutritionists

Originally, another three conferences were scheduled for 2020 however these events did not go ahead due to COVID-19.

Further detail for each conference is outlined below.

Conference 1:

General Practice Conference & Exhibition (GPCE) – November 2018

The first conference attended for the project was GPCE in Melbourne on 16-18 November 2018. The Almonds and Heart Health factsheet for health professionals and Australian Almonds website were promoted. Almond sample tins were also handed out and contact details were collected of those who wanted to receive free tins of almonds at their workplace. Stall attendees were also invited to complete the online survey.



Image 1: The Australian Almonds stand at GPCE in Melbourne in November 2018.

Conference 2:

Diabetes Expo – April 2019

The second conference was the Diabetes Expo on April 27, 2019. This one-day event was run by Diabetes Victoria at the Melbourne Convention and Exhibition Centre. The conference had both a consumer and health professional stream. Approximately 300 delegates attended the health professional stream with main professions represented comprising general practitioners, diabetes educators and pharmacists. The health professional and consumer fact sheets on the Diabetes and Heart Health themes were the key resources disseminated. Eighteen percent of delegates opted into our health professional email list for future updates.



Image 2: The Australian Almonds stand at the Diabetes Expo in Melbourne on April 27, 2019.

Conference 3:

Dietitians Association of Australia National Conference – August 2019

The third conference attended was the Dietitians Association of Australia National conference on the Gold Coast. The three-day event ran from August 12-14 and had 800 delegates in attendance. Delegates were mainly Dietitians and Nutritionists. Approximately 800 factsheets for health professionals and clients/consumers were disseminated. Throughout the conference, 35% of delegates opted into the health professional email list.



Image 3: The Australian Almonds stand at the Dietitians Association of Australian National conference on the Gold Coast from August 12-14, 2019. Pictured (L-R): Amy Knight (Nutrition Australia), Joseph Ebbage (Almond Board of Australia), Jemma O'Hanlon (Hort Innovation).

Conference 4:

GP19 – Royal Australian College of General Practitioners – October 2019

The fourth conference of the program was GP-19, hosted by the Royal Australasian College of General Practitioners (RACGP). This 3-day conference ran from October 24-26, 2019 and was held in Adelaide. Approximately 1600 delegates attended, predominately General Practitioners (GPs), medical educators, registrars, and students. Throughout the duration of the conference, fourteen percent of delegates opted into our health professional email database for future updates. GP-19 was largely a digital conference with exhibitors encouraged to provide collateral digitally as opposed to hard copies. Digital copies of the factsheets and a link to the Health Professional centre website were automatically disseminated to delegates via the conference app. To encourage engagement at the booth, we provided samples of 300 'Almond Brownie Bliss Balls' which proved to be so popular with delegates that the sample only lasted the first day of the conference.



Image 4: The Australian Almonds stand at the GP-19 RACGP conference in Adelaide, October 24-26, 2019. Pictured (L-R): Amy Knight (Nutrition Australia), Lou Martin (Almond Board of Australia).

Conference 5:

Nutrition Society of Australia – December 2019

The fifth conference of the program was the Nutrition Society of Australia (NSA) Annual Scientific Meeting. The 3-day conference was held in Newcastle from Dec 2-5, 2019. Approximately 300 delegates attended, with the majority being Nutritionists and Dietitians. Approximately 300 factsheets were disseminated to health professionals. Throughout the conference 20% of delegates opted into the health professional email list.



Image 5: The Australian Almonds stand at the NSA Annual Scientific Meeting in Newcastle, December 2-5, 2019. Pictured: Emily Fitt (Nutrition Australia).

Health professional resource photoshoot of 4 images for use on collateral

A recipe photo shoot was completed to produce high-quality food imagery for use on client fact sheets.

The original high-resolution images can be accessed at this link:

<https://www.dropbox.com/sh/h7l9po7oqlzclev/AACG9Wf97GfWELdKGiqVwcH6a?dl=0>

Four recipes were developed and shot (image 6 below, pictured L-R):

- Almond butter chicken with rice (featured on the 'Almonds and Diabetes' client fact sheet)
- Almond crusted salmon with kale and fennel salad (featured on the 'Almonds and Heart Health' client fact sheet)
- Creamy cauliflower and almond soup (featured on the 'Almonds and Weight Management' fact sheet)
- Green almond smoothie (featured on the 'Almonds and Good Health' client fact sheet)

These images were also featured in the conference booth artwork for three of the five conferences attended.



Image 6: Recipe images shot for use of health professional fact sheets.

2 webinars

Webinar 1:

The first of two webinars delivered throughout the program was held in May 2019. The webinar was on the topic of Almonds and Heart Health and aimed to provide an update to health professionals on the latest research and practical recommendations. Two expert speakers were selected to present, and a recording was made available for those who could not listen live. Further details and the outcomes of webinar 1 are included as Appendix 18.

Topic: 'Almonds and Heart Health'

Speakers:

Dr. Elizabeth Neale – Advanced Accredited Practising Dietitian, University of Wollongong

Sian Armstrong – Accredited Practising Dietitian, Heart Foundation

Host:

Amy Knight – Accredited Practising Dietitian and Project Officer, Nutrition Australia.

Attendee learning outcomes:

1. Understand the latest research linking nut and almond consumption and the benefits for heart health.
2. Understand the latest evidence and recommendation for dietary fats and associated dietary patterns for heart health.

DATE Wednesday 15 May 2019
TIME 12.30-1.30 pm (AEST)
REGISTER [Click here](#)

**FREE WEBINAR:
ALMONDS & HEART HEALTH**

Proudly brought to you by Nutrition Australia, this webinar will update health and nutrition professionals about the latest research on the benefits of nuts, including almonds for heart health. Our Heart Foundation nutrition expert will talk about the evolution of evidence surrounding dietary fats and dietary patterns and present the current dietary recommendations for heart health.

LEARNING OBJECTIVES

- Understand the latest research linking nut and almond consumption and the benefits for heart health.
- Understand the latest evidence and recommendations for dietary fats and associated dietary patterns for heart health.

Presented By
Dr Elizabeth Neale, University of Wollongong, Accredited Practising Dietitian

Elizabeth's research focuses on the evidence-based framework in nutrition, with a particular focus on systematic reviews and meta-analyses in nutrition. Her research also explores the impact of nut consumption on risk factors for chronic diseases.

Sian Armstrong, National Heart Foundation, Accredited Practising Dietitian

An in depth knowledge of public health, food and nutrition. Sian has worked at the National Heart Foundation for 4 years, where her role involves providing expert nutrition advice both internally. Sian has also worked in clinical dietetics at Peter MacCallum Cancer Centre.

This webinar has been funded by Hort Innovation, using the Almond research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture. The strategic levy investment project Educating Health Professionals (AL16007) is part of the Hort Innovation Almond Fund.

Hort Innovation **ALMOND FUND** **australian almonds** **Nutrition Australia**

Image 7. Digital promotional material for webinar 1 to promote registration by health professionals.

Webinar 2:

Webinar 2 was held in September 2020 with the title 'Australian Almonds: From the orchard to your plate'. Additional investment was made into sending registrants an Australian Almonds tasting kit which contained different varieties of almonds and project related collateral. Further details and the outcomes of webinar 2 are included as Appendix 19.

Topic: 'Australian Almonds: From the Orchard to your Plate'

Speakers:

Brendan Sidhu, CEO Century Orchards and almond grower

Simone Austin, Advanced Sports Dietitian and Australian Almonds ambassador

Host:

Jemma O'Hanlon, Accredited Practising Dietitian and Research & Development Manager at Hort Innovation.

Attendee learning outcomes:

1. Increase understanding of the process of growing almonds in Australia.
2. Increase understanding of culinary uses of whole almonds and value-add products i.e. almond meal, slivered almonds etc.

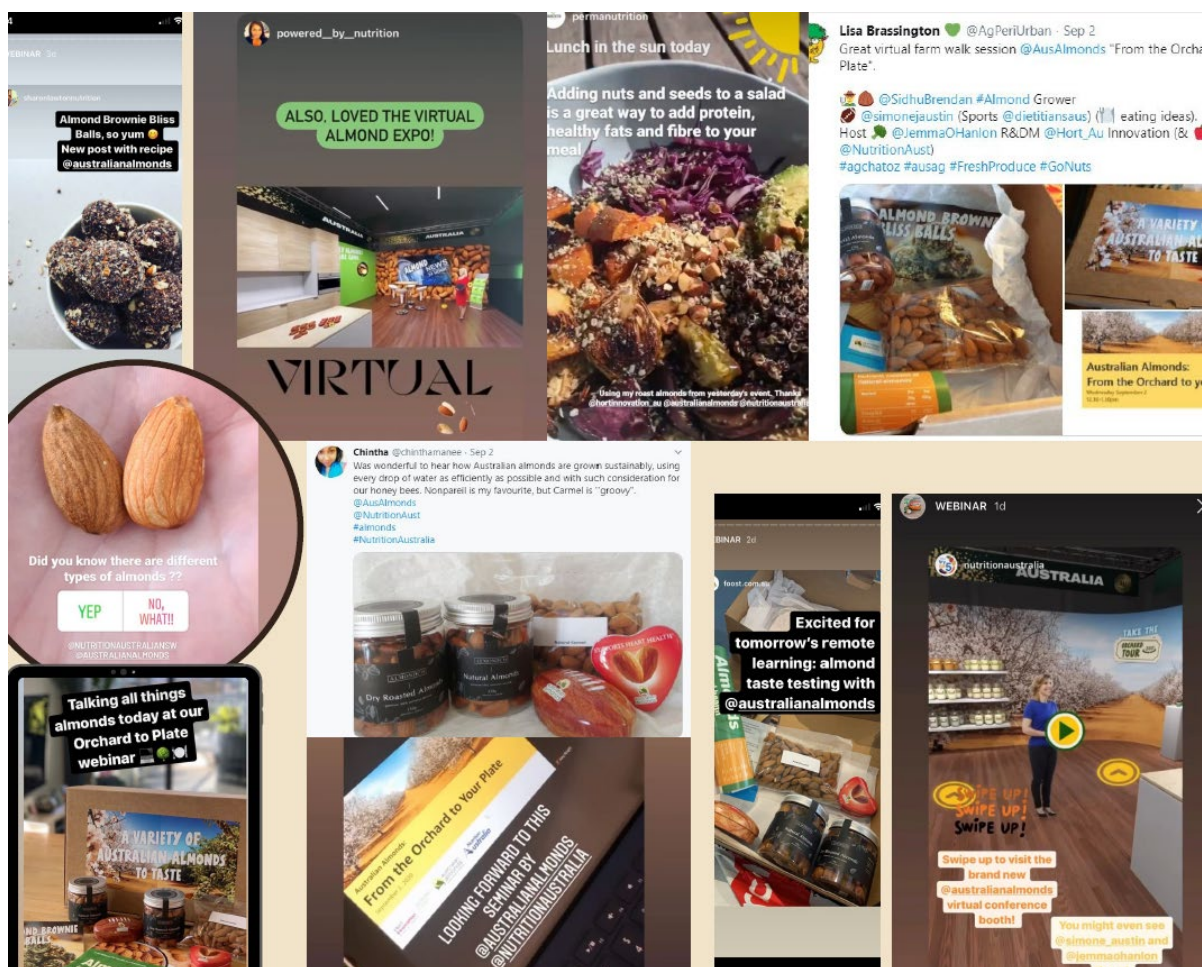


Image 8: Social media highlights shared by attendees of webinar 2.

6 monthly milestone reports

Milestone reports have been submitted in accordance with the timeframes set out in the research agreement.

A final report

This final report has been submitted in accordance with the timeframes set out in the research agreement.

Lifecycle plan outlining ongoing management and maintenance of the website

Nutrition Australia have collaborated with the Almond Board of Australia over the course of the project period to manage the Health Professional section of the Australian Almonds website. The Almond Board of Australia led a website refresh in late 2020, at which point input into the site map was provided to ensure the website was user-friendly and intuitive for health professionals to access.

Following a project variation in October 2020, the following additional outputs were added to the research agreement:

2 day 'Orchard Tour' event in regional Victoria and South Australia

In March 2020, the project team hosted an 'Orchard Tour' event with an invited group of influential nutrition professionals. The group toured almond orchards in Victoria and South Australia, to learn more about the process of growing, harvesting, and processing almonds in Australia. The key purpose of the tour was to facilitate an experiential learning opportunity for influential nutrition professionals on the process of growing almonds, from orchard to table. Furthermore, that attendees become champions of the Australian almond industry and advocate for increased consumer consumption through dissemination of key messages via their social media channels and networks. As part of the event a social media kit was developed (Appendix 20). The purpose of this document was to encourage attendees to post about the event on their social media channels and disseminate key messages of the project. Key outcomes of the 'Orchard Tour' event are included as Appendix 21.



Image 9: Social media highlights posted by attendees of the Orchard Tour event.

Sample packs of almond varieties sent to ~170 attendees of the live webinar 2.

To add an interactive component to webinar 2, all registrants were sent an 'Australian Almonds tasting kit'. These kits included:

- Natural Nonpareil almonds
- Natural Carmel almonds
- Dry roasted Nonpareil almonds
- 'Almond Brownie Bliss Ball' health professional recipe card (Appendix 22)
- 'Almonds for Good Health' health professional factsheet.

The tasting kits were effective in creating social media buzz regarding the event prior. For example, one high-profile attendees made the bliss ball recipe and posted online encouraging their following to try the recipe.



Image 10: Australian Almonds tasting kits sent out to attendees of webinar 2.

Content research for 'Almonds and gut health' theme

Content research was sub-contracted to Nutrition Research Australia (NRAUS) who delivered a literature scope report on the topic of 'Almonds and gut health' which is included in Appendix 23.

Content research for 'Almonds and cognition/mood theme'

Content research was sub-contracted to Nutrition Research Australia (NRAUS) who delivered a literature scope report on the topic of 'Almonds and mood/cognition', which is included in Appendix 23.

Development of ‘State of the Science’ document content

A report titled ‘State of the Science – Document content and recommendations for design and dissemination’ was written by Nutrition Australia and is included as Appendix 24.

Development of Dissemination plan for new collateral and State of the Science document

A dissemination and promotion plan was developed outlining key activities and is included as Appendix 25.

Outcomes

The outcomes of the project are aligned to Outcome 5 in Hort Innovation’s Almond Industry Strategic Investment Plan 2017-2021: Market research and insights to help industry increase domestic almond consumption through possible deliverables such as health research outcomes that link almonds consumption to improved human health communicated to health professionals. Health research outcomes will be based on new Australian research and summaries of the international literature.

To achieve this the project focused on increasing the capacity of health professionals to recommend daily consumption of almonds to their clients. A program logic (Appendix 1) was developed at the commencement of the project as part of the Monitoring and Evaluation plan, to outline the end of project outcome, intermediate outcomes, outputs, and project activities.

The end of project of project and intermediate outcomes are outlined below:

End of project outcome:

The end of project outcome was identified in the project Monitoring and Evaluation plan:

1. Increased capacity of health professionals to recommend almonds to clients as part of a healthy diet.

Intermediate outcomes:

Three key intermediate outcomes were identified in the project Monitoring and Evaluation plan:

1. Increased knowledge of the nutritional profile of almonds amongst health professionals.
2. Greater awareness of latest scientific research on health benefits of almonds for diabetes, heart health, weight management, cognitive function, and exercise recovery.
3. Increased capacity of health professionals to communicate almond nutrition profile to clients.

To achieve increased capacity of health professionals to recommend almonds to their clients as part of a healthy diet, project activities were centered achieving both an increase in knowledge and awareness as shown in Figure 1 below.

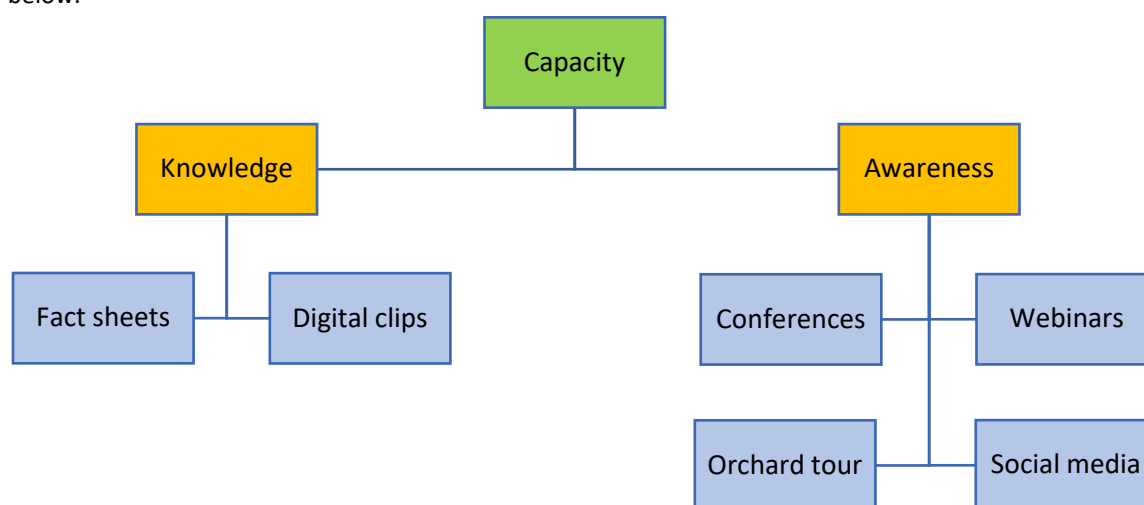


Figure 1: Activities to deliver increased knowledge and awareness, with the overarching aim of increased capacity.

Knowledge

Fact sheets and digital clips

Twelve fact sheets and six digital clips were developed throughout the project with the aim of increasing health professional knowledge of the nutritional profile of almonds and associated health benefits. All fact sheets were housed on the Australian Almond website for health professionals to access. Data on the number of fact sheet downloads was unavailable over the project period, due to website upgrade work being completed by the Almond Board of Australia. Further information regarding the performance of fact sheets is outlined in the Monitoring and Evaluation section.

Awareness

Conferences

The five health professional conferences (Table 3) attended throughout the program aimed to increase health professionals' awareness of the latest scientific research on health benefits of almonds. A combination of medical conferences to target GP's and Practice Nurses, and nutrition conferences to reach Dietitians and Nutritionists were selected.

A combined total of 4350 delegates were reached over the five conferences attended. Eighteen percent of those delegated opted into the Health Professional subscriber database, and fact sheets were disseminated to 71% of delegates.

Table 3: Project conference schedule

Date	Conference	No. of delegates	Percentage of delegate opt-ins to the subscriber database	Approximate no. of facts sheets disseminated
Nov 2018	General Practice Conference & Exhibition (GPCE)	1350	11%	300
Apr 2019	Diabetes Expo	300	18%	100
Aug 2019	Dietitians Association of Australia National Conference	800	35%	800
Oct 2019	GP19 – Royal Australian College of General Practitioners	1600	14%	Disseminated digitally to delegates via conference app
Dec 2019	Nutrition Society of Australia	300	20%	300

Webinar 1

Two webinars were delivered with the aim of increasing awareness among health professionals of the latest scientific evidence regarding the health benefits of almonds.

A total of 253 health professionals registered for webinar 1, with 27% attending the live event. A formative evaluation survey was disseminated to attendees of webinar one, with key insights and learnings used in the development and execution of webinar two. The results of the webinar one evaluation survey showed that

respondents reported an increased awareness of research related to nut/almonds consumption and heart health after attending the webinar, as aligned with the end of project outcome and intermediate outcome 2. When asked about webinar satisfaction, the majority of respondents said they strongly agreed the information was interesting and easy to understand (61%), and that the presenters were engaging and easy to understand (54%). Respondents also reported a preference for both theoretical and practical information:

“Understandable and accessible information presented in a no-nonsense way. A lot of practice points can be taken away.”

“The speakers were very knowledgeable and informative. They gave practical tips and advice to be used by health professionals”.

Orchard Tour

The orchard tour rated highly overall, with eighty percent of attendees rating the tour as excellent and all respondents saying they would recommend the tour. The social media kit was utilised by attendees to disseminate key messages on social media, with a reach of approximately 270,000. Attendees showed further interest in topics such as water usage, bee pollination and almond milk, and so future development of health professional resources on these topics would be valuable.

Webinar 2

Following the success of the Orchard tour event in March 2020, the project team decided that webinar two would be a virtual orchard tour since the option of a second tour was not feasible due to COVID-19. This event was capped at 200 registrations due to the availability of the tasting kits which were mailed out to attendees. A total of 168 professionals registered, with 74% attending the live event which was much higher than webinar 1. A summative evaluation survey was disseminated to attendees of webinar 2. Survey respondents reported an increased awareness of both the process of growing and producing almonds in Australia, and of the culinary uses of both whole almonds and other products. The majority of survey respondents strongly agreed that both the information covered, and presenters were interesting and easy to understand. Respondents reported additional interest in other topics around both the health benefits of almonds, but also the growing process. Overall, the sample almond kits received positive feedback, with important feedback on the sustainability of packaging for future consideration.

Social media

The social media channels Facebook, Instagram and LinkedIn were used throughout the project to promote and disseminate resources and key messages. Social media activity achieved a combined reach of 49,487 people via the Nutrition Australia channels alone. A breakdown of social media activity is included in Appendix 25.

Monitoring and evaluation

Evaluation purpose

The aim of the evaluation was to evaluate the performance and effectiveness of the Educating Health Professionals on Australian Almonds program using a mixed-methods approach.

Evaluation methodology

Evaluation of the program was both formative and summative and involved the use of surveys at various points over the course of the project. Formative evaluation occurred at the first few conferences attended and after the first webinar to inform the development of subsequent materials to maximise Nutrition Australia Vic's ability to achieve the overarching aim. Participant surveys were distributed following the attendance at the webinars and Orchard tour to determine changes in knowledge, satisfaction and recommendations for future almonds related educational opportunities. An end-of-project survey emailed to health professionals subscribed to the project health professional database and promoted on the Australian Almonds website, assessed the extent to which the program was able to achieve its aim; that health professionals are more likely to recommend almonds to their clients as a nutritional solution.

Four key evaluation questions were posed in the Monitoring and Evaluation plan under the themes of effectiveness, relevance, process appropriateness and efficiency, to measure the overall success of the project. To what extent each key evaluation was achieved has been outlined below.

Key evaluation questions (KEQ)

Effectiveness

KEQ 1: Has the program achieved its end of project aims of increased likelihood of health professionals recommending almonds to their clients?

Capacity and likelihood of health professionals to recommend almonds to their clients.

Figure 1 shows a comparison of health professionals' reported likelihood to recommend almonds as part of a healthy diet. Of health professionals surveyed at project commencement in 2018 (n=357), 4% reported they were 'not likely', 45% reported they were 'somewhat likely' and 51% reported they were 'very likely' to recommend almonds as part of a healthy diet. At project conclusion in 2021 there was a positive increase in likelihood to recommend almonds by health professionals surveyed (n=55), 2% reported they were 'not likely', 11% reported they were 'somewhat likely' and 87% reported they were 'very likely' to recommend.

Limitations with this data include differences in the number of survey respondents during 2018 (n=357) compared to the number of respondents in 2021 (n=55). The 2018 survey was disseminated to health professionals face-to-face during the first two conference events of the program, whereas the 2021 survey was disseminated via an email to the project's health professional subscriber database and via the Health Professional section of the Australian Almonds website and therefore it is likely that respondents of the end of project survey were more engaged with the project content compared to conference attendees.

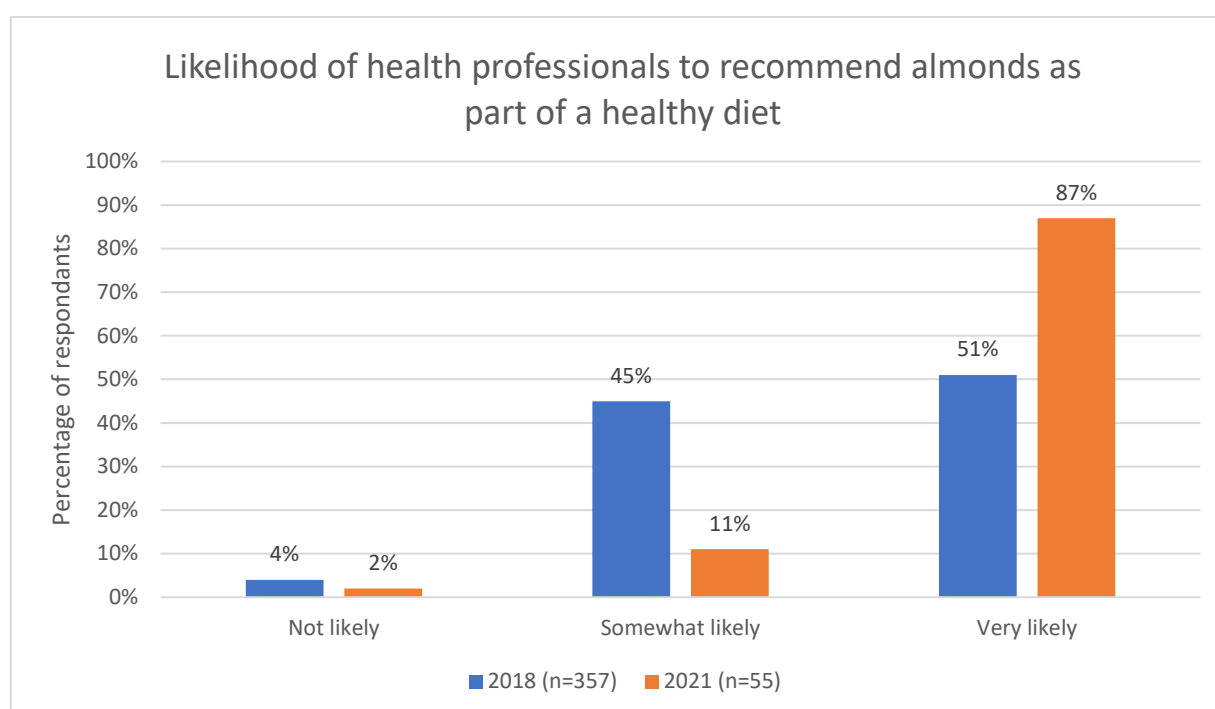


Figure 1: The likelihood of health professionals to recommend almonds as part of a healthy diet to patients and clients at project commencement (2018) compared to at project conclusion (2021).

Change in knowledge and awareness among health professionals about the health benefits of almond consumption.

Figure 2 shows that the majority of end of project respondents (n=55) reported that they ‘agreed’ or ‘strongly agreed’ that their knowledge of the health benefits of almonds increased after accessing the project resources and activities. The content themes with the highest percentage of improved knowledge were the nutritional profile of almonds (58% agree and 35% strongly agree) and heart health (58% agree and 35% strongly agree). A possible reason for this is that the fact sheets and digital clips on these two content themes were developed first allowing more time for dissemination. Furthermore, the ‘Almonds and Heart Health’ was the topic of webinar one.

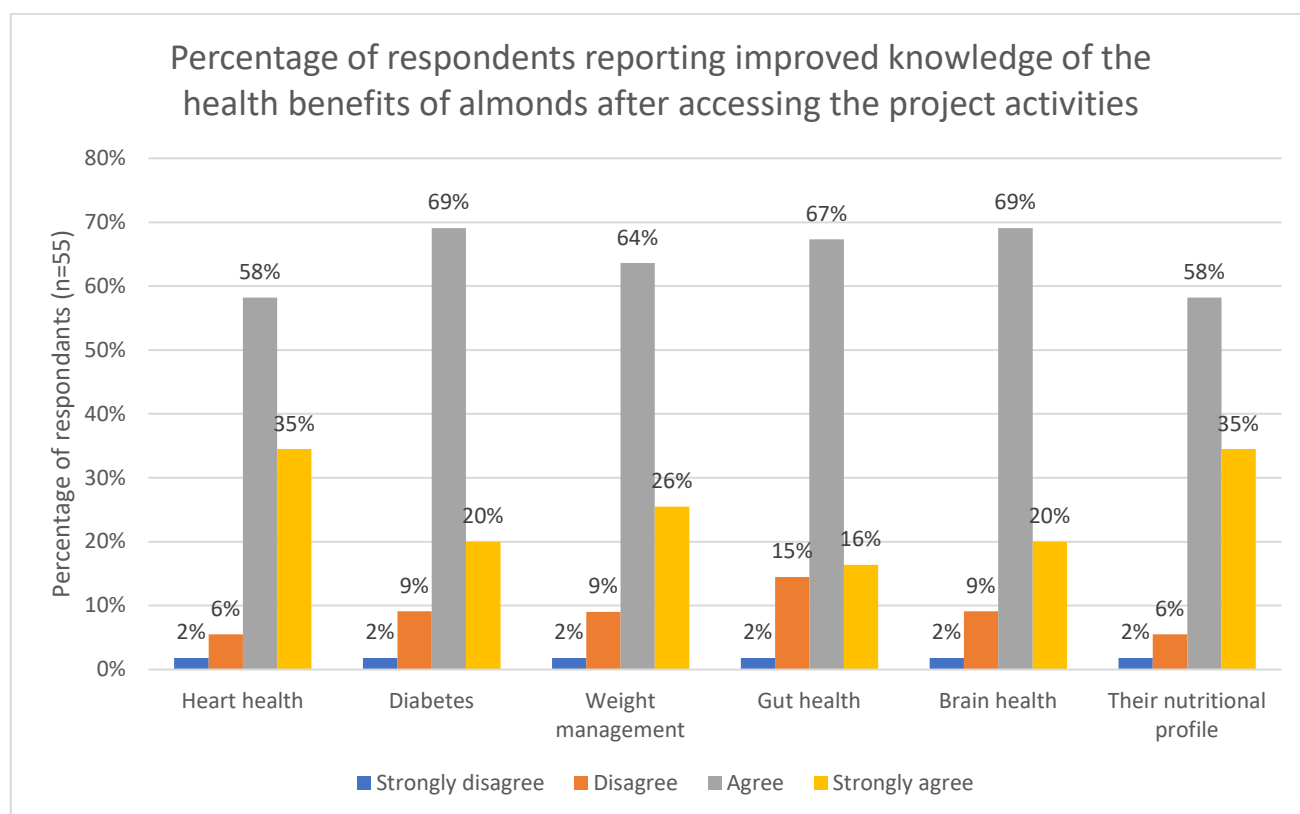


Figure 2: Percentage of respondents reporting improved knowledge of the health benefits of almonds across the six key content themes after accessing the project resources or engaging in project activities.

Relevance

KEQ 2: How can program resources be made more relevant to health professionals?

Relevance of resources for health professionals.

Figure 3 shows that of health professionals surveyed (n=55), 64 percent had accessed the suite of project resources online on the Australian Almonds website. This indicates interest in the key topic areas covered and resources created and disseminated via the website. The key call for action of all dissemination activities was to visit the website. There were 34 percent of respondents who had not accessed the suite of resources via the website. It is likely they engaged with project resources via the conferences, webinars, orchard tour event or social media.

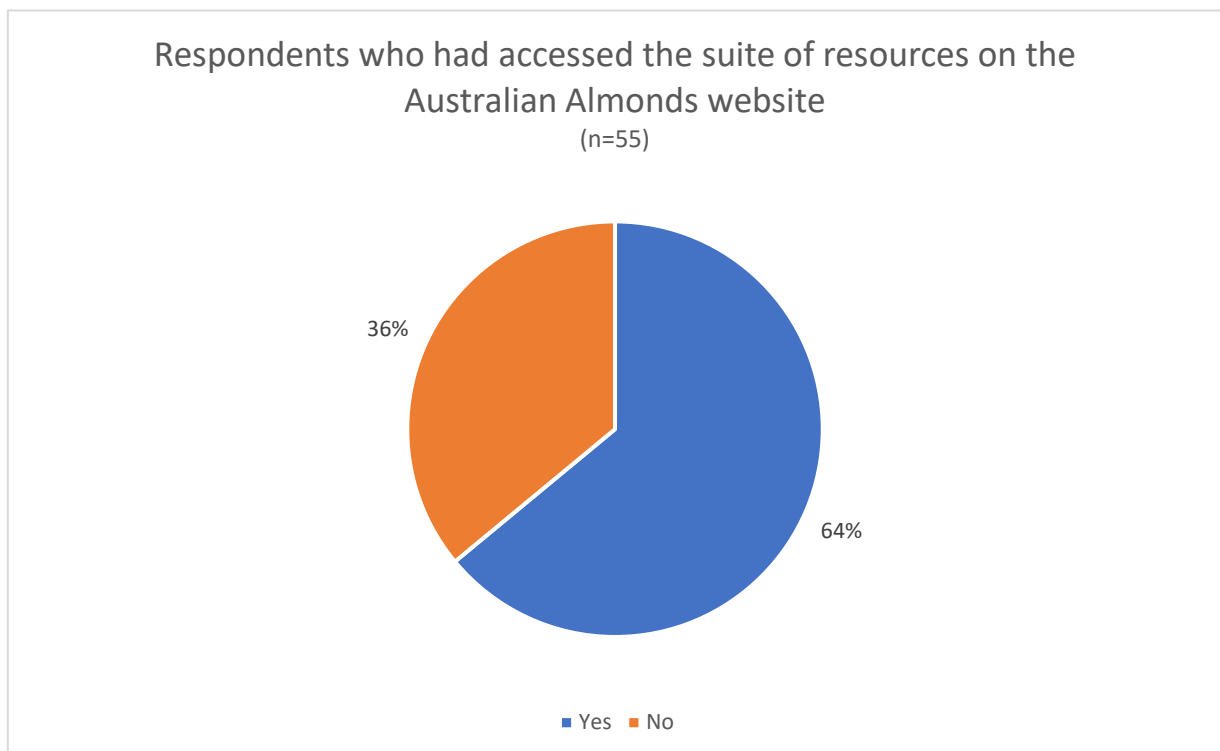


Figure 3: Percentage of respondents who answered 'yes' or 'no' when asked if they had accessed the suite of resources online on the Australian Almonds website.

Figure 4 shows that respondents most commonly (35%) accessed the online suite of resources after attending one of the two webinar events. Conference attendance was the second most common driver of visits to the online suite of resources (24%).

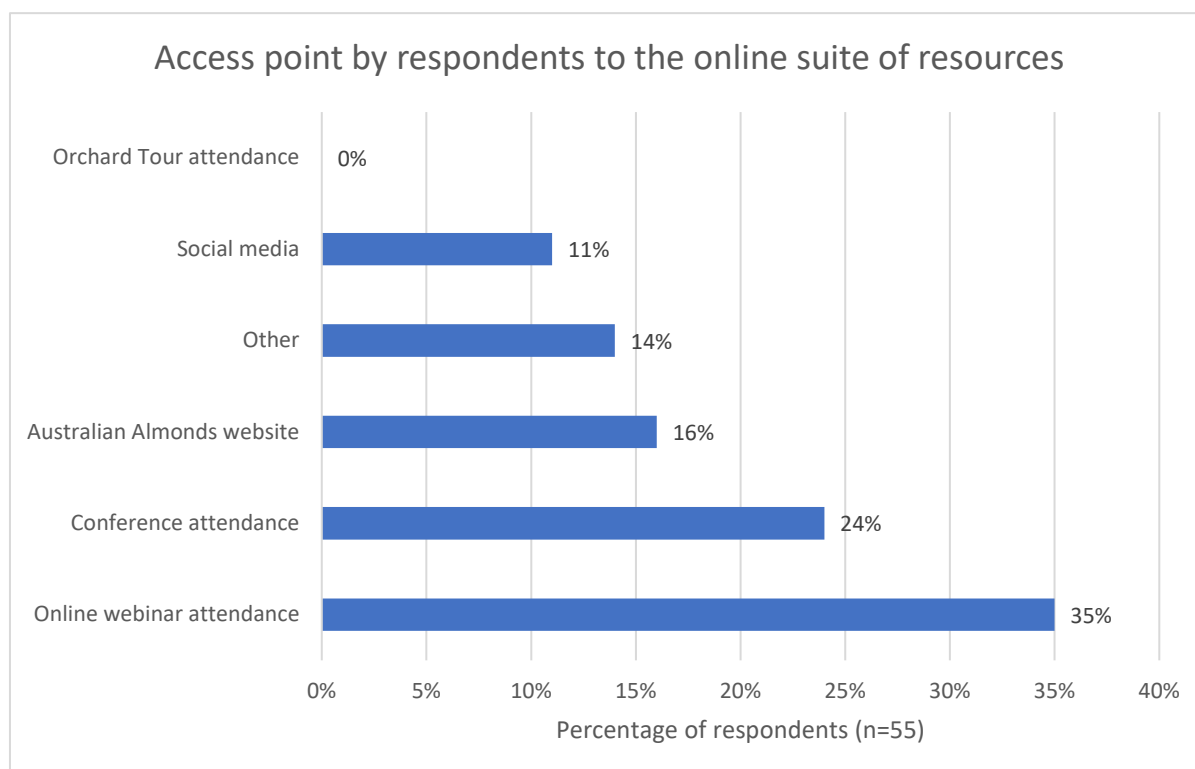


Figure 4: Access point by respondents to the online suite of resources.

Feedback from health professionals

When respondents (n=55) were asked to provide suggestions for resources that could support them in recommending almonds to clients, the most common responses were:

- More recipe content with recipe images
- Pictorial guides on what a 'healthy handful' equates to.
- Continuous updates to the resources online to ensure they are current.
- Basic infographics to complement fact sheet content.
- Access to the sample almond tins for clients.

Throughout the project, health professionals have provided feedback through various project activities regarding topics and themes they have further interest in. These are summarised below in Table 4.

Table 4. Health professional insights regarding topics of interest

Activity	Health professional insights regarding topics of interest
Webinar 1 (n=27)	Diabetes (16%), Weight Management (80%), Cognitive function (72%), Other (12%) which included inflammation, gut health, benefits of whole nuts versus other forms and exercise.
Orchard tour (n=5)	Water usage, bee pollination and almond milk production
Webinar 2 (n=12)	Gut health and microbiome, more information about almond production, bees, pest and disease control, differences in quality and where to purchase best quality product, other almond based products such as almond milk, more recipes and culinary uses.

This user feedback was utilised to inform subsequent resource development throughout the project:

- Following webinar 1 the fact sheets on Diabetes and Weight Management were finalised and disseminated to the project's health professional audience.
- The orchard tour demonstrated that the group of nutrition professionals were interested in content around almond production and on-orchard practices. Following this, the scope of webinar 2 was designed to be a 'virtual' Orchard Tour experience to increase the audience reach of these key messages.
- Following the project variation, four new fact sheets were developed. The topics of Gut Health and Mood & Cognition were chosen based on feedback that health professionals had provided at webinar one and two.

Barriers to recommending almonds to clients experienced by health professionals

When respondents who answered that they do not provide healthy eating information in practice were asked why, the most common responses were that another staff member does this within the practice (50%), or that it is too complicated (17%). No respondents reported that it was due to a lack of time.

Project appropriateness

KEQ 3: Have the program activities been suitable for meeting the end-of-project goals?

Effectiveness of project activities.

At the commencement of the project, health professionals (n=350) were asked what their preferred education modality for conveying food and nutrition messaging to clients was. The top three responses, as shown in Table 5, were printed A4 fact sheet (36%), print-out from digital source e.g. from a USB or from a website (24%), and printed brochure (15%).

Table 5: Health professionals' preferred modes for conveying food and nutrition information to clients

Mode of educational information	Responses (n=350)
Printed A4 fact sheet	36%
Print-out from a digital source (e.g. from a USB or from a website)	24%
Printed brochure	15%
Client script (e.g. a pad with tear off sheets with pre-printed information)	13%
Verbal communication only	7%
Other	5%

These insights were used to inform development of project resources. A total of 12 fact sheets were developed over the course of the project, covering six content themes. Two fact sheets were developed for each theme: one professional development fact sheet for health professionals themselves covering the current scientific evidence, and one shorter fact sheet for health professionals to use as an educational tool with their clients in practice. All fact sheets were housed on the Australian Almonds website in the health professional section and are available for free download. Fact sheets were also printed and disseminated as hard copy at conference events earlier in the program.

Figure 5 demonstrates that the fact sheet and recipe content were the most popular resources shared by health professionals with their clients. The webinars and video clips were less commonly shared by health professionals, however these were developed specifically for health professional education and so not expected to be shared with clients.

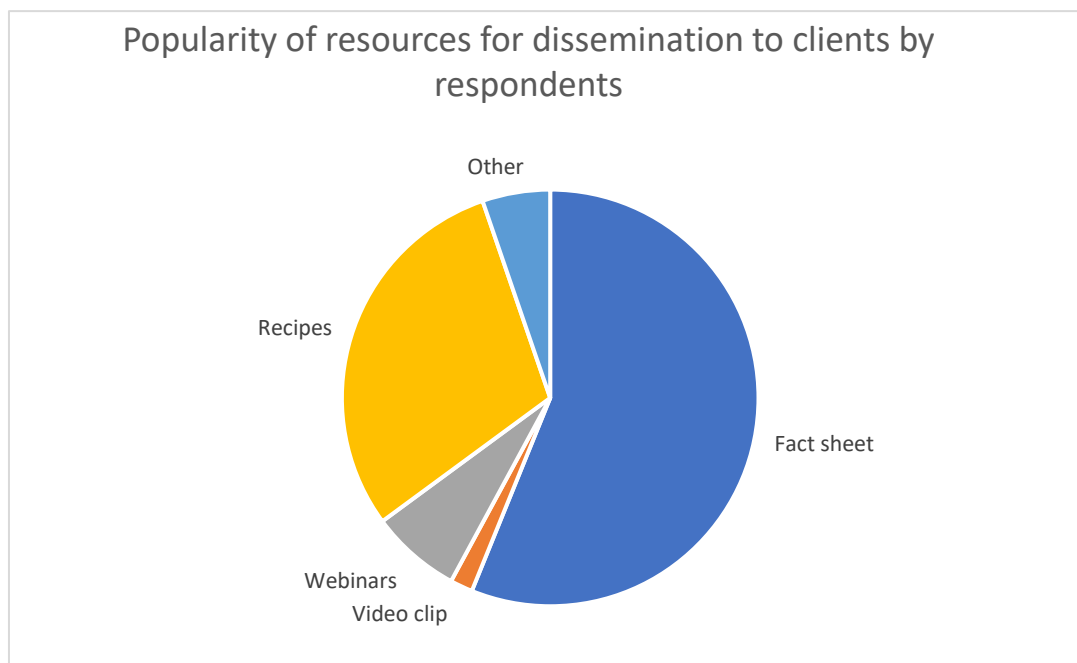


Figure 5: Most common resources provided to clients by respondents.

Level of interest generated from project activities.

The dissemination and promotional activities of the project have generated interest among health professionals. A total of 905 health professionals subscribed following attendance at either the conferences, webinars event or the orchard tour events. This health professional subscriber database has been utilised in the later stages of the project for promotions. Interest from health professionals at webinar or orchard tour events is much greater as they have chosen to engage specifically with the topic and minimum one hour, as compared to a conference booth where they may engage for five minutes.

