

Effective methods for engaging with YOPI on food safety matters

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Scientific Interpretative Summary

This Scientific Interpretative Summary is prepared by New Zealand Food Safety (NZFS), a business unit of the Ministry for Primary Industries (MPI), to provide context to the following report for MPI risk managers and external readers.

FW406658: Effective methods for engaging with YOPI on food safety matters

New Zealand Food Safety/Haumaru Kai Aotearoa is responsible for regulating the food safety system to make sure food is safe and suitable for all New Zealanders. A strategic priority for NZFS is to proactively support consumers to make informed food choices, including providing tools and information to promote safe handling practices.

Consumers considered most vulnerable to foodborne illness include the young (0-5 years), older (65+ years), pregnant, and immunocompromised - collectively termed YOPI. This is likely because they may have lower immunity due to underdeveloped or impaired immune systems. It is also possible that YOPIs or their caregivers are unaware that they are more susceptible and are unaware of what they need to do to minimise their risk of getting sick. Even regulators and health care professionals have limited information on YOPI's understanding of and preferences on food safety matters.

The main objectives of this research were to

- describe the types of food safety information used by YOPI,
- find out where and how this information and advice is obtained, and
- understand how this influences their decision-making about food safety practices and related behaviours.

The research also considered alternative engagement methods to meet YOPI preferences for receiving food safety information.

To address these objectives, a series of 20 focus groups (comprised of either young, older, pregnant, or immunocompromised individuals) and six interviews with relevant healthcare providers were conducted. Separate Māori and Pasifika focus groups were also conducted to improve understanding of their experiences and perspectives in relation to food safety matters. These focus groups were guided by four research questions and underpinned by a rapid review of relevant literature.

Findings from the report revealed that YOPI consumers' understanding of the term "food safety" is wider than simply avoiding foods that cause foodborne illness. It is also associated with food hygiene and handling practices, food quality, and nutrition. Most participants were comfortable with their own practices in the home and reported habitual food safety behaviours. They also reported changing their behaviour when preparing food for people who could potentially be at a higher level of risk.

Health professionals were trusted sources of information for all YOPI groups. Family and peer support groups were key sources of food safety information and advice, especially during pregnancy.

While this is generally positive, we note that the older group aren't actively seeking new information as they age. They see themselves as knowledgeable and resilient, which may be a barrier to minimising their risk as their health status changes. We also note that family comments and peer pressure could influence YOPI to participate in risky food safety behaviours. This could be the result of contemporary food safety messaging differing from that of, for example, one's parents' experiences.

Of similar concern is the observation that the group comprising immunocompromised people reported limited awareness of being more vulnerable to foodborne illness. The focus of the

information used and advice received by this group was on healthy eating and lifestyle changes.

General barriers to consistent food safety behaviours included concerns about food wastage, particularly with awareness of increasing food costs, and the lack of experience of the consequences of foodborne illness.

It is reassuring that a segment of the immunocompromised group (cancer patients) and the pregnant group seek and receive a lot of new information about food and food safety as their situation changes. Both appreciate direct advice. Parents of young children would also appreciate better advice as children become ready for solid foods. However, again those with subtle feeding or ageing changes do not appear to seek such advice.

The main motivating factors for changing behaviour and seeking or using food safety advice were related to risk perception:

- people's perception of their own risk or change in risk,
- the riskiness of different foods, and
- the likelihood of known negative consequences occurring.

Not knowing they were at greater risk of foodborne illness was a common reason for YOPI not seeking, receiving, and using food safety advice.

This report therefore highlights the need to maintain general food safety messaging for safe preparation of meals, while making sure it is featured on the channels that are meaningful to the audience. YOPI want situation-specific food safety advice that is immediately available (online) when their situation changes (e.g., weaning, ageing), in addition to being provided this information alongside advice they are getting from health professionals. Although people are becoming used to weighing up multiple and sometimes conflicting pieces of information, the advice becomes harder to interpret where it is more nuanced, or it changes over time.

Ensuring that food safety messaging does not become lost in food security messaging is also needed.

Finally, the report outlines 12 recommendations, most of which NZFS is already implementing. Additional insights will be considered in future risk management and risk communication activities, such as the development and implementation of strategies, or planning food safety messaging and campaigns used to engage with YOPI.