Efficiency

KEQ 4: Is the project on track to meet end-of-project outcomes and deadlines?

Delivery of the project tracked well against the planned activities, and monitoring and evaluation occurring right the way through to ensure the end of project outcome was being met.

Delivery of project to agreed timelines:

The scope of outputs and timeframe of the project did change significantly within the second half of the project period. The main reason for this was the onset of the COVID-19 pandemic in March 2020. Unfortunately, due to the restrictions associated with COVID-19 all remaining face to face events were cancelled indefinitely. This included three health professional conferences which were scheduled between March and June of 2020. Once it became clear that it was highly unlikely these events could be rescheduled within the project period, the project team began discussions around the best reinvestment of funds to still drive a high return. The project team undertook a project variation to both reallocate remaining funds towards new outputs and extend the project period by six months to facilitate the delivery of these new outputs. This variation was approved by Hort Innovation in October 2020. Project outputs have been delivered in line with this version of the research agreement.

The additional outputs agreed to as part of the project variation were:

- 2 day 'Orchard Tour' event in regional Victoria and South Australia
- Sample packs of almond varieties sent to ~170 attendees of the live webinar 2.
- Content research for 'Almonds and gut health' theme
- Content research for 'Almonds and cognition/mood theme'
- Development of 'State of the Science' document content
- Development of Dissemination plan for new collateral and State of the Science document
- 1 eDM, 2 social media posts (1 on gut health, 1 on mood/cognition) and sharing of resources with influential health professionals to disseminate new resources.

Promotional interest generated by project activities:

The project team utilised the Nutrition Australia social media channels to disseminate project resources and key messages over the life of the project. Table 6 shows a summary the number of posts and audience reach achieved by each channel.

Table 6. Nutrition Australia social media channel reach over the duration of the project.

Channel	Number of posts of campaigns	Reach
Facebook	12	27,697
Instagram	13	21,801
LinkedIn	5	6,073
Electronic direct mail (eDM)	5	1,357

Social media promotions mostly relied on organic reach as there was minimal budget allocated for paid social media advertising. It is challenging to engage medical professionals (GP's and Practice Nurses) on social media as this group is less engaged. Conversely Dietitians and Nutritionists generally have more of a presence on social media.

Recommendations

A number of key learnings and recommendations have arisen from the delivery of the 'Educating Health Professionals' program. These have been outlined below.

Online hub to house resources and information should be continued.

The online hub of resources has proven to be an effective central location for health professionals to access the suite of project resources. Future programs should incorporate reviews and maintenance of this, to ensure the website is intuitive and easy for health professionals to use. The importance of this was even further highlighted following COVID-19 and the cancellation of all face-to-face events. The online hub is an important 'one-stop shop' for health professionals, housing the current and emerging scientific evidence and resources.

Split target audience into two sub-groups, medical professionals and nutrition professionals and design project methodology accordingly.

A key learning from this project is that individual project activities will not necessarily suit both medical professionals (GP's and Practice Nurses) and nutrition professionals (Dietitians and Nutritionists).

Medical professionals were the most engaged with the face-to-face conference events and less engaged via social media. Nutrition professionals were engaged on social media, webinars and orchard tour. Medical professionals are more challenging to engage via social media. Future iterations of the program should consider allocation of funds toward paid advertising specifically to medical professionals (i.e. paid advertising through RACGP or similar organisation).

Interactive online events are effective in achieving project outcomes, and more cost effective than face to face events.

Evaluation showed that majority of health professionals found out about the suite of resources via the two online webinar events. The webinars were effective in increasing health professional knowledge and awareness. Furthermore, the group of health professionals are more engaged during a webinar that they have chosen to attend, as opposed to a conference event where there are many exhibitors. Webinars are also far more cost effective compared to conference events and are able to reach health professionals in many locations. Additionally, it is a project risk to outlay funds for a conference that may or may not go ahead due to COVID-19 restrictions. Online events do not carry this risk.

Professional development points for online events

Offering professional development points as an incentive for participating in online webinar events is not as effective as offering an interactive component i.e. an almond tasting kit. To be eligible to provide professional development points to GP's a complex review process is required which is at a fee. The requirements around professional development for Australian Dietitians have changed in the last 12 months whereby undertaking professional development that is assessed is not a critical requirement.

Future 'Orchard to Plate' events for nutrition professionals

The Orchard Tour and 'Orchard to Plate' webinar were popular and effective in disseminating key messages among nutrition professionals. Following the social media coverage of the Orchard Tour, several nutrition professionals reached out to express interest in future events. The online webinar version was also effective in reaching a larger audience.

Trial the 'Orchard to Plate' online event with an audience of medical professionals.

The 'Orchard to Plate' webinar was successful with the audience of nutrition professionals. The project team would recommend tailoring a version of this webinar for medical professionals and promoting the event specifically to this

audience. The outcomes of this activity could then be used to inform whether an in-person Orchard Tour event for medical professionals would yield a strong return on investment.

Refereed scientific publications

None to report.

Intellectual property, commercialisation and confidentiality

No project IP, project outputs, commercialisation or confidentiality issues to report.

AL16007 Educating Health Professionals Project

Monitoring and Evaluation Plan

Overview

This document outlines an evaluation plan for the Nutrition Australia Vic Division's (NA Vic) AL16007 Educating Health Professionals Project. The program develops educational material directed at health professionals to provide up-to-date information about the health benefits of almond consumption. The overarching aim that the project will contribute to is to influence almond consumption amongst consumers via health professional recommendations of almonds as a nutritious and healthy food source. To achieve this overall aim, the project focusses on increasing the capacity of health professionals to recommend almonds to their clients. The program will equip health professionals with information about almond nutrition, the evidence to support this information and resources to assist them in communicating this information to clients.

The project will involve the production of a digital learning centre housed on the Australian Almonds website. The digital learning centre will disseminate information sheets related to almond nutrition that are suitable to give to clients, educational videos for health professionals, and will host two webinars. Project staff from NA Vic will promote the digital learning centre over a two-year period at eight conferences around Australia that are attended by the target populations. These target populations include nutritionists, dietitians, diabetes educators, practice nurses, general practitioners, and other relevant public health practitioners.

Evaluation of the program will be both formative and summative and will involve the use of surveys at various points over the course of the project. Formative evaluation will occur at the first few conferences attended and after the first webinar. A **conference survey** will investigate the needs of health professionals when making food recommendations to clients, while a **post-webinar survey** will monitor change in health professionals' knowledge about almond nutrition. These surveys will inform the development of subsequent materials to maximise NA Vic's ability to achieve the overarching aim of increased recommendations of almonds by health professionals. An **end-of-project survey** sent to health professionals by email will assess the extent to which the program was able to achieve its aims.

1 Program Logic

Hort Innovation's project logic level hierarchy is represented in the program logic model provided in Fig. 1 (pg. 4), with the dotted lines representing a 'line of accountability'¹. The outcome 'above the line' relates to the overall outcome that the program is expected to contribute to. The outcomes represented 'below the line' indicate the specific outcomes that NA Vic will be responsible for.

Above-the-line outcome

The AL16007 Educating Health Professionals Project falls under outcome 5 of Hort Innovation's Strategic Investment Plan (SIP) 2017-2021 which is to promote research linking almond consumption and health to health professionals as a way of increasing domestic almond consumption.

Below-the-line outcomes

The main **end-of-project outcome** that NA Vic will be responsible is that health professionals are more likely to recommend almonds to their clients as a healthy food option. To achieve this overall aim, NA Vic aims to address the **intermediate outcomes** by first, delivering education to health professionals so that they are up to date on the latest research on the health properties of almonds; second, to build health professionals' capacity to communicate almond health benefits to their clients through the provision of supporting resources.

The rationale underpinning the provision of education as a way of boosting demand for almonds is based on two assumptions:

1. That health professionals who are knowledgeable of the latest research on the health benefits of almonds will be more likely to recommend almonds to their clients as part of a healthy diet
2. That Australians trust health professionals²

Activities and outputs

The **foundational activities** that NA Vic has carried out include the following:

- A literature review of evidence for health benefits of almond consumption.
- SWOT analysis identifying relevant opportunities for program.
- Development of Monitoring and Evaluation plan

¹ Hort Innovation Project Monitoring & Evaluation Planning – template and guide, p. 11

² Hardie, E.A. and Critchley, C.R., 2008. Public perceptions of Australia's doctors, hospitals and health care systems. *Medical Journal of Australia*, 189(4), pp.210-214.

- Development of communication strategy
- Risk register

These foundational activities inform the program's planning and development **activities** that include:

- Identification of relevant conferences where target populations can be engaged
- Identification of other avenues for communication with target populations
- Development of educational materials based on recent research
- Fine-tuning of resources based on formative evaluation
- Dissemination of materials through conferences and other channels

The outputs of the program will include the following:

Digital learning centre

An online resource centre will be developed to house the materials developed as part of this program. This will sit on the Australian Almonds website.

Conferences

The project team will identify eight relevant conferences where the team will man a promotional booth to promote the digital learning centre and associated materials. Conference attendees will be given sample packets of almonds, printed information sheets also promoting the digital learning centre and Australian Almonds branded USBs that will contain digital files of the information sheets and videos.

Information sheets

Up to twelve information sheets pertaining to almonds and the nutritional needs of different client groups will be developed. It is anticipated that some of these will deal with the health benefits of almonds overall, and others will address specific nutritional requirement for clients with particular health needs (e.g. heart health, diabetes, weight management). The information sheets will be designed as a resource that health professionals can draw on to give to their clients, highlighting the nutrition-related information relevant to them. These will be rolled out gradually.

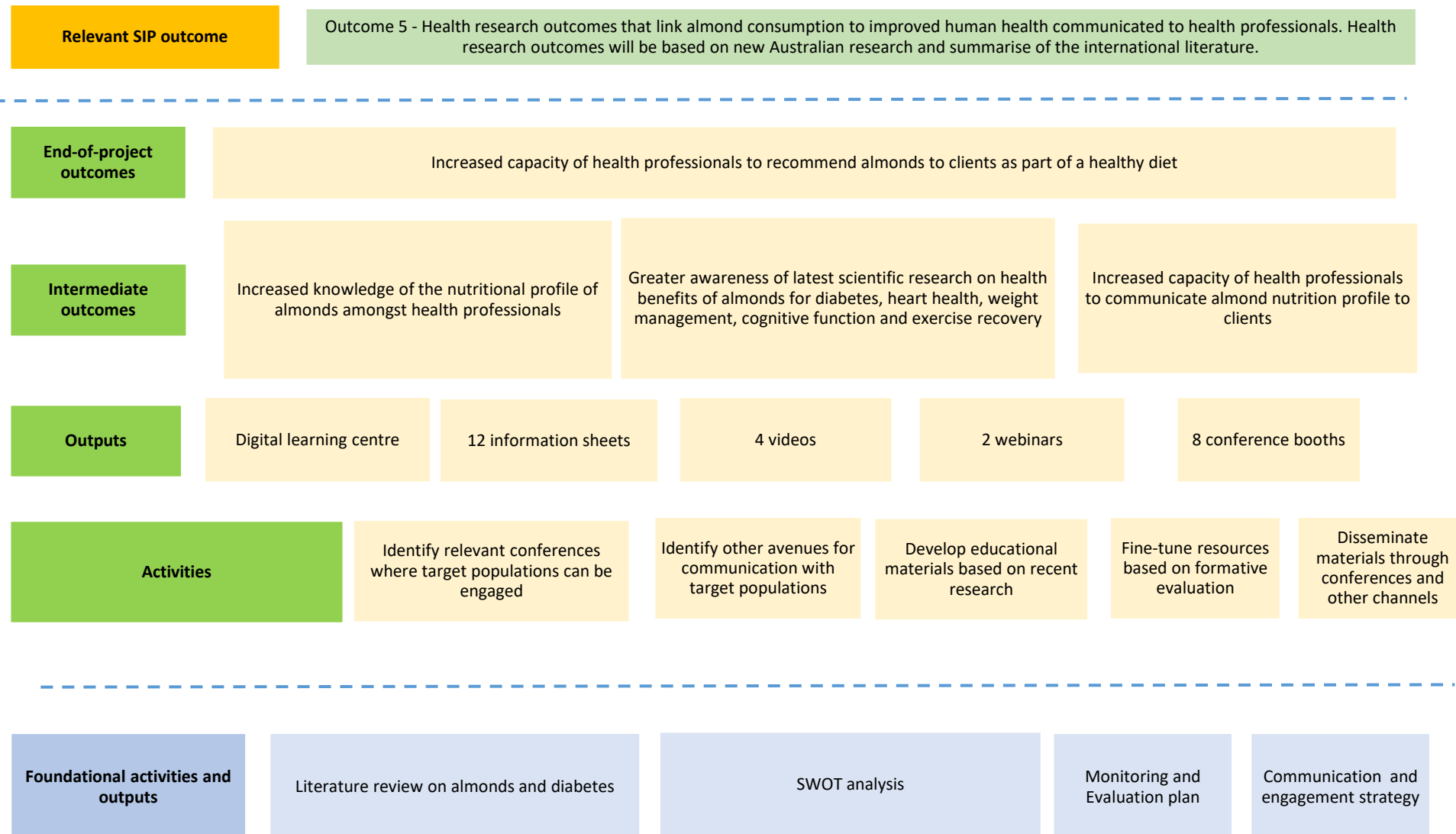
Educational video clips

Four short educational video clips of under two minutes each will be developed to disseminate up-to-date information about the health benefits of almond consumption. The videos will sit on the website as a strategy for health professionals to quickly get on top of the latest information and share the clips with their clients.

Webinars

Two webinars will be developed around the nutritional benefits of almonds that fulfil health professionals' requirements for professional development.

Figure 1 Logic model for project



2 Project monitoring and evaluation scope

2.1 Audience

TABLE 1 MONITORING AND EVALUATION AUDIENCE AND THEIR INFORMATION NEEDS

Audience	Information needed
PRIMARY	
NA Vic project team	- What are the needs of target populations in relation to their capacity to recommend almonds to clients - Whether target audience is engaging with the program material as intended - Whether the program has met the end-of-project outcomes of increased likelihood of health professionals recommending almonds to their clients - What can be improved on in future programs aimed at health professionals
Hort Innovation	- Whether the program has met the end-of-project outcomes of increased likelihood of health professionals recommending almonds to their clients - What can be improved on in future programs aimed at health professionals
SECONDARY	
N/A	

2.2 Key evaluation questions

TABLE 2 PROJECT KEY EVALUATION QUESTIONS

Key evaluation questions	Relevant?	Project-specific questions
Effectiveness	✓	
Has the program achieved its end-of-project aims of increased likelihood of health professionals recommending almonds to their clients? (Summative)		To what extent has the program led to improved knowledge/awareness among health professionals about the health benefits of almond consumption? In particular: - Almonds and heart health - Almonds and diabetes - Almonds and healthy weight - Almonds and exercise recovery - Almonds and cognitive function To what extent has the program led to improved knowledge of the nutrition profile of almonds? To what extent has the program been successful in supporting health professionals to recommend almonds to their clients?

		To what extent has the program led to more health professionals recommending almonds to their clients more often?
Relevance	✓	
How can program resources be made more relevant to health professionals? (Formative)		How can program resources maximise health professionals' likelihood to recommend almonds to clients? How can resources fill a gap in what currently exists to support health professionals in recommending almonds to clients? What difficulties, if any, do health professionals face in recommending almonds to their clients?
Process appropriateness	✓	
Have the program activities been suitable for meeting the end-of-project goals? (Formative and summative)		To what extent are the program activities such as conference attendance and communication strategies successful in generating interest from health professionals? To what extent has the format of activities (e.g. webinar) contributed to increased knowledge about almond nutrition amongst health professionals?
Efficiency	✓	
Is the project on track to meet its end-of-project outcomes and deadlines?		Is the material being rolled out according to the planned timelines? Have the promotional activities generated the interest expected?
Other (if any)		
N/A		

3 Performance expectations, data collection and analysis

The NA Vic project team will collect data to monitor activities, outputs, intermediate outcomes and end-of project outcomes. An overview of the monitoring plan is provided in Table 3.

Table 3: Project Monitoring Plan

Logic level	What to monitor	Performance expectation (KPIs) and /or monitoring questions	Data collection method and source	Timing of, and responsibility for, data collection ³
Foundational activities/outputs	N/A			
Activities	Development of resources	Are program materials being rolled out as planned?	Monitoring timelines	Ongoing
Outputs	Information sheets, videos, webinar, conference handouts	Are the target populations engaging with program materials? Are the program materials being developed in a way that addresses needs of health professionals?	Monitoring number of kits handed out at conference; website statistics (e.g. visits, downloads, views) after key promotional activities; registrations for webinars. Conference survey investigating health professionals' needs when making nutritional recommendations. Via in-person electronic questionnaire using iPads at first two conferences attended.	Website monitoring at regular intervals e.g. after promotional activity. GPCE Conference - Nov 2018 Second conference (early 2019)

³ The NA Vic project team will be responsible for all these activities.

Logic level	What to monitor	Performance expectation (KPIs) and /or monitoring questions	Data collection method and source	Timing of, and responsibility for, data collection ³
Intermediate outcomes	Changes in health professional knowledge, awareness and capacity.	Has health professional knowledge of almond nutritional profile increased? Has health professional awareness of latest research on almond benefits for diabetes, heart health, weight management, cognitive function and exercise recovery increased? Has health professionals' capacity to convey almond nutritional information to clients increased?	Post-webinar survey testing knowledge of almond nutrition and awareness of latest research. Via online questionnaire administered to all participants of webinars. End-of-project survey evaluating change in health professional knowledge, awareness and capacity to convey information to clients. Online questionnaire emailed to networks.	Survey after first webinar scheduled for February 2019. Survey after second webinar scheduled for early 2020. Survey on completion of project, scheduled for mid to late 2020.
End-of-project outcomes	Capacity of health professionals to recommend almonds to clients as part of a healthy diet.	Has health professionals' capacity to recommend almonds to clients as part of healthy diet increased?	End-of-project survey of health professional change of practice in recommending almonds to clients.	Survey on completion of project, scheduled for mid/late 2020.

Explanation of data collection and analysis

Conference survey

The conference survey will collect information about health professionals' practice around food recommendations, resources they draw on to convey nutritional information to clients, and attitudes towards recommending almonds. This will allow the project team to ensure that the program materials are addressing the needs of health professionals. It will inform the project team on how to develop subsequent materials in a way that increases their relevance to the target populations.

The number of conferences where data is collected will depend on the number of conferences that fall within the time frame before the development of the second batch of materials.

Attendees at the conferences who provide nutritional information or make food recommendations to clients will be invited to participate in the survey. Participants will fill out the survey on the spot with an iPad provided by the project team. The conference survey will also be an opportunity for the project team to collect contact details so that health professionals can stay in touch with the program. These details will be stored separately from questionnaire responses.

Incentives to participate will include going into a draw to win a prize.

Post-webinar survey

Participants in the webinars will fill in a questionnaire on completion of the webinar. These questionnaires will include a test of knowledge based on content of the webinars (to meet the requirements for professional development credit), as well as feedback on the effectiveness of the webinars in conveying the program's key messages. The webinar surveys will provide evidence of the target population acquiring the knowledge that the program has been designed to convey. The first webinar survey will provide formative evaluation that will directly inform the development of the subsequent webinar, while the second webinar survey will provide summative evaluation that will be useful for the development of future programs.

With consent, the details of webinar participants will be stored so that they can be invited to participate in the final survey.

End-of-project survey

The end-of-project survey will be an online questionnaire emailed to health professionals and advertised on the digital learning centre website. An incentive will be provided such as a competition draw to maximise participation. The questionnaire will evaluate the success of the program in achieving its aims of increasing health professionals' knowledge of almond nutrition, increasing their capacity to convey this information to clients, and increasing the likelihood of health professionals recommending almonds to clients.

4 Evaluation

Table 4: Additional evaluation data requirements

KEQ	Data collection requirement	Source and method
Is project on track to meet end-of-project outcomes and deadlines? (Formative)	No additional data required	
How can program resources be made more relevant to health professionals? (Formative)	No additional data required	
Have the program activities been suitable for meeting the end-of-project goals? (Formative and summative)	No additional data required	
Has the program achieved its end-of-project aims of increased likelihood of health professionals recommending almonds to their clients? (Summative)	No additional data required	

While it is not anticipated that formal ethics approval will be required for this evaluation, approval will be sought and obtained if necessary.

Data collection, storage, analysis and dissemination will be conducted in accordance with the National Health and Medical Research Council's (NHMRC) guidelines for human

research⁴. Participants will be fully informed about the uses to which the information they will provide will be put. Consent for participation in the online questionnaires will be assumed by submission of the questionnaire. Participation will be voluntary, anonymous and confidential. Contact details collected during the program will be stored separately from survey responses.

⁴ NHMRC, 2015. *National statement on ethical conduct in human research*. Available online: https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72_national_statement_may_2015_150514_a.pdf

Appendix 2: Project risk register and SWOT analysis (page 54)

The risk What could happen?	Potential causes / sources What could happen? What would cause it?	Potential impacts How would the risk impact on delivery of project?	Controls What controls are in place, or will be in place to manage the risk	Likelihood with controls in place From <i>Risk likelihood Scale</i>	Consequence with controls in place From <i>Risk Consequence Scale</i>	Treated risk assessment From <i>Risk Assessment Matrix</i>	Risk evaluation Could you defend this level of risk is acceptable? Yes/No	Responsible person Who is the person(s) responsible for monitoring and managing the risk?
Ineffective stakeholder engagement	Not consulting with key stakeholders who have a vested interest in the project on project strategy and activities.	Outputs of the project do not meet the aim and objectives and affect the quality of what is produced.	Set-up of project reference group with relevant key stakeholders and regular engagement throughout the life of the project.	Remote	Moderate	Low	Yes	Project Manager - Beth Scholes Project Coordinator - Aranya Changkaoprom
Loss of key project personnel	Resignation or inability to continue project work as contractor	New staff / consultants will need to be sourced and trained Disruption to workloads/program plans, loss of key knowledge and/or expertise, financial impact to recruit replacement (time and cost) Loss of key senior nutrition/dietetics knowledge and expertise, impact to project workloads and project plans, potential to affect established key relationships with stakeholders	Project team trained in multiple skills; regular project meetings to share information, central storage, handover plans developed, succession plans in place, opportunities for professional development.	Possible	Minor	Medium	Yes	Project Manager - Beth Scholes

The educational resources developed (factsheets, digital clips, webinars) are not useful / valuable to the target audience.	The content and/or usability of the resources do not meet the needs of the target audience – either by being irrelevant or by being presented in a manner that is not suitable (or easily received) by the target audience.	The resources are not viewed as useful, resulting in low engagement with the resources amongst the target audience, and ultimately – low usage/reach.	Feedback process developed where content is reviewed by different stakeholders (internal and external) who bring relevant expertise and knowledge of the target audience and subject matter. Communications agency contracted who also have prior significant experience engaging with target audience.	Remote	Moderate	Low	Yes	Project Manager - Beth Scholes Project Coordinator - Aranya Changkaoprom
Conferences exhibited do not have attendees in line with the target audience for the project.	The conference organisers advertise the conference to have attendees which include the target audience.	Decreased reach of key messages.	Comprehensive communication completed with conference organisers to obtain reports from past conferences on attendee numbers and profession type.	Possible	Moderate	High	Yes	Project Coordinator - Aranya Changkaoprom
Low uptake for conference survey (evaluation activity)	The survey is too cumbersome for conference attendees to complete or there is not enough of an incentive for them to complete it.	Inability to measure impact of project and achievement of aim and objectives.	Engagement with experienced personnel to create a realistic monitoring and evaluation plan and practical supporting evaluation tools. Use allocated funding for prizes/incentives for target audience to complete survey/evaluation tools	Likely	Minor	Medium	Yes	Project Coordinator - Aranya Changkaoprom

Literature review on diabetes is not an accurate summary of the latest research.	As the review is not a systematic review but a qualitative literature review that has not performed a meta-analyses of the results. Therefore conclusions are based on the writers interpretation.	Inaccuracy of key messages used to inform educational resources therefore misinforming the target audience.	Use of experienced researcher or personnel to conduct the literature review. Particularly who can appraise literature objectively without using the full comprehensive process of a systematic review.	Unlikely	Minor	Medium	Yes	Project Coordinator - Aranya Changkaoprom
Dissemination of educational resources via digital methods (e.g. e-newsletters) does not reach the target audience.	Misuse of promotional channels (wrong email database used).	Decreased reach of key messages to correct target audience resulting in low reach and impact.	Engagement with experienced personnel to conduct communication activities via a Communications agency with significant experience engaging with our target audience.	Unlikely	Minor	Medium	Yes	Project Coordinator - Aranya Changkaoprom
Web content on health professional webpage not engaging.	Content written by Communications agency is not engaging or clear.	Decreased reach of key messages to correct target audience resulting in low reach and impact.	Support from experienced personnel Communications agency with experience engaging with target audience to assist with writing engaging copy for webpage.	Unlikely	Insignificant	Low	Yes	Project Coordinator - Aranya Changkaoprom

Evaluation does not measure against the project objectives accurately.	The correct evaluation methods and tools are not used.	Data collected does not clearly capture project results and therefore affects final report and recommendations.	Engagement with experienced project personnel e.g. Evaluation Coordinator and development of program logic and monitoring and evaluation plan.	Remote	Minor	Low	Yes	Project Coordinator - Aranya Changkaoprom
Security, confidentiality or privacy breach of information.	Hacker, virus or staff member / contractor leaks information	Legal consequences, reputational damage. Sharing with other NFP similar to NA	NA Vic will monitor the content submissions, and discuss with VISA to ensure acceptable growth	Unlikely	Moderate	Medium	Yes	CEO - Lucinda Hancock Legal Administration
Injury or fatality in the workplace / on the job	Unsafe workplace	Injured/deceased staff member Workers Comp Claim Loss of productivity	Insurance. Emergency management protocols Food safety Supervisor Test and Tag OH&S coordinator, audit once per year	Remote	Moderate	Low	Yes	CEO - Lucinda Hancock Administration
Unavailability of key IT systems	Server disruption	Disruption to work, unable to access key information to inform work Impact to continuity of operations, meet KPIs. Financial impacts through lost time, missed KPIs,	All key documents stored on file server that is backed up regularly off site. Back up occurs twice a day, files are taken offsite weekly. Appropriate off site backup strategies need to be in place and cover all. Important data should not be stored in locations that are not part of this	Unlikely	Catastrophic	High	Yes	Administration IT

Lack of budgetary control and financial planning	Financial support unavailable	Poor cash flow and credit control, inability to meet commitments. Insolvency.	Timely and accurate reporting to Victorian Board, budgets are linked to project plans and projections, adequate skill base through finance contractors and	Unlikely	Moderate	Medium	Yes	CEO - Lucinda Hancock Treasurer Deloitte Managers Bookkeeper
Inadequate handover and cover for staff leave	Organsational human resourcing inadequate	Loss of reputation, loss of business, inability to deliver, reduced capacity, extra workload for others,	Human resource forecasting/planning for future to avoid impact to other staff. Handover documents and meetings completed in advance.	Remote	MInor	Low	Yes	CEO - Lucinda Hancock
Disaster management	Natural disaster	Impact to continuity of operations. Financial impacts, loss of data/documents, loss of equipment.	Contingency / DRP plans including how to prepare for and respond to a disaster (in progress), to include ensuring backups and planning for alternative working arrangements. Response includes evacuation and emergency planning. Insurance. Process of internal controls and audit. Current OH&S	Remote	MInor	Low	Yes	Administration
Staff member feels discriminated against	Organsational human resourcing inadequate	FWA Complaint	We have an EEO policy in place	Remote	MInor	Low	Yes	CEO - Lucinda Hancock Administration

Poor performance of staff	Organisational human resourcing inadequate	Time it takes to recruit someone Poor quality candidate Time wasted on training and developing Risk to the organisations brand and reputation in the market Low morale Gossip Time consuming Unregistered employee Lacks accreditation Civil litigation	Template for Job Descriptions for staff, consultants and volunteers Performance plans for staff and performance management for consultants and volunteers Regular informal catch ups to discuss workload and output Annual formal reviews Professional indemnity insurance Performance management Processes are addressed in HR P and P	Possible	Major	High	Yes	CEO - Lucinda Hancock Human resources
Cyber crime - hacking, loss of funds through email scams, data theft.	Inadequate IT system	Financial loss, privacy issues - reputational, loss of work, corruption, impede on future opportunities	Presentation on cybercrime to staff Administration to have further conversations with IT. Upgrade of antivirus software.	Unlikely	Moderate	Medium	Yes	Administration IT

AL16007 Educating Health Professionals – SWOT analysis

Educating health professionals on the health benefits of almond consumption	
Strengths	- Almonds are an excellent addition to the diet because they¹: - Are a rich source of healthy fats (predominantly monounsaturated and low proportion of saturated fat) and cholesterol free. - Are an excellent source of natural vitamin E - Contain natural plant sterols - Are a source of plant protein - Reduce oxidative stress - Have anti-inflammatory effects - Improve blood glucose control - Are a source of dietary fibre – beneficial for digestive health - Almonds contribute to improving heart health as part of a healthy diet. This is seen through the reduction of three measurements related to heart health (total cholesterol, LDL cholesterol and LDL cholesterol: HDL cholesterol ratio)². - Consumed as part of a healthy diet has resulted in weight reduction overall as well as reduced BMI and waist circumference². - Health professionals are inclined to promote nutrient dense foods to their clients that would assist with preventing cardiovascular disease - Almonds are a versatile nut and can consumed as a snack (convenient and portable) or used in different forms in all types of cooking; flakes or slivers in bircher muesli, almond meal in baked goods or added to a smoothie. - Almonds are gluten-free so are beneficial for those that are gluten intolerant or coeliac as almond meal could be used as a flour replacement. - General public have a trust in health professionals to provide healthy eating advice - The project supports the Almond Strategic Investment Plan https://horticulture.com.au/wp-content/uploads/2017/04/HortInnovation-almond-SIP.pdf - in particular outcome 5 <i>Health research outcomes that link almond consumption to improved human health communicated to health professionals. Health research outcomes will be based on new Australian research and summaries of the international literature</i>
Weaknesses	- Health professionals being bombarded with new information and professional development therefore will not absorb information provided about almonds - General practitioners have a limited amount of time with patients therefore may not have the capacity in their appointment to promote almonds - General public perception that nuts in general are high in fat therefore can contribute to weight gain^{3,4}

¹ <https://www.nutsforlife.com.au/nut-fact-sheets/almondhealthfacts/>

² Nuts for Life systematic review – the effect of nut consumption on heart health (internal document)

³ Yong, L., Gray, A., Chisholm, A., Leong, S., Tey, S., & Brown, R. (2017). Barriers to and facilitators and perceptions of nut consumption among the general population in New Zealand. Public Health Nutrition, 20(17), 3166-3182. doi:10.1017/S1368980017002464

⁴ Pawlak R., Colby S., Herring J. Beliefs, benefits, barriers, attitude, intake and knowledge about peanuts and tree nuts among WIC participants in eastern North Carolina. Nutr. Res. Pract. 2009;3:220–225. doi: 10.4162/nrp.2009.3.3.220.

	• General public perception that nuts in general can increase cholesterol^{3,4} • Low knowledge in general population on nutrient content of almonds^{3,4} • Low knowledge in general population of the cardioprotective effects of nuts^{3,4} • Cost of almonds could be perceived to be too high particularly for those at low socioeconomic status • Those with nut allergies (to not necessarily almonds) or children with nut allergies may be less likely to purchase and consume almonds as they have a general aversion to nuts
Opportunities	• Communicate the health benefits of almonds in novel and succinct ways to health professionals • Provide health professionals with resources for their clients summarising their health benefits (heart health, weight management and diabetes prevention and management) and address misconceptions around almonds and weight gain and increasing cholesterol • Highlight how nutrient dense almonds are and that a “handful” or 30g per day is all that is required in a healthy diet to have a positive effect on heart health, weight management and diabetes (addressing cost barrier)
Threats	• Other nuts being promoted to health professionals removing almonds from being front of mind to recommend to clients • Other professional development opportunities promoted to health professionals



Almonds - Educating Health Professionals Communication, engagement and content plan

Prepared for Nutrition Australia Victoria Division,
20 September 2018

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Introduction

Nutrition Australia is working with Horticulture Innovation Australia Limited (Hort Innovation) to deliver a project to educate health professionals about the nutritional benefits of almonds.

Hort Innovation and the Almond Board of Australia have identified a significant opportunity to inform health professionals about the benefits of daily almond consumption. This project aims to increase health professionals' awareness of the role almonds play in a healthy diet. The project will help position Australian almonds as an important nutrition source that health professionals can share with their clients.

Nutrition Australia has a role to play in providing easy to access, understandable, evidence-based information and recommendations about nutrition that health professionals can pass on to clients. The project commenced in May 2018 and will be completed in October 2020. Project activities include attending conferences, conducting surveys, developing webinars as well as producing and disseminating a range of communication materials.

As part of this program, Fenton Communications will develop content and resources for health professionals and their clients.

The potential long-term impacts of this program include:

1. Health professionals have increased confidence to promote the benefits of almonds as a snack, as part of a healthy balanced diet, to their clients
2. Increased consumption of Australian almonds by Australian consumers.

Objectives

The overall campaign objectives are:

- To communicate the scientific evidence of the important role that almonds play in a healthy diet.
- To increase the understanding and advocacy by health professionals of the nutritional value of almonds to support: heart health, diabetes prevention and management and healthy weight management.
- To raise the profile of almonds as a food with aspirational health benefits, including as an exercise recovery snack and as a food that improves cognitive function.

Target audiences

Primary target audiences: health professionals including general practitioners (GPs), practice nurses, dietitians and nutritionists.

Health professionals are bombarded with new information and professional development. Therefore, information needs to be easy to access, credible and reliable. Research shows that GPs favour evidence-based information and immediately check the validity, accuracy and source.

Health professionals want the best health outcomes for clients and would be inclined to promote nutrient-dense foods that assist in preventing cardiovascular disease.

Secondary target audiences: patients or clients of health professionals.

The general public trusts health professionals to provide sound nutritional advice.

Communication to health professionals

Strategic imperative	What	How
Credibility: trusted source	It is critical to the success of this campaign that all information provided is evidence-based and adds value to health professional's knowledge and understanding.	Educational resources will be based on scientific evidence Reference research Nutrition Australia is a trusted and credible organisation – branding of Nutrition Australia on educational resources Nutrition Australia has existing relationships with stakeholders
Ease of access	Health professionals must be able to find the information easily. They must be aware of the information and know how to find it.	Nutrition Australia will distribute information at conferences and through webinars Build relationship with key stakeholders to distribute/link to material The website is user-friendly and the information will be easy to find
Ease of use	The educational resources must include information the health professional can easily discuss with their clients.	We will communicate the health benefits of almonds in novel and succinct ways to health professionals Health professionals will be able to easily print out the educational resources to distribute to their clients Educational resources will be easy to understand and relevant for their clients
Longevity	This is not a one off 'marketing activity' but a long-term commitment to providing useful, relevant information to health professionals and their clients. The website means information will be updated frequently.	Continual communication with health professionals through social media, webinars and attending conferences Build on exiting work where possible, including building the website

Key messages

It is important that key messages are clear and simple so health professionals and their clients understand them.

- Almonds are an easy, tasty ‘client solution’ that health professionals can recommend as a snack and to include in a meal.
- Almonds are an important part of a healthy, balanced diet and have many health benefits, including prevention of heart health, diabetes and healthy weight.
- Consumption of 30g (a handful) of almonds daily as part of a healthy diet can help improve heart health.
- Consumption of 30g (a handful) of almonds daily as part of a healthy diet can assist with weight management.
- (Nutrition Australia Vic to include a key message about almonds and the management of diabetes).
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.
- Almonds are versatile and can be used in many different ways in cooking.

Note: additional messages may be developed as the project continues to be rolled out. This may include messages to correct misperceptions about almonds causing weight gain or to clarify the difference between raw almonds and almonds that are coated with flavor enhancers like salt and sugar.

Tone

The tone of the educational resources will be credible, informative and optimistic.

Engagement

Conferences and webinars

Nutrition Australia Victoria will attend up to 10 (minimum of 8) and develop two webinars to engage health professionals. The first event will be the GPCE Conference in Melbourne in November 2018.

Social media engagement

Social media is not just a broadcast platform; it is an engagement platform. Social media can be effectively used to engage with health professionals.

Campaign materials

Website

The Australian Almonds website went live in August 2018. It has different sections for respective target audiences, including health professionals and consumers (as part of this plan) and fitness and industry (targeted by the Australian Almond Board).

Communication for health professionals will need to be easy to access and use.

The website will also help support communication to clients, making resources available to complement and enhance health professional conversations with clients about the health benefits of almonds.

The website will

- Provide tailored information for each target group
- Provide easy to use resources and information for health professionals to support their nutrition advice to clients
- Be mobile-friendly to be accessible on desktop, tablet and mobile
- Contain printable information.

Educational resources

The ultimate goal of communication to health professionals is to equip them to discuss the health benefits of almonds with their clients. To facilitate these conversations, Fenton will develop some nutrition-focused educational resources promoting the health benefits of almonds for health professionals to read, print/email and distribute to their clients. Resources will be visually engaging; to capture the attention of time poor health professionals and to present information in an appealing way.

Nutrition Australia Victoria will be responsible for disseminating the educational resources and promoting engagement around almonds.

The educational resources will be based on four themes:

- 1 Overall health benefits of almonds (Priority 1 – by November 2018)
- 2 Almonds and heart health (Priority 2 – by November 2018)
- 3 Almonds and weight management (2019)
- 4 Almonds and the prevention/management of diabetes (2019).

The original project plan included the development of 12 factsheets and four digital clips, however we recommend that for each theme, we develop a factsheet, A5 handout and digital clip. Each resource will have a different purpose. For example, factsheets will be strictly targeted at health professionals. See detailed explanation for each resource below.

The materials will feature infographics to ensure information is visually engaging and easy to read and understand.

In total, there will be four factsheets, four A5 handouts and four digital clips.

Factsheets

Factsheets will be targeted at health professionals only, as content will focus on scientific research findings and nutrition literature in more detail than other resources.

The factsheets for general health benefits and heart health will be developed by November. The remaining factsheets will be delivered in 2019 to allow time to refine the messages around diabetes and healthy weight.

Factsheets will be distributed to health professionals and via electronic direct mail.

A5 handouts

A5 handouts (half the size of A4) will be developed for health professionals to share with their clients. These handouts will include a high-level summary of each theme. The format ensures information is succinct and helps people remember the key messages. Content will be visually appealing, incorporating some infographics. Each handout will display a recipe with almonds as a key ingredient.

The smaller size will mean health professionals will be more inclined to distribute the handouts to clients as content is not overwhelming and includes a practical recipe. The handouts are designed to keep around the kitchen (perhaps stuck on the fridge door) to follow the recipe, and be reminded of the health benefits of almonds when preparing food or a shopping list.

Fenton will design the artwork so it retains impact if printed in black and white and can be printed on A4.

The handouts can also be printed on card to distribute to health professionals at conferences. Fenton also recommends sending the handouts via electronic direct mail to GP and dietitian clinics to put on display and print and distribute to their clients.

Digital clips

Digital animated clips will be developed to engage health professionals and their clients.

These digital clips will be shared on social media and sent via electronic direct mail. It is also possible to play the digital clips on screens at conferences and potentially in GP waiting areas. Nutrition Australia will use an external company to coordinate the electronic direct mail to GPs.

Timeline of deliverables 2018

Resources for general health benefits and heart health will be developed in 2018 (see below).

The remaining resources around diabetes and healthy weight will be developed in 2019. Together, Nutrition Australia and Fenton will confirm a timeline for these resources.

Deliverables	Actions	Timing	Responsibility
Factsheets: General health benefits Heart health	Develop version 1	3 October	Fenton
	Submit to NA		
	Circulate to PRG for feedback	4 October	NA
		Due back to NA 9 October	
A5 handouts: General health benefits Heart health	Provide feedback to Fenton	10 October	NA
	Develop version 2	17 October	Fenton
	Submit to NA		
	NA to review version 2	24 October	NA
	Provide feedback to Fenton		
	Incorporate feedback	31 October	Fenton
	Submit final version to NA		
Digital clips: General health Heart health	Develop version 1	15 October	Fenton
	Submit to NA		
	Circulate to PRG for feedback	16 October	NA
	Provide feedback to Fenton	22 October	NA
	Develop version 2	29 October	Fenton
	Submit to NA		
	NA to review version 2	5 November	NA
	Provide feedback to Fenton		
	Incorporate feedback	12 November	Fenton
	Submit final version to NA		

Resource content plan

Theme	Resource	Proposed content
Overall health benefits of almonds	Factsheet	A handful or 30g per day of almonds is all that is required in a healthy diet to have a positive effect on heart health, weight management and diabetes Almonds are an excellent addition to the diet because they: • Are a rich source of healthy fats e.g. mono/polyunsaturated fats • Are an excellent source of natural vitamin E • Contain natural plant sterols • Are a source of plant protein • Reduce oxidative stress • Have anti-inflammatory effects • Improve blood glucose control • Are a source of dietary fibre – beneficial for digestive health Reference studies
	A5 handout	Almonds are rich in protein, fibre and nutrients There are many health benefits to consuming 30g (a handful) of almonds each day Almonds should be eaten as part of a healthy balanced diet that includes all the core food groups Suggestions on how to consume almonds in meals or as a snack Reference the current Australian Guide to Healthy Eating Include a recipe with almonds, such as bircher muesli with almonds or rosemary roasted almonds

	Digital clip	Almonds are rich in protein, fibre and nutrients There are many health benefits to consuming 30g (a handful) of almonds each day, including: • heart health – reduce cholesterol • weight management – reduce BMI and waist circumference • preventing diabetes – improve blood glucose control Visit www.australionalmonds.com.au
Almonds and weight management	Factsheet	Consumed as part of a healthy diet, almonds contribute to overall weight reduction as well as reduced BMI and waist circumference Almonds should be eaten as part of a healthy balanced diet that includes all the core food groups Reference Nuts for Life systematic review, 2017
	A5 handout	Consumed as part of a healthy diet, almonds contribute to overall weight reduction as well as reduced BMI and waist circumference Reference Nuts for Life systematic review, 2017 Almonds should be eaten as part of a healthy balanced diet that includes all the core food groups Include a recipe with almonds, such as apricot, almond and pomegranate rice pilaf or berry breakfast smoothie
	Digital clip	30g (a handful) of almonds are important for weight management Almonds are fibre-rich and keep you full for longer. Enjoy almonds everyday as a snack or in a meal Visit www.australionalmonds.com.au
Almonds and heart health	Factsheet	Information in updated factsheet to include: A regular 30g handful of almonds, when eaten as part of a healthy, varied diet contributes to heart health Almonds contribute to improving heart health as part of a healthy diet. This is seen through the reduction of three measurements related to heart health (total cholesterol, LDL cholesterol and LDL cholesterol: HDL cholesterol ratio). Reference Nuts for Life systematic review, 2017

	A5 handout	A daily 30g handful of almonds helps keep your heart healthy when eaten as part of a healthy, varied diet Almonds are a rich source of healthy fats and help prevent heart disease Almonds are a source of dietary fibre, which is important for preventing heart disease Include a recipe with almonds, such as beef, broccolini almond stir-fry or toasted almond granola
	Digital clip	A daily 30g handful of almonds helps keep your heart healthy when eaten as part of a healthy, varied diet Enjoy a handful of delicious 'heart-healthy almonds' as a snack or in a meal everyday Visit www.australionalmonds.com.au
Almonds and diabetes prevention	Factsheet	Almonds (may) improve blood glucose control Suggestions on how to consume almonds as part of a healthy diet for diabetes prevention and management Reference the systematic review by Nutrition Australia
	A5 handout	Almonds (may) improve blood glucose control Include suggestions on how to consume almonds as part of a healthy diet for diabetes prevention and management Include did you know? Almond meal can be used as a replacement for flour Include a recipe with almonds, such as smoked trout and almond salad
	Digital clip	30g (a handful) of almonds can make a difference to your health Almonds (may) play a role in preventing diabetes by improving blue glucose control Enjoy almonds everyday as a snack or in a meal Visit www.australionalmonds.com.au

Appendix 4: Literature review

Confidential document on file at Hort Innovation.

A factsheet for health professionals

Almonds

for good health

Almonds are a protein-rich, versatile tree nut packed with vitamins, minerals, antioxidants and phytochemicals beneficial to health.

The Australian Dietary Guidelines recommends 30 grams (a handful) of nuts, including almonds, every day.¹

What your clients and patients need to know

- Almonds contain many beneficial nutrients including healthy unsaturated fats, protein, fibre and calcium.
- Enjoying a handful of almonds regularly as part of a healthy diet may reduce the risk of cardiovascular disease including heart disease and can help with achieving a healthy weight.²
- Almonds are a versatile and portable snack that can be easily incorporated into your diet.

Nutrient content of natural almonds³

Nutrient	Per 30g serve	Per 100g
Energy (kJ)	751	2503
Protein (g)	5.9	19.5
Fat, total (g)	16.4	54.7
Fat, saturated (g)	1.1	3.7
Fat, monounsaturated (g)	10.8	35.9
Fat, polyunsaturated (g)	3.8	12.8
Carbohydrate, total (g)	1.4	4.8
Carbohydrate, sugars (g)	1.4	4.8
Dietary fibre (g)	2.6	8.8
Calcium (mg)	75	250
Copper (mg)	0.3	1.1
Iron (mg)	1.2	3.9
Magnesium (mg)	78	260
Manganese (mg)	0.8	2.5
Molybdenum (µg)	7.4	24.7
Phosphorus (mg)	144	480
Potassium (mg)	222	740
Sodium (mg)	2	5.0
Zinc (mg)	1.1	3.7
Folate (µg)	9	29
Vitamin E (mg)	8.4	28.1
Arginine (g) ⁴	0.8	2.5
Plant sterols (mg) ⁴	59	197
Polyphenols (mg) ⁵	125	418

Almonds: nutrition profile

Healthy fats

Almonds contain healthy unsaturated fats, predominantly monounsaturated fat (66% of total fat), and have a low proportion of saturated fat (7% of total fat).³

Plant protein

Almonds contain around 6g of protein in every 30g handful³, which makes them a good alternative to meat, poultry or fish for vegetarians or vegans. In particular almonds contain the amino acid L-arginine which helps increase the bioavailability of nitric oxide and improve endothelial dysfunction.⁶ Endothelial dysfunction is a central component in the development and progression of atherosclerosis and is associated with greater risk of cardiovascular events.⁷

Calcium

Calcium is important for maintaining healthy teeth and bones and plays a vital role in maintaining the health and functioning of nerve and muscle tissue.⁸ A 30g serve of almonds provides around 75mg, or 7% of your daily calcium needs.^{3,9} This makes almonds an alternative natural source of calcium for those who cannot or choose not to eat dairy.

Plant iron and zinc

Iron is an important mineral involved in various bodily functions, including the transport of oxygen in the blood. This is essential for providing energy for daily life.¹⁰ Similarly, zinc performs essential functions in the body, including the development of immune system cells.¹¹

Almonds contain plant iron and zinc, which are important minerals especially for those following a vegetarian or vegan diet. Vegetarians and vegans are at risk of iron and zinc deficiency if they are not consuming animal meats, fish and/or eggs.¹² Increase the absorption of plant iron from nuts by combining with vitamin C rich foods such as brightly coloured fruit and vegetables.

Natural vitamin E

Almonds are high in vitamin E with a 30g serve providing over 70% of the daily requirements for adults.^{3,9} Vitamin E is an important fat-soluble vitamin and antioxidant that can help maintain a healthy heart.

Natural plant sterols

Almonds contain 197mg of plant sterols per 100g.³ Plant sterols can help lower cholesterol levels by reducing cholesterol reabsorption in the intestine.

Almonds are available whole, blanched, slivered, flaked and ground. As well as their health benefits, almonds offer many possibilities for adding texture and taste to meals.



Almonds: health benefits

Protects against cardiovascular disease

Oxidation causes damage to the cells and tissues in the body and is said to potentially contribute to the onset and/or progression of several diseases including diabetes, metabolic disorders and cardiovascular disease.¹³ A study of smokers found that eating 84g of almonds per day for four weeks reduced biomarkers of oxidative stress¹⁴ while another found that eating almonds with a meal reduced oxidative damage.¹⁵ More recent data suggests that regular consumption of monounsaturated rich nuts such as almonds may confer protective antioxidant benefits and possibly decrease oxidative stress.^{16, 17}

Helps with achieving a healthy weight

Although high in unsaturated fat, current research data indicates that nut consumption (including almonds) is not related to body weight increase.^{18, 19, 20} In fact, a systematic review of the literature in 2016 showed that nut consumption (including almonds) can actually help with weight management.² Specifically, consuming almonds was associated with a reduction in overall weight, body mass index and waist circumference.



Almonds are a source of dietary fibre, which is important for a healthy digestive system – a 30g serve provides around 10% of the daily requirements for adults.

Improves blood glucose control

Studies show the potential of almond consumption for improving blood glucose control, particularly as part of a healthy diet. A study in participants with type 2 diabetes that consumed 28g of almonds with breakfast saw positive results on post-prandial glycaemia (post-meal glucose) levels.²¹ In another study, a reduction in fasting blood glucose and fasting insulin was seen in participants with type 2 diabetes that consumed 60g of almonds per day as part of the National Cholesterol Education Program step II diet for four weeks.²² Overall, while these studies are positive, more research is needed to show a consistent effect of almond consumption on blood glucose control.²³

Benefits digestive health

Almonds are a source of dietary fibre, which is important for a healthy digestive system – a 30g serve provides around 10% of the daily requirements for adults.^{3, 9} Research has also shown that almonds may have potential as a prebiotic^{24, 25, 26} – these are non-digestible carbohydrates in a food which stimulate the growth of beneficial bacteria in the gut. Improvements in the intestinal microbiota profile and a modification of intestinal bacterial activity are induced with almond consumption.²⁵

Consuming almonds was associated with a reduction in overall weight, body mass index and waist circumference.



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A factsheet for health professionals

Almonds

for heart health

Cardiovascular disease (CVD) including heart disease is the major cause of death in Australia. The top three attributable risk factors for CVD relate to diet: high blood pressure, high body-mass index and high total cholesterol.^{1,2}

Dietary intervention is key to managing these risk factors and there is compelling evidence that consuming nuts, including almonds, offers protection against CVD.

What your clients and patients need to know

- Almonds are a heart healthy food.
- Eating a handful of almonds every day as part of a healthy diet may help reduce the risk of CVD including heart disease.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.
- To get the most benefit, choose almonds without any added salt or sugar.

Recommended daily amount

The Australian Dietary Guidelines recommends **30 grams (a handful)** of nuts, including almonds, every day.³

When eaten as part of a healthy, varied diet, almond consumption contributes to **heart health without causing weight gain.**



Research findings: almonds and cholesterol

There is over 25 years of research looking at the effects of almond consumption on heart health.

Since an early landmark study that observed a decrease in total cholesterol and in low density lipoprotein (LDL or 'bad') cholesterol in individuals on a diet high in monounsaturated fat from almonds,⁴ a considerable body of research has emerged focusing on the relationship between nuts and cardiovascular health.

Systematic review, 2016, Canada

A systematic review and meta-analysis of 18 randomised control trials published by a Canadian research team in 2016 looked at the effects of almond consumption on blood lipid levels.⁵ Findings showed that diets enriched with almonds were associated with significant reductions in total cholesterol, LDL cholesterol and triglyceride levels without affecting high density lipoprotein (HDL or 'good') cholesterol.

Systematic review, 2016, University of Wollongong

A systematic review published in 2016 by the University of Wollongong reviewed literature from 1996 to 2014 on the effect of overall nut consumption on heart health and weight management.⁶ This was supplemented with analyses of epidemiological studies examining associations between nut consumption and cardiovascular disease end points. In particular, changes in total cholesterol, LDL cholesterol, and the ratio of LDL cholesterol to HDL cholesterol were reviewed.

Results showed that almond consumption was associated with significant reductions in total cholesterol, LDL cholesterol and also on LDL cholesterol: HDL cholesterol ratio. Additionally, the form of the food was important in mediating the observed effects, with overall poorer effects observed for nut oils compared to their whole nut equivalents.

The findings from this review were enough for Food Standards Australia New Zealand to substantiate a general level health claim that nuts (including almonds)

contribute to heart health as part of a healthy diet. All types of natural almonds scored extremely well against the Nutrient Profile Scoring Criteria which made them eligible to carry the general level health claim.

The findings support the recommendation of consuming almonds as part of a healthy diet to maintain healthy blood lipid levels and reduce the risk of CVD.

How nuts protect against CVD

Abnormal levels of lipids and/or lipoproteins in the blood is a major risk factor for CVD. The beneficial effects of nut consumption on CVD can be explained by an improvement in blood lipid and cholesterol levels. Almonds in particular are low in saturated fat, high in mono and polyunsaturated fats and contain fibre, phytosterols, plant protein and many other unique cardioprotective nutrients.

Their unique nutrient matrix is likely the reason for an observed reduction in LDL cholesterol in the body as they target the primary mechanisms behind LDL cholesterol reduction. These include decreased reabsorption of cholesterol and bile acid, increased bile acid and cholesterol excretion, and increased LDL-C receptor activity.⁷

A 2018 published literature review looked at major cohort studies and small to large intervention trials on nut intake and impact on CVD.⁸ It found that there was increasing evidence that nut consumption may help protect against CVD via lowering of oxidative stress and improvement in endothelial function.

Oxidative stress

Oxidation causes damage to the cells and tissue in the body and is said to potentially contribute to the onset and/or progression of several diseases including diabetes, metabolic disorders and cardiovascular diseases.⁹



Almonds are low in saturated fat, high in mono and polyunsaturated fats and contain fibre, phytosterols, plant protein and many other unique cardioprotective nutrients.⁷



Recent studies have suggested that regular consumption of mono-unsaturated rich nuts such as almonds may confer protective antioxidant benefits and possibly decrease oxidative stress.¹⁰

Endothelial function

Endothelial dysfunction is a central component in the development and progression of atherosclerosis and is associated with greater risk of CVD events.¹¹ Endothelial dysfunction is characterized by decreased bioavailability of nitric oxide and increased proinflammatory cells.

Given nuts contain a rich source of L-arginine, a type of protein which helps increase the bioavailability of nitric oxide, it is thought that nut intake can improve endothelial dysfunction.¹²

Collectively the evidence suggests that improvements in endothelial function and a reduction in oxidative stress can be achieved with daily nut consumption.

Almonds as part of a Mediterranean diet

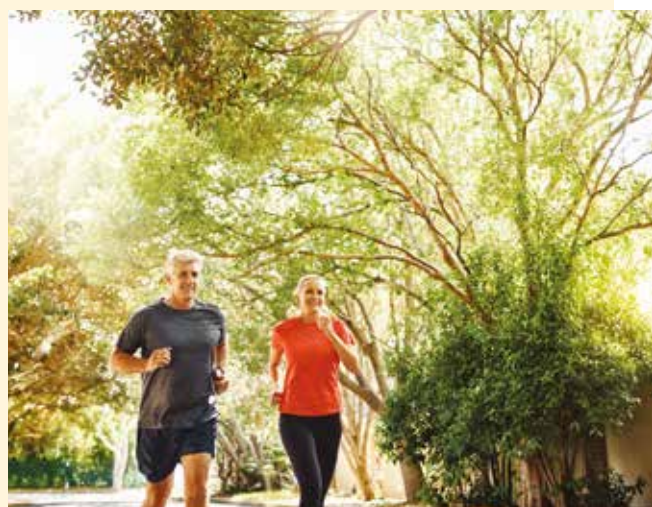
The Mediterranean diet is an eating pattern emphasising certain foods based on the dietary traditions of Crete, Greece and southern Italy during the mid-20th century.¹³ It is primarily plant-based and includes wholegrains, olive oil, fruits, vegetables, beans and other legumes, nuts, herbs and spices. The emphasis is on healthy fats, with olive oil replacing butter or margarine, and the inclusion of foods that contain healthy fats, such as avocados, nuts and oily fish.¹⁴

The Prevention with Mediterranean diet, or PREDIMED study, is the largest dietary intervention trial to assess the effects of the Mediterranean diet on CVD prevention to date.^{15, 16} First published in 2013 and republished in 2018, it looked at the primary prevention of CVD in 7,447 older adults using a Mediterranean Diet supplemented with extra virgin olive oil or nuts.^{15, 16}

The original study included older adults at high CVD risk who were given either a Mediterranean diet supplemented with extra virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or a control diet (reduced dietary fat).¹⁵

Incidence of CVD in the Mediterranean diet groups was lowered by approximately 30 per cent compared to the control diet group.^{15, 16}

This large study adds to the strong body of existing evidence highlighting the positive effect that nuts, including almonds, have when consumed as part of healthy diet, and their value as a dietary intervention for preventing CVD.





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A factsheet for health professionals

Almonds and diabetes

Diabetes has overtaken heart disease and cancer as the fastest growing chronic condition in Australia.¹ There are different types of diabetes; the most common are type 2, type 1 and gestational diabetes.

Strong international evidence shows that type 2 diabetes can be prevented in almost two thirds of cases and the risk of type 2 diabetes can be reduced by maintaining a healthy weight, being physically active, managing blood pressure and cholesterol, and by following a healthy eating plan.²

Almonds are a nutrient-dense tree nut and a healthy source of plant-based protein, monounsaturated fats, fibre, antioxidants, vitamins and minerals.³ Over the last two decades a body of evidence has emerged from both epidemiological and controlled trials demonstrating the favourable effects of regular nut consumption, including almonds, on diabetes-related outcomes.^{4,5}

The Australian Dietary Guidelines recommends 30 grams (a handful) of nuts, including almonds, every day.⁶

What your clients and patients need to know

- Eating a handful of almonds (30g) every day as part of a healthy diet may help manage the risk factors for type 2 diabetes – particularly high cholesterol and being overweight or obese.
- Adding almonds to a meal slows digestion of the overall meal, lowering its glycaemic index, therefore assisting to manage blood glucose levels.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.



Almonds and managing the risk factors for diabetes

Overweight and obesity

Overweight and obesity are major risk factors for developing type 2 and gestational diabetes, with weight loss being the primary strategy for glycemic control and prevention and management of diabetes.

In those with newly diagnosed type 2 diabetes, a large retrospective cohort study found that individuals who lost approximately 10% of their body weight after diabetes diagnosis were more likely to achieve glycemic control and blood pressure targets, despite weight regain, four years later compared with individuals with stable or weight gain trajectories.⁷

Despite their high energy content, there is good evidence to suggest that including almonds in an energy-restricted diet does not compromise, and may actually enhance, weight loss.^{8,9,10,11} A 2016 randomised controlled 12-week clinical trial of 86 healthy adults evaluated the effect of consuming almonds as part of an energy-restricted diet on body composition, compared to a nut-free energy-restricted diet.¹² Results revealed that moderate almond consumption by overweight and obese individuals during energy restriction results in greater proportional reductions of truncal and total body fat as well as diastolic blood pressure.



Those who lost approximately 10% of their body weight after diabetes diagnosis, were more likely to achieve glycemic control and blood pressure targets.

High cholesterol and high blood pressure

High cholesterol and blood pressure are known risk factors for diabetes, and people with diabetes are at increased risk of heart disease including heart attack and stroke.² There is strong evidence to suggest that lifestyle changes, like eating a healthy diet and doing regular physical activity, can significantly improve blood pressure and the blood cholesterol levels of people with diabetes.

A 2016 systematic review concluded that consuming almonds was associated with a significant reduction in three measurements related to heart health: total cholesterol, LDL cholesterol and LDL: HDL cholesterol ratio.⁸ Another systematic review looking at the effect of almond consumption on blood lipid levels had similar findings. Diets enriched with almonds were associated with significant reductions in total cholesterol, LDL cholesterol and triglyceride levels.¹³

Although there is robust evidence linking nut consumption with reduced blood pressure, the evidence base for almonds is still emerging. A 2016 systematic review concluded a lack of favourable effects being reported for almond consumption and blood pressure, HDL cholesterol and triglycerides.⁸ In contrast, a 2015 systematic review and meta-analysis looking at the effect of nut consumption on blood pressure suggest that total nut consumption lowered systolic and diastolic blood pressure in participants without type 2 diabetes.¹⁴



Blood glucose

A systematic review and meta-analysis of randomised controlled trials was conducted in 2014 to assess the effect of tree nuts (including almonds) on markers of glycemic control in individuals with diabetes.⁵ Pooled analyses showed an overall significant lowering of two markers of glycemic control: HbA1c and fasting glucose at a consumption level of 56 grams of tree nuts (including almonds) per day over eight weeks.⁵

A 2018 literature review summarised the effect of almonds on measures of glycaemia and insulinaemia in people with diabetes or those at risk.¹⁵ One study saw positive results on post-prandial glycaemia (post-meal glucose levels) in participants with type 2 diabetes that consumed 28g of almonds with their breakfast.¹⁶ Another study, conducted in Taiwan, saw a reduction in fasting blood glucose and fasting insulin in participants with type 2 diabetes who consumed 60g of almonds per day as part of the National Cholesterol Education Program step II diet for four weeks.¹⁷ Although these studies are promising, the review concluded more research is needed to show a consistent effect of almond consumption on blood glucose control.¹⁵

It is recommended that people with diabetes have moderate amounts of carbohydrate and include high fibre foods with a low glycaemic index (GI) to assist in managing blood glucose levels.¹⁸ Adding almonds to carbohydrate-rich meals lowers the overall GI of that meal,¹⁹ which can help slow the rise in blood glucose levels when the food is consumed.

Almonds, tree nuts and mixed nuts as part of a healthy diet

The traditional Mediterranean diet is widely considered beneficial in the prevention and management of diabetes.²⁰ It is characterised by high consumption of vegetables, legumes, grains, fruits, nuts, and extra virgin olive oil, moderate consumption of fish and wine, and low consumption of red and processed meat and whole-fat dairy products. The diet emphasises foods composed of healthy unsaturated fats including extra virgin olive oil, avocados and nuts (including almonds).

A prospective study in 2008 suggested a lower incidence of diabetes with increasing adherence to the Mediterranean diet in previously healthy individuals.²¹ A clinical trial the following year showed that, compared with a low-fat diet, a Mediterranean diet allowed better glycemic control and delayed the need for anti-diabetes drug treatment in patients with newly diagnosed diabetes.²² Similar results were found by a systematic review²³ and several individual randomised controlled trials^{22, 24, 25, 26} including people with type 2 diabetes. These studies showed that a Mediterranean dietary pattern emphasising nuts (including almonds) decreased HbA1c and fasting glucose in comparison to a conventional dietary pattern.

A separate arm of the PREDIMED study tested the role of the Mediterranean diet in the prevention of diabetes in a clinical trial.²⁷ Results revealed diabetes rates were reduced by 51% and 52% with the consumption of Mediterranean diets supplemented with virgin olive oil or mixed nuts (including almonds), respectively, compared with a control diet.



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A factsheet for health professionals

Almonds

for weight management

Overweight and obesity is a major risk factor for cardiovascular disease, type 2 diabetes, some musculoskeletal conditions and some cancers.²

Rates of obesity are rising rapidly in Australia, with approximately 2 in 3 adults and 1 in 4 children reportedly overweight and obese in 2017-18.³

Gaining excess weight is mostly preventable by living a healthy lifestyle – primarily choosing healthier foods and being more physically active.⁴

Almonds are a nutrient-dense food, rich in healthy monounsaturated fats, plant-based protein and fibre, and a myriad of different vitamins and minerals including vitamin E, calcium, iron and zinc.⁵

Despite their healthy nutritional profile, people trying to lose weight often avoid nuts (including almonds) due to their high energy density. In fact, research shows that consumption of almonds in a balanced diet does not lead to weight gain and may enhance weight loss.

Recommended daily amount

The Australian Dietary Guidelines recommends **30 grams (a handful)** of nuts, including almonds, every day.¹

What your clients and patients need to know

- Almonds are high in protein and fibre, which help to increase satiety and control appetite.
- Eating a handful of almonds (30g) every day as part of a healthy balanced diet will not lead to weight gain and may help achieve weight loss.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.

Despite their high energy content, evidence suggests that the inclusion of almonds in an energy-restricted diet may actually enhance weight loss.



Research findings: The effect of consuming nuts (including almonds) on body weight measures

Weight management

A randomised crossover study in 2002 examined 81 male and female participants and the effect on body weight of daily almond supplementation over six months. During two sequential six-month periods, diet, body weight and habitual exercise were evaluated and almonds were provided only during the second period. Results revealed that incorporating 54g of almonds in the diet daily for six months did not, on average, lead to significant changes in body weight.⁶

Epidemiological studies looking at nuts further support these findings, revealing no association or a negative association between nut consumption and body weight.^{7,8} In addition, a 2013 meta-analysis of 33 clinical trials found that diets enriched with nuts did not increase body weight.⁹

Strengthening these findings, a 2018 updated systematic literature review looked at seven intervention studies and eight analyses around almond consumption and weight measures.¹⁰ The review concluded that consuming almonds was not associated with adverse changes in weight-related measures (body mass index, body fat, waist circumference, waist-hip ratio or lean body mass). Therefore, current evidence continues to support the position that, in the context of a healthy diet, almond consumption does not result in weight gain.

Weight loss

Despite their high energy content, evidence suggests that the inclusion of almonds in an energy-restricted diet may actually enhance weight loss. A 2003 randomised study looked at the effect of almond consumption in the context of a 24-week weight-loss program.¹¹ The participants either consumed a liquid formula-based low-calorie diet (LCD) enriched with 84g almonds per day or a liquid-based LCD supplemented with complex carbohydrates. The results found greater reductions in weight in the almond-enriched group.

A 2012 study looked at evaluating the effects of a low-calorie, almond-enriched diet compared with a low-calorie nut-free diet on body weight and cardiovascular disease risk factors over 18 months. Both groups achieved significant short-term weight reduction, which was generally maintained at 18 months. The findings concluded that incorporating limited portions of almonds (56g per day) into a behavioral weight-loss program resulted in significant weight reduction.¹²

Improvements in body fat, body mass index, waist circumference and waist-hip ratio

A 2016 randomised controlled 12-week trial of 86 healthy adults evaluated the effects of consuming almonds as part of an energy-restricted diet on body composition, compared to a nut-free energy-restricted diet.¹³ Results revealed that moderate almond consumption (15% energy from almonds) by compliant overweight and obese individuals during energy restriction resulted in greater proportional reductions of truncal and total body fat.

Similar findings were observed in a 2014 clinical trial that investigated the effects of a balanced hypocaloric almond-enriched diet (50g per day) compared to a balanced hypocaloric nut-free diet on body weight and cardiovascular disease risk factors in 108 overweight or obese women over three months.¹⁴ Results showed that both groups (almond and nut-free) experienced significant weight reduction, with the almonds group achieving greater weight-loss, reduction in body mass index, waist circumference and waist-hip ratio.



Research findings: How almonds can help with weight management

Increased satiety and appetite control

Foods that generate strong sensations of satiety can help individuals control their appetite, eat more healthily and manage their weight.¹⁵ It is well established that kilojoule-for-kilojoule not all foods deliver the same level of satiety.¹⁶ For example, in satiety studies where comparison foods were matched for energy content, there is considerable evidence that high-protein foods are more satiating than those that are high in carbohydrate and/or fat;¹⁷ and that fibre-rich foods are more satiating than low-fibre foods.¹⁸

Whole almonds have a nutritional profile consistent with satiety, being one of the tree nuts highest in plant-based protein and fibre. Research indicates that consuming almonds can have positive effects on appetite control and does not lead to significant changes in body weight.^{6,19,20,21}

A 2015 randomised crossover study found that adding 28 or 42g of almonds to the diet as a mid-morning snack was likely to increase satiety responses in a portion-dependent manner, leading to reductions in subsequent food intake so that total energy intake over the day was not increased.²²

This supported the findings of a 2013 four-week randomised controlled trial, which assessed the outcomes of consuming 43g of almonds daily with meals or as snacks.²⁰ Results showed that overall daily energy intake was reduced to compensate for energy from the almonds and did not increase the risk of weight gain among participants.

Increased resting energy expenditure

A biological mechanism that may explain the ability of nuts (including almonds) to improve body weight measures is through having a greater thermogenic effect.²³ This means consuming nuts (including almonds) increases the amount of energy and fat used by the body at rest, leading to less fat accumulation, therefore potentially curbing weight gain. This could be because nuts (including almonds) are rich in healthy unsaturated fatty acids, which are more readily oxidized (or burned) by the body than saturated fatty acids.²⁴

Decreased fat absorption

The fat in almonds is stored within its cell walls, which has shown to impact the amount of fat available for digestion.^{25,26,27} Research has shown that when whole almonds are consumed, not all cell walls are broken down when chewing, making the fat less bioaccessible and leading to incomplete fat absorption in the gut. Instead, some of the fat passes through the body and is excreted in faeces.^{25,26} This decreased absorption of fat in the body may also be a reason why almonds do not contribute to weight gain. Further, evidence suggests that we may only absorb 70% of the total calories contained in almonds.²⁸

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The Gut Benefits of ALMONDS

Interest in gut health has increased exponentially over recent years. Understanding what drives a healthy gut is still in its infancy, but current knowledge suggests a healthy gut is dependent on an abundant and diverse gut microbiota⁽¹⁾. Lower gut microbiota diversity is associated with a range of disorders and disease states, including cardiovascular disease, type 2 diabetes and inflammatory bowel disease⁽¹⁾. The nutrients that we get from food, in particular fibre, phytochemicals (particularly flavonoids and polyphenols) and unsaturated fatty acids, can positively impact the gut microbiota^(2,3).

Almonds contain a unique nutrient package that includes all three, but what exactly is the evidence base for nuts and gut health?

SUMMARY: What do clients need to know?

- Gut health, and specifically microbiota balance and diversity, can influence overall health.
- Almonds are one of the few foods to contain a unique package of fibre, phytochemicals and unsaturated fat, that can all positively affect the gut microbiota composition.
- There is established evidence that eating at least 1 large handful (>42g) of almonds daily has a positive effect on gut microbiota - both increasing beneficial bacteria and decreasing potentially pathogenic types.
- Evidence suggests that long-term nut consumption may also decrease the risk of colorectal (and colon) cancer recurrence and death, and this link may be more apparent in women than men. Almonds contain the highest content of fibre, and one of the highest amounts of phytochemicals, of all nuts.

About the research

A literature review investigating the relationship between nuts, specifically almonds, and gut health was conducted by Nutrition Research Australia (NRAUS). A review of the literature was undertaken via the PUBMED database. Study types were limited to randomised controlled trials (RCTs), cohort studies and systematic literature reviews (SLR). Targeted searches were also conducted in Google Scholar using key terms.

Research findings in a snapshot: THE GUT MICROBIOTA

A 2020 SLR and meta-analysis of nine RCTs found strong evidence that both almonds (5 studies) and walnuts (3 studies) can improve the gut microbiota. There was an absence of evidence for other nut types⁽⁶⁾. Almonds had a dual effect, increasing the abundance of healthy short chain fatty acids producing bacteria, and decreasing potentially pathogenic bacteria^(3,4,7,13). In one study, even greater effects were found in children, where 42.5g and 85g of almonds per day over 3 weeks had a more pronounced effect on gut microbiota in four-year-old children compared with their parents⁽⁷⁾.

Is the level of processing important?

Research has shown that whole and chopped almonds have a greater positive impact on the gut microbiota than almonds in butter form⁽²⁾.

This may be because approximately 50% of the fibre content of almonds is found in the almond skin⁽⁹⁾.

Research findings in a snapshot: COLORECTAL AND COLON CANCER

The effect of nuts on colorectal (and colon) cancer risk remains inconclusive, across two SLRs of case control and cohort studies, plus one additional cohort study not included in the SLRs published to date.

A 2015 SLR of two cohort studies and one case control study reported a positive effect of nuts on colorectal cancer risk, while another 2018 SLR of six cohort studies found no association^(10,11). Differences may be attributed to sex, with larger risk reductions reported in women. In a large prospective cohort study involving ten European countries, eating at least 6.2g nuts per day was associated with a 31% and 19% lower risk of colon and colorectal cancers in women, respectively, with no association found in men⁽¹²⁾.

A 2018 cohort study reported that eating at least two handfuls (>57g) of nuts per week was associated with a lower incidence of both colorectal cancer recurrence and death, compared to patients who abstained from nuts⁽¹³⁾.

How are Almonds linked to GUT HEALTH?

Nuts are one of the few foods that provide a nutrient package of fibre, phytochemicals (flavonoids, flavanones and polyphenols) and unsaturated fatty acids, which may explain their strong beneficial effects on bacterial abundance and microbiota composition.

Fibre is well known to provide important fuel for colonic bacteria, and phytochemicals act like prebiotics, positively influencing the maintenance of healthy and diverse microbiota^(3,4). Unsaturated fatty acids have been shown to have antimicrobial properties and also benefit gut microbiota composition⁽²⁾.



Amounts and frequency: What does the science say?

- One large handful (42g) of almonds or walnuts per day over 3-12 weeks had positive effects on the gut microbiota.
- Two or more handfuls (57g) of nuts per week were associated with a lower incidence of colorectal cancer recurrence and death⁽¹³⁾.

5 REASONS

Why Almonds are good for GUT HEALTH

- ✓ Source of fibre (3g/serve), including prebiotic fructans that feed the gut microbiota⁽¹⁴⁾.
- ✓ High insoluble to soluble fibre ratio (7:1), with the skin containing approx. 50% of the fibre⁽⁹⁾.
- ✓ Rich in unsaturated fatty acids⁽¹⁴⁾.
- ✓ Contains phytochemicals (flavonoids, flavanones and polyphenols) - again these are particularly rich in the skin^(3,4).
- ✓ Compared to other nuts, almonds have the highest content of fibre, and one of highest amounts of phytochemicals^(9,15).



Where to from here?

While it is clear that almonds improve the gut microbiota, more evidence is required on what the health outcomes of these specific changes to the gut microbiota are.

Further clinical trials that look specifically at the health effects of these microbiota changes are needed and will provide additional evidence-based recommendations for consumption.



TAKE HOME MESSAGE

Almonds are one of only a few foods that contain fibre, phytochemicals and unsaturated fat, nutrients that can positively affect bacterial abundance and microbiota composition, and support gut health. Eating at least 1 large handful (>42 g) of almonds daily, preferably whole or chopped, has been shown to have a positive impact on the gut microbiota.

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MOOD & COGNITION

ALMONDS CONTAIN:

- ✓ Protein
- ✓ Vitamin E
- ✓ Healthy Fats

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The Brain Benefits of ALMONDS

A rapidly growing body of human research shows that nuts, including almonds, can have positive effects on the brain. This is highly relevant given Australia's growing mental health crisis and ageing population. Depression and anxiety are one of the largest contributors to the total burden of disease today, and dementia is the leading cause of disability among Australians over 65, and the leading cause of death in females ^(1,2). In recent years the growing field of Nutritional Psychiatry has emerged, with a growing understanding on the important relationship between food and its impact on mood and cognition.

Where do almonds fit in? What does the science say? And what evidence-based practical advice can we give to clients?

Cognitive Decline & Mental Illness – A SNAPSHOT

Cognitive ageing is defined as a spectrum, moving from healthy functioning to mild cognitive decline to dementia ⁽¹⁾. Over 400,000 Australians are currently living with dementia ⁽¹⁾, and cognitive disorders like dementia are predicted to double over the next 20 years ⁽²⁾.

One in 5 Australians are reported to suffer a mental health condition in any given year, with nearly 1 in 2 experiencing a mental illness at least once in their lifetime ⁽²⁾.

SUMMARY: What do clients need to know?

- Maintaining good nutrition is vital for brain health as we get older.
- Almonds contain a unique package of nutrients that can support healthy brain structure and function.
- Strong evidence that nuts are associated with a reduction in the cognitive decline associated with ageing.
- Emerging evidence that nuts and almonds may improve wellbeing, mood and memory.
- One serve of almonds (1 handful or 30g) daily may help to prevent cognitive decline, while up to two handfuls (60g) each day may improve shorter-term outcomes of mood and memory.

About the research

A literature review investigating the relationship between nuts, including almonds, and cognition and mood was conducted by Nutrition Research Australia (NRAUS). The review was undertaken via the PUBMED database. Study types were limited to randomised controlled trials (RCTs), cohort studies, and systematic literature reviews. Targeted searches were also conducted in Google Scholar using key terms.

Research findings in a snapshot: COGNITION

Over the last 10 years there were 15 human studies investigating nut intake on cognition. Strong and consistent evidence from cohort studies suggests that nut intake reduces the cognitive decline associated with ageing ⁽³⁻⁷⁾. In a Dutch study following over 2600 men and women over 5 years, an equivalent reduction in cognitive decline of 5-8 years was reported among individuals who consumed the highest nut intake, compared to those who consumed the lowest ⁽⁴⁾.

Recent evidence suggests that almonds may improve some aspects of memory. In a RCT of 86 American adults, approximately two handfuls of almonds (53g) as part of a high fat lunch reduced the dip in memory that occurs immediately after eating lunch ⁽⁸⁾. In a recent RCT, nearly three handfuls of almonds (85g/day) were found to improve multiple aspects of memory such as visuospatial working memory, visual memory and learning, and special planning and working memory, over 6 months ⁽⁹⁾.

Research findings in a snapshot: MOOD

Research on the role of nuts and mood is still in its infancy, with four RCTs and one cohort study found over the last six years. Evidence from RCTs has shown that eating walnuts improved mood in young men ⁽¹⁰⁾, and that eating almonds as part of a low carbohydrate diet improved depression symptoms in type 2 diabetics ⁽¹¹⁾. More research is needed to firmly establish the role of almonds specifically on mood disorders and mental health.

How might almonds be linked to BRAIN HEALTH?

Almonds may positively impact cognition by reducing inflammation and supporting endothelial function. Chronic inflammation has been linked to a loss of neuron function and brain regeneration ⁽¹²⁾. The endothelium is important in regulating blood flow, and impaired blood flow is linked with cognitive decline ⁽¹³⁾. Almonds contain a unique nutrient package (including arginine, vitamin E and polyphenols) that may improve endothelial function by increasing vasodilation ⁽¹⁴⁾.

Almonds potential impact on mood is thought to be mediated through improved brain nutrient status, reduced inflammation, and improved gut microbiota composition ⁽¹⁵⁻¹⁸⁾.



Amounts and frequency: What does the science say?

- At least 10g of nuts per day is associated with the reduction in age related cognitive decline ⁽³⁻⁷⁾.
- Two to three handfuls of almonds (53-85g) each day over 6 months was shown to improve some aspects of memory ^(8, 9).
- Two large handfuls of nuts (56-60g) each day over 8-12 weeks had positive effects on mood ^(10, 11).

7 REASONS

Why Almonds are good for BRAIN HEALTH

- ✓ Source of protein and rich in the amino acid arginine, which helps keep blood vessels healthy ⁽¹⁹⁾.
- ✓ Rich in vitamin E, which provides antioxidant and anti-inflammatory protection ⁽¹⁷⁾. One serve (30g) of almonds provides over 90% of vitamin E requirements.
- ✓ Contains riboflavin and magnesium, brain specific nutrients that have been linked to mood and depression ^(15,16).
- ✓ Rich in unsaturated fatty acids to support healthy gut flora and circulatory health ^(12,20).
- ✓ Source of fibre (3g/serve), with almond skin containing approx. 50% of the fibre ⁽²¹⁾. The fibre has a high insoluble to soluble fibre ratio (7:1) and contains prebiotic fructans to support gut health ⁽¹⁸⁾.
- ✓ Contains polyphenols in the skin to support gut health and are anti-inflammatory ⁽¹⁷⁾.
- ✓ Almonds contain higher levels of vitamin E, riboflavin, niacin and fibre, compared to other nuts ⁽²²⁾.



Where to from here?

As the current evidence on cognitive decline is on total nut intake, future research is needed that examines the role of almonds on cognitive decline and dementia specifically. Further clinical trials are also needed to investigate the effect of almonds on mood, including the specific underlying mechanisms, such as almond-induced changes to the microbiota.

TAKE HOME MESSAGE

Almonds contain a unique package of nutrients that can support brain structure and function.

One daily serve (1 handful or 30g) may help to prevent cognitive decline, while up to two handfuls each day (60g) may positively impact shorter-term outcomes of mood and memory.

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Almonds are rich in **protein** and packed with **vitamins, minerals** and **antioxidants**.

They're good for **overall health** and are a **portable healthy snack**.

Almonds

for good health



It's easy to make almonds part of your daily diet:

- Sprinkle flaked almonds on your breakfast.
- Toss a handful into a stir-fry.
- Use almond meal or ground almonds to make a flourless cake.
- Try almond butter as an alternative to butter or margarine.
- Mix natural yoghurt with berries and top with chopped almonds.
- Use slivered almonds as a crunchy topping for salads.

Almonds **add texture and taste to meals** and have a range of uses in cooking.

Try them **whole, blanched, slivered, flaked**, and **ground**.

Almonds are **gluten free**, rich in **healthy unsaturated fats** and eating a **handful everyday** as part of a balanced diet:

- **does not** affect weight
- is good for **the gut**
- helps protect **the heart**.

Green almond smoothie

A delicious breakfast on the go

Serves 1

Preparation time: 5 minutes

- 1 cup almond milk (calcium fortified)
- 1 tablespoon almond butter
- ½ tablespoon chia seeds
- ½ teaspoon vanilla extract
- ¼ teaspoon cinnamon
- ½ banana
- 1 handful baby spinach
- ¼ cup rolled oats
- 1 handful ice cubes (optional)

Method

Place all ingredients into a blender and blend until smooth. If smoothie is too thick, add more milk.



For more information and recipes visit www.australionalmonds.com.au

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Almonds are rich in **healthy fats**, known as **monounsaturated fats**, which help protect the heart.

Eating a **handful of almonds every day** as part of a balanced diet can help keep the heart healthy without affecting weight.¹

Almonds

for heart health



The healthy snack that tastes great

Almonds are versatile and convenient: on their own they're a great portable snack but you can also use them in all types of cooking.

To get the most benefit, eat almonds every day as part of a healthy diet and choose almonds without any added salt or sugar.

Benefits backed by research

Research shows a handful of almonds eaten every day as part of a balanced diet can **lower LDL or 'bad' cholesterol** which contributes to a **healthy heart**.²

¹ Department of Health and Ageing. Eat for Health: Australian Dietary Guidelines. Canberra [AU]: National Health and Medical Research Council; 2013.

² Neale E, Nolan-Clark D, Tapsell L. The effect of nut consumption on heart health: A systematic review of the literature. Sydney (AU): Nuts for Life; 2016. 24 p.



Almond crusted salmon with kale and fennel salad

A tasty meal packed with healthy fats

Serves 4

Preparation time: 20 minutes

Cooking time: 30 minutes



Ingredients

- 4 small salmon fillets (approx. 120g each)

Almond crust

- 1 cup almonds, roasted and unsalted
- 2 cloves garlic, crushed
- 2 tablespoons extra virgin olive oil
- 1 lemon
- Pepper, to taste

Salad

- 2 tablespoons extra virgin olive oil
- 1 tablespoon balsamic vinegar
- 2 teaspoon honey
- $\frac{2}{3}$ cup quinoa
- 1 cup baby kale, torn
- 2 cups baby spinach
- $\frac{1}{2}$ fennel, chopped
- $\frac{1}{2}$ red onion, finely diced
- 1 red capsicum, cut into strips
- 1 tomato, diced
- 1 apple, peeled and finely sliced
- $\frac{1}{2}$ cup reduced fat feta, crumbled

1. Preheat oven to 200°C.
2. Using a mortar and pestle or rolling pin, crush almonds into a crumble.
3. In a small bowl, combine garlic, crushed almonds, oil and juice and zest of the lemon.
4. Pat salmon dry with paper towel and season both sides with a pinch of pepper. Place salmon onto a lined baking tray.
5. Spoon almond mixture over the top of the salmon and gently press down so the crust sticks.
6. Bake salmon for about 10 minutes until cooked through and the crust is golden.
7. Cook quinoa as per packet instructions.
8. In a small bowl, combine oil, balsamic and honey and mix well.
9. Place cooked quinoa and all other salad ingredients in a large bowl and toss well to combine.
10. Dress the salad just before serving and season with pepper if desired.

For more information and recipes visit www.australionalmonds.com.au

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The risk of **type 2 diabetes** can be **reduced** by maintaining a healthy weight, being physically active, managing blood pressure and cholesterol and following a healthy eating plan.

Eating **a handful of almonds** every day as part of a healthy diet may help manage the risk factors for type 2 diabetes.

Almonds and diabetes



Almonds are a **convenient and portable snack** that can be eaten anywhere and any time of day.

Adding almonds to a meal slows digestion and **lowers its overall glycaemic index (GI)**.

This can help with **managing blood glucose levels** at mealtimes.

It's easy to make almonds part of your daily diet:

- Add almond meal to a smoothie.
- Sprinkle a handful over breakfast cereal or muesli.
- Use almond butter as an alternative to butter or margarine in sandwiches.
- Toss a handful into a stir-fry, curry, stew or tagine for added texture.

Almond butter chicken with rice

A hearty low-GI meal
full of flavour

Serves 4

Preparation time: 15 minutes

Cooking time: 45 minutes



Ingredients

- 4 tablespoons curry powder
- 3 tablespoons almond butter
- 400g skinless chicken breasts, diced
- ¼ cup extra virgin olive oil
- 1 tablespoon garlic, minced
- 2 teaspoons ginger, minced
- 3 tablespoons lemongrass, finely chopped
- 1 small sweet potato, cut into chunks
- 1 carrot, diced
- 1 zucchini, diced
- 1 bunch bok choy, roughly chopped
- 200ml water
- 1 tin coconut flavoured evaporated milk
- 120g slivered almonds
- ⅔ cup basmati rice

1. Mix curry powder with a bit of water to make a paste. Slowly stir in almond butter to make a marinade.
2. In a medium bowl, coat chicken breast with marinade, cover and leave in fridge for at least 1 hour.
3. Heat oil in a frypan over medium heat and add garlic, ginger and lemongrass. Stir for 1-2 minutes until fragrant. Add chicken and cook for another 4-5 minutes until almost cooked through.
4. Add sweet potato and carrot and approximately 2 tablespoons of water to ensure the ingredients don't stick to the pan. Cover with lid and simmer on low for 10 minutes, stirring occasionally, until the sweet potatoes and carrots are soft.
5. Add zucchini, bok choy and water and simmer for another 5-10 minutes, stirring occasionally, until vegetables are all cooked through.
6. Add coconut flavoured evaporated milk and ¾ of the slivered almonds. Stir and heat through.
7. While curry simmers, cook basmati rice as per packet instructions.
8. Toast remaining slivered almonds on a small non-stick pan over medium-heat until browned.
9. Divide rice equally into serving bowls and top with butter chicken and toasted slivered almonds.

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Although almonds are **high in energy**, research shows that eating a handful (30g) every day as part of a healthy balanced diet **may help you lose weight**.

Almonds

for weight management



Almonds are a **convenient and portable snack** that can be eaten anywhere and any time of day.

To get the most benefit choose **raw or dry roasted** almonds without any added salt or sugar.

Almonds are **rich in healthy fats, high in protein** and **fibre**, and **low in carbohydrates**. They help to keep us **fuller for longer**.

The best ways to maintain a **healthy weight** are to eat a **balanced diet** and to be more **physically active**.

Creamy cauliflower and almond soup

A delicious winter warmer

Serves 4

Preparation time: 15 minutes

Cooking time: 35 minutes



Ingredients

- 1 cup raw sliced almonds
- 1 tablespoon extra virgin olive oil
- 1 brown onion, chopped
- 3 cloves garlic, crushed
- 1 head cauliflower, cut into florets
- 400g tin butter beans, drained and rinsed
- ½ tablespoon dried herbs (e.g. thyme, oregano, basil)
- 1 litre salt-reduced vegetable stock
- Pepper, to taste
- Handful fresh herbs, to serve
- 4 slices wholegrain or sourdough bread, to serve

1. Soak ¾ cup almonds in 1 cup water for at least 2 hours to soften (to save time, you can also microwave almonds in water for a few minutes). Drain and set aside.
2. In a large pot, heat oil over a medium-high heat. Sauté onion and garlic for 3-4 minutes until soft. Add cauliflower and cook for a further 5 minutes.
3. Add beans, dried herbs, stock and pepper. Stir and bring to the boil. Reduce heat to a simmer and cook semi-covered for around 3 minutes, until cauliflower begins to soften.
4. Add soaked almonds to pot and simmer for 5 minutes.
5. Remove pot from the heat. Using a blender, puree soup until smooth.
6. In a small non-stick frypan heat the remaining ¼ cup almonds until lightly brown.
7. Divide soup into bowls and garnish with fresh herbs, toasted sliced almonds, and a drizzle of oil if desired. Serve with crusty bread.

For more information and recipes visit www.australialmonds.com.au

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ALMONDS & GUT HEALTH

Interest in gut health has increased exponentially over recent years. Understanding what drives a healthy gut is still in its infancy, but current knowledge suggests a healthy gut is dependent on abundant and diverse gut bacteria, also known as gut microbiota⁽¹⁾.

- Gut health, and specifically microbiota balance and diversity, can influence overall health.
- Almonds are one of the few foods to contain a unique package of fibre, phytochemicals and unsaturated fat, that can all positively affect the gut microbiota composition.
- There is scientific evidence that shows that eating at least 1 large handful (>42g) of almonds daily has a positive effect on gut microbiota.
- Scientific evidence suggests long-term nut consumption may also decrease the risk of colorectal (and colon) cancer recurrence and death, and this link may be more apparent in women than men.

Simone Austin is an advanced sports dietitian, keynote speaker and author. She is also our nutrition program ambassador.



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ROSEMARY ROASTED ALMONDS

Lightly roasting almonds adds a delicious flavour and does not impact the nutrient content.

Ingredients

- | | |
|---|--|
| 2 cups almonds | 2 teaspoons honey |
| 1 tablespoon extra virgin olive oil | ½ teaspoon chilli powder or hot cayenne pepper |
| 2 tablespoons fresh rosemary leaves, finely chopped | |

Method

1. Preheat the oven to 180 degrees Celsius and line a baking tray with baking paper.
2. Spread almonds over tray and roast for 10 minutes.
3. Meanwhile, mix the olive oil, rosemary, honey and cayenne pepper in a medium bowl.
4. Tip roasted almonds into olive oil mixture and stir well until fully combined.
5. Serve immediately or allow to cool and store in an air-tight container.

Recipe: <https://australianalmonds.com.au/recipe/rosemary-roasted-almonds/?v=6cc98ba2045f>

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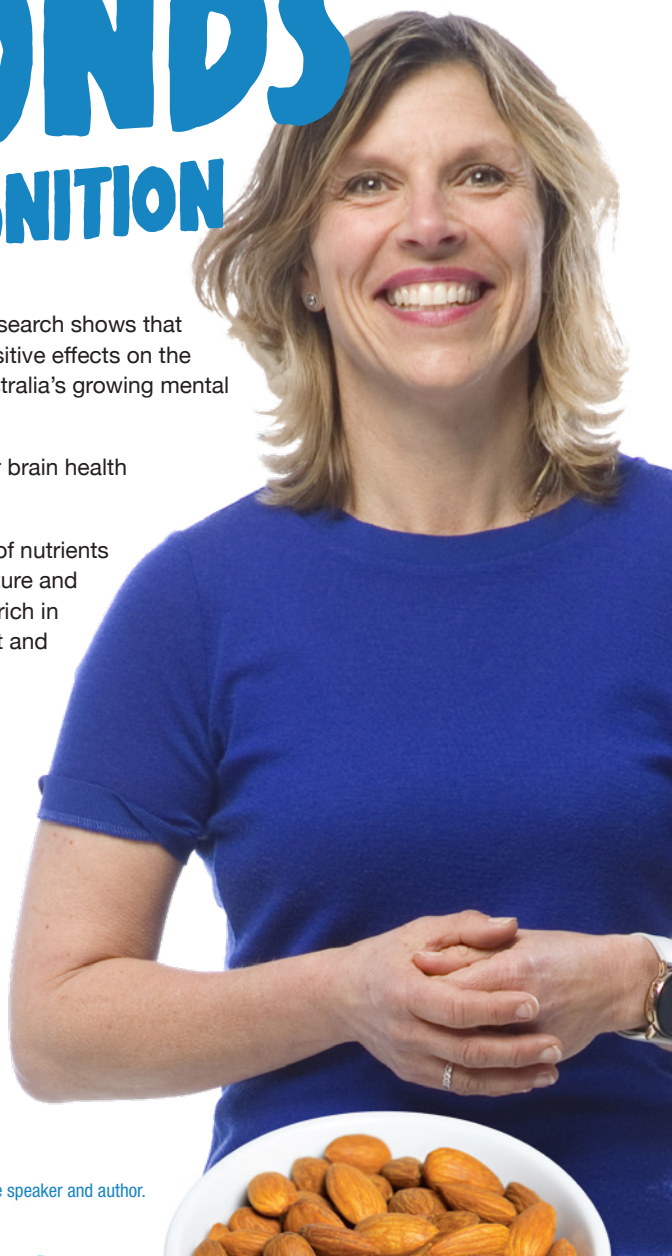
ALMONDS

MOOD & COGNITION

A rapidly growing body of scientific research shows that nuts, including almonds, can have positive effects on the brain. This is highly relevant given Australia's growing mental health crisis and ageing population.

- Maintaining good nutrition is vital for brain health as we get older.
- Almonds contain a unique package of nutrients that can support healthy brain structure and function. For example, almonds are rich in vitamin E which provides antioxidant and anti-inflammatory protection.
- There is strong scientific evidence that nuts are associated with a reduction in the cognitive decline associated with ageing.
- There is emerging scientific evidence that nuts and almonds may improve wellbeing, mood and memory.
- One serve of almonds (1 handful or 30g) daily may help to prevent cognitive decline, while up to two handfuls (60g) each day may improve shorter-term outcomes of mood and memory.

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nutrition

HOT AND SPICY ALMONDS



Ingredients

200g oven roasted almonds (approx. 1 cup)
1 teaspoon garlic powder
1 teaspoon ground cumin
½ teaspoon chilli powder (1 teaspoon = extra hot)

¼ teaspoon ginger powder
1 teaspoon Schezuan peppercorns, crushed in a mortar and pestle
4 teaspoons (20ml) honey

Method

1. Line a baking tray with baking paper.
2. Heat up a non-stick fry pan.
3. Add all dried spices and cook over a medium heat for 1-3 minutes, stirring constantly, until fragrant.
4. Add almonds to pan and stir briskly for a minute or two to heat them up.
5. Add honey and stir briskly to combine with the spice mixture. This will take a minute or two.
6. Turn out on baking tray to cool at room temperature, then break into small pieces.
7. Keeps well in an air-tight container for a week.

Recipe: <https://australianalmonds.com.au/recipe/hot-spicy-almonds/?v=6cc98ba2045f>

This project has been funded by Hort Innovation, using the Almond research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture. The strategic levy investment project Educating Health Professionals (AL16007) is part of the Hort Innovation Almond Fund. 2021.

**Hort
Innovation**
Strategic levy investment

**ALMOND
FUND**

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Summary report: survey for health professionals

Aim of survey: to understand how health professionals make food and nutrition recommendations to their clients (particularly around nuts and almonds).

Distribution

The survey was hosted on online program Survey Monkey. A summary of the distribution has been provided in the table below.

Date	Audience	Mode of delivery	Number of responses
16-18 Nov 2018	Mixed attendees – mostly general practitioners	GPCE conference. Face-to-face via iPads.	57
19 Dec 2018	Dietitians and students	Dietitians Association of Australia direct email to members	291
20 Dec 2018	Nutritionists, students and researchers	Nutrition Society of Australia e-newsletter – included amongst other content within fortnightly newsletter to members	9

Respondent breakdown by profession

ANSWER CHOICES	RESPONSES	
Nutritionist	3.64%	13
Dietitian	79.55%	284
General Practitioner	10.36%	37
Practice nurse	1.40%	5
Diabetes educator	0.00%	0
Other (please specify)	5.04%	18
TOTAL		357

The professions of those who selected “other” included:

- Student dietitians x 7
- Senior manager
- Visa medial panel physician
- Hospital medical officer
- Allied health
- Manager healthy communities
- Health professional
- Registrar

- Psychologist
- IMG GP
- Finance
- Practice manager

Key findings

- 95% (n=335) of individuals selected “yes” that they provided clients with healthy eating information as part of their practice. As expected a majority of 84% of these respondents were dietitians (81%, n=271).
- Of the 5% (n=18) that did not provide healthy eating information as part of their practice, only 1 person each respectively said “I do not have time” or “someone else does this at my practice”. Most people stated it wasn’t within their scope due to working in a different industry or did not work in private practice.
- From the 95% of respondents that did provide clients with healthy eating information as part of their practice, 80% (n=268) would be “very likely” and 20% (n=66) would be “somewhat likely” to recommend nuts as part of a healthy diet to their clients. Excluding dietitians and nutritionists the statistics were 72% (n=38) “very likely” and 28% (n=15) “somewhat likely”.
- Furthermore 51% (n=169) would be “very likely”, 45% (n=150) would be “somewhat likely” and 4% (n=15) would be “not likely” to recommend almonds as part of a healthy diet to their clients. Excluding dietitians and nutritionists, the statistics were 55% (n=29) “very likely”, 36% (n=19) “somewhat likely” and 9% (n=5) “not likely”.
- From the 4% (n=16) of all individuals who selected “not likely” to recommend almonds as part of healthy diet to their clients, 11 respondents gave their reason when probed “why”, as they would recommend nuts in general but do not specify the nut type and leave it up to their patient to decide.
- 98% (n=341) respondents considered almonds to be a healthy food source for most of their clients.
- The top 3 preferred modes for conveying food and nutrition information to clients were by printed A4 factsheet (36%, n=126), printout from a digital source e.g. USB or website (23% n=82) and printed brochure (15%, n=53). See below table for further detail:

ANSWER CHOICES	RESPONSES	
Printed brochure	15.14%	53
Printed A4 factsheet	36.00%	126
Client script (e.g a pad with tear-off sheets with pre-printed information)	12.86%	45
Print-out from a digital source (e.g. on USB or from a website)	23.43%	82
Verbal communication only	7.43%	26
Other (please specify)	5.14%	18
TOTAL		350

“Other” responses mostly included a combination of the above choices as respondents were only able to select one option in the survey e.g. “verbal and printed A4 fact sheet”.

AL16007 Educating Health Professionals

Webinar 1 - Outcomes

Purpose:

The first of two webinars to be delivered during the program was held in May 2019. The webinar aimed to increase the awareness of the current evidence base related to almond consumption and heart health. The target audience were General Practitioners, Dietitians and Nutritionists. The webinar was hosted by Redback Connect.

Webinar

The free 60-minute event was on topic was Almonds and Heart Health. The webinar was held at 12.30pm to allow health professionals to view during their lunchbreak. High profile speakers were selected to encourage uptake:

- Dr Elizabeth Neale (Advanced Accredited Practising Dietitian), University of Wollongong
- Sian Armstrong (Accredited Practising Dietitian), Heart Foundation.
- Amy Knight (Accredited Practising Dietitian), webinar facilitator, Nutrition Australia.

The learning objectives of the webinar were to:

- Understand the latest research linking nut and almond consumption and the benefits for heart health.
- Understand the latest evidence and recommendations for dietary fats and associated dietary patterns for heart health.

A recording of the webinar was accessible to all registrants following the live event along with a copy of the slides.

Promotion

A number of promotional activities were completed prior to the webinar to increase uptake. The focus was on social media and email marketing. Table 1 outlines promotional activities that were undertaken for the webinar.

Table 1: Promotional activities for webinar 1.

Date	Organisation	Activities	Reach
Mar-19	Nutrition Australia Vic Division	Electronic direct mail targeted to health professional subscribers	1385 recipients 22.5% open rate (21.9% industry average) 2.7% click rate (2.1% industry average)
Mar-19	Nutrition Australia National	Electronic direct mail targeted to health professional subscribers	3576 recipients

Date	Organisation	Activities	Reach
May-19	Nutrition Australia social media	Twitter, Facebook, LinkedIn, Instagram (Image 1)	52,000 followers
May-19	Nuts for Life	Twitter (Image 2)	3,000 followers
May-19	Heart Foundation	Twitter – retweet (Image 3)	22,000 followers

Examples of the promotion are included below.

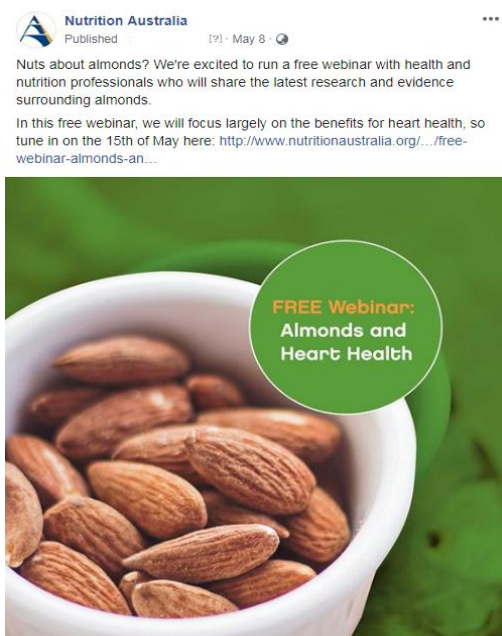


Image 1: Nutrition Australia Facebook post advertising the webinar.



Image 2: Heart Foundation retweet



Image 3: Nuts for Life Tweet

Evaluation - Post-webinar survey

At the completion of the webinar attendees were emailed a link to an evaluation survey by the host. The evaluation survey consisted of a range of questions to assess attendees' self-assessed improvements in awareness of the key concepts and satisfaction with the webinar content and speakers. Formative questions were utilised to inform the content of the second webinar for this program of work and a professional development quiz was also included to meet the CPD requirements of the different craft groups in attendance.

Attendance:

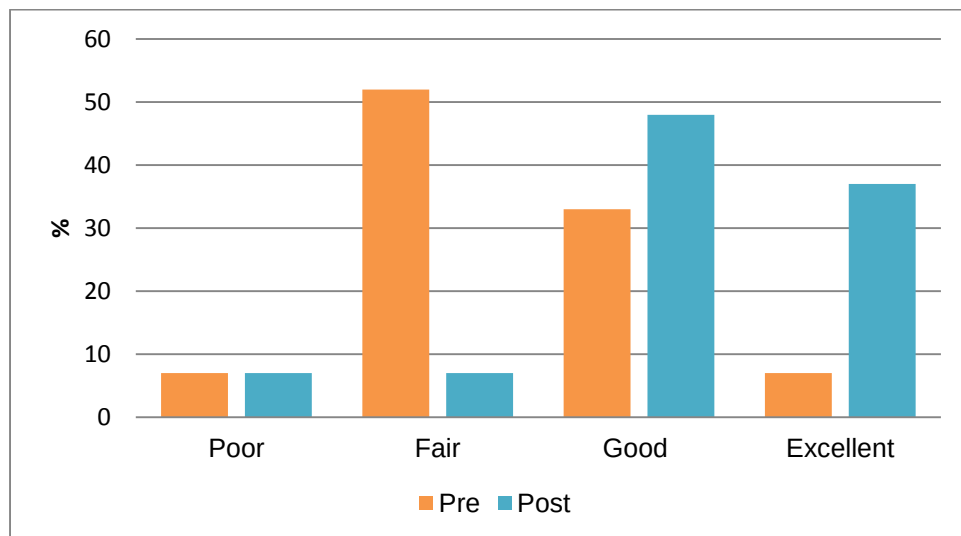
Table 2: Webinar registration, attendance and survey completion by state and profession

	Registrants No (%)	Live attendance No (%)	Survey completion No (%)
Number	253	69 (27% registrants)	27 (39% attendees)
Location			
Vic	98 (38.5%)	32 (46%)	
NSW	61 (24%)	21 (30%)	
QLD	27 (10.5%)	5 (7%)	
NT	1 (0.5%)	0 (0%)	
SA	19 (8%)	4 (6%)	
ACT	7 (3%)	2 (3%)	
WA	20 (8%)	1 (1.5%)	
TAS	2 (1%)	1 (1.5%)	
Other	18 (7%)	3 (4.5%)	
Profession			
Dietitian/Nutritionist	128 (51%)	35 (51%)	
GP/Practice Nurse	4 (1.5%)	0 (0%)	
Health promotion	12 (4.5%)	4 (5%)	
Student	50 (20%)	11 (16%)	
Other	59 (23%)	19 (28%)	

At the completion of the webinar registrants were emailed a link to the webinar recording. This was helpful for those that were unable to watch the webinar on the day. To date there has been 144 views of the webinar recording.

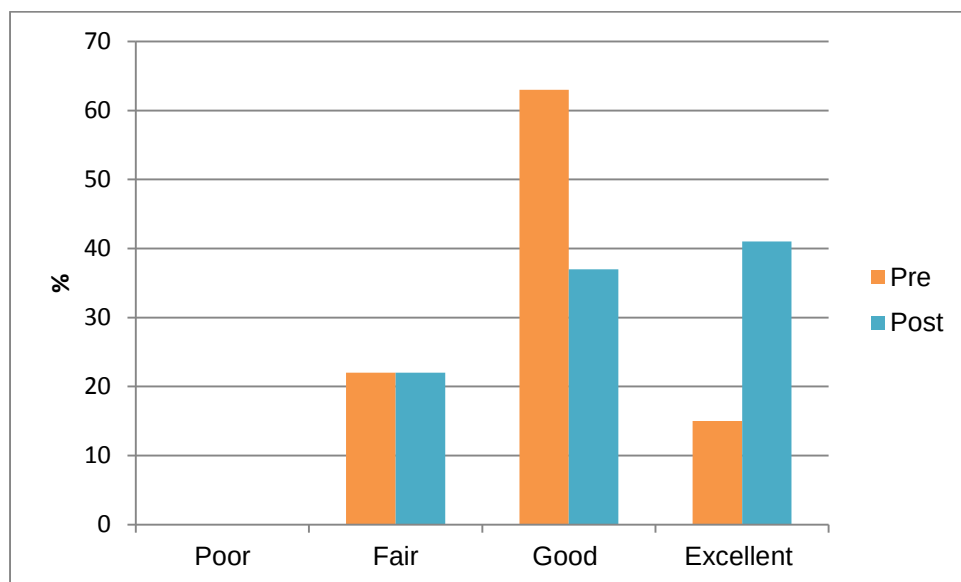
Evaluation

Graph 1: Awareness of research related to nut/almond consumption and heart health (n=27)



As shown in Graph 1, attendees reported increased awareness of research related to nut/almond consumption and heart health following attending the webinar.

Graph 2: Awareness of research/recommendations related to dietary fat and heart health (n=27)



Graph 2 demonstrates attendees reported increased awareness of research/ recommendations related to dietary fat and heart health following attendance at the webinar.

Table 3: Webinar satisfaction

N=27	Strongly agree	Agree	Disagree	Strongly disagree
The information was interesting and easy to understand	17 (61%)	11 (39%)	0	0
The presenters were engaging and easy to understand.	15 (54%)	13 (46%)	0	0
N=27	Extremely likely	Likely	Unlikely	Extremely unlikely
How likely are you to recommend this webinar to others?	8 (30%)	18 (67%)	1 (4%)	0

Webinar satisfaction- comments

Comments and experience of the webinar was noted in the participant survey including:

- 'Cited current research and latest findings. Practical suggestions for implementation'
- 'Discussed new research and updates which were really valuable'
- 'Clear and easy to understand presenters and information'
- 'The webinar was easy to understand and was presented in an engaging way. There was enough time for Q&A's'
- 'Understandable and accessible information presented in a no-nonsense way. A lot of practice points can be taken away'
- 'The speakers were very knowledgeable and informative. They gave practical tips and advice to be used by health professionals'
- 'Making it more about what is happening now and what the current research is saying but then going and putting this into practice. Focusing on whole foods and not just nutrients give easier recommendations'

Webinar improvements- comments

- A couple of participants suggested provision of the slides beforehand would enhance their learning experience
- 'As expected a little too almond heavy and not overly clear on if it was all nuts or just almonds'

Table 4: How did you find out about the webinar?

Answer options	N (%)
Email	56%
Social media	26%
Health professional newsletter	4%
Friend or family	8%
Work colleague	0%
Nutrition Australia website	8%

Email and social media were the most effective methods of promotion.

Table 5: Other health topics related to almonds you'd be interested in learning about.

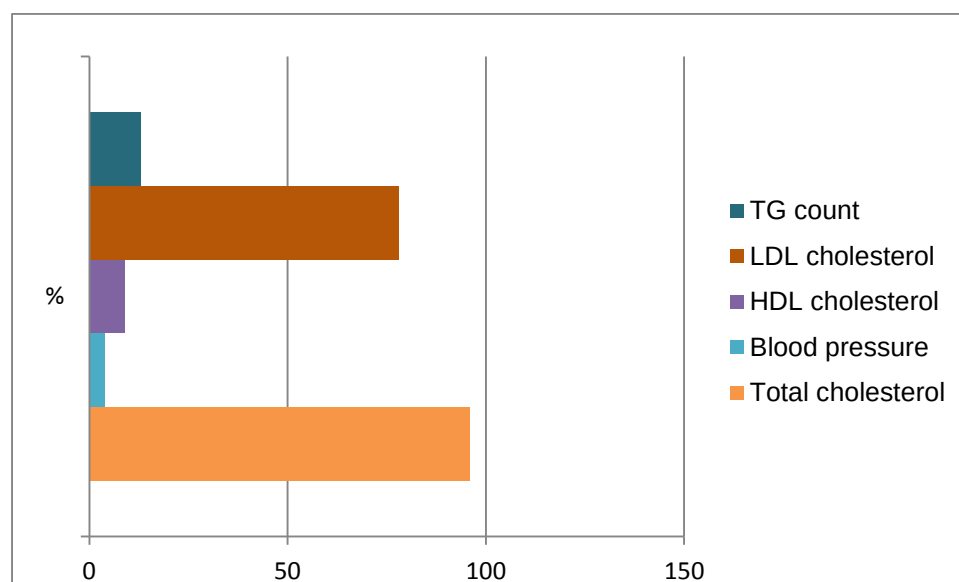
Topic	N (%)
Diabetes	16 (64%)
Weight management	20 (80%)
Cognitive function	18 (72%)
Other	3 (12%)

Attendees were able to select multiple answers. Other responses included: inflammation, GIT function, exercise, gut health, benefits of whole nuts vs other forms.

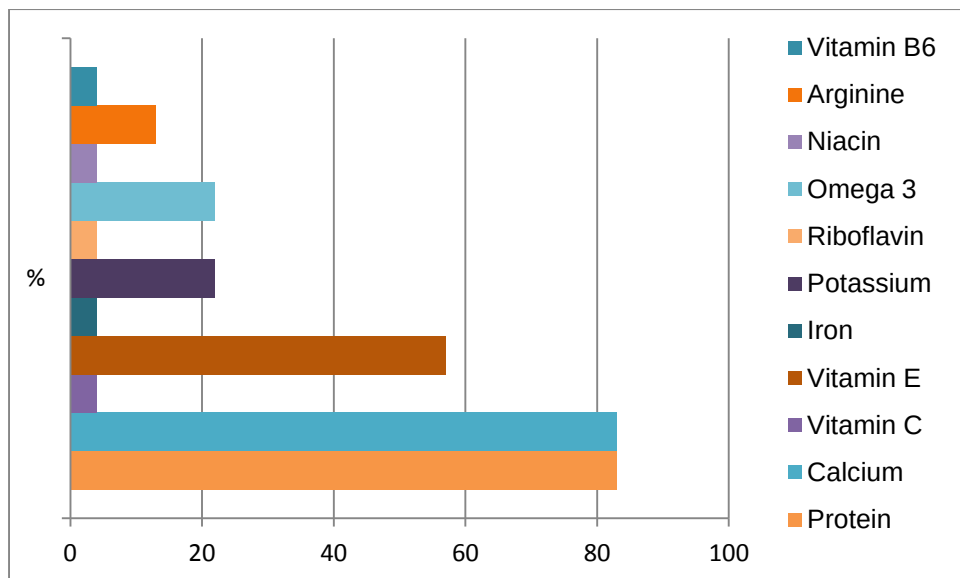
Professional development quiz

Attendees were asked the following questions as part of a professional development quiz. Responses were overwhelmingly correct, which indicates webinar attendees were able to understand and retain key concepts discussed during the webinar.

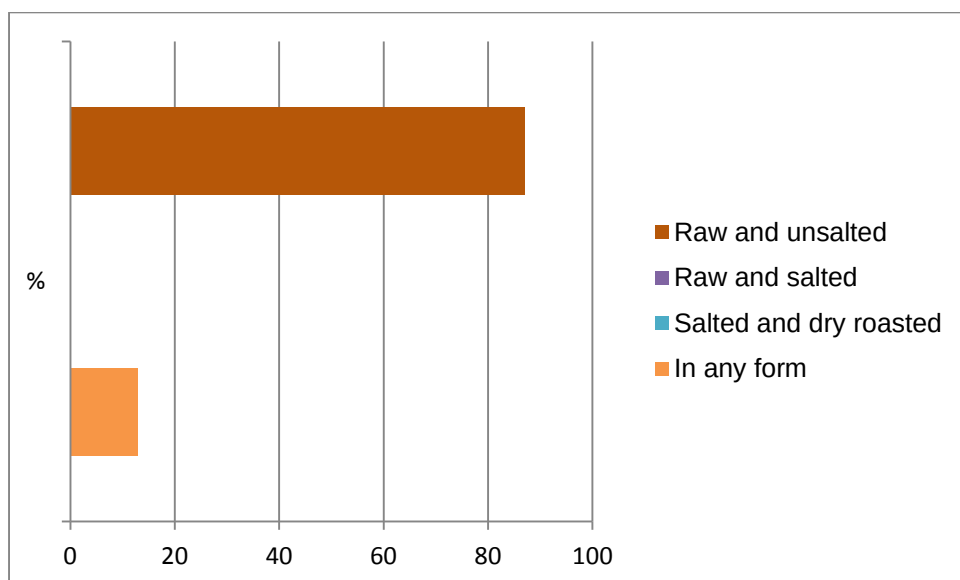
Q1. Which two heart health related outcomes have consistently been found to be improved with almond consumption (Answer: Total cholesterol and LDL cholesterol)



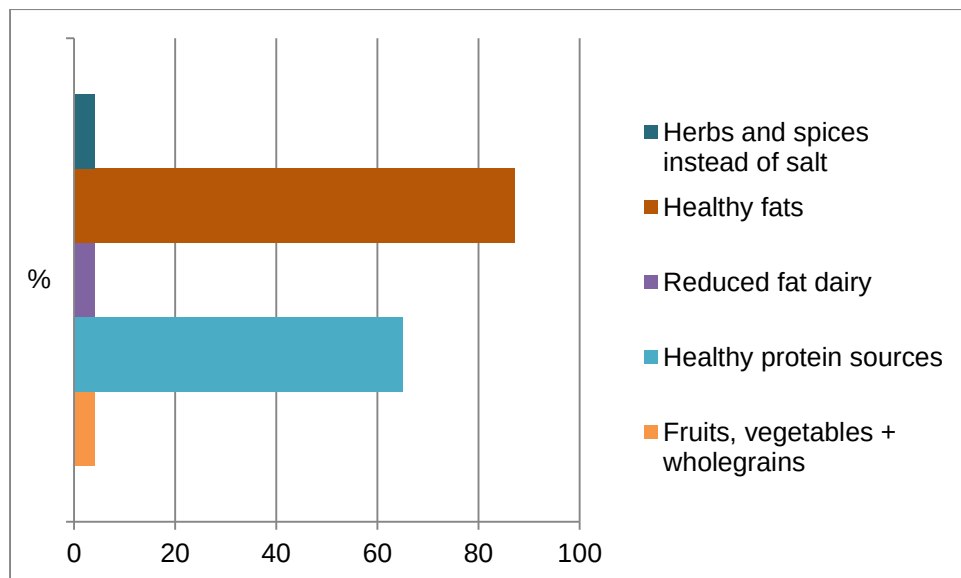
**Q2. List at least three nutrients which are found in higher amounts in almonds than most other nuts?
(Answer: protein, calcium, vitamin E, potassium, riboflavin, niacin, arginine)**



Q3. How does the Heart Foundation recommend nuts (such as almonds) be incorporated into a healthy eating pattern? (Answer: Raw and unsalted)



Q4. Where do almonds fit within the Heart Foundations healthy eating principles? (Answer: Healthy protein sources AND Healthy fat choices)



Key outcomes and future recommendations:

- There were an excellent number of registrations, attendance and subsequent views of the Almonds and Heart Health webinar.
Recommendation: Webinars are an effective educational modality to reach a large number of clinicians, in particular dietitians, nutritionists and students.
- Attendees of the Almonds and Heart Health webinar were satisfied with the content and presenters. In particular, they were satisfied with the evidence-based content and that presenters were able to provide practical strategies that could be implemented with their clients/patients.
Recommendation: Engaging expert speakers is an effective method for encouraging webinar participation.
- The health professionals that completed the post webinar survey demonstrated increased awareness/knowledge in both webinar learning objectives; to understand the latest research linking nut/almond consumption and the benefits for heart health and to understand the latest evidence, dietary patterns and recommendations for dietary fats and associated dietary patterns for heart health.
Recommendation: Following a similar format of having expert and credible speakers, latest evidence, practical strategies and 60-minute duration should be followed for the second webinar.
- Having the slides available before the webinar was the main suggested improvement.
Recommendation: Prior to the second webinar, attendees will be provided with presenter slides and/or suggested resources that can promote more in-depth learning during the webinar.
- The majority of attendees found out about the Almonds and Heart Health webinar by email marketing and social media promotional posts.
Recommendation: Email marketing is an effective tool for promoting webinars. To encourage webinar uptake of the second webinar the health professionals subscriber database and promotions via peak organisations will be engaged.
- Attendees would like the content of future webinars to include content focusing on almonds and weight management, diabetes and cognitive function.
Recommendation: The most commonly suggested topics for the next webinar will be confirmed in collaboration with the PRG.
- The professional development quiz at the end of the webinar demonstrated attendees had good retention and understanding of key concepts discussed during the webinar.
Recommendation: Including a professional development quiz assists in meeting the CPD requirements of a number of health professionals and will again be included for the second webinar.

AL16007- Milestone 106

Webinar 2 Outcomes

Purpose

Following the success of the Orchard Tour event in March 2020, the project team had originally planned to hold a second event in August 2020, around the time of orchard blossom. Due to the impacts of COVID-19 this was unable to go ahead, and so the focus shifted to webinar 2, and how this could be transformed into a more interactive event highlighting the orchard to table process of growing almonds. The target audience was health professionals, predominantly nutrition professionals.

Learning outcomes:

1. Increase understanding of the process of growing almonds in Australia.
2. Increase understanding of culinary uses for whole almonds and value-add products i.e. almond meal, slivered almonds etc.

Event details

Wednesday September 2nd, 12.30pm - 1.30pm

Speakers:

- Brendan Sidhu, CEO Century Orchards and almond grower
- Simone Austin, Advanced Sports Dietitian and Australian Almonds ambassador

Hosted by:

- Jemma O'Hanlon, Accredited Practising Dietitian and Research & Development Manager at Hort Innovation.

Format:

- Jemma welcomed attendees, summarised the format, and introduced speakers.
- Brendan presented on the process of growing almonds in Australia, and innovations in technology and sustainability within the industry.
- Simone presented on the various culinary uses of whole almonds and almond products and discussed tips to prevent waste of these products in the home, for health professionals to be able to share with their clients.
- Jemma, Brendan, and Simone facilitated a live almond tasting, where they talked attendees through the different varieties, differences in tasting profile, and how the varieties are grown.
- Q&A session to answer attendee questions.

Tasting kits

To increase engagement of attendees, an interactive component was included in the webinar. All registrants were sent an Australian Almonds tasting kit.

These kits contained:

- Natural Nonpareil almonds.
- Natural Carmel almonds.
- Dry roasted Nonpareil almonds.
- 'Almond Brownie Bliss Ball' health professional recipe card.
- 'Almonds for Good Health' health professional factsheet.



Promotions

The event was capped at a maximum of 200 registrants, due to the budget available for producing and sending out the tasting kits.

The event was promoted via social media on the Nutrition Australia and Australian Almonds channels, and via an electronic direct mail (eDM) campaign to the Health Professional subscriber database (approximately 900 subscribers).

The tasting kits helped to create social media buzz online in the days leading up to the live event, as attendees began receiving the kits. Example below from Dr Joanna McMillian, a high-profile nutrition scientist and media personality.



Registration and attendance

Table 1: Webinar registration, live attendance and recording views

	Number	Percentage of registrants
Registrants	168	N/A
Live attendance	124	74%
Recording views (6 weeks post)	15	9%
Total viewers (live + recording)	139 (124 + 5)	83%

This event had a higher live attendance rate of 74% compared to webinar 1 which had a live attendance rate of 27%.

Figure 1: Summary of registrants by profession

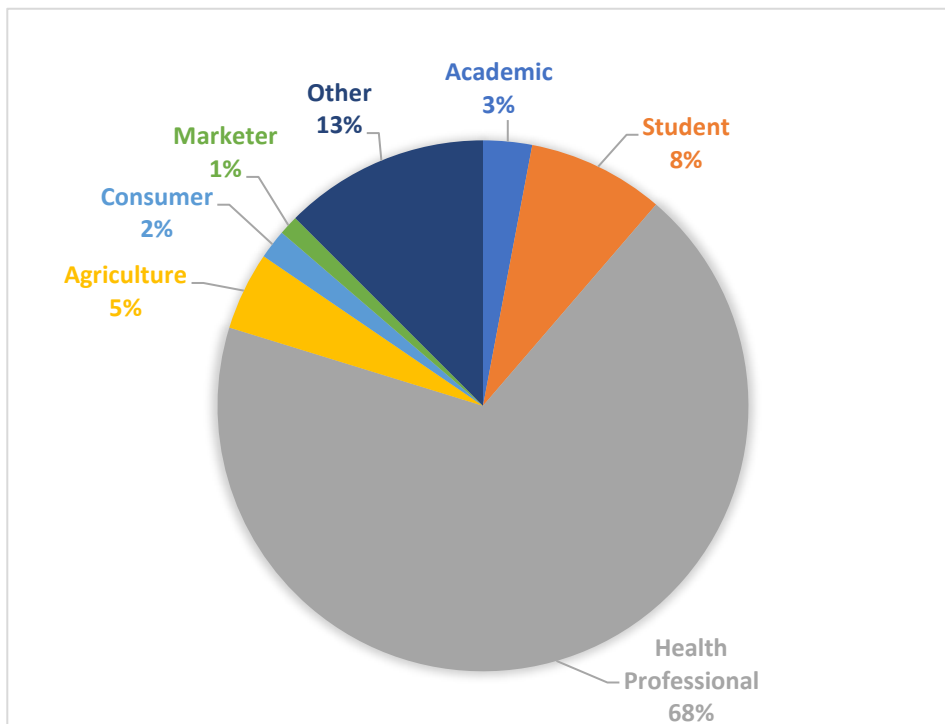


Table 2: Detailed breakdown of registrants by profession

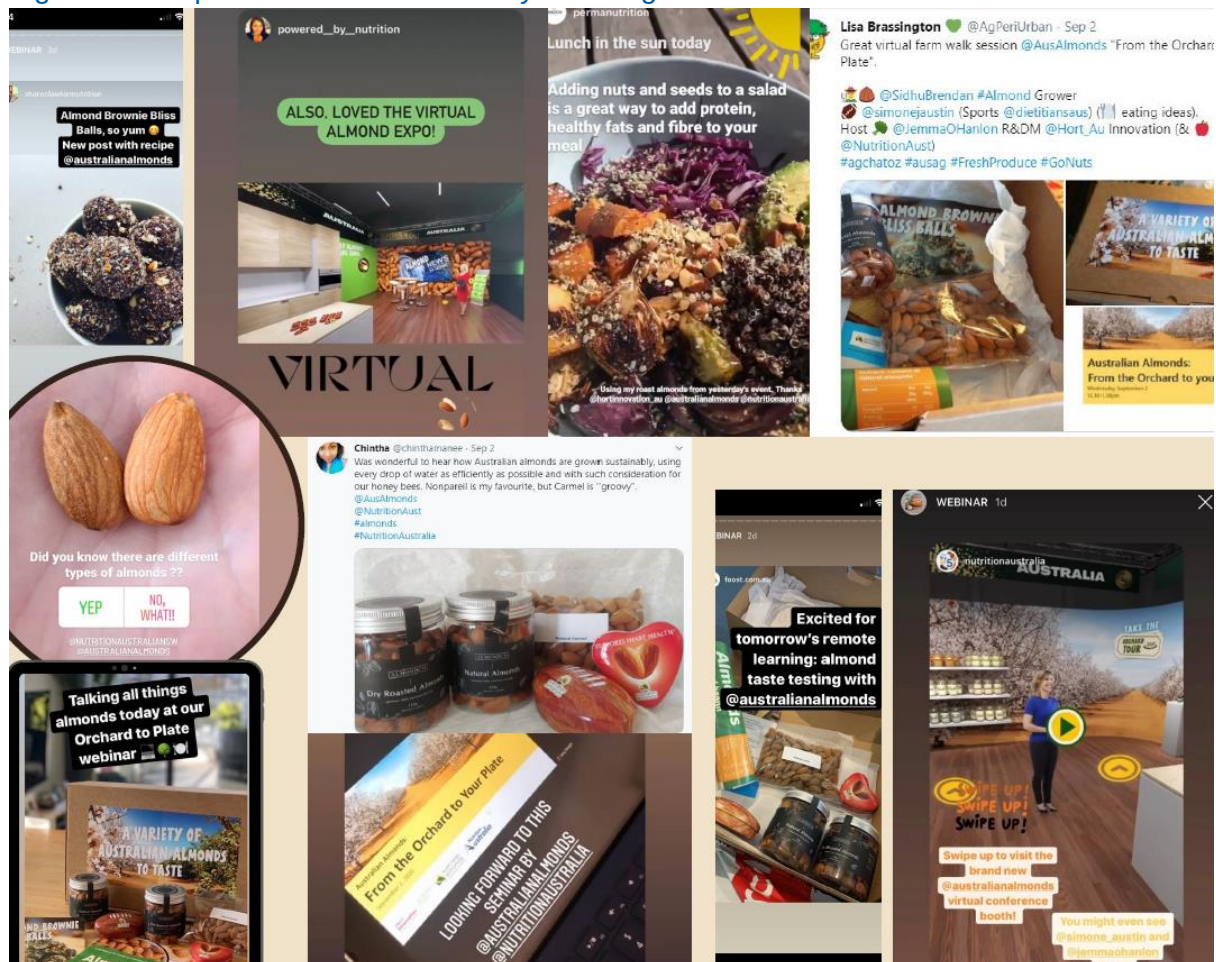
	Number of registrants	Percentage of registrants
Health Professional	115	
Dietitian	78	46%
Nutritionist	25	15%
Medical	6	4%
Pharmacist	5	3%
Naturopath	1	
Students	14	8%
Agriculture	8	
Agronomist	3	2%
Agribusiness Professional	2	1%
Biologist	1	
Farmer	1	
Horticulturalist	1	
Academic	5	3%
Consumer	3	2%
Marketer	2	1%
Other	21	
Unknown	12	7%
Business	5	3%
Food Technologist	1	
Innovation	1	
Journalist	1	
Teacher	1	

Majority of registrants were health professionals (68%), consisting mostly of Dietitians (46%) and Nutritionists (15%) which was aligned to the event's target audience. The second largest audience was students (8%). The event also attracted registrants from a diverse range of other professions, with the third largest audience being from the agricultural sector (5%) which was an unexpected outcome, however positive to see interest and support coming from that sector. Three percent of the audience were academics. Thirteen percent of registrant professions were not specified.

Social media presence

The live event created a social media presence.

Figure 2: Sample of social media activity following live event.



Post event

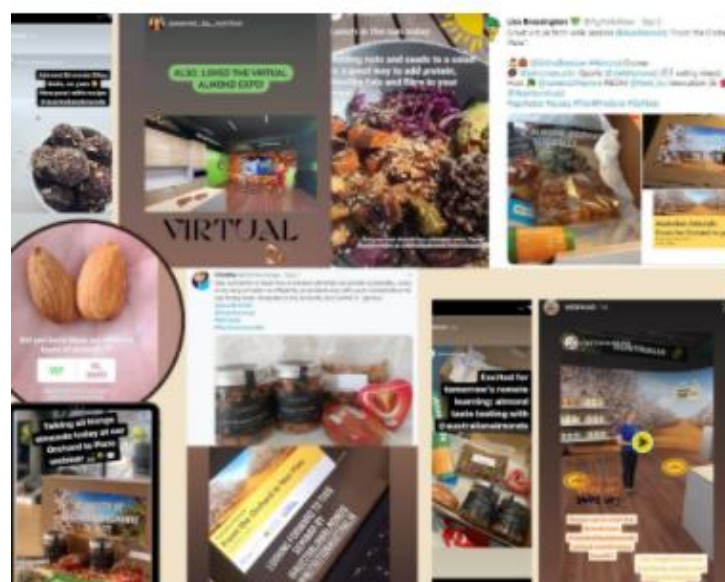
At the conclusion of the live event, attendees were automatically redirected to the newly launched Australian Almonds online virtual booth.

In the week after the event, all registrants were sent a follow up eDM as shown in Figure 3. This contained the event recording, post-event survey, link to virtual booth and tasting notes. This campaign achieved 92 opens (55%) and 15 clicks (9%).

Figure 3: Post-event eDM to all event registrants.



Thank you for attending the event! We had a lot of fun bringing this to you! It was so great to see all the excitement on social media. The event recording is now available if you missed the live event or would like to view again. We have included tasting notes below that will help you distinguish the characteristics of the different almond varieties.



[Watch recording!](#)

We would love your feedback on the event via this short feedback form!

[Feedback form](#)

Check out our new Australian Almonds virtual booth!

[Virtual booth](#)

How to roast almonds at home!
Roast at 130 degrees celsius for 25 minutes on a flat tray, shaking regularly.

Don't forget to tag us in your creations!
[@australionalmonds](#)

Australian Almonds tasting notes

1. Natural Nonpareil almonds

- Classic shape and classic flavour of the almond
- Lighter than the Carmel - harvested in early Feb-Mar
- On biting they are dense with moderate palate weight and a hint of sweetness.
- The flavour is creamy and milky with soft, broad flavours with hints of creamed honey.

2. Natural Carmel almonds

- More variety in the shape
- A little darker in the skin - harvested later in the season in Mar-Apr.
- Taste fresh and clean with floral hints and vanilla notes. With well-balanced flavours, they are creamy with definite flavours of marzipan and almonds extract.
- The Carmel is more of a 'foodie' almond.

3. Dry roasted Nonpareil almonds

- Richer mouthfeel and body
- These almonds are toasty, like toasted coconut with hints of smokiness and sweetness, almost like toffee.
- And the nutrient composition is not compromised by lightly roasting almonds!

(ref. Lyndey Milan)

Hort Innovation
Strategic levy investment

ALMOND FUND

australian almonds
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Nutrition Australia

This project has been funded by Hort Innovation, using the Almond research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture. The strategic levy investment project Educating Health Professionals (AL16007) is part of the Hort Innovation Almond Fund.

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Evaluation

Table 3. Number of survey respondents and percentage against total views (139 views).

	Number	Percentage of total viewers
Survey respondents	12	9%

A post-event evaluation survey was sent to all registrants one week following the live event which resulted in 2 responses. A follow up second email was sent a couple of weeks later to encourage increased uptake of the survey which resulted in an additional 10 responses. As shown in table 3, the total number of survey respondents was 12, which is 9% of total viewers. This response rate was lower than expected, especially as compared to webinar 1 which had a response rate of 39% of total views. One key difference is that webinar 1 automatically linked to the survey at the conclusion of the live event, whereas webinar 2 automatically linked to the virtual booth at the conclusion of the live event.

Knowledge change:

How would you rate your awareness of the process of growing and producing almonds in Australia?

	Before the event	After the event
Excellent	2 (17%)	7 (58%)
Good	3 (25%)	3 (25%)
Fair	2 (17%)	2 (17%)
Poor	5 (41%)	0

How would you rate your awareness of the culinary uses of both whole almonds and other products i.e. almond meal?

	Before the event	After the event
Excellent	5 (41%)	7 (58%)
Good	4 (33%)	4 (33%)
Fair	3 (25%)	1 (8%)
Poor	0	0

Survey respondents reported an increased awareness of both the process of growing and producing almonds in Australia, and of the culinary uses of both whole almonds and other products

Webinar satisfaction:

The information was interesting and easy to understand.

	Number	Percentage of total survey respondents
Strongly agree	6	50%
Agree	5	42%
Disagree	0	
Strongly disagree	1	8%

The presenters were interesting and easy to understand.

	Number	Percentage of total survey respondents
Strongly agree	7	59%
Agree	4	33%
Disagree	0	
Strongly disagree	1	8%

How likely are you to recommend this event to others?

	Number	Percentage of total survey respondents
Very likely	8	67%
Likely	4	33%
Unlikely	0	
Very unlikely	0	

Majority of survey respondents strongly agreed that both the information covered, and presenters were interesting and easy to understand. Furthermore, two thirds of respondents said they would be very likely to recommend this event to others. Important to note, one respondent strongly disagreed that both the information covered, and presenters were interesting and easy to understand. Unfortunately, this respondent did not provide any further comment and so it is unclear why they provided this response.

Webinar promotion:

How did you find out about this event?

	Number	Percentage of total survey respondents
Email	6	50%
Social media	3	25%
Family / friend / colleague	2	17%
Other	1	8%

Seventy-five percent of respondents found out about the event via either email or social media, which is consistent with key learnings from webinar 1, that these are effective means of promotion.

Other topics and comments / improvements:

What other topics around Australian almonds would you be interested in?

- “Ongoing awareness of the benefits of nuts in the face of so much misunderstanding in the community - even with health practitioners.”
- “Cooking with almonds - maybe a zoom cooking demo.”
- “Everyday usefulness to reduce hunger.”
- “Cooking and new varieties”.
- “More recipes/uses in cooking”.
- “Journal studies”.
- “Differences in quality and where to purchase good quality almonds”.
- “Almond based products i.e. milk”.
- “Gut health / gut microbiome”.
- “Pest and diseases and how they are controlled”.
- “More about the sustainability of the almond industry and the process of growing and harvesting almonds - particular the conditions they thrive on.”
- “Bees”.

Any other comments about the event, or improvements for future events?

- “Well done all round!”
- “The tasting was wonderful - I'm very grateful that we had the tasting packs sent out prior!”
- “Thanks”
- “Almonds sample packs and tasters were great but produced a lot of rubbish. Would be good to see almonds packaged in environmentally friendly packaging in future (this includes shops)”.
- “Thanks for putting on this event”.
- “The online trade exhibit was excellent, and the tasting of different almond varieties was a great idea”.
- “Thank you for the almond care package – delicious!”

Respondents reported additional interest in other topics around both the health benefits of almonds, but also the growing process which was positive to see. Overall, the tasting kits received positive feedback, with important feedback on the sustainability of packaging for future consideration.

Key outcomes and future recommendations:

- Despite low response rate of the survey the results indicate that attendees showed an increased awareness of both the process of growing almonds, and of the culinary uses of almonds.
Key recommendation: Online webinar events are an effective education modality for future 'Educating Health Professional' programs.
- The tasting kits were received positively by registrants and encouraged engagement at the webinar and created an effective interactive component to the event.
Key recommendation: Ensure sustainability of packaging in all future kits.
- Survey response rate was lower than expected, likely partly due to the fact the live event did not automatically link attendees there, and therefore responses were reliant on uptake of the post-event eDM.
Key recommendation: Send eDM with survey straight after event to live attendees. Could also consider an incentive to complete the post-event webinar.
- The live attendance rate was high at 74%, compared to webinar one (27%).
Key recommendation: Interactive almond tasting, and almond tasting kits were supportive of live attendance, compared to the more traditional webinar format of webinar one.
- The majority of the audience were nutrition professionals – Dietitians (46%) and Nutritionists (15%), however the event did also attract a broader audience of other health professionals, students, people in the agricultural sector, and academics.
Key recommendation: Future program activities should focus and expand on the 'orchard to plate' message, as there is clear interest from health professionals.

Australian Almonds

Orchard Tour 2020

Social media kit

Welcome!

Welcome to the first Australian Almonds Orchard Tour! We are so glad you can join us.

This Orchard Tour falls within the current 'Educating Health Professionals' program (AL16007) funded by Hort Innovation and delivered in partnership with Australian Almonds and Nutrition Australia Vic Division. This is a two and a half year program, running from May 2018 until October 2020.

The primary focus of this program is to increase awareness amongst Australian health professionals about the health benefits of regular almond consumption, with the long-term goal of increasing consumption of Australian almonds.

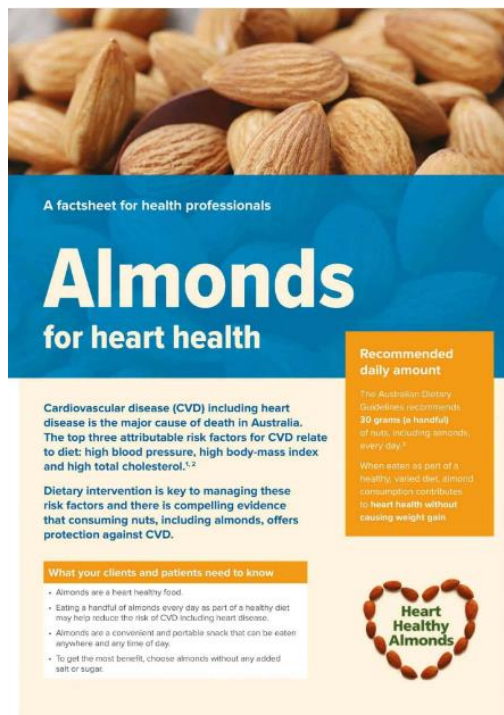
The project team have developed a suite of new resources that highlight the health benefits of almonds and have utilised webinars, and attendance at health professional conferences to amplify these messages.



Online health professional centre

The Australian Almonds Health Professional Centre houses all the latest resources health.australionalmonds.com.au

This includes health professional factsheets, consumer factsheets, recipes, webinars, video clips and more!



A factsheet for health professionals

Almonds for heart health

Cardiovascular disease (CVD) including heart disease is the major cause of death in Australia. The top three attributable risk factors for CVD relate to diet: high blood pressure, high body-mass index and high total cholesterol.^{1,2}

Dietary intervention is key to managing these risk factors and there is compelling evidence that consuming nuts, including almonds, offers protection against CVD.

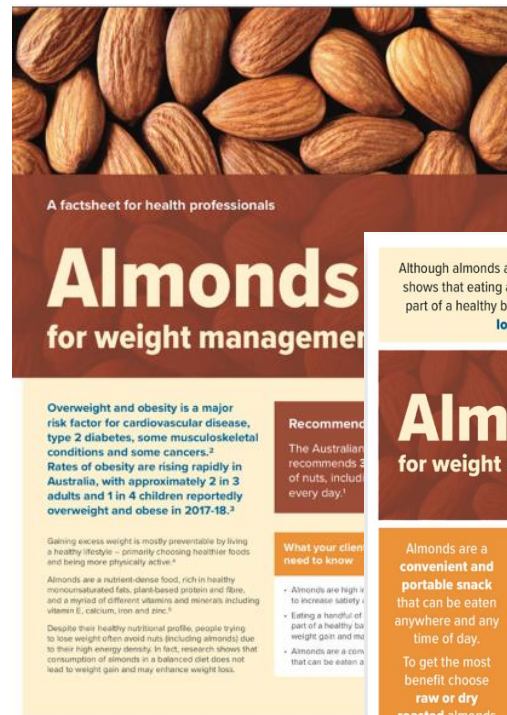
Recommended daily amount

The Australian Dietary Guidelines recommends 30 grams (a handful) of nuts, including almonds, every day.¹

When eaten as part of a healthy, varied diet, almond consumption contributes to heart health without causing weight gain.

What your clients and patients need to know

- Almonds are a heart healthy food.
- Eating a handful of almonds every day as part of a healthy diet may help reduce the risk of CVD including heart disease.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.
- To get the most benefit, choose almonds without any added salt or sugar.



A factsheet for health professionals

Almonds for weight management

Overweight and obesity is a major risk factor for cardiovascular disease, type 2 diabetes, some musculoskeletal conditions and some cancers.²

Rates of obesity are rising rapidly in Australia, with approximately 2 in 3 adults and 1 in 4 children reportedly overweight and obese in 2017-18.³

Gaining excess weight is mostly preventable by living a healthy lifestyle – primarily choosing healthier foods and being more physically active.⁴

What your clients need to know

- Almonds are a nutrient dense food, rich in healthy monounsaturated fats, plant-based protein and fibre, and a myriad of different vitamins and minerals including vitamin E, calcium, iron and zinc.⁵
- Despite their healthy nutritional profile, people trying to lose weight often avoid nuts (including almonds) due to their high energy density. In fact, research shows that consumption of almonds in a balanced diet does not lead to weight gain and may enhance weight loss.
- Almonds are high in fibre to increase satiety.
- Eating a handful of almonds as part of a healthy diet may help reduce the risk of weight gain and may help to maintain a healthy weight.
- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.

Although almonds are **high in energy**, research shows that eating a handful (30g) every day as part of a healthy balanced diet **may help you lose weight**.

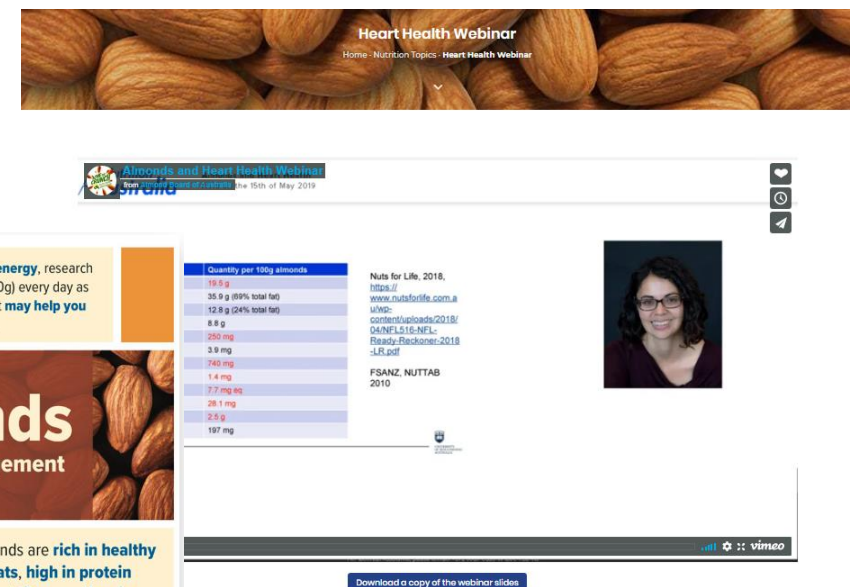
Almonds for weight management

Almonds are a **convenient and portable snack** that can be eaten anywhere and any time of day.

To get the most benefit choose **raw or dry roasted almonds** without any added salt or sugar.

Almonds are **rich in healthy fats, high in protein and fibre, and low in carbohydrates**. They help to keep us **fuller for longer**.

The best ways to maintain a **healthy weight** are to eat a **balanced diet** and to be more **physically active**.



Heart Health Webinar

Home - Nutrition Topics - Heart Health Webinar

Almonds and Heart Health Webinar

Heart Health Webinar recorded on the 15th of May 2019

Quantity per 100g almonds

16.9 g
35.9 g (89% total fat)
12.8 g (24% total fat)
4.8 g
290 mg
3.9 mg
740 mg
1.4 mg
7.7 mg eq
26.1 mg
2.5 g
197 mg

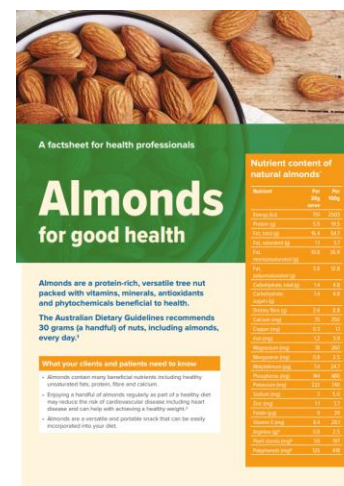
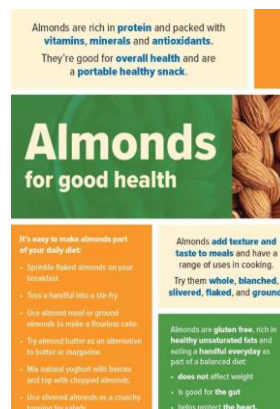
Nuts for Life, 2016, <https://www.nutsforlife.com.au/wp-content/uploads/2018/04/NFL1516-NFL-Ready-Flashcard-2018-15.0.pdf>

FSANZ, NUTTAB 2019

Download a copy of the webinar slides

A healthy handful daily!

- One key message of the 'Educating Health Professionals' program is encouraging Australians to enjoy 'a healthy handful' of almonds daily.
- This is equal to 30g of raw or dry roasted almonds.
- The nutrient content of 30g of almonds is shown here, as featured in the 'Almonds for good health' factsheet, which details the nutrient profile of almonds.
- Additional key messages have also been developed, around the themes of heart health, diabetes and weight management.



Nutrient content of natural almonds³

Nutrient	Per 30g serve	Per 100g
Energy (kJ)	751	2503
Protein (g)	5.9	19.5
Fat, total (g)	16.4	54.7
Fat, saturated (g)	1.1	3.7
Fat, monounsaturated (g)	10.8	35.9
Fat, polyunsaturated (g)	3.8	12.8
Carbohydrate, total (g)	1.4	4.8
Carbohydrate, sugars (g)	1.4	4.8
Dietary fibre (g)	2.6	8.8
Calcium (mg)	75	250
Copper (mg)	0.3	1.1
Iron (mg)	1.2	3.9
Magnesium (mg)	78	260
Manganese (mg)	0.8	2.5
Molybdenum (µg)	7.4	24.7
Phosphorus (mg)	144	480
Potassium (mg)	222	740
Sodium (mg)	2	5.0
Zinc (mg)	1.1	3.7
Folate (µg)	9	29
Vitamin E (mg)	8.4	28.1
Arginine (g) ⁴	0.8	2.5
Plant sterols (mg) ⁴	59	197
Polyphenols (mg) ⁵	125	418

The health benefits of almonds

Key messages:

- Almonds are a convenient, portable snack that can be eaten anywhere and at any time of day.
- They are versatile and can be used in many ways in different recipes.
- Encourage everyone to enjoy a 'healthy handful' of 30g of raw or dry roasted almonds daily.
- Almonds are rich in healthy fats, known as monounsaturated fats, which help protect the heart.
- Adding almonds to a meal slows digestion and lowers the overall glycaemic index. This can help with managing blood glucose levels at mealtimes.
- Eating a handful of almonds (30g) every day as part of a healthy balanced diet will not lead to weight gain and may help achieve weight loss.
- Evidence suggests we may only absorb 70% of the total energy contained in almonds.



Please refer to the full fact sheets and resources on the Health Professional Centre website, for more detailed information and references.

The orchard to table journey

More recently it has become apparent that health professionals and consumers are not only interested in the health benefits of eating almonds, but they have demonstrated increasing interest in how Australian almonds are grown.

We wanted to create an immersive 'orchard to table' experience during this orchard tour to share more about the process of growing, harvesting and processing almonds in Australia.

The next steps of the 'Educating Health Professionals' program will include the development of sustainability key messaging to meet the growing demand for information by health professionals and consumers.

Stay tuned for new resources and events focused on sustainability this year!



Orchard tour social media

We would love for you to share the orchard tour with your networks using the relevant hashtags and accounts below

#ausalmondstour

#australianalmonds

#hearthealthyalmonds

#healthyaussiealmonds

@hortinnovation
(Facebook)

@australianalmonds

@hort_au
(Twitter)

@nutritionaustralia



Project partners



Hort Innovation

Horticulture Innovation (Hort Innovation) is the grower-owned, not-for-profit research and development corporation for Australia's horticulture industry.



Australian Almonds

The Almond Board of Australia is the peak body for Australian almond growers and processors. One of their key roles is to communicate the important health and nutrition benefits of eating almonds to health professionals.



Nutrition Australia

Nutrition Australia is an independent, non-government, not-for-profit, community-based organisation. Nutrition Australia aims to inspire the healthy eating of all Australians.



Get in touch

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AL16007 Milestone 106

Orchard Tour Outcomes

Purpose

A group of influential nutrition professionals were invited to tour almond orchards in Victoria and South Australia, to experience and understand the process of growing, harvesting, and processing almonds in Australia. The intended outcome was that attendees are better informed about not only the health benefits of almonds, but also the 'orchard to table' journey of growing almonds. Furthermore, that attendees would become champions of the Australian almonds industry and advocate for increased consumer consumption through dissemination of key messages via their social media channels and networks.

Itinerary

Wednesday 11 March 2020:

- Mildura airport at 9:30am
- Visit Rijami Farms and Heading Cliffs Lookout
- Lunch in Renmark, SA
- Visit the Almond Centre of Excellence experimental orchard in Loxton, SA
- Check into Hotel in Loxton
- Dinner in Loxton/Berri

Thursday 12 March 2020:

- Breakfast at Hotel in Loxton- 1908 Café
- Visit CMV Farms in Loxton
- Visit AlmondCo Australia in Renmark
- Lunch in Renmark
- Drive to Mildura airport: Flight at 5:25pm

Social media kit and key messages

A social media kit was developed to provide event and project background, as well as the key messages and event hashtags. This was disseminated to all attendees the week prior to the event.

The full social media kit is included as Appendix 2.

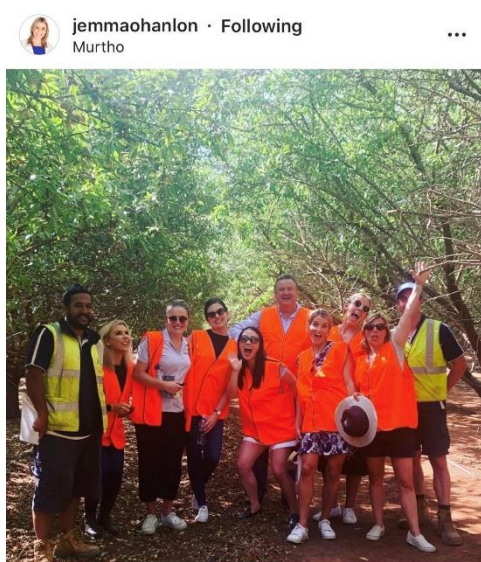
Attendees

Name	Bio	Social Media
Jemma O'Hanlon	Leading Australian Dietitian and trusted nutrition expert with over 15 years' experience across the food production, foodservice, food manufacturing and public health sectors. In her role as Research & Development Manager at Hort Innovation, Jemma oversees the nutrition, health, food safety and value chain portfolios, managing over 30 projects.	2,359 Instagram followers
Alex Parker & Anna Debenham (The Biting Truth)	The Biting Truth are a team of expert dietitians who believe in the power of science-based nutrition. Anna and Alex have a high media profile and extensive experience working in the health and wellbeing space. They run a successful website www.thebitingtruth.com , are the creators of the Nutrition Reboot Program, have appeared on national television, radio and print media and have a large social media following where they share their health and wellbeing advice	42,300 Instagram followers
Vicki Foord	Vicki is an Accredited Practising Dietitian (APD) and Sports Dietitian graduating from the University of Newcastle with a Bachelor of Nutrition and Dietetics. She is the Founding Director of Eat for Wellness, a private practice based in Melbourne. Vicki has over 7 years of experience in nutrition and has a special interest in weight loss management and has helped many individuals achieve their health and well-being goals.	9,040 Instagram followers
Simone Austin	Simone is an Accredited Practising Dietitian, Advanced Sports Dietitian, author, President of Sports Dietitians Australia and Hawthorn Football Club's dietitian. Simone is also a public speaker and media presenter, consultant to food industry and Senior Dietetic Advisor for Dietitians Australia. Simone is currently an ambassador for Australian Almonds.	5,418 Instagram followers

Social media reach

A sample of the social media activity is shown below. In summary:

- Reach: 274,000 on Facebook
- Total posts under hashtag: 28 (20 photo posts; 8 videos)
- Total likes (photos only): 722



Liked by dietitianconnection and others

jemmaohanlon Excited to be on Almond Tour? Just a little 🌞

jemmaohanlon #almonds #australianalmonds #hearthealthvalmonds #ausalmondstour

simone_austin Loxton, South Australia, Australia



Liked by aranyac and others

simone_austin I have been lucky enough to spend 2 days in Mildura, & Loxton (SA) visiting farms and processing centres for almonds and eating... more

View all 10 comments

thebitingtruth What an awesome few days!! 🥰🥰



Liked by naqnutrition and others

nutritionaustralia As restrictions hit Melbourne, we're reminiscing on better times at the @australianalmonds orchard tour in Mildura... more

nuts_galore 🍷🍷🍷 you don't get any fresher than that 🍷🍷🍷

vickima_dietitian Loxton, South Australia, Australia



Liked by simone_austin and others

vickima_dietitian Feeling so lucky to have been invited to the very first @australianalmonds Orchard Tour... more



Liked by sunsol_muesli and others

thebitingtruth What an epic few days 🥰🥰!!

jemmaohanlon Almondco Australia Ltd



Liked by aranyac and others

jemmaohanlon Final stop was @almondco_australia in Renmark where they take the hulled & shelled almonds, pasteurise them (for food safety... more

Evaluation

A post-event survey was disseminated to attendees following the event. Five attendees responded.

Event satisfaction:

Overall, how would you rate this tour?

	Number	Percentage of total survey respondents
Excellent	4	80%
Very good	1	20%
Good	0	
Fair	0	
Poor	0	

How would you rate the individual locations / presenters on Day 1?

Mildura Murray River – Psyche Bend Pumps

	Number	Percentage of total survey respondents
Excellent	1	20%
Good	3	60%
Satisfactory	1	20%
Undecided	0	
Unsatisfactory	0	

Lindsay Point Orchard – Tony Spiers

	Number	Percentage of total survey respondents
Excellent	5	100%
Good	0	
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Houseboat Tour at Wilkadene

	Number	Percentage of total survey respondents
Excellent	5	100%

Good	0	
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Amaroo Orchards – Michael Ward

	Number	Percentage of total survey respondents
Excellent	2	40%
Good	2	40%
Satisfactory	1	20%
Undecided	0	
Unsatisfactory	0	

AlmondCo's Hulling and Shelling Facility – Tom Dobbin

	Number	Percentage of total survey respondents
Excellent	5	100%
Good	0	
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

CMV Farms Loxton – Ryan Norton

	Number	Percentage of total survey respondents
Excellent	2	40%
Good	3	60%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

How would you rate the individual locations / presenters on Day 2?

Almond Centre of Excellence Research Orchard – Mark Skewes

	Number	Percentage of total survey respondents
Excellent	2	40%

Good	3	60%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Loxton Pumping Station – Gavin McMahon

	Number	Percentage of total survey respondents
Excellent	1	20%
Good	1	20%
Satisfactory	2	40%
Undecided	1	20%
Unsatisfactory	0	

AlmondCo in Renmark – Nick Spanos

	Number	Percentage of total survey respondents
Excellent	5	100%
Good	0	
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

What was the highlight of your trip and why?

- “Hard to pick - I did love the first farm and the new farm where they are trialling things themselves, also loved the houseboat and lunch venue- all great”.
- “The highlight for me was the AlmondCo tour in Renmark. Love seeing the whole processing and packing procedure, it gave me a new appreciation for Australian Almonds.”
- “Seeing the trees and eating almonds fresh from the tree”
- The last presenter (Nick) from the almond processing plant was great. He pitched everything at the right level for us and it was really fascinating what he was sharing. Although super interesting, some of the other presenters were a little too detailed and technical with the information they shared.
- I felt very fortunate to get to see the entire journey from the orchards all the way through to Almond Co, and the processing of the almonds, and different value add products.

Overall, how would you rate the organisational and administration aspects of the tour?

Accommodation

	Number	Percentage of total survey respondents
Excellent	3	60%
Good	2	40%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Transport

	Number	Percentage of total survey respondents
Excellent	4	80%
Good	1	20%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Catering / food

	Number	Percentage of total survey respondents
Excellent	4	80%
Good	1	20%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Scheduling / timing of tour

	Number	Percentage of total survey respondents
Excellent	3	60%
Good	2	40%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Number of places visited

	Number	Percentage of total survey respondents
Excellent	2	40%
Good	3	60%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

Length of presentations

	Number	Percentage of total survey respondents
Excellent	2	40%
Good	2	40%
Satisfactory	1	20%
Undecided	0	
Unsatisfactory	0	

Length of tour overall

	Number	Percentage of total survey respondents
Excellent	4	80%
Good	1	20%
Satisfactory	0	
Undecided	0	
Unsatisfactory	0	

What topics / processes did you find the most engaging?

Water management

	Number	Percentage of total survey respondents
Very engaging	3	60%
Neutral	2	40%
Not engaging	0	

Native vegetation

	Number	Percentage of total survey respondents
Very engaging	2	40%
Neutral	3	60%
Not engaging	0	

Repurposing of waste products

	Number	Percentage of total survey respondents
Very engaging	4	80%
Neutral	1	20%
Not engaging	0	

Water market

	Number	Percentage of total survey respondents
Very engaging	2	40%
Neutral	3	60%
Not engaging	0	

IPM (integrated pest management) programs

	Number	Percentage of total survey respondents
Very engaging	2	40%
Neutral	3	60%
Not engaging	0	

Phytech tree sensor scheduling of irrigation

	Number	Percentage of total survey respondents
Very engaging	3	60%
Neutral	2	40%
Not engaging	0	

Farming techniques (machinery, technology used)

	Number	Percentage of total survey respondents
Very engaging	4	80%
Neutral	1	20%
Not engaging	0	

Processing of almonds

	Number	Percentage of total survey respondents
Very engaging	5	100%
Neutral	0	
Not engaging	0	

How likely is it that you would recommend this tour to a friend or colleague?

	Number	Percentage of total survey respondents
Extremely likely	5	100%

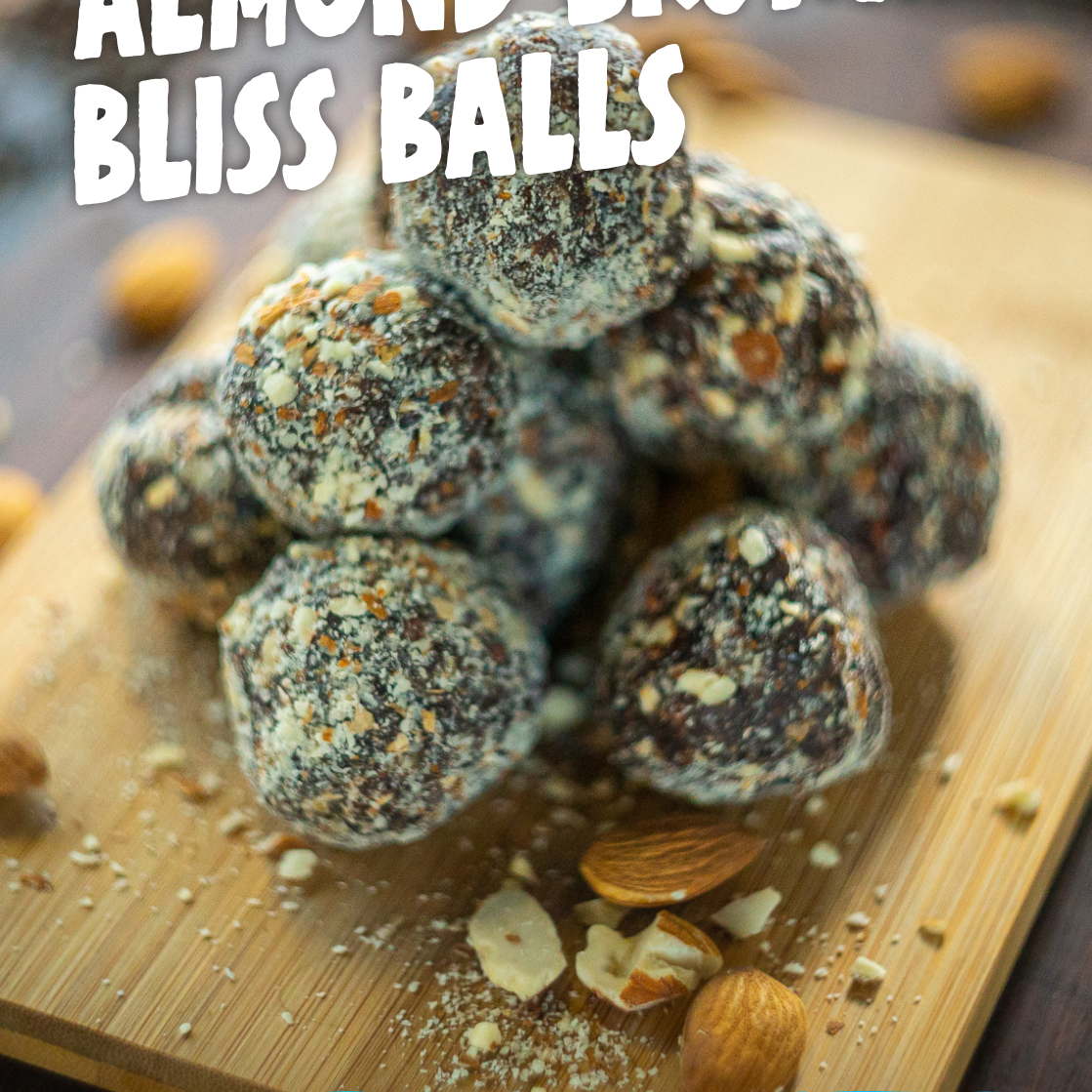
Do you have any other comments, questions or concerns relating to the tour?

- “Absolutely loved the tour! Was very honoured to come away and it has made us even bigger fans of almonds! We have been spreading a lot of the information we learned and are so grateful we had the opportunity. We do still get some questions around almonds and water, so would be great to get some simple responses to these so that our messages are all aligned. Thanks again guys!!”
- “A position developed on almond milk would be useful as I feel we weren't able to directly address this question from the dietitians”
- “Would have loved to learn more about bee pollination. Something that would be fun to add to the whole experience perhaps is to include a cooking demo regarding how people could incorporate more almonds in their everyday meals :) It would be fun and exciting for Dietitians' or other professionals to learn this!”
- “I would like to know more about where almond milk is made e.g. ones on our shelves are they mostly Californian, Australian almonds, is it important to the industry- what is it like environmentally like to produce the almond milk or is it better to sell the almonds to eat? Loved learning about the water and the bees- loved it all! The people were also just beautiful!”

Key outcomes and future recommendations

- The orchard tour rated highly overall, with 80% of attendees rating the tour as 'excellent', and one hundred percent of survey respondents saying they would recommend the tour.
Key recommendation: An orchard tour event is an effective means of engaging Dietitians and Nutritionists.
- The social media kit was utilised by attendees to disseminate key messages on social media, with a reach of approximately 270,000.
Key recommendation: Provide a social media kit for future events also.
- Some sessions and presenters rated more highly than others.
Key recommendation: Refinement of itinerary to occur for future events.
- Attendees showed further interest in topics such as water usage, bee pollination, almond milk.
Key recommendation: Development of health professional resources on these topics would be valuable.

ALMOND BROWNIE BLISS BALLS



australian
almonds

healthy lifestyle
nutrition

ALMOND BROWNIE BLISS BALLS

Ingredients:

- 1 ½ cup almonds
- ¾ cup rolled oats
- ¼ cup cacao powder
- 2 teaspoons vanilla extract
- 12 medjool dates pitted
- 40 grams cacao nibs
- 1 tablespoon almond oil

Directions:

1. Add 1/2 cup almonds to food processor. Process on medium speed to crush for coating bliss balls. Do not over process as you do not want almond meal. Pour into a small dish, set aside.
2. Add remaining 1 cup of almonds, oats, cacao, vanilla extract into a food processor, process on high speed for 20 seconds.
3. Scrape down sides of the bowl, add dates and cacao nibs and continue processing on full speed for another 20 seconds.
4. Again, scrape the sides of the bowl and add the almond oil, continue to process for a further 20-40 seconds or until mixture combines.
5. Form into bite-sized balls.
6. Roll each ball into crushed almonds.
7. Store in the fridge in an airtight container for up to 1 week.



australian
almonds

healthy lifestyle
nutrition



The effect of almonds on mood, cognition and gut health

A literature scope

Prepared for Nutrition Australia
January 2021

Prepared by Nutrition Research Australia Pty Ltd.

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Executive summary

Nutrition Australia commissioned Nutrition Research Australia (NRAUS) to conduct a literature scope on nuts and their effect on mood, cognition and gut health, with a focus on almonds. The purpose of the scope was to develop evidenced-based messaging for education and communications. The literature scope was conducted through the PUBMED database in December 2020. Randomised controlled trials (RCTs) and cohort studies, including systematic literature reviews (SLRs) of such studies, were included.

Key findings

Mood:

- Few studies on nuts (n = 2 RCTs and 1 cohort) and almonds (n = 2 RCTs).
 - Eating 56g per day of almonds reduced symptoms of depression in adults with type-II diabetes, as part of a low carbohydrate diet, in one RCT.
- Effect is biologically plausible, warranting further research.
 - Nuts, including almonds, can provide at-risk nutrients important to brain function, reduce inflammation, and improve the gut microbiota status.

Cognition:

- Strong, consistent evidence that nuts are associated with a reduction in cognitive decline associated with ageing.
 - Evidence drawn from numerous cohort studies and supported by one RCT.
 - In one study, the reduction in cognitive decline was equivalent to 5-8 years of ageing.
 - No evidence on nut type specifically (including almonds).
 - Biologically plausible via a reduction in inflammation and improved blood flow.
- Emerging evidence from two recent RCTs that almonds may have a favourable effect on memory.
- Limited, inconclusive or unfavourable evidence that nuts have an effect on executive function, child neuropsychological development, cognitive scores, or Alzheimer's disease mortality.

Gut health:

- Strong evidence (systematic review of RCTs) that nuts improve the gut microbiota composition.
 - Evidence limited to almonds and walnuts, and most established for almonds.
 - Almonds provide a unique nutrient package including fibre, phytochemicals and unsaturated fatty acids, which have potential prebiotic effects.
 - Compared with other nuts, almonds are highest in fibre and contain one of the highest phytochemical contents.
- Mixed evidence from two meta-analysis of cohort studies that nuts reduce colon and colorectal cancer risk.
 - Sex may impact the association, with risk reduction larger in women.
- Limited evidence that almonds induce a change in bowel function.

Brief

Almonds are a nutrient rich food and their cardiovascular health benefits are well established. Less is known about the relationship between almonds and the more emerging areas of mood, cognition and gut health. Nutrition Australia (VIC) briefed Nutrition Research Australia (NRAUS) to conduct a literature scope on the effects of almonds on i) mood and cognition, and ii) gut health. Due to the limited evidence for almonds specifically, it was decided to widen the scope to include evidence on total nuts (any type), with a focus on almonds. The findings will be used to guide the development of evidenced-based key messages in education collaterals, including fact sheets for healthcare professionals (HCPs).

Background

What is mood and cognition?

Mood

Mood is an important component of mental wellbeing. It is characterised by the presence, severity and duration of depressive symptoms, anxiety, psychological distress and other emotions (1). Mood is frequently measured scientifically through validated questionnaires. Common questionnaires include (2):

- **Depression and anxiety:**
 - Hospital Anxiety and Depression Scale (HADS),
 - Hamilton Rating Scale for Anxiety/Depression (HAM-A, HAM-D),
 - Beck Depression Inventory (BDI), and
 - Montgomery-Asberg Depression Rating Scale (MADRS).
- **Psychological distress:**
 - Kessler Psychological Distress Scale (K10), and
 - Distress Questionnaire-5.
- **General mental wellbeing:**
 - Warwick-Edinburgh Mental Well-being Scale.

When mood symptoms meet a certain severity and duration, the person is classified as having a mental disorder. Approximately 45% of Australians will experience a mental illness in their lifetime (3), with anxiety and depression having the greatest prevalence (4). Depression is one of the largest contributors to the total burden of disease, expressed as years of life lost due to ill-health, disability and early death, both in Australia and globally (5, 6).

Cognition

Cognition refers to mental processes involved in understanding, storing and using information in everyday activities (7). Domains of cognition include:

- **Social cognition:** responding to emotion-laden stimuli.
- **Executive function:** higher level thinking and decision making including mental flexibility, planning and response inhibition.
- **Memory:** categorised into episodic, working and recognition memory.
- **Psychomotor speed, motor function and attention:** attention to specific information and ignoring others.

Cognition is often measured objectively. Objective measures include the Choice Reaction Test, Wechsler Memory Scale and Mini-Mental State Examination (8).

Cognitive abilities can decline over time. Dementia is a common cognitive disorder defined as the deterioration in brain function including memory, thinking, behaviour, and the ability to perform everyday activities (9). Alzheimer's disease makes up 60-70% of dementia cases (10). Dementia is a major cause of disability and dependence and considered by the World Health Organisation as a public health priority (10).

What is gut health?

Gut health consists of both bowel functions (such as defecation frequency, stool weight, and transit time) and the abundance and diversity of gut microbiota. Gut health is important for a strong immune system (11) and general health and well-being (12).

Potential markers of gut health used in scientific studies are listed in **Table 1**, although this list is not exhaustive.

Table 1. Measures related to determining optimal gut health

Gut health outcomes	Description or relationship to gut health
Stool weight, consistency, frequency and transit time	Markers of stool quality. Healthy and diverse gut microbiota composition is thought to be important for each of these bowel functions (13, 14).
Presence of constipation/diarrhoea	Thought to occur in the presence of microbial dysbiosis and can improve with healthy gut microbiota composition (15).
Excessive flatulence	Number of events and volume of gas evacuated linked to variations in main phyla and gut dysbiosis (16).
Reflux	Reflux disorders associated with a number of gram-negative anaerobes (e.g. Bacteroidetes) (17).
Bifidobacterium/Lactobacilli abundance	Thought to support digestive health through production of SCFA. However caution is needed as the 2017 Consensus Panel considered changes solely on Bifidobacterium or Lactobacilli abundance insufficient for prebiotic activity, suggesting microbial diversity is key (18).

Microbial diversity	A measure for how many different species are present and how evenly distributed they are. Lower diversity is considered a marker of dysbiosis (imbalance) and associated with a range of disorders/disease states (19).
SCFA production	SCFA production is a product of bacteria fermentation and linked to health benefits. However, it is difficult to determine a causative role for SCFA and health outcomes (18). Acetate is the most abundant SCFA and is essential for the growth of other bacteria. Acetate may have a role in appetite regulation and is associated with lower levels of obesity and reduced insulin resistance. Butyrate is the main energy source for microbes in the colon and prevents gut microbiota dysbiosis. Butyrate appears to improve glucose and energy homeostasis. Propionate appears to regulate gluconeogenesis and satiety (19).

SCFA: Short-chain fatty acids

Research Questions

Mood and Cognition

1. What is the effect of nuts on mood and cognition?
2. What is the effect of almonds specifically on mood and cognition?
3. What are the potential mechanisms of action for almonds on mood and cognition?

Gut Health

4. What is the effect of nuts on gut health?
5. What is the effect of almonds specifically on gut health?
6. What are the potential mechanisms of action for almonds on gut health?

Methods

Separate searches were created for i) mood and cognition (**Table 2**), and ii) gut health (**Table 3**). Searches were conducted on December 9, 2020 and December 13, 2020, respectively, via the PUBMED database. Study types were limited to randomised controlled trials (RCTs), cohort studies, and systematic literature reviews (SLRs) of RCTs or cohort studies. In addition:

- Snowballing techniques were employed within the PUBMED database.
 - Where an applicable study was identified, the “relevant titles” listed under each applicable study were screened to check for possible inclusion.
- Targeted searches were conducted in Google Scholar by using the key terms (**Tables 2 and 3**) in an advanced search.

Table 2. Search terms for the effect of almonds on mood and cognition in PUBMED database.

Food component	Health outcome	Limits
1. Prunus Dulcis[MeSH Terms]	8. mental processes[MeSH Terms]	10. 7 and 26
2. Prunus Dulcis[Title/Abstract]	9. mental health[MeSH Terms]	11. Limit to humans
3. almond[Title/Abstract]	10. mental*[Title/Abstract]	
4. almonds[Title/Abstract]	11. cognit*[Title/Abstract]	
5. nuts[MeSH Terms]	12. awareness[Title/Abstract]	
6. nuts[Title/Abstract]	13. comprehension[Title/Abstract]	
7. 1 or 2 or 3 or 4 or 5 or 6	14. memory[Title/Abstract]	
	15. executive function[Title/Abstract]	
	16. metacognit*[Title/Abstract]	
	17. attention[Title/Abstract]	
	18. psychomotor[Title/Abstract]	
	19. dementia[Title/Abstract]	
	20. alzheimer's[Title/Abstract]	
	21. mood[Title/Abstract]	
	22. depress*[Title/Abstract]	
	23. anxiety[Title/Abstract]	
	24. stress[Title/Abstract]	
	25. emotion[Title/Abstract]	
	26. 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25	

PUBMED via Ovid, records 642.

Table 3. Search terms for the effect of almonds on gut health in PUBMED database.

Food component	Health outcome	Limits
1. Prunus Dulcis[MeSH Terms]	11. exp Microbiota/	49. 11 or 12 or 13 or 14 or 15 or
2. Prunus Dulcis[Title/Abstract]	12. microbiota.ti,ab.	16 or 17 or 18 or 19 or 20 or 21
3. almond [MeSH Terms]	13. microbiome.ti,ab.	or 22 or 23 or 24 or 25 or 26 or
4. almonds[Title/Abstract]	14. microflora.ti,ab.	27 or 28 or 29 or 30 or 31 or 32
5. nuts[MeSH Terms]	15. gut.ti,ab.	or 33 or 34 or 35 or 36 or 37 or
6. nuts[Title/Abstract]	16. gut bacteria.ti,ab.	38 or 39 or 40 or 41 or 42 or 43
7. 1 or 2 or 3 or 4 or 5 or 6	17. exp Bifidobacterium/	or 44 or 45 or 46 or 47 or 48
	18. bifidobacteri*.ti,ab.	50. 7 and 49
	19. Lactobacillus/	51. Limit to humans
	20. lactobacill*.ti,ab.	
	21. microbial.ti,ab.	
	22. exp Fatty Acids, Volatile/	
	23. short chain fatty acid.ti,ab.	
	24. SCFA.ti,ab.	
	25. butyrate.ti,ab.	
	26. acetate.ti,ab.	
	27. propionate.ti,ab.	
	28. exp. Digestive System	
	Physiological Phenomena/	
	29. constipation.ti,ab.	
	30. laxation.ti,ab.	
	31. bloating.ti,ab.	
	32. bowel.ti,ab.	
	33. intestin*.ti,ab.	
	34. exp Feces/	
	35. fece*.ti,ab.	
	36. faece*.ti,ab.	
	37. stool.ti,ab.	
	38. transit time.ti,ab.	
	39. gastrointestinal.ti,ab.	
	40. BSC.ti,ab.	
	41. flatus.ti,ab.	
	42. dyspeps*.ti,ab.	
	43. diarrhoea.ti,ab.	
	44. diarrhea.ti,ab.	
	45. colonic neoplasms.ti,ab.	
	46. colon.ti,ab.	
	47. colorectal cancer.ti,ab.	
	48. exp Irritable bowel syndrome/	

PUBMED via Ovid, records 461.

Results

1. What is the effect of nuts on mood and cognition?

Mood

Two RCTs and one cohort study were found on nuts and mood outcomes (20-22). There was limited effect for nuts as a group, but preliminary evidence of an effect for walnuts specifically, with evidence stronger in males:

- In a cross-over RCT in 64 young adults, walnut consumption (60g/day for 8 weeks, in the form of banana bread) improved composite mood score and individual domains (tension-anxiety, depression-dejection, anger-hostility, vigour-activity, fatigue-inertia or confusion-bewilderment) vs. placebo in males (20).
 - No improvement in total sample or females.
 - Unclear why there was an effect in males and not females.
- In a cohort study of women starting in the midlife and followed up over 14-years, both i) walnuts and ii) other nuts, at ≥ 2 servings per week, were associated with greater odds of 'healthy ageing' (defined as intact mental health, no memory impairment and no physical disabilities), compared to no intake (22).
 - After controlling for confounding factors, only walnuts were significant (OR 1.20, 95% CI 1.00-1.44, $p < 0.001$).
- In the PREDIMED study, a longer-term three-arm RCT (mean 4.1 years) in 447 older adults, consisting of Mediterranean diet plus 30g mixed nuts, Mediterranean diet plus olive oil, and control diet (advice to reduce dietary fat), the Mediterranean diet plus 30g mixed nuts did not reduce depressive symptoms vs. control (21).

Cognition

One SLR (23), seven cohort studies (24-31), and four RCTs (21, 32-34) were found for nuts and cognition outcomes:

- The one SLR was written in Spanish and did not contain a meta-analysis or other method to effectively pool studies together (23).
- Four of the cohort studies assessed the association between nuts and cognition and a further three looked at the association of nuts as part of a "healthier" dietary pattern (e.g. plant-based, Mediterranean) (24-26).
 - None of the cohort studies included associations of different nut types.
- Of the four RCTs, two tested the effects of walnuts (32, 33), one tested the effect of brazil nuts (34), and one tested the effect of a Mediterranean diet supplemented with mixed nuts (21).

Findings across the individual studies:

- Evidence for reduced risk of cognitive decline, dementia and Alzheimer's disease from cohort studies:
 - Strong evidence that total nuts as a group is associated with a reduced risk of cognitive decline (3 of 3 cohort studies).
 - Nut consumption of ≥ 10 g per day was associated with a 40% reduced risk of cognitive decline in Chinese adults aged >55 years (27).
 - Highest intakes of nut consumption (specific quantities not reported) in people from the Netherlands was associated with smaller declines in cognitive domains compared to the lowest intake.
 - Equivalent to a difference in cognitive decline of 5-8 years (28).
 - Older women (≥ 70 years) consuming ≥ 5 servings of nuts per week (one serving = 28g) had greater cognitive test scores than those who did not consume nuts.
 - Equivalent to a difference of 2 years (29).
 - Strong evidence, from cohort studies and one RCT, that nuts as part of a "healthier" dietary pattern is associated with reduced cognitive decline:
 - A significant inverse association for almond intake and cognitive outcomes across all identified cohort studies:
 - Reduced risk of cognitive decline in older adults (≥ 65 years) in two cohort studies (24, 25), and
 - Lower risk of Alzheimer's disease in one cohort study (26).
 - In a longer-term RCT spanning a median 4.1 years in cognitively healthy older adults (55-80 years) from Spain, the incidence of mild cognitive impairment during the trial was 7% in the Mediterranean diet plus 30g nuts group, compared to 13% in both the Mediterranean diet plus olive oil group and in the control group (21).
 - No association between nut consumption and Alzheimer's disease mortality in a US cohort (1 study) (30).
- Limited evidence (1 cohort study) on neuropsychological development in children:
 - In a Spanish cohort, higher nut intake during pregnancy was associated with improved neuropsychological development in children up to eight years of age, particularly in women with higher nut intake (>32 g per week) in the first trimester (31).
- Mixed evidence from RCTs for a favourable effect on multi-domain cognition scores:
 - Walnut consumption (15% of energy intake for 2 years) improved a multi-domain cognitive score in older adults (aged 63-79 years) with lower baseline alpha-linolenic acid status (one RCT). (33).
 - Brazil nut consumption (one per day for 6 months) did not improve composite cognition score in older adults with mild cognitive impairment (34).
- Moderate evidence across four RCTs that nuts do not have an effect on memory:
 - Walnut consumption (60g per day for 8 weeks) did not improve memory compared to control in young adults (32).
 - Walnut consumption (15% of energy intake for 2 years) in 708 adults aged 63-79 years had no effect on memory in a post-hoc analysis (33).

- Brazil nut consumption (one per day for 6 months) did not improve word list recall in older adults with mild cognitive impairment (34).
- Mediterranean diet supplemented with 30g nuts over a median 4.1 years did improve memory more than the control (low fat) diet in 447 cognitively healthy older adults (21).
- Inconclusive evidence for an effect of nuts on executive function, with 2 of 4 RCTs reporting a favourable result:
 - Walnut consumption (60g per day for 8 weeks) increased inferential verbal reasoning by 11.2% ($p = 0.009$) compared to control in young adults, but did not improve non-verbal reasoning (32).
 - Brazil nut consumption (one per day for 6 months) improved the verbal fluency test and constructional praxis in older adults with mild cognitive impairment, but did not improve word list learning test or Boston naming test (34).
 - Pilot study with a small sample size and no intention-to-treat analysis.
 - Walnut consumption (15% of energy intake for 2 years) in 708 adults aged 63-79 had no effect on language, perception, or frontal function in a post-hoc analysis (33).
 - Mediterranean diet plus 30g nuts over a median 4.1 years did not improve frontal cognition (executive function and attention) more than control in 447 cognitively healthy older adults (21).

Evidence-based messages

- Research on the role of nuts and mood is very new with few studies, although it was reported in one high quality study that walnuts (60g per day over 8 weeks) improved mood in young male adults.
- There is highly consistent evidence that nuts (≥ 10 g per day) may reduce the cognitive decline associated with ageing.
- Limited, inconclusive or unfavourable evidence that nuts have an effect on memory, executive function, child neuropsychological development, cognitive scores, or Alzheimer's disease mortality.

2. What is the effect of almonds specifically on mood and cognition?

Mood

Two RCTs tested the effect of almonds specifically on mood outcomes (35, 36). No SLRs or cohort studies were identified. Study details are presented in **Table 4** and findings are summarised below:

- No effect on mood disturbance (1 RCT).
 - A 12-week almond-enriched diet (15% of energy from whole almonds) had no effect on total mood disturbance and individual mood domains (tension, anger, fatigue, confusion, vigour) vs. an isocaloric nut-free diet (15% of energy intake from high carbohydrate snacks) in older Australian adults with BMI $\geq 25\text{kg/m}^2$ (35).
- Limited evidence for an effect on depressive symptoms (1 of 2 RCTs with a favourable result).
 - In a 12-week RCT, 56g almonds per day, as part of a low carbohydrate diet compared to a low-fat diet, reduced symptoms of depression in Chinese adults with Type-II Diabetes (36).
 - The 12-week almond-enriched study (15% of energy from whole almonds vs. 15% energy from high carbohydrate snacks) included depression as an outcome (35), with no difference in symptoms of depression between groups.

Table 4. Study details for almond-specific studies with mood outcomes

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Coates et al. 2020 Australia (35)	DB	Test the effect of almond-enriched diet on cognition, mood and cardiometabolic health	IG: n=77	<u>Run-in:</u>	<u>Duration:</u> 12w	<u>Duration:</u> 12w	Total mood disturbance	IG: 0.9±1.9 v 1.1±2.2 CG: -3.7±1.9 v -2.2±2.2	p = 0.64	NR
	PG		18% attrition	NR						
	RCT		CG: n=74	<u>Adherence:</u>	Almond-enriched diet	Isocaloric nut-free diet	Tension	IG: 4.6±0.5 v 4.3±0.4 CG: 3.9±0.5 v 3.6±0.4	p = 0.99	
			12% attrition	Energy matched,	15% energy from whole almonds	15% energy from carbohydrate-rich snack	Depression	IG: 2.0±0.4 v 2.4±0.5 CG: 1.2±0.4 v 1.5±0.5	p = 0.83	
			<u>Sex:</u> 53% F	although greater intake of fat in IG.			Anger	IG: 1.4±0.3 v 1.0±0.3 CG: 1.0±0.3 v 1.0±0.3	p = 0.54	
			<u>Age:</u> 65 ± 8				Fatigue	IG: 4.4±0.4 v 4.9±0.6 CG: 3.4±0.4 v 3.7±0.6	p = 0.83	
			Older, overweight adults (50-80y)				Confusion	IG: 5.2±0.4 v 5.1±0.4 CG: 4.4±0.4 v 4.1±0.4	p = 0.87	
							Vigour	IG: 16.7±0.7 v 16.4±0.8 CG: 17.7±0.7 v 16.1±0.8	p = 0.16	

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Ren et al. 2020 China (36)	DB PG RCT	Test whether an almond-based low carbohydrate diet improves depression and glycometabolism in T2DM	<u>IG</u> : n=25 12% attrition <u>CG</u> : n=25 8% attrition <u>Sex</u> : IG: 41% F CG: 48% F <u>Age</u> : IG: 73.6 ± 4.5 CG: 70.5 ± 5.9 T2DM, no limits for depressive symptoms	<u>Run-in</u> : excluded if ate nuts >4d/w <u>Adherence</u> : Almond intake “stable & good”	<u>Duration</u> : 12w Almond-based (56g/d) low carbohydrate diet. Almonds replaced 150g/d staple food.	<u>Duration</u> : 12w Low-fat diet	PROMIS-Depression	Pre-post IG: 48.4±8.1 v 42.1±5.8 Between group: IG: 48.4±8.1 v 42.1±5.8 CG: 49.6±8.5 v 48.7±7.7	p < 0.01 p < 0.01	Difficulty chewing (attrition n=2)

CG: Control group, D: day, DB: Double-blind, F: Female, IG: Intervention group, NA: Not applicable, NR: Not reported, PG: Parallel group, RCT: Randomised controlled trial, T2DM: Type-II diabetes mellitus, V: Versus, W: week, Y: Years.

Cognition

Three RCTs tested the effect of almonds on cognitive outcomes (35, 37, 38). These RCTs have all been published in the last 5 years, suggesting an emerging field of research. One RCT tested an almond intervention compared to control (35), one RCT included two experiments (immediate and long-term effect of almonds) (37), and one RCT included two different intervention arms with different almond doses, compared to a control arm (38). No SLRs or cohort studies were identified. Study details and findings are presented in **Table 5** and summarised below:

- Mixed evidence for an effect of almonds on memory.
 - In a RCT that tested the effect of an almond-enriched, high-fat lunch (53g almonds) on the post-lunch cognitive “dip”, the post-prandial decline in memory was reduced by 58% in the almond-enriched meal, compared to the control (37).
 - In a 6-month RCT in healthy older adults, 85g almonds per day led to improvements in visuospatial working memory, visual memory and learning, and special planning and working memory, compared to control.
 - No effect reported at the lower dose of 42g almonds per day (38).
 - In a 12-week weight-loss RCT, memory improved in both groups with no difference between intervention (15% energy from almonds) and nut free groups (37).
 - In a 12-week almond-enriched diet, there was no difference in measures of memory between almond intervention and control (isocaloric nut free diet) (35).
- No evidence for an effect of almonds on other measures of cognitive function (psychomotor speed, motor function or attention).
 - No difference in alertness or attention measures after a 12-week almond-enriched diet compared to an isocaloric nut-free diet (35).
 - In the post-prandial RCT, no other differences on the post-lunch cognitive “dip” between an almond-enriched, high-fat lunch (53g almonds) and control (37).

Evidence-based messages

- The effect of almonds on mood is largely unknown, although a very recent (2020) study found that almonds (56g per day) eaten as part of a low carbohydrate diet improved symptoms of depression in people with Type-II Diabetes.
- Emerging evidence that almond intake may improve some measures of memory.
 - A 2017 study reported almonds (53g as part of a high fat lunch) limits the brief reduction in memory that occurs immediately after lunch consumption.
 - A 2020 study reported almonds (at levels of 85g per day) improves multiple aspects of memory over 6 months.
- No evidence found that almonds specifically improve other aspects of cognitive function (psychomotor speed, motor function, attention), or reduce the risk of cognitive decline/dementia.

Table 5. Study details for almond specific studies with cognition outcomes

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Coates et al. 2020 Australia (35)	DB PG RCT	Test the effect of almond-enriched diet on cognition, mood and cardiometabolic health	IG: n=77 18% attrition CG: n=74 12% attrition <u>Sex:</u> 53% F <u>Age:</u> 65 ± 8 Older, overweight adults (50-80y)	<u>Run-in:</u> NR <u>Adherence:</u> Energy matched, although greater intake of fat in IG.	<u>Duration:</u> 12w Almond-enriched diet 15% energy from whole almonds	<u>Duration:</u> 12w Isocaloric nut-free diet 15% energy from carbohydrate-rich snack	COMPASS neuro-psychological test battery (37 tests of cognition: attention & memory) Visual Analogue Scale: Alertness	NA IG: 55.9±1.9 v 59.7±2.0 CG: 61.4±1.9 v 61.0±2.0	All p > 0.09 p = 0.07	NR

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects		
Dhillon et al. 2017 USA (37)	Un-blinded PG RCT	Test almond consumption on the post-lunch changes in cognitive function	IG: n=43 0% attrition CG: n=43 0% attrition <u>Sex</u> : 76% F <u>Age</u> :	NA	<u>Duration</u> : 1 mealtime	<u>Duration</u> : 1 mealtime	Memory	PL: no difference 35min PL: less decline in memory	NS p = 0.004	NR		
					Almond-enriched, high-fat lunch	High carbohydrate lunch	Attention - concentration performance	No difference	NS			
							- quantitative performance	No difference	NS			
							- qualitative performance	No difference	NS			
					Test almond consumption, as part of an energy-restricted diet, on memory & attention			IG: n=43 % attrition CG: n=43 % attrition <u>Sex</u> : 76% F <u>Age</u> :	Run-in: NR		<u>Duration</u> : 12w	<u>Duration</u> : 12w
		Verbal list recognition	Improved in both groups	NS								
		Attention - concentration performance	Improved in both groups	NS								
		- quantitative performance	Improved in both groups	NS								
						Almonds = 15% energy intake	- qualitative performance	Improved in both groups	NS			

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Johnson et al. 2020 USA (38)	SB PG (3-arm) RCT	To determine the impact of almond consumption on cognition in elderly adults.	IG: n=19	<u>Run-in:</u>	<u>Duration:</u> 6m	<u>Duration:</u> 6m	Visuospatial working memory	NR	NS	NR
			Attrition NR	NR	1.5 oz/d almonds	1.5 oz/d snack mix				
			CG: n=17	<u>Adherence:</u>			Visual memory and learning	NR	NS	
			Attrition NR	NR						
			<u>Sex/Age:</u> NR				Spatial planning and working memory	NR	NS	
			Healthy, older adults							
			IG: n=24	<u>Run-in:</u>	<u>Duration:</u> 6m	<u>Duration:</u> 6m	Visuospatial working memory	NR	p < 0.05	
			Attrition NR	NR	3 oz/d almonds	1.5 oz/d snack mix				
			CG: n=17	<u>Adherence:</u>		(matched for macro-nutrients)	Visual memory and learning	NR	p < 0.05	
			Attrition NR	NR						
			<u>Sex/Age:</u> NR				Spatial planning and working memory	NR	p < 0.05	
			Healthy, older adults							

BL: Baseline, CG: Control group, COMPASS: Computerised Mental Performance Assessment System, D: Day, IG: Intervention group, M: Month, NA: Not applicable, NR: Not reported, NS: Not statistically significant, Oz: Ounce, RCT: Randomised controlled trial, SB: Single-blind.

3. What are the potential mechanisms of action for almonds on mood and cognition?

Mood

The potential mechanisms of action by which diet influences mood are numerous (39), including nutrient deficiencies, inflammation and endothelial function, the gut microbiome, obesity, mitochondrial dysfunction, hypothalamic-pituitary-adrenal axis, and modulation of neurogenesis through brain-derived neurotrophic factor (40). These pathways are complex and interrelated, and therefore the mechanism is likely to extend beyond a singular pathway.

The key pathways that almonds are theoretically more likely to exert an effect on mood are:

- Reduced nutrient deficiencies:
 - Mood and depression have been linked to individual nutrients that play a role in brain function, such as magnesium and riboflavin (41, 42).
 - Almonds are a good source of magnesium, riboflavin and vitamin E, among others, and therefore may assist in improving the status of such nutrients within the body in some individuals.
- Reduced inflammation:
 - Inflammation can cause brain tissue damage, and antioxidants in almonds have the potential to reduce inflammation (43). This is discussed in further detail below.
- Improved gut microbiome:
 - Almonds contain fibre, fructans, phytochemicals and unsaturated fatty acids, which all influence the gut microbiome (44). This is discussed in further detail in the next section of this report.

Cognition

Nuts are thought to exert an effect on cognition via two key pathways (45). These pathways may be more instrumental to preventing cognitive decline than improving current cognitive function:

- Reduced inflammation:
 - Prolonged inflammation is linked to the loss of neuron function and regeneration in the brain (46).
 - Almonds contain antioxidant nutrients, including Vitamin E and polyphenols, that may be exerting an effect by neutralising “free radicals”, and thus reducing inflammation (43).
 - A recent narrative review using a systematic search of three databases found that nut consumption reduces inflammatory markers by 5-75% in intervention studies, with a possible minimum dose of $\geq 30\text{g/day}$ (47).
 - Three almond-specific interventions (30-73g/day or 14g/1000kcal four weeks) found reductions in C-reactive protein, with one study (14g/1000kcal) finding a reduction equivalent to statin medication (48).

- Findings for almonds were comparable to other nuts, although no head-to-head studies were identified.
- Improved endothelial function:
 - The endothelium is the lining involved in the relaxation and contraction of blood vessels, and therefore controls blood flow. Impaired blood flow to the brain has been linked to cognitive decline (49).
 - Almonds contain a unique nutrient package that may improve endothelial function by increasing vasodilation (widening of the blood vessels).
 - Almonds contain L-arginine, fibre, magnesium, potassium and polyphenols (50, 51).
 - There are higher levels of vitamin E, riboflavin, niacin and fibre in almonds compared to other nuts.
 - It is unclear if the nutritional composition of almonds is superior to other nuts for an effect on mood and cognition.
 - In the narrative review, five of nine nut intervention studies (10-100g/day for 4-12 weeks) had statistically significant improvements in endothelial function, although no intervention was specific to almonds (47).

Evidence-based messages

- While direct evidence for an effect of almonds on mood is limited, there are reasons to believe that almonds may help to support improved mood through the improved status of nutrients relevant to brain function, a reduction in inflammation, and improved gut microbiota status.
- The positive association of nuts in reducing cognitive decline can be explained by a reduction in inflammation and an improvement in endothelial function.
- Almonds contain a unique nutrient package that may help to directly improve these outcomes:
 - Vitamin E and polyphenols, that act as antioxidants and reduce inflammation.
 - L-arginine, fibre, magnesium, potassium and polyphenols, that have a role in maintaining normal blood pressure and endothelial function.

4. What is the effect of nuts on gut health?

Four studies (3 systematic reviews and 1 cohort study) were identified on nuts and gut health. Evidence was specific to colorectal cancer risk and changes to the gut microbiome.

Colorectal cancer

Three studies were identified investigating nut consumption and colorectal cancer risk, including 2 SLRs (with meta-analysis) of case control and cohort studies, and 1 additional cohort study not included within the SLRs. The evidence was mixed:

- In a SLR and meta-analysis of 2 cohort studies and 1 case control study (2015), nut consumption was associated with a decreased risk of colorectal cancer.
 - Highest category of nut intake was associated with a 24% decreased risk of colorectal cancer compared to the lowest category (RR 0.76, 95% confidence interval [95%CI] 0.61-0.96) (54).
- In another SLR and meta-analysis of 6 cohort studies (2018), nut intake was not associated with colorectal cancer risk (55).
 - No association for the highest vs. lowest nut intake category (RR: 0.96; 95% CI 0.90, 1.02)
- Differences in findings may be explained by sex, although an analysis by sex was not conducted in either of the SLRs:
 - In a large prospective cohort study involving 10 European countries (n=478,040 adults), women with the highest nut intake (>6.2g per day) reported a 31% lower risk of colon cancer and 19% reduction in colorectal cancer. No association was found in men (57).
 - In the Nurse's Health Study (n=75,680 women from the USA, mean age 59 years), women who consumed nuts two or more times per week (≥ 56 g per week) reported a 13% lower risk of colorectal cancer compared with those who rarely consumed nuts, although the association was not statistically significant (RR: 0.87; 95% CI: 0.72-1.05) (56).
- In a 2018 cohort study, nut consumption was associated with a lower risk of cancer recurrence and mortality in patients with colon cancer.
 - Diets high in nuts (>57 grams per week) associated with lower incidence of cancer recurrence and death after a median follow-up of 6.5 years, compared to patients who abstained from nuts (58).

Gut microbiome

A recent SLR and meta-analysis of 9 RCTs (2020) explored the effect of nuts on the gut microbiota (53). The SLR included three walnut RCTs, five almond RCTs (reported in the following research question), and one pistachio RCT. No studies were found in addition to those included within the SLR.

- Favourable evidence for walnuts specifically:

- Eating 43g of walnuts per day over 8 weeks increased the abundance of Ruminococcus and Bifidobacterium ($p < 0.02$), while Clostridium species decreased ($p < 0.05$) (59).
- Eating 42g of walnuts for two 3-week periods resulted in a 49-160% higher relative abundance of Faecalibacterium, Clostridium, Dialister, and Roseburia, and a 16-38% lower relative abundances of Ruminococcus, Dorea, Oscillospira, and Bifidobacterium, compared to control ($P < 0.05$) (60).
- Walnut intake (57-99g per day) increased gut microbiota (Roseburia, Eubacterium eligensgroup, LachnospiraceaeUCG001, Lachnospiraceae UCG004, and Leuconostocaceae) to a similar diet without walnuts. The walnut diet also increased healthy Gordonibacter microbiota (61).
- Further studies powered to detect other clinical outcomes are needed to understand the impact of these microbiota changes and thus the prebiotic potential of walnuts.
- Limited evidence of an effect of pistachios improving microbiome composition and diversity.
 - In the one study on pistachios, there was a decrease in healthy lactic acid bacteria, no change in the healthy Bifidobacterium, and an increase in beneficial b-diversity (45).

Evidence based messages

- While the effects of nuts on mood and cognition is under researched, there is more established evidence on the effect of nuts on markers of gut health, in particular, their association with colorectal cancer and their effect on the gut microbiota.
- There is mixed evidence of an effect for nuts and colorectal (and colon) cancer risk. The risk reduction may be greater in women.
- Excluding almonds, there is strong evidence that walnuts improve the gut microbiota, although there is an absence of evidence for other nut types.
- Further research is needed to understand the health impacts of these gut microbiota changes.

5. What is the effect of almonds specifically on gut health?

Seven RCTs reported on the effect of almonds across three different markers of gut health (**Table 6**):

- The gut microbiota (n = 6 studies).
 - Five of the studies were included in the SLR related to nuts and the gut microbiome.
- Irritable bowel syndrome symptoms (n = 1).
- Gastrointestinal symptoms (n = 1).

Gut microbiota

- Strong evidence from six RCTs that almond intake improves intestinal microbiota composition and activity (37, 45, 62-65), although the differences in measures between studies make it difficult to make specific conclusions about the types of changes.
 - 84g almonds per day repressed the growth of the Firmicutes bacterium and Clostridium in an 18 day trial, although there was no increase in Bifidobacterium (45).
 - Almond snacking (56.7g per day) for 8 weeks decreased the abundance of the pathogenic bacterium Bacteroides fragilis by 48% in healthy young adults, compared to a graham cracker control group (62).
 - Consumption of 56g per day of almonds over 3 months resulted in an increase in the short chain fatty acid (SCFA) producing bacteria Roseburia, Ruminococcus and Eubacterium (37).
 - Three weeks of eating 42g per day of almonds resulted in an increase in Roseburia, Lachnospira and Dialister (63).
 - The consumption of 36 almonds a day (about 43g) over 3 weeks did result in any change to the beneficial Bifidobacterium (64), similar to another trial of 18 days (45).
 - The length of the study may be important to see bacterial changes.
 - One study reported no change in SCFA levels in faecal samples (65).
 - Faecal SCFA sampling may not be a true representation of SCFA levels, due to SCFAs being absorbed in the gut.
- Emerging evidence from one RCT (2018) that almond form and level of processing may impact the effects on gut health:
 - When three forms of almonds (whole, chopped and butter) were compared, whole and chopped almonds had a greater impact on gut microbiota than when consumed in butter form (63).
- Evidence that almonds may have a greater impact on gut health in children than adults:
 - In a crossover trial (64), almond consumption (42.5g and 85g per day for 3 weeks each) had a greater effect on the gut microbiota in young children (n = 29; 4±0.2 years) than in their parents (n = 29; 35±0.6 years).
 - No significant differences in overall microbiota diversity measures, but some changes in the prevalence of various bacterial signatures at the genus and species levels. Specific types were not indicated.
- Almond consumption shown to benefit the gut microbiota in some sub-populations.

- Two of the favourable studies were conducted in adults with elevated blood glucose or T2DM (37, 65).

Irritable Bowel Syndrome (IBS)

- Limited evidence (1 study) of an effect on symptoms of IBS:
 - In a RCT (2019) with 50 participants split between the intervention and control groups, the consumption of 40g powdered almonds over 20 days led to an increase in bowel movements and the severity of pain in IBS-Diarrhoea sufferers (66).

Gastrointestinal symptoms and stool frequency

- No evidence for an effect of almonds on markers of bowel function:
 - A 4-week RCT in 29 adults and children, that tested two different doses of almond consumption (43g and 14g per day), reported no changes in stool frequency or reflux, but a trend towards lower constipation scores (64).

Evidence based messages

- Strong evidence that almond consumption (>43g per day) improves gut microbiota.
 - Almonds increase the abundance of healthy gut microbiota that produce SCFAs.
 - Almonds decrease the abundance of potentially pathogenic gut microbiota.
 - Greater quantity of evidence available than for all other nut types.
- The form of almonds may be important, with processing reducing the effect.
- Almonds may have an even stronger effect on the gut microbiota in children.
- There is limited or no evidence that almonds have an effect on other measures of gut health (e.g., bowel function, IBS, colorectal cancer).

Table 6. Study details for almond specific studies with gut health outcomes

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Choo et al. 2020 Australia (65)	PG RCT	Determine the effects of daily almond supplementation on fecal microbiota composition and associated fecal characteristics of overweight or obese adults with elevated fasting plasma glucose with elevated fasting blood glucose	IG: n=39 CG: n=30 <u>Sex</u> : 53% F <u>Age</u> : 65 ± 8 overweight or obese adults with elevated fasting plasma glucose (≥5.6 – <7.0 mmol/L) or previously diagnosed with type 2 diabetes	<u>Run-in</u> : NR <u>Adherence</u> : NR	<u>Duration</u> : 8w 56g of raw almonds/d as 28 g morning and afternoon snacks	<u>Duration</u> : 8w 72 g (energy matched) of a commercially available, sweet, nut and seed-free biscuits/day, as 36 g morning and afternoon snacks	Alpha diversity Microbiota composition The relative abundance of OTUs SCFAs Fecal pH Fecal moisture levels intestinal permeability	Alpha diversity: ↔ Microbiota composition: ↑ The relative abundance of OTUs: ↑ SCFAs: ↔ Fecal pH: ↑ Fecal moisture levels: ↓ intestinal permeability: ↔	Alpha diversity: p>0.05 Microbiota composition p=0.011 Ruminiclostridium p=0.042 Ruminococcaceae NK4A214 p=0.0004 Ruminococcaceae UCG-003 p=0.0002 Fecal pH p=0.0004 Fecal moisture p=0.009	NR

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Ren et al. 2020 China (36)	RCT DB PG	Determine the effect of an almond-based LCD (a-LCD) on depression and glycometabolism, gut microbiota and GLP-1 in patients with T2DM	IG: n=22 CG: n=23 IG age: 73.55 ± 4.99 y CG age: 70.48 ± 5.91 Sex: 55% F	<u>Run-in:</u> NR <u>Washout:</u> 1 w <u>Adherence:</u> almond adherence record table	<u>Duration:</u> 3m 56 g/day almond which replaced 150 g/d staple food (1 liang staple foods/meal)	<u>Duration:</u> 3m 1 Jin vegetables/days; 2 liang staple food/meal (300 g/day); 3 tablespoons of oil/day; eating fruits under 4 conditions; 5 kinds of protein food/day (1 carton of milk (220 mL), 1 egg, 1 liang fish or shrimp, 1 liang soybean production, 1 liang meat); 6 g salt/day	Alpha-Adversity Beta-Diversity Firmicutes Bacteroidetes	Alpha-Adversity: ↑ Beta-Diversity: ↔ Firmicutes: IG BL: 0.389 (0.283,0.729) CG BL: 0.544 (0.455,0.671) IG follow-up: 0.580 (0.371,0.672) CG follow-up: 0.684 (0.561,0.778) Bacteroidetes: IG BL: 0.249 (0.120,0.323) CG BL: 0.110 (0.072,0.180) IG follow-up: 0.151 (0.061,0.256) CG follow-up: 0.108 (0.042,0.236)	Alpha-Adversity: p<0.01 Firmicutes: p < 0.05 Bacteroidetes: p < 0.05	NR

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Burns et al. 2016 USA (64)	RCT Cross-over	Examine the Benefits of consuming almonds on immune status	N= 14 <u>Age:</u> 18-40 y Parents with at least 1 child (3-6 years)	<u>Run-in:</u> 1 w <u>Wash-out:</u> 6 w <u>Adherence:</u> Daily questionnaire	<u>Duration:</u> 3w <u>Parents:</u> 1.5 oz of pre-packaged almonds (36 almonds) <u>Child:</u> consume 0.5 oz of almonds or an equivalent of almond butter daily	<u>Duration:</u> 3w	Microbiota diversity measures (Shannon diversity index and inverse Simpson diversity index) Constipation score Reflux Stool frequency	Microbiota diversity measures: no change Stool frequency: no change Constipation scores: trend lower Reflux: no change	Microbiota diversity measures: p>0.05 Genus-level changes: P < .05	NR

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
Holscher et al. 2020 USA (63)	RCT Cross-over	Assess the interrelationship of almond consumption and processing on the gastrointestinal microbiota	N=18 (44% F) BMI: 29.7 + 4.4 kg/m ² Age: 56.7 + 10.2 y	Run-in: NR Washout: NR Adherence: NR	Duration: 3w 1.5 servings (42 g)/day of whole almonds 1.5 servings/day of whole, roasted almonds 1.5 servings/day of roasted, chopped almonds	Duration: 3w zero servings/day of almond	Bacterial phyla and genera	Firmicutes CG: 63.9 ± 1.99 Almond butter: 64.2 ± 1.99 Chopped almonds: 66.2 ± 2.13 Whole roasted: 66.2 ± 1.99 Whole raw: 66.1 ± 2.03 Bacteroidetes CG: 25.7 ± 2.13 Almond butter: 27.1 ± 2.14 Chopped almonds: 26.5 ± 2.30 Whole roasted: 25.7 ± 2.14 Whole raw: 27.6 ± 2.19 Actinobacteria CG: 5.45 ± 1.05 Almond butter: 4.51 ± 1.06 Chopped almonds: 3.77 ± 1.11 Whole roasted: 4.09 ± 1.06 Whole raw: 3.20 ± 1.07 Verrucomicrobia CG: 1.45 ± 0.34	Firmicutes: p= 0.68 Bacteroidetes: p= 0.90 Actinobacteria: p= 0.16	NR

Reference	Design	Aim	Participant sample	Run-in, washout, adherence	Intervention	Control	Outcome	Overall effect	P-value	Adverse effects
								Almond butter: 1.16 ± 0.34 Chopped almonds: 1.10 ± 0.36 Whole roasted: 1.25 ± 0.34 Whole raw: 0.87 ± 0.35 Proteobacteria CG: 2.34 ± 0.51 Almond butter: 1.93 ± 0.51 Chopped almonds: 1.88 ± 0.55 Whole roasted: 1.75 ± 0.51 Whole raw: 1.29 ± 0.52	Verrucomicrobia: p=0.44 Proteobacteria: p=0.45	
Ukhanova et al. 2014 USA (44)	RCT Cross-over	Determine the effects of almond and pistachio consumption on human gut microbiota composition	<u>IG almond:</u> n=18 <u>IG pistachio:</u> n=16	<u>Washout:</u> 2 w	<u>Duration:</u> 18 d 1·5 or 3 servings/d	<u>Duration:</u> 18 d No nut	Bacterial phyla Alpha-Adversity	Bifidobacteria: ↔ Alpha-Adversity: ↔	p>0.05	NR

BL: Baseline, BMI: Body mass index, CG: Control group, D: Day, DB: Double-blind, IG: Intervention group, M: Month, NR: Not reported, OTUs: Operational taxonomic units Oz: Ounce, PG: Parallel group, RCT: Randomised controlled trial, W: week

6. What are the potential mechanisms of action for almonds on gut health?

Almonds are a source of a number of nutrients that may explain their favourable effects on the gut microbiome. This includes fibre, phytochemicals and unsaturated fatty acids, and there are few other foods that provide this same nutrient profile. An improvement in the gut microbiome is also thought to help keep the colon cells healthy, and thereby reducing colorectal cancer risk.

- **Fibre**
 - Fibre is resistant to digestive enzymes and passes undigested to the large intestine, providing substrate for the colonic bacteria.
 - Almonds are about 12% dietary fibre, which is higher than any other nut. The skin of almonds is particularly rich, with approximately 50% dietary fibre (67).
 - Almonds also have a high insoluble to soluble fibre ratio (7:1). Insoluble fibre is slower to ferment (64) and provides a greater substrate for the gut microbes (45).
- **Phytochemicals**
 - Phytochemicals are plant chemicals that contribute to the plant's colour, taste and smell (68).
 - Phytochemicals are thought to have a similar prebiotic effect as many fibres, as they provide food for the maintenance of healthy and diverse microbiota (45, 69).
 - The phytochemicals in almonds include flavonoids, flavanones and polyphenols (69), and these are particularly rich in the almond skin (45).
 - Almonds have a relatively high flavonoid when compared with other nuts (15mg/100g), along with Pecans (34mg/100g) and Pistachios (18mg/100g) (71).
- **Unsaturated fatty acids**
 - Unsaturated fatty acids have been shown to have antimicrobial properties and a benefit gut microbiota composition (63). The increase in microbiota following almond consumption may be related to their high unsaturated fatty acid profile.

Evidence based messages

- Nuts are one of the few foods that provide a nutrient package of fibre, phytochemicals and unsaturated fatty acids, which may help to explain their beneficial effects on bacterial abundance and microbiota composition, which is important for a healthy gut.
- Compared to other nuts, almonds contain the highest content of fibre and one of the highest phytochemical contents.

Limitations

- Recommend that communication of the findings from this scope report should be done with caution and in consultation with NRAUS:
 - The literature review is a scope only. It may not have captured all available studies.
 - The number of studies for many of the outcomes are small.
 - Report is unpublished and not peer reviewed.
 - Included studies are limited.
 - RCTs were frequently confounded by other components such as broader interventions, for example, a low-carbohydrate diet.
 - Cohort studies are confounded by other lifestyle and dietary factors.

Recommendations

The relationship between almonds and mood, cognition and gut health are largely emerging areas of research. Recommendations to progress these fields include:

1. Investigate the impact of nut and almond consumption on the incidence of mood disorders and mental ill-health, through a cohort study.

Overview: We did not identify any cohort studies that investigated total nut or almond intake at different life stages on the incidence of mental disorders or mental ill-health.

Rationale: Cohort studies can provide high-level evidence and are used in the development of dietary guidelines. This research is required to better establish the role of nut intake on mood disorders and mental ill-health. An Australian cohort could be used, and the findings can be communicated as the first study of its kind to consumer media and HCPs.

2. Investigate the relationship of almond consumption and incidence of cognitive decline and dementia in older adults through a cohort study.

Overview: There is sufficient evidence to suggest a relationship between nut consumption and risk of cognitive decline and dementia, however, no study investigated almonds individually. Therefore, a cohort study, measuring almond intake at multiple time points to increase the accuracy of true almond intake, with cognitive decline and dementia measured as end points once in older adulthood, is recommended.

Rationale: It is unclear whether the relationship found in multiple studies is similar for all nuts or superior for almonds. Conducting this research could strengthen the messaging on cognitive decline for almonds specifically. It can be combined with existing research on associations and mechanisms of action to educate HCPs on their potentially unique role in preventing cognitive decline, a significant and growing problem in the context of our ageing population.

3. Conduct research into the health effects of almond-induced microbiota changes, including mood.

Overview: Conduct a clinical trial to determine the effect of almond-induced microbiota changes. There is evidence that microbiota changes may improve moods, cholesterol, vitamins and resist infection (68), and that nut consumption reduces the risk of obesity, diabetes mellitus, and cardiovascular disease (69), although the specific effect of almond-induced microbiota changes is unknown.

Rationale: Carrying out research will strengthen the research on almonds and the gut microbiota and help to enhance the current knowledge surrounding the impact of these gut microbiome changes on health, including potential improvements in mood. This research also has strong potential for consumer media.

4. Pursue conducting a systematic review of almonds and improved gut health via the gut microbiome for a health claim.

Overview: Evidence was found that consumption of nuts including almonds (42-56g per day) improves gut microbiota. There is possibility of a health claim. A scope would be conducted first to determine the most likely pathway to secure a claim (e.g., a 'two-step' claim via fibre or phytochemicals may be recommended).

Rationale: We identified 8 studies investigating the relationship between almonds and the gut microbiome. A systematic review may generate a health claim that can be used for consumer communications on maximising gut health with almonds. It would also strengthen the evidence base in this area.

Conclusion

Nuts provide a unique nutrient package that includes dietary fibre, polyphenols and unsaturated fatty acids, that may help to improve mood, cognition and gut health. Of all nut types, almonds are highest in fibre and one of the highest in phytochemicals.

There are few studies on nuts and mood and more research is required before clear conclusions can be drawn. A consistent and growing body of evidence suggests that nuts reduce the risk of cognitive decline and dementia. There are no studies on almonds specifically. The effect is biologically plausible as nuts have been shown to reduce inflammation and improve endothelial function. There is a lack of evidence of a causal relationship for nuts and improved cognitive performance.

There is strong evidence that almonds and walnuts improve the gut microbiota composition. It is unclear if these changes to the gut microbiota confer health benefits, and evidence for other nut types is lacking. Evidence on nuts and colorectal cancer risk is mixed and there was insufficient evidence on nuts and measures of bowel function. Opportunities to progress the research on almonds and mood, cognition and gut health are provided.

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The latest science on the health benefits of consuming almonds for human nutrition. The Australian Almonds 'State of the Science' document is an all-in-one resource for health professionals, providing a summary of the health benefits of consuming almonds.



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Innovation**
Strategic levy investment

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The nutrient profile of almonds

Almonds are a protein-rich, versatile tree nut packed with vitamins, minerals, antioxidants, and phytochemicals beneficial to health. The Australian Dietary Guidelines recommend 30 grams (a handful) of nuts, including almonds every day¹.

Key nutrients found in almonds include:

Healthy fats

Almonds contain healthy unsaturated fats, predominantly monounsaturated fat (66% of total fat), and have a low proportion of saturated fat (7% of total fat)².

Protein

Almonds contain around 6g of protein in every 30g handful² which makes them a good alternative to meat, poultry or fish for vegetarians or vegans. In particular almonds contain the amino acid L-arginine which helps increase the bioavailability of nitric oxide and improve endothelial dysfunction³.

Calcium

Calcium is important for maintaining healthy teeth and bones and plays a vital role in maintaining the health and functioning of nerve and muscle tissue⁴. A 30g serve of almonds provides around 75mg, or 7% of

daily calcium needs for adults between 18 to 50 years of age^{2,5}. This makes almonds an alternative natural source of calcium for those who cannot or choose not to eat dairy.

Iron and Zinc

Iron is an important mineral involved in various bodily functions, including the transport of oxygen in the blood. This is essential for providing energy for daily life⁶. Similarly, zinc performs essential functions in the body, including the development of immune system cells⁷.

Almonds contain plant iron and zinc, which are important minerals especially for those following a vegetarian or vegan diet. Vegetarians and vegans are at risk of iron and zinc deficiency if they are not consuming animal meats, fish and/or eggs⁸. Increase the absorption of plant iron from nuts by combining with vitamin C rich foods such as brightly coloured fruit and vegetables.

The Australian Dietary Guidelines recommend 30 grams (a handful) of nuts, including almonds every day¹.

Vitamin E

Almonds are high in vitamin E with a 30g serve providing over 70% of the daily requirements for adults^{2,5}. Vitamin E is an important fat-soluble vitamin and antioxidant that can help maintain a healthy heart.

Plant sterols

Almonds contain 197mg of plant sterols per 100g². Plant sterols can help lower cholesterol levels by reducing cholesterol reabsorption in the intestine.

The nutrient composition of almonds is linked to many positive health benefits for the human body, which will be explored in the next section.

Nutrient content of natural almonds ³		
Nutrient	Per 30g serve	Per 100g
Energy (kJ)	751	2503
Protein (g) ⁵	.9	19.5
Fat, total (g) ¹	6.45	4.7
Fat, saturated (g) ¹	.1	3.7
Fat, monounsaturated (g)	10.8	35.9
Fat, polyunsaturated (g)	3.81	2.8
Carbohydrate, total (g)	1.44	.8
Carbohydrate, sugars (g)	1.44	.8
Dietary fibre (g)	2.68	.8
Calcium (mg)	75	250
Copper (mg)	0.31	.1
Iron (mg)	1.23	.9
Magnesium (mg)	78	260
Manganese (mg)	0.82	.5
Molybdenum (g)	7.42	4.7
Phosphorus (mg)	144	480
Potassium (mg)	222	740
Sodium (mg)	25	.0
Zinc (mg)	1.13	.7
Folate (g)	92	9
Vitamin E (mg)	8.42	8.1
Arginine (g) ⁴	0.82	.5
Plant sterols (mg) ⁴	59	197
Polyphenols (mg) ⁵	1254	18

Almonds for heart health

Cardiovascular disease (CVD) including heart disease is the major cause of death in Australia. The top three attributable risk factors for CVD relate to diet: high blood pressure, high body-mass index and high total cholesterol^{9,10}.

Dietary intervention is key to managing these risk factors and there is compelling evidence that consuming nuts, including almonds, offers protection against CVD.



How nuts protect against CVD?

The beneficial effects of nut consumption on CVD can be explained by an improvement in blood lipid and cholesterol levels. Almonds in particular are low in saturated fat, high in monounsaturated and polyunsaturated fats and contain fibre, phytosterols, plant protein and many other unique cardioprotective nutrients.

Their unique nutrient matrix is likely the reason for an observed reduction in LDL cholesterol in the body as they target the primary mechanisms behind LDL cholesterol

reduction. These include decreased reabsorption of cholesterol and bile acid, increased bile acid and cholesterol excretion, and increased LDL-C receptor activity¹¹.

A 2018 published literature review looked at major cohort studies and small to large intervention trials on nut intake and impact on CVD¹². It found that there was increasing evidence that nut consumption may help protect against CVD via lowering of oxidative stress and improvement in endothelial function.

Almonds are low in saturated fat, high in mono and polyunsaturated fats and contain fibre, phytosterols, plant protein and many other unique cardioprotective nutrients¹¹



Almond crusted salmon. For recipe see page 15.

Almonds as part of a Mediterranean diet

The Mediterranean diet is an eating pattern emphasising certain foods based on the dietary traditions of Crete, Greece, and southern Italy during the mid-20th century¹³. It is primarily plant-based and includes wholegrains, olive oil, fruits, vegetables, beans and other legumes, nuts, herbs and spices. The emphasis is on healthy fats, with olive oil replacing butter or margarine, and the inclusion of foods that contain healthy fats, such as avocados, nuts, and oily fish¹⁴.

The Prevention with Mediterranean diet, or PREDIMED study, is the largest dietary intervention trial to assess the effects of the Mediterranean diet on CVD prevention to date^{15,16}. First published in 2013 and republished in 2018, it looked at the primary prevention of CVD in 7,447 older adults using a Mediterranean Diet supplemented with extra virgin olive oil or nuts^{15,16}. The original study included older adults at high CVD risk who were given either a Mediterranean diet supplemented with extra virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or a control diet (reduced dietary fat)¹⁵. Incidence of CVD in the Mediterranean diet groups was lowered by approximately 30 per cent compared to the control diet group^{15,16}.

Almonds for diabetes

Diabetes has overtaken heart disease and cancer as the fastest growing chronic condition in Australia¹⁷. Strong international evidence shows that type 2 diabetes can be prevented in almost two thirds of cases and the risk of type 2 diabetes can be reduced by maintaining a healthy weight, being physically active, managing blood pressure and cholesterol, and by following a healthy eating plan¹⁸. Over the last two decades a body of evidence has emerged from both epidemiological and controlled trials demonstrating the favourable effects of regular nut consumption, including almonds, on diabetes-related outcomes^{19,20}.

Almonds and managing the risk factors for diabetes

A systematic review and meta-analysis of randomised controlled trials was conducted in 2014 to assess the effect of tree nuts (including almonds) on markers of glycemic control in individuals with diabetes²⁰. Pooled analyses showed an overall significant lowering of two markers of glycemic control: HbA1c and fasting glucose at a consumption level of 56 grams of tree nuts (including almonds) per day over eight weeks²⁰.

A 2018 literature review summarised the effect of almonds on measures of glycaemia and insulinaemia in people with diabetes or those at risk²¹. One study saw positive results on post-prandial glycaemia (post meal glucose levels) in participants with type 2 diabetes that consumed 28g of almonds with their breakfast²². Another study, conducted in Taiwan, saw a reduction in fasting blood

glucose and fasting insulin in participants with type 2 diabetes who consumed 60g of almonds per day as part of the National Cholesterol Education Program step II diet for four weeks²³. Although these studies are promising, the review concluded more research is needed to show a consistent effect of almond consumption on blood glucose control²¹.

It is recommended that people with diabetes have moderate amounts of carbohydrate and include high fibre foods with a low glycaemic index (GI) to assist in managing blood glucose levels²⁴. Adding almonds to carbohydrate-rich meals lowers the overall GI of that meal²⁵, which can help slow the rise in blood glucose levels when the food is consumed.

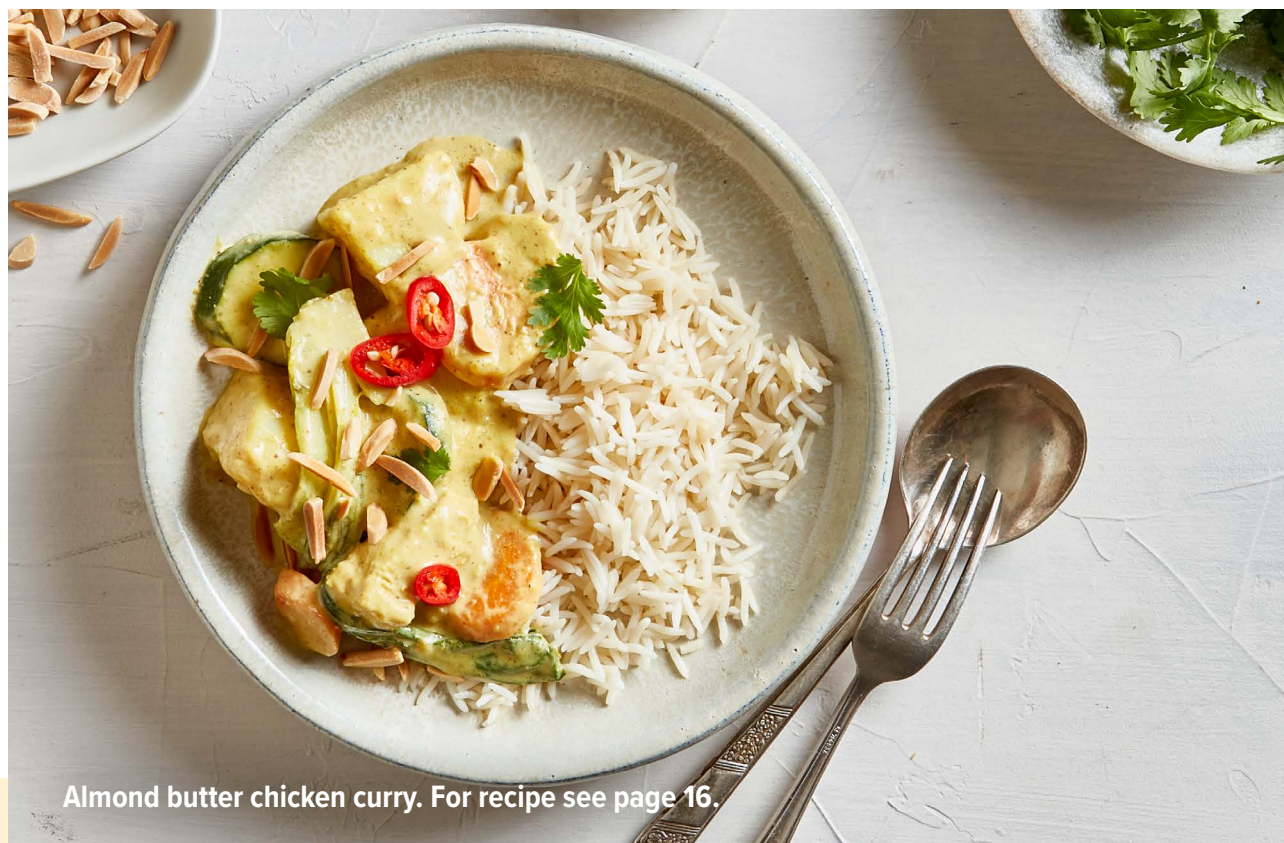


Adding almonds to carbohydrate-rich meals lowers the overall GI of that meal²⁵, which can help slow the rise in blood glucose levels when the food is consumed.

Almonds as part of a Mediterranean diet

The traditional Mediterranean diet is widely considered beneficial in the prevention and management of diabetes²⁶. A prospective study in 2008 suggested a lower incidence of diabetes with increasing adherence to the Mediterranean diet in previously healthy individuals²⁷. A clinical trial the following year showed that, compared with a low-fat diet, a Mediterranean diet allowed better glycemic control and delayed the need for anti-diabetes drug treatment in patients with newly diagnosed diabetes²⁸. Similar results were found by a systematic review²⁹ and several individual randomised controlled trials^{28,30,31,32} including people with type 2

diabetes. These studies showed that a Mediterranean dietary pattern emphasising nuts (including almonds) decreased HbA1c and fasting glucose in comparison to a conventional dietary pattern. A separate arm of the PREDIMED study tested the role of the Mediterranean diet in the prevention of diabetes in a clinical trial³³. Results revealed diabetes rates were reduced by 51% and 52% with the consumption of Mediterranean diets supplemented with virgin olive oil or mixed nuts (including almonds), respectively, compared with a control diet.



Almond butter chicken curry. For recipe see page 16.

Almonds for weight management

Gaining excess weight is mostly preventable by living a healthy lifestyle – primarily choosing healthier foods and being more physically active³⁴. Almonds are a nutrient-dense food, rich in healthy monounsaturated fats, plant-based protein and fibre, and a myriad of different vitamins and minerals including vitamin E, calcium, iron and zinc³⁵. Despite their healthy nutritional profile, people trying to lose weight often avoid nuts (including almonds) due to their high energy density. In fact, research shows that consumption of almonds in a balanced diet does not lead to weight gain and may enhance weight loss.



Evidence suggests that we may only absorb 70% of the total calories contained in almonds⁵⁰

How almonds can help with weight management

Increased satiety and appetite control

Foods that generate strong sensations of satiety can help individuals control their appetite, eat more healthily and manage their weight³⁶. It is well established that kilojoule-for-kilojoule not all foods deliver the same level of satiety³⁷. For example, in satiety studies where comparison foods were matched for energy content, there is considerable evidence that high-protein foods are more satiating than those that are high in carbohydrate and/or fat³⁸; and that fibre-rich foods are more satiating than low-fibre foods³⁹. Whole almonds have a nutritional profile consistent with satiety, being one of the tree nuts highest in plant-based protein and fibre. Research indicates that consuming almonds can have positive

effects on appetite control and does not lead to significant changes in body weight^{40,41,42,43}. A 2015 randomised crossover study found that adding 28g or 42g of almonds to the diet as a mid-morning snack was likely to increase satiety responses in a portion-dependent manner, leading to reductions in subsequent food intake so that total energy intake over the day was not increased⁴⁴. This supported the findings of a 2013 four-week randomised controlled trial, which assessed the outcomes of consuming 43g of almonds daily with meals or as snacks⁴². Results showed that overall daily energy intake was reduced to compensate for energy from the almonds and did not increase the risk of weight gain among participants.

Increased resting energy expenditure

A biological mechanism that may explain the ability of nuts (including almonds) to improve body weight measures is through having a greater thermogenic effect⁴⁵. This means consuming nuts (including almonds) increases the amount of energy and fat used by the body at rest, leading to less fat accumulation, therefore potentially curbing weight gain. This could be because nuts (including almonds) are rich in healthy unsaturated fatty acids, which are more readily oxidized (or burned) by the body than saturated fatty acids⁴⁶.

Decreased fat absorption

The fat in almonds is stored within its cell walls, which has shown to impact the amount of fat available for digestion^{47,48,49}. Research has shown that when whole almonds are consumed, not all cell walls are broken down when chewing, making the fat less bioaccessible and leading to incomplete fat absorption in the gut. Instead, some of the fat passes through the body and is excreted in faeces^{47,48}. This decreased absorption of fat in the body may also be a reason why almonds do not contribute to weight gain. Further, evidence suggests that we may only absorb 70% of the total calories contained in almonds⁵⁰.



Green almond smoothie. For recipe see page 14.

Almonds for gut health

The Gut Benefits of Almonds

Interest in gut health has increased exponentially over recent years. Understanding what drives a healthy gut is still in its infancy, but current knowledge suggests a healthy gut is dependent on an abundant and diverse gut microbiota⁵¹. Lower gut microbiota diversity is associated with a range of disorders and disease states, including cardiovascular disease, type 2 diabetes and inflammatory bowel disease⁵¹. The nutrients that we get from food, in particular fibre, phytochemicals (particularly flavonoids and polyphenols) and unsaturated fatty acids, can positively impact the gut microbiota^{52,53}. Almonds contain a unique nutrient package that includes all three, but what exactly is the evidence base for nuts and gut health?

Almonds and the gut microbiota

A 2020 SLR and meta-analysis of nine RCTs found strong evidence that both almonds (5 studies) and walnuts (3 studies) can improve the gut microbiota. There was an absence of evidence for other nut types⁵⁴. Almonds had a dual effect, increasing the abundance of healthy short chain fatty acids producing bacteria, and decreasing potentially pathogenic bacteria^{53,55,56,57}. In one study, even greater effects were found in children,

where 42.5g and 85g of almonds per day over 3 weeks had a more pronounced effect on gut microbiota in four-year-old children compared with their parents⁵⁶. Research has shown that whole and chopped almonds have a greater positive impact on the gut microbiota than almonds in butter form⁵². This may be because approximately 50% of the fibre content of almonds is found in the almond skin⁵⁸.

Almonds are one of only a few foods that contain fibre, phytochemicals and unsaturated fat, nutrients that can positively affect bacterial abundance and microbiota composition, and support gut health.



Almonds and colorectal and colon cancer

The effect of nuts on colorectal (and colon) cancer risk remains inconclusive, across two systematic literature reviews (SLR) of case control and cohort studies, plus one additional cohort study not included in the SLRs published to date. A 2015 SLR of two cohort studies and one case control study reported a positive effect of nuts on colorectal cancer risk, while another 2018 SLR of six cohort studies found no association^{59,60}. Differences may be attributed to sex, with larger risk reductions reported in women. In a large prospective cohort study involving ten European countries, eating at least 6.2g nuts per day was associated with a 31% and 19% lower risk of colon and colorectal cancers in women, respectively, with no association found in men⁶¹. A 2018 cohort study reported that eating at least two handfuls (>57g) of nuts per week was associated with a lower incidence of both colorectal cancer recurrence and death, compared to patients who abstained from nuts⁵⁷.

How are Almonds linked to gut health?

Nuts are one of the few foods that provide a nutrient package of fibre, phytochemicals (flavonoids, flavanones and polyphenols) and unsaturated fatty acids, which may explain their strong beneficial effects on bacterial abundance and microbiota composition. Fibre is well known to provide important fuel for colonic bacteria, and phytochemicals act like prebiotics, positively influencing the maintenance of healthy and diverse microbiota^{53,55}. Unsaturated fatty acids have been shown to have antimicrobial properties and also benefit gut microbiota composition⁵².

Amounts and frequency: What does the science say?

- One large handful (42g) of almonds or walnuts per day over 3-12 weeks had positive effects on the gut microbiota.
- Two or more handfuls (57g) of nuts per week.



Creamy cauliflower and almond soup. For recipe see page 17.

Almonds for mood and cognition

The Brain Benefits of Almonds

A rapidly growing body of human research shows that nuts, including almonds, can have positive effects on the brain. This is highly relevant given Australia's growing mental health crisis and ageing population. Depression and anxiety are one of the largest contributors to the total burden of disease today, and dementia is the leading cause of disability among Australians over 65, and the leading cause of death in females^{62,63}. In recent years the growing field of Nutritional Psychiatry has emerged, with a growing understanding on the important relationship between food and its impact on mood and cognition.

Cognitive Decline & Mental Illness – A Snapshot

Cognitive ageing is defined as a spectrum, moving from healthy functioning to mild cognitive decline to dementia⁶³. Over 400,000 Australians are currently living with dementia⁶², and cognitive disorders like dementia are predicted to double over the next 20 years⁶³. One in 5 Australians are reported to suffer a mental health condition in any given year, with nearly 1 in 2 experiencing a mental illness at least once in their lifetime⁶³.



Almonds and cognition

Over the last 10 years there were 15 human studies investigating nut intake on cognition. Strong and consistent evidence from cohort studies suggests that nut intake reduces the cognitive decline associated with ageing⁶⁴⁻⁶⁸. In a Dutch study following over 2600 men and women over 5 years, an equivalent reduction in cognitive decline of 5-8 years was reported among individuals who consumed the highest nut intake, compared to those who consumed the lowest⁶⁵. Recent evidence suggests that almonds may improve some aspects of memory. In a RCT of 86 American adults, approximately two handfuls of almonds (53g) as part of a high fat lunch reduced the dip in memory that occurs immediately after eating lunch⁶⁹. In a recent RCT, nearly three handfuls of almonds (85g/day) were found to improve multiple aspects of memory such as visuospatial working memory, visual memory and learning, and special planning and working memory, over 6 months⁷⁰.

Almonds and mood

Research on the role of nuts and mood is still in its infancy, with four RCTs and one cohort study found over the last six years. Evidence from RCTs has shown that eating walnuts improved mood in young men⁷¹, and that eating almonds as part of a low carbohydrate diet improved depression symptoms in type 2 diabetics⁷². More research is needed to firmly establish the role of almonds specifically on mood disorders and mental health.



Two to three handfuls of almonds (53-85g) each day over 6 months was shown to improve some aspects of memory^{69,70}

How might almonds be linked to Brain Health?

Almonds may positively impact cognition by reducing inflammation and supporting endothelial function. Chronic inflammation has been linked to a loss of neuron function and brain regeneration⁷³. The endothelium is important in regulating blood flow, and impaired blood flow is linked with cognitive decline⁷⁴. Almonds contain a unique nutrient package (including arginine, vitamin E and polyphenols) that may improve endothelial function by increasing vasodilation⁷⁵. Almonds potential impact on mood is thought to be mediated through improved brain nutrient status, reduced inflammation, and improved gut microbiota composition⁷⁶⁻⁷⁹.

Amounts and frequency: What does the science say?

- At least 10g of nuts per day is associated with the reduction in age related cognitive decline⁶⁴⁻⁶⁸.
- Two to three handfuls of almonds (53-85g) each day over 6 months was shown to improve some aspects of memory^{69,70}.
- Two large handfuls of nuts (56-60g) each day over 8-12 weeks had positive effects on mood^{71,72}.

Culinary uses

It's easy to make almonds part of their daily diet:

- Sprinkle flaked almonds on your breakfast.
- Toss a handful into a stir-fry.
- Use almond meal or ground almonds to make a flourless cake.
- Try almond butter as an alternative to butter or margarine.
- Mix natural yoghurt with berries and top with chopped almonds.
- Use slivered almonds as a crunchy topping for salads.

Recipes

Green almond smoothie

A delicious breakfast on the go

Serves 1
Preparation time: 5 minutes

- 1 cup almond milk (calcium fortified)
- 1 tablespoon almond butter
- ½ tablespoon chia seeds
- ½ teaspoon vanilla extract
- ¼ teaspoon cinnamon
- ½ banana
- 1 handful baby spinach
- ¼ cup rolled oats
- 1 handful ice cubes (optional)

Method

Place all ingredients into a blender and blend until smooth. If smoothie is too thick, add more milk.



Almond crusted salmon with kale and fennel salad

A tasty meal packed with healthy fats

Serves 4
Preparation time: 20 minutes
Cooking time: 30 minutes

Ingredients

- 4 small salmon fillets (approx. 120g each)

Almond crust

- 1 cup almonds, roasted and unsalted
- 2 cloves garlic, crushed
- 2 tablespoons extra virgin olive oil
- 1 lemon
- Pepper, to taste

Salad

- 2 tablespoons extra virgin olive oil
- 1 tablespoon balsamic vinegar
- 2 teaspoon honey
- 2/3 cup quinoa
- 1 cup baby kale, torn
- 2 cups baby spinach
- ½ fennel, chopped
- ½ red onion, finely diced
- 1 red capsicum, cut into strips
- 1 tomato, diced
- 1 apple, peeled and finely sliced
- ½ cup reduced fat feta, crumbled



Method

- Preheat oven to 200°C.
- Using a mortar and pestle or rolling pin, crush almonds into a crumble.
- In a small bowl, combine garlic, crushed almonds, oil and juice and zest of the lemon.
- Pat salmon dry with paper towel and season both sides with a pinch of pepper. Place salmon onto a lined baking tray.
- Spoon almond mixture over the top of the salmon and gently press down so the crust sticks.
- Bake salmon for about 10 minutes until cooked through and the crust is golden.
- Cook quinoa as per packet instructions.
- In a small bowl, combine oil, balsamic and honey and mix well.
- Place cooked quinoa and all other salad ingredients in a large bowl and toss well to combine.
- Dress the salad just before serving and season with pepper if desired.

Almond butter chicken with rice

A hearty low-GI meal full of flavour

Serves 4

Preparation time: 15 minutes

Cooking time: 45 minutes



Ingredients

- **4 tablespoons curry powder**
- **3 tablespoons almond butter**
- **400g skinless chicken breasts, diced**
- **¼ cup extra virgin olive oil**
- **1 tablespoon garlic, minced**
- **2 teaspoons ginger, minced**
- **3 tablespoons lemongrass, finely chopped**
- **1 small sweet potato, cut into chunks**
- **1 carrot, diced**
- **1 zucchini, diced**
- **1 bunch bok choy, roughly chopped**
- **200ml water**
- **1 tin coconut flavoured evaporated milk**
- **120g slivered almonds**
- **2/3 cup basmati rice**

Method

- Mix curry powder with a bit of water to make a paste. Slowly stir in almond butter to make a marinade.
- In a medium bowl, coat chicken breast with marinade, cover and leave in fridge for at least 1 hour.
- Heat oil in a frypan over medium heat and add garlic, ginger and lemongrass. Stir for 1-2 minutes until fragrant. Add chicken and cook for another 4-5 minutes until almost cooked through.
- Add sweet potato and carrot and approximately 2 tablespoons of water to ensure the ingredients don't stick to the pan. Cover with lid and simmer on low for 10 minutes, stirring occasionally, until the sweet potatoes and carrots are soft.
- Add zucchini, bok choy and water and simmer for another 5-10 minutes, stirring occasionally, until vegetables are all cooked through.
- Add coconut flavoured evaporated milk and 3/4 of the slivered almonds. Stir and heat through.
- While curry simmers, cook basmati rice as per packet instructions.
- Toast remaining slivered almonds on a small non-stick pan over medium-heat until browned.
- Divide rice equally into serving bowls and top with butter chicken and toasted slivered almonds.

Creamy cauliflower and almond soup

A delicious winter warmer

Serves 4

Preparation time: 15 minutes

Cooking time: 35 minutes



Ingredients

- **1 cup raw sliced almonds**
- **1 tablespoon extra virgin olive oil**
- **1 brown onion, chopped**
- **3 cloves garlic, crushed**
- **1 head cauliflower, cut into florets**
- **400g tin butter beans, drained and rinsed**
- **½ tablespoon dried herbs (e.g. thyme, oregano, basil)**
- **1 litre salt-reduced vegetable stock**
- **Pepper, to taste**
- **Handful fresh herbs, to serve**
- **4 slices wholegrain or sourdough bread, to serve**

Method

- Soak ¾ cup almonds in 1 cup water for at least 2 hours to soften (to save time, you can also microwave almonds in water for a few minutes). Drain and set aside.
- In a large pot, heat oil over a medium-high heat. Sauté onion and garlic for 3-4 minutes until soft. Add cauliflower and cook for a further 5 minutes.
- Add beans, dried herbs, stock and pepper. Stir and bring to the boil. Reduce heat to a simmer and cook semi-covered for around 3 minutes, until cauliflower begins to soften.
- Add soaked almonds to pot and simmer for 5 minutes.
- Remove pot from the heat. Using a blender, puree soup until smooth.
- In a small non-stick frypan heat the remaining ¼ cup almonds until lightly brown.
- Divide soup into bowls and garnish with fresh herbs, toasted sliced almonds, and a drizzle of oil if desired. Serve with crusty bread.

More information and resources

Visit the Australian Almonds website online. Here you will find lots of FREE resources:

- Health professional webinars
- Fact sheets for health professionals on heart health, diabetes, weight management, gut health, and mood and cognition.
- Client fact sheets for you to share with your clients
- Video content
- Subscription form so you can stay up to date.
- Virtual exhibition booth.

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‘State of the Science’

Recommendations for dissemination and future directions

Compiled by Nutrition Australia

April 2021

Background

The current ‘Educating Health Professionals’ program (AL16007) began in May 2018 and is scheduled to conclude in April 2021. Throughout the three-year program a suite of comprehensive educational fact sheets have been developed for health professionals, showcasing the health benefits of consuming almonds. There are six content themes: almonds for good health, heart health, diabetes, weight management, gut health, and mood and cognition. The existing fact sheets can be viewed in the Health Professional section of the [Australian Almonds website](#).

One of the key outputs of Milestone 190 is the development of content for a ‘State of the Science’ document that will be a compilation of fact sheets developed during the program. The idea for the ‘State of the Science’ document is based on a document created by the [Almond Board of California](#).

The purpose of the ‘State of the Science’ document is to create a concise, ‘all-in-one’ resource for busy health professionals to access. The document will be a snapshot of the health benefits of consuming almonds and will provide links for further reading and resources. Key messages from all six existing content themes will be included. The ‘State of the Science’ document is designed to complement the existing suite of fact sheets, in the sense that it will serve as an entry point into the full collection of online resources and will allow health professionals to identify areas of the subject matter that are of interest to them.

A key learning from earlier project activities is that educational resources with a blend of scientific theory and practical information are preferred by health professionals, and so this is the main guiding principle for the content development of this document.

Dissemination recommendations

- The finished 'State of the Science' document is housed on the Health Professional section of the Australian Almonds website.
- A feature story is published in the 'News' section of the Australian Almonds website to help drive traffic to the resource.
- Produce a 1-minute video for social media featuring Australian Almonds health professional ambassador Simone Austin (Advanced Sports Dietitian) promoting the 'State of the Science' document and its relevance to health professionals.
- Develop and execute a social media campaign promoting the new State of the Science document to drive traffic to the website and downloads.
- Launch and promote the 'State of the Science' document via a personalised electronic direct mail (e-DM) campaign to the existing health professional database (approximately 950 subscribers).

Future directions

- Refresh the 'State of the Science' document content every year to update evidence-based information.
- Consider adding high level key messages on the topic of almond production processes and innovations in sustainability.
- Develop a series of infographics to complement the 'State of the Science' document summarising the link between health benefits and almond consumption, sustainable growing practices, and the orchard to table process.
- Develop an animated version of the static document to increase the ability of the audience to interact and engage with the content.



AL16007 Educating Health Professionals Dissemination and Promotion Plan

Project background

Nutrition Australia Vic Division (NA Vic) is currently delivering the Horticulture Innovation Australia Limited (Hort Innovation) Project: AL16007 Educating Health Professionals. The program of work is in its 16th year of delivery. Key achievements in the previous 15 years include formation of sound relationships and increased credibility with health professionals through attendance at healthcare conferences and increased advocacy of Australian almonds by key independent health professionals.

The project will communicate to key health professionals the evidence on the health benefits of almonds and the important role they play in a healthy daily diet. It aims to raise the profile of almonds by communicating aspirational health benefits, such as supporting chronic disease prevention and cognitive function. In addition, new and emerging research on almonds will be used to inform the creation of resources specific for health professionals including digital clips, fact sheets, website content.

The outcomes of this project will meet Outcome 5 in Hort Innovation's Almond Industry Strategic Investment Plan 2017-2021: "Market research and insights to help industry increase domestic almond consumption".

The potential long-term impacts of this program include:

1. Health professionals have increased confidence talking about the benefits of almonds with patients/clients and develop a preference for recommending almonds as a snack, as part of a healthy balanced diet
2. Increased consumption of Australian almonds by Australian consumers.

Project aim:

To increase awareness amongst Australian health professionals of the health benefits of daily consumption of almonds.

Objectives:

- To provide the scientific evidence that almonds play an important role in a healthy diet.
- To increase the understanding and advocacy by health professionals of the nutritional value of almonds for heart health, diabetes prevention and management and healthy weight.
- To raise the profile of almonds as a food with aspirational health benefits leveraging the health benefits of almonds as an exercise recovery snack and as a food that improve cognitive function.

Target group:

- General practitioners
- Practice nurses
- Dietitians
- Nutritionists

Dissemination plan aim:

To disseminate the key messages and new resources to health professionals of different disciplines nationwide.

The resources

A suite of new resources has been developed summarising the health benefits of almonds relating to four key themes:

- Almonds for good health
- Almonds for heart health
- Almonds and diabetes
- Almonds and weight management
- Almonds and gut health
- Almonds and mood & cognition

For each theme a **health professional factsheet**, **consumer factsheet** and a **digital clip** have been developed. The resources are housed on the Australian Almonds Health Professional Centre website:

health.australianalmonds.com.au

The collage features several key resources:

- Almonds for heart health (A factsheet for health professionals):** A large factsheet with a blue header and white text, detailing the benefits of almonds for heart health. It includes a section on 'Recommended daily almond' and a 'Heart Healthy Almonds' logo.
- Almonds for heart health (Consumer factsheet):** A smaller factsheet with a blue header and white text, providing information for consumers. It includes a section on 'The healthy snack that tastes great' and a 'Heart Healthy Almonds' logo.
- Almond crusted salmon with kale and fennel salad:** A recipe card with a photo of the dish and a list of ingredients and instructions. It includes a 'Nutrition Australia' logo.
- Almonds for heart health (Digital clip):** A large orange and white graphic with the text 'Almonds for heart health' and a 'Heart Healthy Almonds' logo.

Key messages

Health Professionals:

- Almonds are an easy, tasty 'client solution' that health professionals can recommend as a snack and to include in a meal.
- Consumption of 30g (a handful) of almonds daily as part of a healthy diet can help improve heart health.
- Consumption of 30g (a handful) of almonds daily as part of a healthy diet can assist with weight management.
- Evidence suggests that we may only absorb 70% of the total calories contained in almonds.
- There is established evidence that eating at least 1 large handful (>42g) of almonds daily has a positive effect on gut microbiota – both increasing beneficial bacteria and decreasing potentially pathogenic types.
- One serve of almonds (1 handful or 30g) daily may help to prevent cognitive decline, while up to two handfuls (60g) each day may improve shorter-term outcomes of mood and memory.
- Visit the Australian Almonds Health Professional Centre to access the resources
health.australianalmonds.com.au

Consumers:

- Almonds are a convenient and portable snack that can be eaten anywhere and any time of day.
- Almonds are versatile and can be used in many different ways in cooking.
- Almonds are an important part of a healthy, balanced diet and have many health benefits, including prevention of heart health, diabetes and healthy weight.
- Almonds are rich in healthy fats, known as monounsaturated fats, which help protect the heart.
- Adding almonds to a meal slows digestion and lowers its overall glycaemic index. This can help with managing blood glucose levels at mealtimes.
- Almonds are one of the few foods to contain a unique package of fibre, phytochemicals and unsaturated fat, that can all positively affect the gut microbiota composition.
- Almonds contain a unique package of nutrients that can support healthy brain structure and function.

Promotional Activities - General

The following table outlines the promotional activities that are aimed at a general audience of health professionals, including all four of our key targets (General Practitioners, Practice Nurses, Dietitians and Nutritionists).

Timeline	Who	Activities	Potential reach	Status
Mar 19	Nutrition Australia members	Promotion via member newsletter (Image 1).	578 recipients	Complete
Mar 19	Nutrition Australia National	Electronic direct mail promoting new resources and the Australian Almonds Health Professional Centre to health professional subscribers	1545 recipients	Complete
Mar 19	Hort Innovation	Social media (Facebook and LinkedIn) featuring the digital clips for the Good Health and Heart Health themes (Image 2 and 3).	20,000 followers	Complete
Apr 19	Nutrition Australia	Paid advertising via Facebook (Image 4).	4985 people reached 192 link clicks 1752 clip views	Complete
Sep 19	Australian Almonds Health Professional Centre	Upload the Weight Management fact sheets and digital clip to the Health Professional Centre website. The full suite of resources will then be accessible.	Unknown	Complete
Ongoing	Australian Almonds	Social media (Facebook, LinkedIn, Twitter, Instagram) highlighting key messages for consumers.	~120,000 followers	Complete
Ongoing	Hort Innovation	Social media (Facebook, LinkedIn) highlighting key messages for health professionals and linking to the Australian Almonds Health Professional Centre.	~20,000 followers	Complete
Ongoing	Nutrition Australia	Social media (Facebook, LinkedIn, Twitter, Instagram) highlighting key messages for health professionals and linking to the Australian Almonds Health Professional Centre.	~52,000 followers	Complete
Ongoing	Health Professional Mailing List (from conferences)	Electronic direct mail focused on key messages for health professionals and linking to the Australian Almonds Health Professional Centre.	~750 subscribers	Complete
TBC	Nuts for Life	Promotion via social media highlighting key messages for consumers.	Unknown	Unable to complete

Promotional Activities – General Practitioners and Practice Nurses

The following table outlines the promotional activities that are aimed specifically at General Practitioners and Practice Nurses.

Timeline	Who	Activities	Potential reach	Status
Nov 2018	General Practice Conference and Exhibition (GPCE)	- Attended conference as an exhibitor - Disseminated fact sheets 16% of delegates opted in to the health professional email list	1000 delegates	Complete
Apr 2019	Diabetes Expo	- Attended conference as an exhibitor - Disseminated fact sheets on Diabetes and Heart Health 18% of delegates opted in to the health professional email list	300 delegates	Complete
Oct 2019	Royal Australian College of General Practitioners (RACGP) conference	- Promotion via official conference app during conference - Contribute a prize to drive delegate engagement with the stand - Disseminate 3500 hard copies of factsheets - Obtain new sign-ups to health professional email list	~1800 delegates	Complete
N/A	RACGP	- Methods for promotion/dissemination scoped. - Requires an advertising spend between \$5000-\$10,000 - Project budget does not allow for this.	39,000 members	Unable to proceed due to budget constraints
TBC	Primary Health Networks	- Victoria: 3 PHN's currently reviewing content - New South Wales: 1 PHN currently reviewing content - Aim is to disseminate fact sheets via PHNs.	Unknown	Unable to proceed – PHN unable to disseminate

Promotional Activities – Dietitians and Nutritionists

The following table outlines the promotional activities that are aimed specifically at Dietitians and Nutritionists.

Timeline	Who	Activities	Potential reach	Status
Aug 2019	Dietitians Association of Australia (DAA) National Conference	- Attended conference as an exhibitor - Promotion via official conference app during conference - Contribute a prize to drive delegate engagement with the stand - Disseminated 800 hard copies of factsheets 35% of delegates opted into the health professional email list	800 delegates	Complete
Sep 2019	DAA	Provide factsheets to DINER for DAA members to download	~7000 DAA members	Complete
		Feature in DAA weekly newsletter	~7000 DAA members	Unable to proceed – budget constraints
Dec 2019	NSA Conference	- Disseminate hard copies of factsheets - Obtain new sign-ups to health professional email list	~300 delegates	Complete
Mar 2020	Nutrition Influencers	Disseminated social media kit to group of 4 influential nutrition professionals invited to the Orchard Tour	270,000 reach via social media networks	Complete
Sep 2020	Industry Groups	Webinar 2 promoted via networking group of food industry dietitians.	179 members	Complete
TBC	Dietitian Connection	Promotion of resources via email distribution list – meeting scheduled for September.	~3400 members	Unable to proceed – budget constraints
TBC	NSA	Promotion of Health Professional Centre and new resources in fortnightly newsletter	1000 subscribers	Unable to proceed – budget constraints
TBC	Healthy Food Guide Magazine	Key messages for consumers featured on news pages in upcoming issue. Significant proportion of readership are Dietitians and Nutritionists	~246,000 print readership	Unable to proceed – budget constraints

Nutrition Australia social media reach

The Nutrition Australia Communications team have utilised Nutrition Australia's reach to disseminate project resources and key messages via social media and mailing lists.

Channel	Number of posts or campaigns	Reach
Facebook	12	27,697
Instagram	13	21,801
LinkedIn	5	6,073
Electronic direct mail (eDM)	5	1,357

A content and reach of each individual post or campaign is outlined below (* Due to changes in Facebook & Instagram privacy settings, some reach values from before May 2019 are not available).

Channel	Date	Content	Reach	Image no.
eDM	21-Feb-19	Launch of new Health Professionals website	412	Image 1
Facebook	21-Mar-19	Release of 'Almonds and Good Health' video	1560	Image 2
Instagram	21-Mar-19	Release of 'Almonds and Good Health' video	Unavailable*	Image 3
Facebook	8-Apr-19	Release of 'Almonds and Heart Health' video	2656	Image 4
Instagram	9-Apr-19	Release of 'Almonds and Heart Health' video	Unavailable*	Image 5
eDM	29-Apr-19	Promotion of 'Almonds and Heart Health' webinar	327	Image 6
Facebook	8-May-19	Promotion of 'Almonds and Heart Health' webinar	1800	Image 7
Instagram	8-May-19	Promotion of 'Almonds and Heart Health' webinar	Unavailable*	Image 8
eDM	14-Jun-19	Dissemination of 'Almonds and Heart Health' webinar recording	154	Image 9

Facebook	29-Sep-19	Promotion of World Heart Day with Heart Health key messages	2584	Image 10
Instagram	29-Sep-19	Promotion of World Heart Day with Heart Health key messages	2202	Image 11
Facebook	25-Oct-19	Promotion of attendance at GP19 conference in Adelaide	2392	Image 12
Instagram	25-Oct-19	Promotion of attendance at GP19 conference in Adelaide	2202	Image 13
Instagram	13-Mar-20	Highlights of Orchard Tour event	1948	Image 14
Facebook	10-Apr-20	'Almond snack ideas'	2444	Image 15
Instagram	10-Apr-20	'Almond snack ideas'	1895	Image 16
Facebook	2-May-20	'Healthy Eating is 1, 2, 5'	2863	Image 17
Instagram	2-May-20	'Healthy Eating is 1, 2, 5'	1830	Image 18
Facebook	15-Jul-20	Almond facts	1907	Image 19
Instagram	15-Jul-20	Almond facts	1930	Image 20
LinkedIn	15-Jul-20	Almond facts	1516	Image 21
LinkedIn	10-Aug-20	Promotion of 'Orchard to Plate' webinar	1839	Image 22
eDM	11-Aug-20	Promotion of 'Orchard to Plate' webinar	312	Image 23
Facebook	14-Aug-20	Promotion of 'Orchard to Plate' webinar	6328	Image 24
Instagram	14-Aug-20	Promotion of 'Orchard to Plate' webinar	2107	Image 25
Facebook	8-Jan-21	Almond facts	1619	Image 26
Instagram	8-Jan-21	Almond facts	3370	Image 27
LinkedIn	16-Feb-21	Promotion of Almond day	1857	Image 28
Facebook	27-Apr-21	Release of 'Almonds and Gut Health' fact sheets	1203	Image 29

Instagram	27-Apr-21	Release of 'Almonds and Gut Health' fact sheets	2616	Image 30
LinkedIn	27-Apr-21	Release of 'Almonds and Gut Health' fact sheets	587	Image 31
Facebook	28-Apr-21	Release of 'Almonds and Mood/Cognition' fact sheets	341	Image 32
Instagram	28-Apr-21	Release of 'Almonds and Mood/Cognition' fact sheets	1068	Image 33
LinkedIn	28-Apr-21	Release of 'Almonds and Mood/Cognition' fact sheets	269	Image 34
eDM	28-Apr-21	Release of 'Almonds and Gut Health' and 'Almonds and Mood/Cognition fact sheets'	152	Image 35

Image 1



Launching New Website

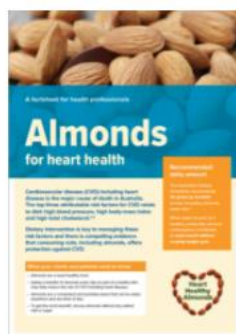
The [Australian Almonds Health Professional Centre](#) has launched; housing a myriad of new resources highlighting the many health benefits of almonds. Specifically designed for health professionals, clients and patients, these educational resources are easy to access, credible and reliable, and can aid with your continuing professional development.

Available Resources

The [NEW resources](#) make it easy for you to recommend almonds daily as part of a healthy diet to clients and patients, and be more confident talking about the benefits. They include factsheets and digital clips relating to almonds and heart health, diabetes and good health.

Stay Informed

Keep up-to-date on the latest research relating to almonds via the Australian Almond Health Professional Centre website: health.australianalmonds.com.au



[View the latest factsheets and digital clips here.](#)



This project has been funded by Hort Innovation, using the Almond research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture. The strategic levy investment project Educating Health Professionals (AL16007) is part of the Hort Innovation Almond Fund.

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Our mailing address is:
118 Cardigan St. Carlton VIC 3053

Image 2

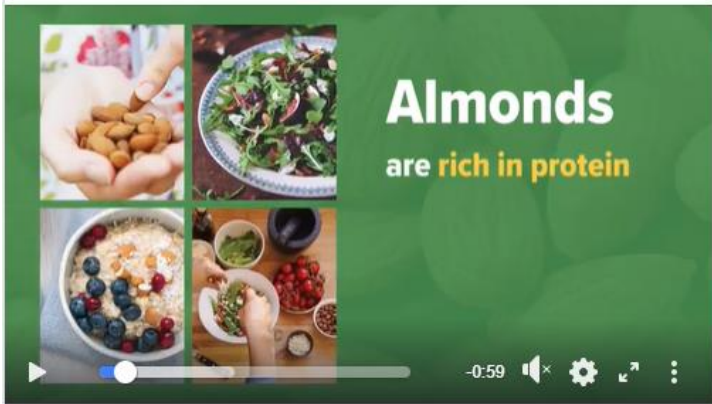
Nutrition Australia
20 March 2019 · 🌐

Did you know almonds are a protein-rich, versatile tree nut packed with vitamins, minerals and antioxidants that are beneficial for good health?

Nutrition Australia, in partnership with Hort Innovation and Australian Almonds, is excited to launch a myriad of new resources tailored specifically to health professionals and their clients, which are available via the Australian Almonds Health Professional Centre website:
<https://health.australianalmonds.com.au/>

This website is the resource hub that will house resources summarising the latest research on almonds and their health benefits, including factsheets and digital clips.

Check out our first video below and keep an eye out for more almonds tips coming soon!



Almonds
are **rich in protein**

-0:59 🔊 ⚙️ ↗️ ⋮



Almonds
for good health

-1:02 🔊 ⚙️ ↗️ ⋮

HOW HEALTHY ARE ALMONDS?

Hort Innovation
19 March 2019 · 🌐

Many people don't realise just how healthy almonds can be. That's why we created these great videos with our friends and experts at Nutrition Australia. Find out about some of the great benefits Aussie almonds can have for your body...

👍❤️ 33

2 comments 18 shares

Image 3

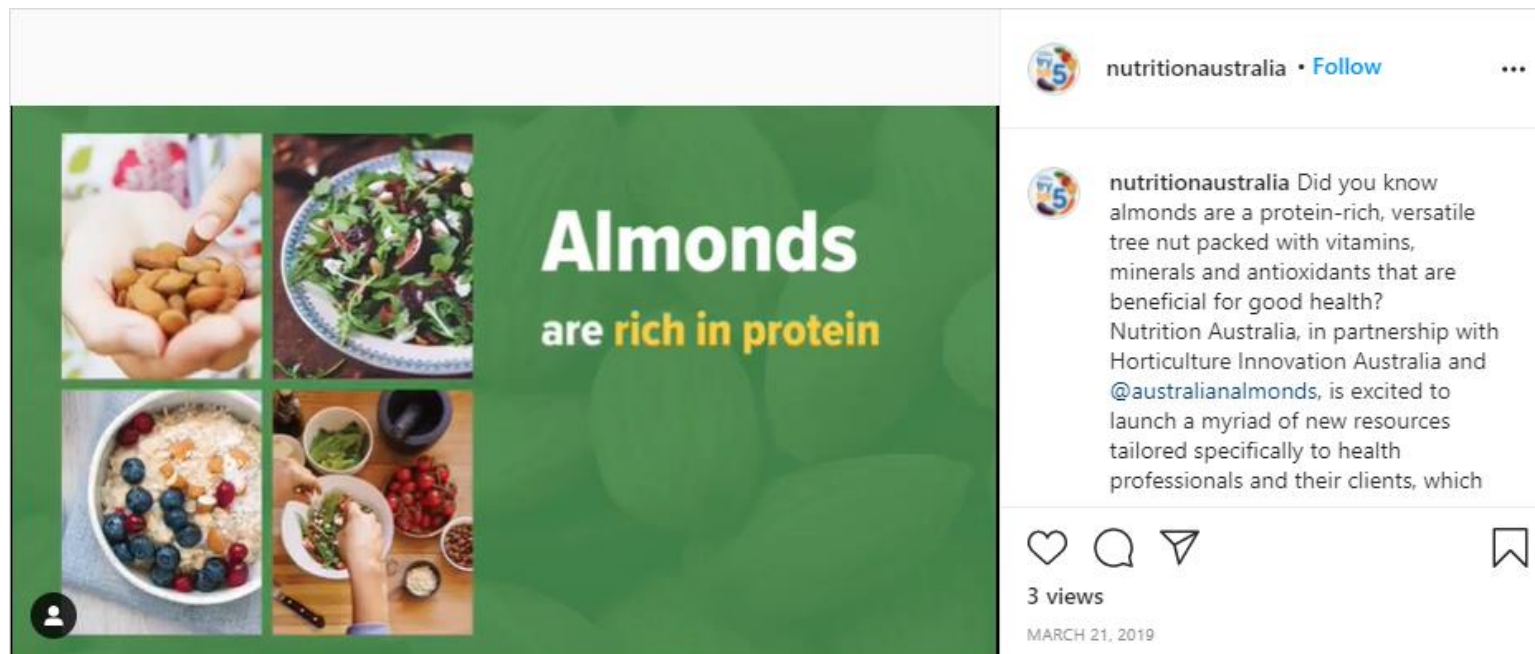


Image 4



Did you know consuming almonds as part of a healthy diet can help protect you against cardiovascular disease?

Nutrition Australia, in partnership with Hort Innovation and Australian Almonds, is proud to present the next video clip in our series of new resources, tailored specifically to health professionals and their clients.

A myriad of resources featuring the latest research on almonds and their health benefits (including factsheets and digital clips) is available via the Australian Almonds Health Professional Centre website:
<https://health.australianalmonds.com.au/>

Watch this space for more almonds tips very soon and sign up for our FREE webinar to learn more on almonds and heart health via the below link!

<http://www.nutritionaustralia.org/.../free-webinar-almonds-an...>



Image 5

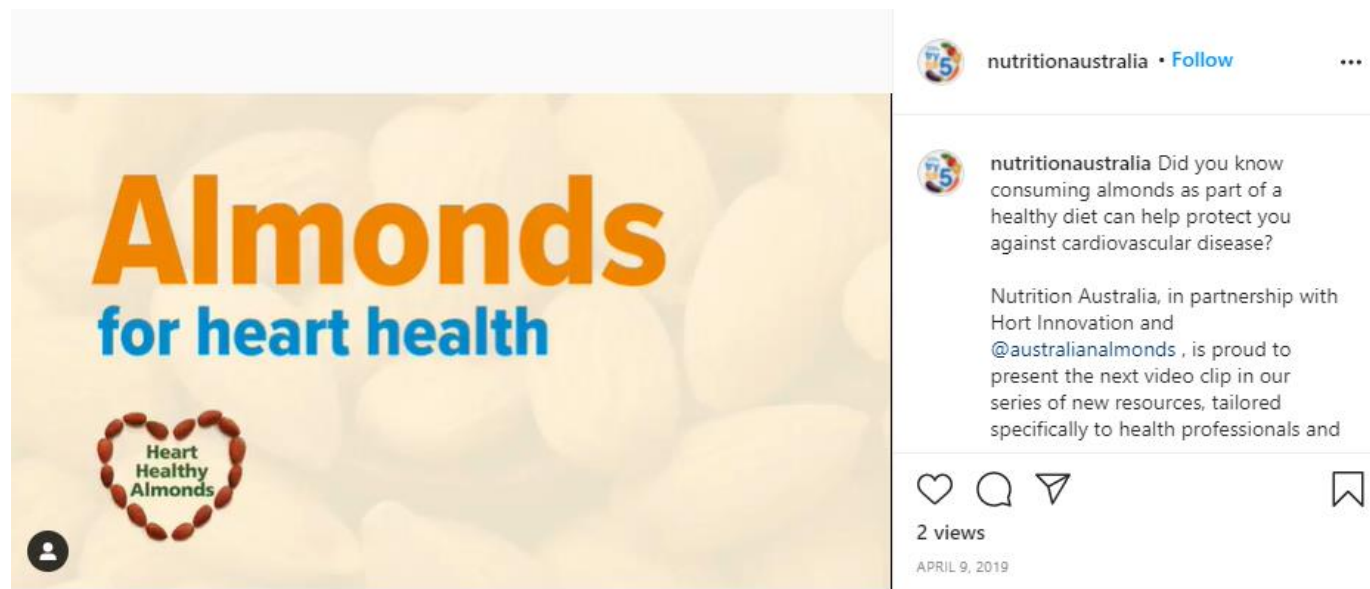


Image 6



Don't Miss Our FREE Webinar – Almonds and Heart Health

This webinar will update health and nutrition professionals about the latest research on the benefits of nuts, including almonds for heart health. Our Heart Foundation nutrition expert will talk about the evolution of evidence surrounding dietary fats and dietary patterns and present the current dietary recommendations for heart health.

Details

- **Date:** Wednesday 15 May 2019
- **Time:** 12.30-1.30 pm (AEST)

Registration

Click [here](#) to register

Learning Objectives

1. To understand the latest research linking nut and almond consumption and the benefits for heart health.
2. To understand the latest evidence and recommendations for dietary fats and associated dietary patterns for heart health.

Assessed CPD hours are applicable for Australian dietitians and nutritionists. Unaccredited professional development hours are applicable for Australian general practitioners.

Presented By

Dr Elizabeth Neale, University of Wollongong

Dr Elizabeth Neale is an Accredited Practising Dietitian. She completed her PhD in nutrition at the University of Wollongong in 2012. Elizabeth was a director at Landmark Nutrition, a nutrition consulting company from 2012 – 2016, and currently works as a Career Development Fellow (Lecturer) at the University of Wollongong. Elizabeth's research focuses on the evidence-based framework in nutrition, with a particular focus on systematic reviews and meta-analyses in nutrition. Elizabeth's research also explores the impact of nut consumption on risk factors for chronic diseases.

Sian Armstrong, National Heart Foundation

Sian is an Accredited Practising Dietitian with in depth knowledge of public health, food and nutrition. Sian has worked at the National Heart Foundation for 4 years, where her role involves providing expert nutrition advice both internally and externally and delivering on key projects. Sian has also previously worked

Image 7



Nutrition Australia

May 8, 2019 · 🌐

...

Nuts about almonds? We're excited to run a free webinar with health and nutrition professionals who will share the latest research and evidence surrounding almonds.

In this free webinar, we will focus largely on the benefits for heart health, so tune in on the 15th of May here: <http://www.nutritionaustralia.org/.../free-webinar...>

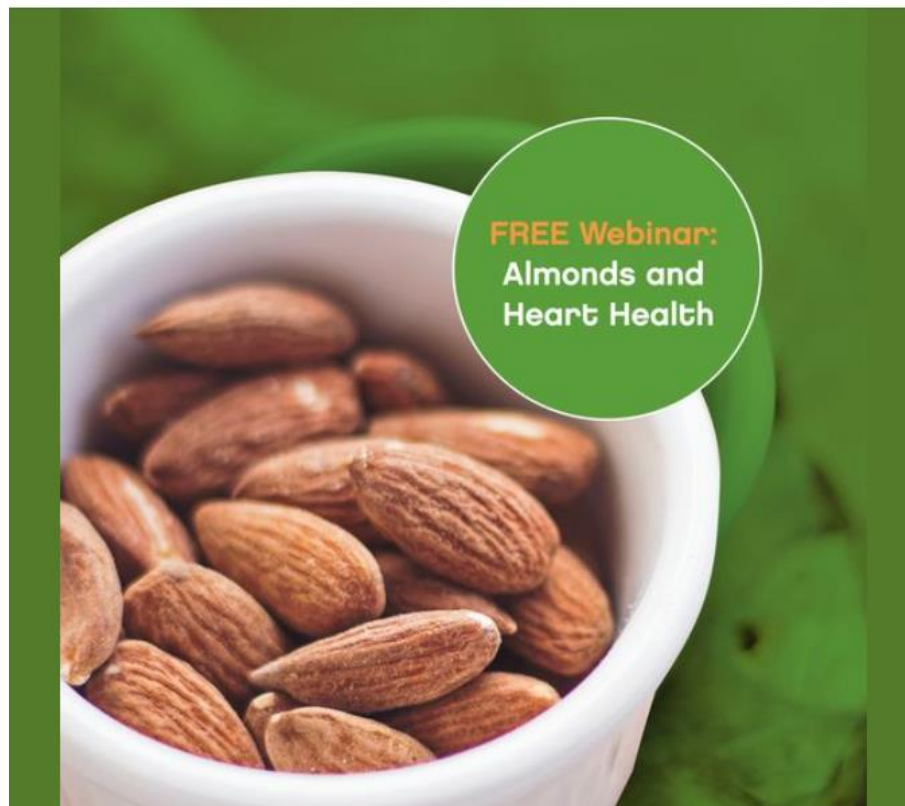


Image 8

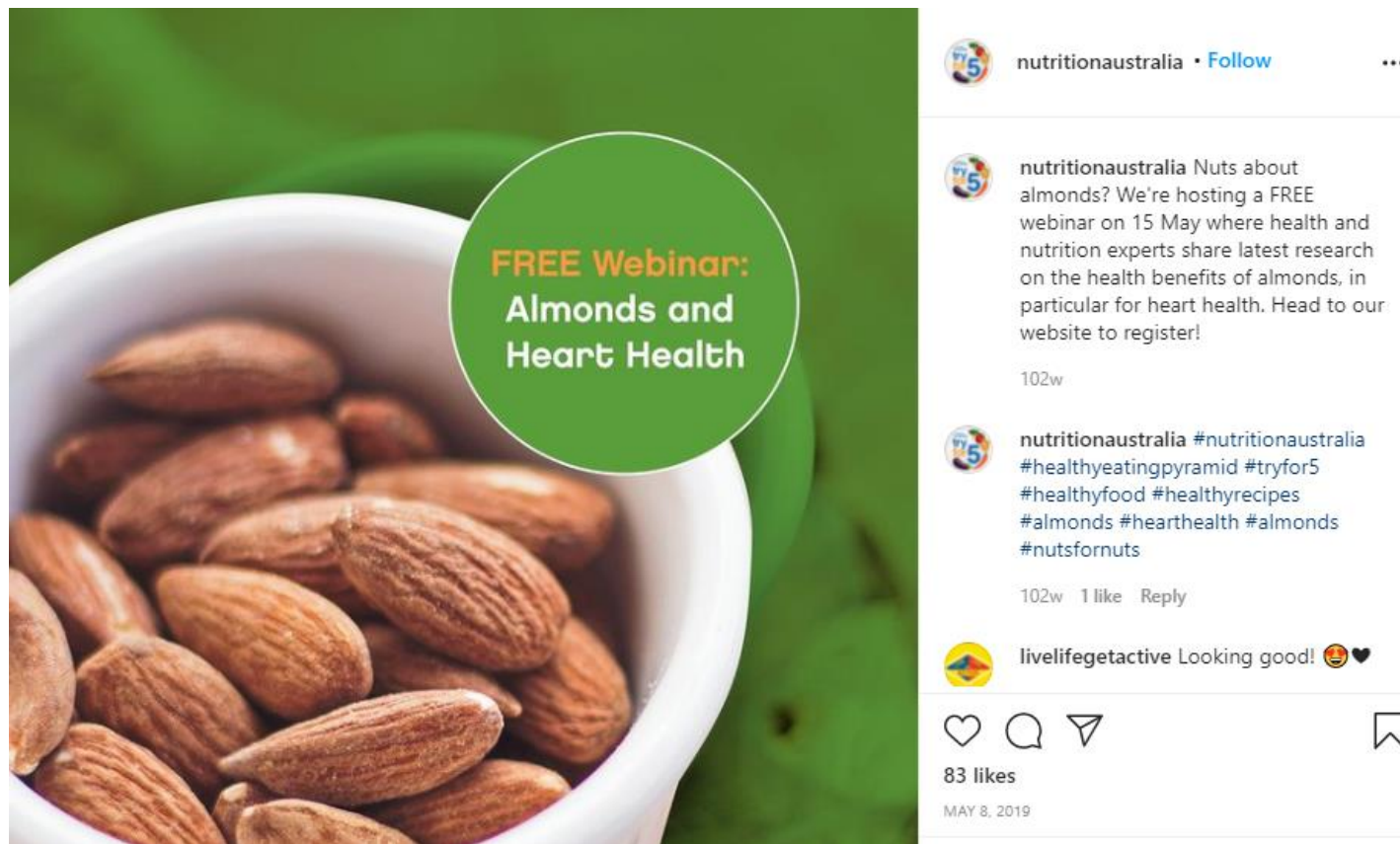


Image 9



Thank you for registering for our Almonds and Heart Health webinar. This webinar provides an update to health and nutrition professionals about the latest research on the benefits of nuts, including almonds for heart health.

Presented By

Dr Elizabeth Neale, University of Wollongong

Dr Elizabeth Neale is an Advanced Accredited Practising Dietitian. Elizabeth's research explores the impact of nut consumption on risk factors for chronic diseases.

Sian Armstrong, National Heart Foundation

Sian is an Accredited Practising Dietitian with in depth knowledge of public health, food and nutrition. Sian has worked at the National Heart Foundation for 4 years.

[Watch webinar](#)

[Download the slides](#)

Objectives

1. To understand the latest research linking nut and almond consumption and the benefits for heart health.
2. To understand the latest evidence and recommendations for dietary fats and associated dietary patterns for heart health.

CPD quiz available

Assessed CPD hours are applicable for Australian dietitians and nutritionists. Unaccredited professional development hours are applicable for Australian general practitioners. Follow the link below to the quiz.

[Complete the quiz](#)

Visit the **Australian Almonds Health Professional Centre** to download fact sheets and resources.

[Click here](#)

Image 10



Image 11



Image 12



Nutrition Australia

October 25, 2019 · 🌐

...

We are in Adelaide today at the RACGP GP19 conference in partnership with Australian Almonds and Hort Innovation, delivering a project focused on educating health professionals about the health benefits of almonds #almonds #hearthealth #healthprofessionals #GP19Adelaide

👍 20

1 Comment

Image 13



nutritionaustralia • Follow



nutritionaustralia Happy Friday ❤️
We are in Adelaide today at
@the_racgp GP19 conference in
partnership with @australianalmonds
and Hort Innovation, delivering a
project focused on educating health
professionals about the health
benefits of almonds! .



130 likes

OCTOBER 25, 2019

Image 14

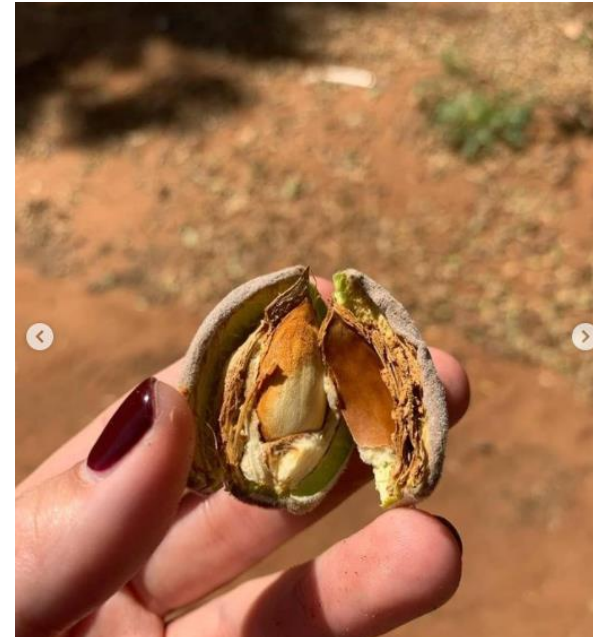


Image 15



Nutrition Australia

April 10, 2020 · 🌐

...

Here at Nutrition Australia we are big on almonds. Not only are they a delish snack to keep us going, but eating a handful of almonds every day as part of a healthy diet may actually help reduce the risk of CVD including heart disease! Good and good for you!

Here's our favourite ways to eat almonds:

- Lightly roasted for snacking on the go
- Mixed through a yummy salad for extra crunch
- Almond butter slathered on a piece of sourdough
- An almond milk coffee for a yummy mil... See More

  14

1 Comment 4 Shares

Image 16

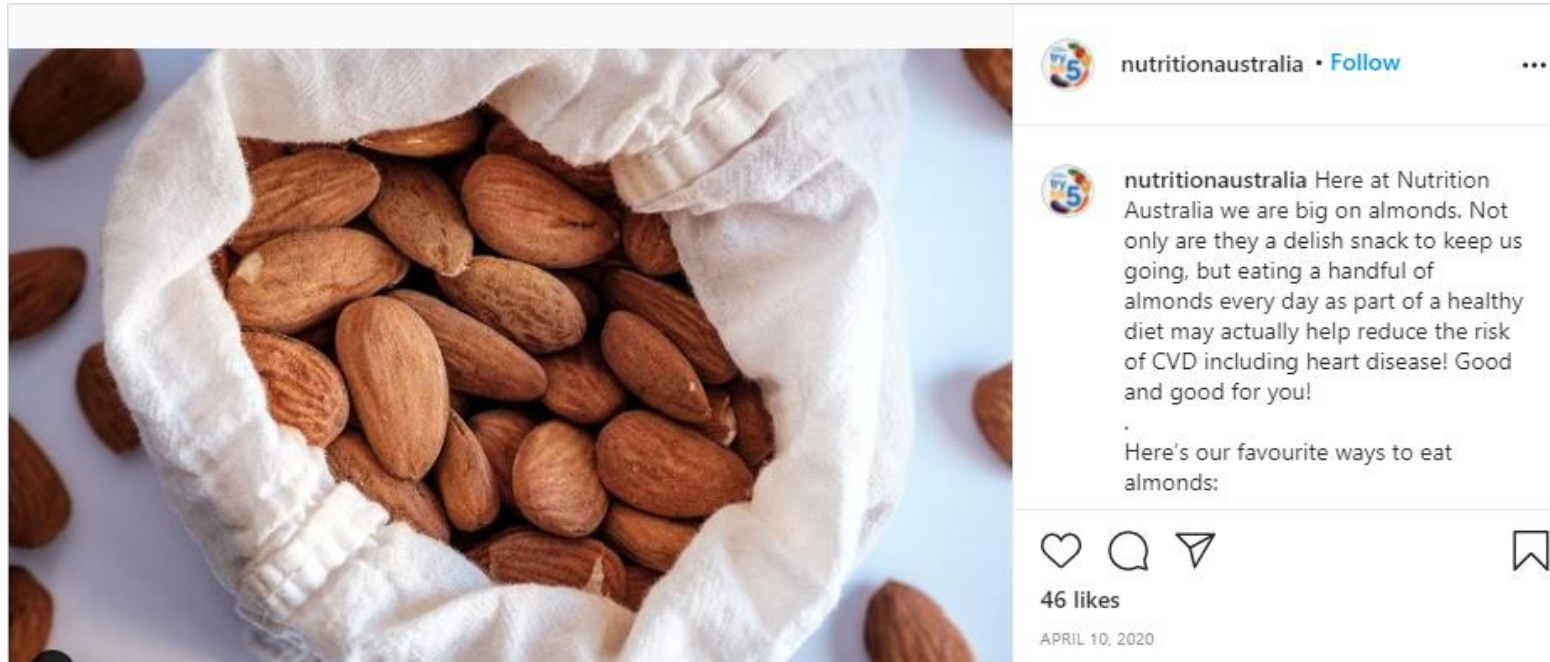


Image 17



Nutrition Australia

May 3, 2020 · 🌐



Healthy eating is as easy 1, 2, 5 . 👉 serve of almonds, 🍎 serves of fruit, 🥕 serves of veggies. Yes you heard that right! Almonds are great source of protein and healthy fats, help support heart health and keep you fuller for longer. Plus they're super delicious. Don't forget them in your day! How do you eat your almonds?

👍 11

7 Shares

Image 18



Image 19



Nutrition Australia

July 15, 2020 · 🌐

...

As restrictions hit Melbourne, we're reminiscing on better times at the **Australian Almonds'** almond orchard tour in Mildura, VIC and Loxton, SA earlier this year! It was such a unique and fun experience and we learnt so much about the harvesting and processing of almonds in Australia 😊

Did you know, the Australian almond industry are working hard to not only deliver delicious almonds, but to grow, process and package almonds in a sustainable, environmentally-friendly way?

Australian almond orchards use sophisticated irrigation systems to ensure they receive their water requirements with minimal waste or impact on the environment. 99% of almond orchards in Australia use drip irrigation for precise and cost-effective watering, with the other 1% using low level micro sprinklers. Overall, the water needed to produce almonds has reduced by 33% in the last 20 years due to advancements in technology 🙄

Almond processing in Australia is also a zero-waste effort, with the hull of the almond used to feed livestock, and the shell used to generate electricity and also used as mulch and livestock bedding. And then of course the almonds themselves are devoured by us almond lovers!

The photo is an almond in its stone fruit (yep, you heard right) in its shell and husk, taken by our Vic Division dietitian Amy!

#australianalmonds #lovethecrunch
#sustainability See Less

Image 20



Image 21



19 • 2 comments



Nutrition Australia

11,630 followers

10mo •

As restrictions hit Melbourne, we're reminiscing on better times at the Australian Almonds' almond orchard tour in Mildura, VIC and Loxton, SA earlier this year!

Did you know, the Australian almond industry are working hard to not only deliver delicious almonds, but to grow, process and package almonds in a sustainable, environmentally-friendly way?

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The photo is an almond in its stone fruit (yep, you heard right) in its shell and husk, taken by one of our dietitians Amy!

[#australianalmonds](#) [#lovethecrunch](#) [#sustainability](#)

Image 22



Nutrition Australia
11,630 followers
9mo • 

Online event for Health Professionals!
Brought to you by [Almond Board of Australia](#), [Hort Innovation](#) and Nutrition Australia, this online event will take you on the journey of growing almonds in Australia. Starting with the beautiful almond orchards located in regional Victoria and South Australia you will hear about the process of growing almonds and the incredible amount of technology that drives innovation and sustainability within the industry. Ending with your plate, hear more about the delicious and creative ways to incorporate almonds into your diet.

The event is only available to the first 200 people to register as you will receive an exclusive Australian Almonds sample kit, with a mix of both natural and dry roasted almonds of different varieties for the live tasting! Please only register if you can attend the live event.

Register here: <https://lnkd.in/gamdq94>



**Australian Almonds:
From the Orchard to your Plate**

Wednesday September 2
12.30-1.30pm

Welcome! You are invited to join a webinar: Australian Almonds live event. After registering, you will receive a confirmation email about joining the webinar.

us02web.zoom.us

Image 23



Brought to you by Australian Almonds, Hort Innovation and Nutrition Australia, this online event will take you on the journey of growing almonds in Australia. Starting with the beautiful almond orchards located in regional Victoria and South Australia you will hear about the process of growing almonds and the incredible amount of technology that drives innovation and sustainability within the industry. Ending with your plate, hear more about the delicious and creative ways to incorporate almonds into your diet.

The event is only available to the first 200 people to register as you will receive an exclusive **Australian Almonds sample kit**, with a mix of both natural and dry roasted almonds of different varieties for the live tasting! Please only register if you can attend the live event

Please be quick, spots are filling!

Details:

Date: Wednesday 2nd September 2020
Time: 12.30-1.30 pm (AEST)

Presented By:

Brendan Sidhu, Almond Grower and CEO Century Orchards
Simone Austin, Advanced Sports Dietitian and Australian Almonds ambassador

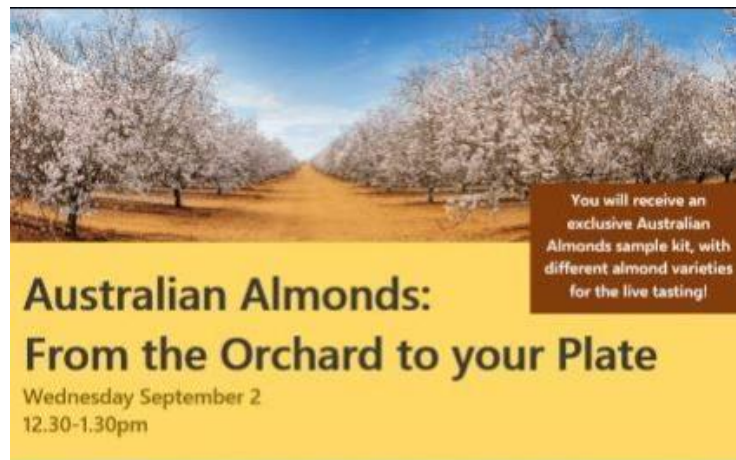
Hosted by:

Jemma O'Hanlon, Accredited Practising Dietitian and Research & Development Manager, Hort Innovation

[Register now!](#)

This webinar has been funded by Hort Innovation, using the Almond research and development levy and contributions from the Australian Government. Hort Innovation is the grower owned, not-for-profit research and development corporation for Australian horticulture. The strategic levy investment project Educating Health Professionals (AL16007) is part of the Hort Innovation Almond Fund.

Image 24



**Australian Almonds:
From the Orchard to your Plate**

Wednesday September 2
12.30-1.30pm

You will receive an exclusive Australian Almonds sample kit, with different almond varieties for the live tasting!

Guest speakers:
Brendan Sidhu, Almond Grower and CEO Century Orchards
Simone Austin, Advanced Sports Dietitian and Australian Almonds ambassador

Hosted by:
Jemma O'Hanlon,
Accredited Practising Dietitian and Research & Development Manager, Hort Innovation

Hort Innovation **ALMOND FUND** **australian almonds** **Nutrition Australia**



Nutrition Australia

August 14, 2020 · 🌐



Brought to you by Australian Almonds, Hort Innovation and Nutrition Australia, this online event will take you on the journey of growing almonds in Australia. Starting with the beautiful almond orchards located in regional Victoria and South Australia you will hear about the process of growing almonds and the incredible amount of technology that drives innovation and sustainability within the industry. Ending with your plate, hear more about the delicious and creative ways to incorporate almonds into your diet.

The event is only available to the first 200 people to register as you will receive an exclusive Australian Almonds sample kit, with a mix of both natural and dry roasted almonds of different varieties for the live tasting! Please only register if you can attend the live event.

To register, visit <https://buff.ly/31zJDjv>

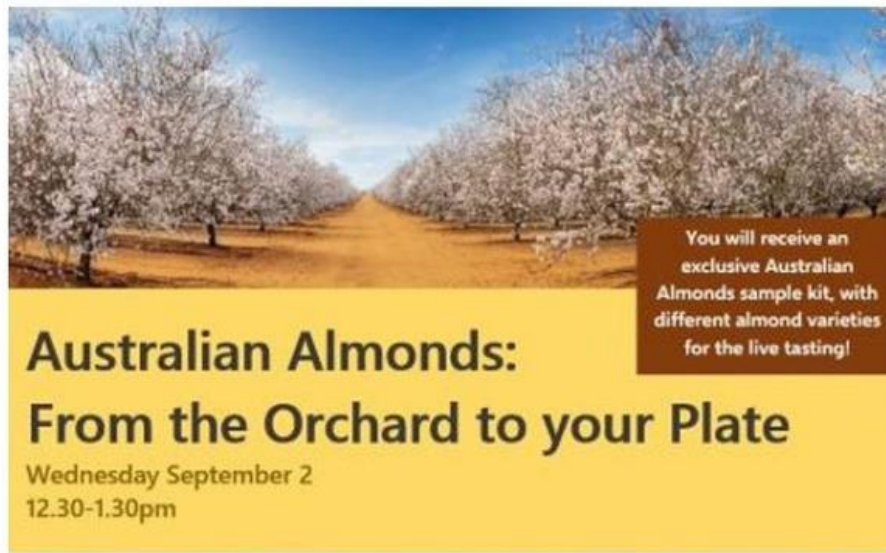
Australian Almonds Hort Innovation See Less



10

4 Shares

Image 25



**Australian Almonds:
From the Orchard to your Plate**

Wednesday September 2
12.30-1.30pm

Guest speakers:
Brendan Sidhu, Almond Grower and CEO Century Orchards
Simone Austin, Advanced Sports Dietitian and Australian Almonds ambassador

Hosted by:
Jemma O'Hanlon,
Accredited Practising Dietitian and Research & Development Manager, Hort Innovation

You will receive an exclusive Australian Almonds sample kit, with different almond varieties for the live tasting!



nutritionaustralia • Follow



nutritionaustralia Brought to you by Australian Almonds, Hort Innovation and Nutrition Australia, this online event will take you on the journey of growing almonds in Australia. Starting with the beautiful almond orchards located in regional Victoria and South Australia you will hear about the process of growing almonds and the incredible amount of technology that drives innovation and sustainability within the industry. Ending with your plate, hear more about the delicious and creative ways to incorporate almonds into your diet.

The event is only available to the first 200 people to register as you will receive an exclusive Australian Almonds sample kit with a variety of



46 likes

AUGUST 14, 2020

Image 26



 **Nutrition Australia** January 8 · 🌐

Did you know almonds are grown on trees and actually belong to the stone fruit family? 🧐 Crazy.

These tasty almonds are good and good for you. They contain healthy fats, vitamin E and protein that help maintain a healthy weight, contribute to good heart health and support our gut health.

The next Australian almond harvest begins in Feb... we can't wait! Whose excited? 🥳

Australian Almonds

#almonds #healthyeating #nutrition #food See Less

👍🧐 15 4 Shares

Image 27



Image 28

 **Nutrition Australia**
11,630 followers
2mo • 

...

Happy Almond Day!

Did you know Australian Almonds have a section on their website specifically for health professionals? The page contains helpful factsheets and resources for your clients, as well as professional development opportunities and more!

Visit <https://buff.ly/3u2uMM4>

[#almond day](#) [#almonds](#) [#australianalmonds](#) [#nutrition](#)
[#professionaldevelopment](#) [#healthprofessionals](#)



Image 29



The image shows a Facebook post from the page 'Nutrition Australia'. The post features a large graphic on the left with the text 'ALMONDS & GUT HEALTH' in large pink letters and a starburst shape below it saying 'NEW FACTSHEET AVAILABLE NOW!'. To the right of the graphic is a photo of a smiling woman with blonde hair wearing a blue top. The post text reads: 'New resources for Health Professionals! Did you know there is scientific evidence that shows that eating at least 1 large handful (>42g) of almonds daily has a positive effect on our gut microbiome. We have just released two new fact sheets on Almonds & Gut Health – one for health professionals, and one for you to share with your clients. ... See more'. Below the text, it says 'Michelle Lausen, Manami Henderson and 2 others like this.' and '1 share'.

**ALMONDS
& GUT HEALTH**

**NEW FACTSHEET
AVAILABLE
NOW!**

Nutrition Australia
Like This Page · 17 hrs · 

New resources for Health Professionals!

Did you know there is scientific evidence that shows that eating at least 1 large handful (>42g) of almonds daily has a positive effect on our gut microbiome.

We have just released two new fact sheets on Almonds & Gut Health – one for health professionals, and one for you to share with your clients. ... See more

Michelle Lausen, Manami Henderson and 2 others like this.

1 share

Image 30



Image 31

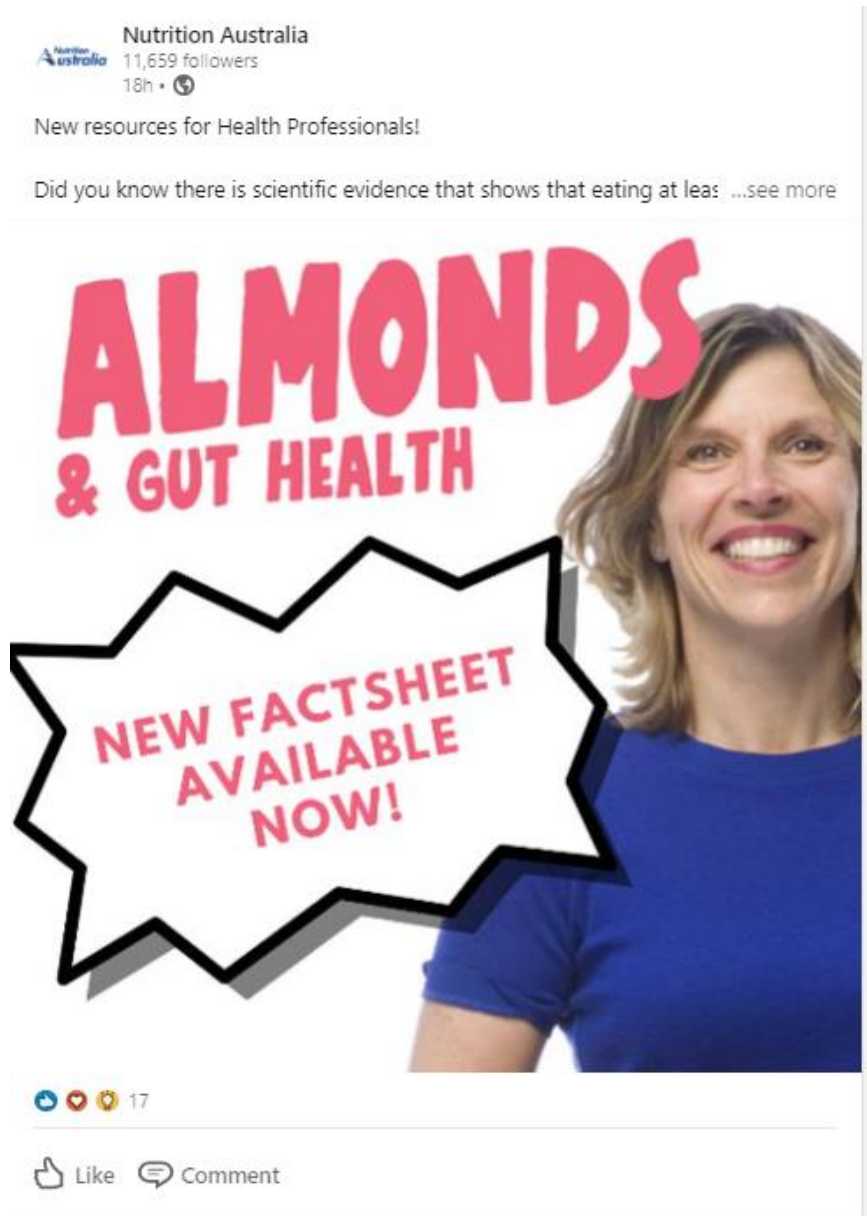


Image 32



ALMONDS
MOOD & COGNITION

**NEW FACTSHEET
AVAILABLE
NOW!**

Nutrition Australia
Like This Page · 58 mins · 

New resources for Health Professionals!

Almonds are great for our mood and cognition. In fact, just one serve of almonds (1 handful or 30g) daily may help to prevent cognitive decline, while up to two handfuls (60g) each day may improve shorter-term outcomes of mood and memory.

We have just released two new fact sheets on Almonds and Mood & Cognition – one for health professionals, and one for ... [See more](#)

Gordon Dawson, Joanne McPhee and Clare Fargher like this.

Timeline Photos

Image

12:57



33



Image 34

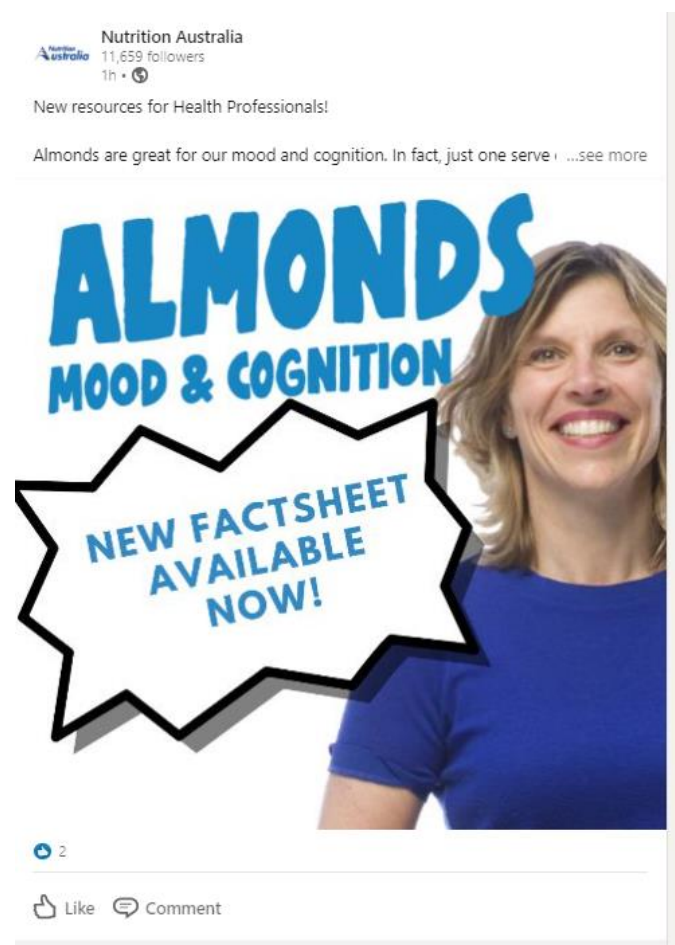


Image 35



Dear << Test First Name >>,

We are pleased to announce we have just released new content on the health benefits of consuming almonds for **gut health** and **mood & cognition**.

For each topic we have a new fact sheet for health professionals covering the latest evidence-based research. There is also a client fact sheet for you to share with your patients.

You can find these fact sheets in the Health Professional section of the Australian Almonds website!

[Visit new content!](#)