Effective methods for engaging with YOPI on food safety matters

Final Research Report

5 May 2023



ALLEN + CLARKE

The *Allen + Clarke* research team warmly acknowledges the contribution made to this research by all participants, especially those that were interviewed about their experiences of food safety, health professionals who gave up their time to be interviewed, and those that gave us time and supported us to contact YOPI people and organise focus groups. Thank you to you all, your willingness to participate in the evaluation has enriched the findings.

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Glossary

Term	Definition
YOPI	Young, Old, Pregnant, and/or Immunocompromised
Young	In this project, 'young' is defined as 0 to 5 years. NZFS had a specific interest in those aged 0 to 2 years. In this report, we have used 'parents of young children' to refer to people we sought perspectives from for this group.
Old	In this project, 'old' is defined as aged 65 years and older
Pregnant	In this project 'pregnant' has been defined as those who are currently pregnant or have recently (within the last 3 months) been pregnant
Immunocompromised	In this project 'immunocompromised' is defined as having reduced immune function due to disease, treatment or a genetic disorder
Clean, Cook, Chill	Current NZFS campaign on "following the 3 Cs" to reduce the likelihood of foodborne illness
Foodborne illness	Illnesses caused by food contaminated by consumption of food contaminated with bacteria, viruses or toxins.
GP	General Practitioner
MOH	Ministry of Health
MPI	Ministry for Primary Industries
NZFS	New Zealand Food Safety

Executive summary

Background

New Zealand Food Safety/Haumaru Kai Aotearoa (NZFS), a branch of the Ministry for Primary Industries (MPI), is responsible for regulating the food safety system to make sure food is safe and suitable to eat for all New Zealanders. One priority area in *A Strategy for New Zealand Food Safety*¹ is to improve ways to proactively support consumers to make informed food choices, including providing tools and information to promote safe food handling practices. NZFS has committed to improving its understanding of consumer information needs and behaviours, so that instances of foodborne illness in New Zealand can be minimised.

Young, old, pregnant, and immunocompromised (YOPI) people are groups most vulnerable to foodborne illnesses. These people may have low immunity due to impaired or underdeveloped immune systems and are more at risk of getting sick from contaminated food.

There is a lack of information and understanding about whether and how YOPI groups access, receive or use information about food safety, what influences their food safety behaviour, and their preferences for receiving food safety advice. To help reduce foodborne illnesses in YOPI groups, fit-for-purpose, targeted food safety messages and resources may be required. In order to develop relevant messaging, it is essential to gain an understanding of what motivates these groups, any barriers they face in accessing accurate information and following food safety advice, and what influences their behaviours.

Purpose of this research

NZFS commissioned this research to develop a better understanding of how YOPI consumers in New Zealand access and use food safety information. The overall aim was to describe the types and sources of food safety information YOPI groups use, how information and advice are obtained, and how these interact with other influences on their decision-making about food safety practices and related behaviours. It was also to understand the experiences of health care providers in relation to food safety information provision and use by YOPI groups.

This research aimed to answer the following questions:

- 1) What types of food safety information do YOPI consumers seek and/or are currently using?
- 2) Where is this information obtained, how is this information used, and what motivations are there for taking up the advice?
- 3) What barriers exist that may prevent YOPI consumers seeking, receiving, and/or acting on food safety advice?

¹ <https://www.mpi.govt.nz/dmsdocument/52936-2022-Food-safety-strategy-2019-2024-refresh>



- 4) What are potential alternative engagement approaches that address, mitigate, and/or remove these barriers for the different segments of the YOPI populations?

Findings from this research will be used by NZFS and key stakeholders to inform the development of communication and engagement approaches about food safety to YOPI groups.

Methods

This qualitative, exploratory research centred around 20 focus group interviews of YOPI groups. These focus groups were conducted between September 2022 and March 2023 in three geographical locations: Christchurch, Wellington city, and the Greater Wellington area. A total of 97 people participated in the focus groups. The focus groups were homogenous, comprising either young, old, pregnant, or immunocompromised participants, with separate focus groups within each YOPI group by ethnicity. Separate Māori and Pacific focus groups were conducted to ensure conversations about food safety could occur within a relevant cultural context for participants. These focus groups were complemented with data from six primary or secondary care health provider interviews: three individual, and three small-group interviews with nutritionists, dietitians, aged care providers, cancer nurses, Well Child Tamariki Ora providers, and midwives.

All data were analysed thematically against the research questions, and a qualitative segmentation analysis was also conducted.

Key findings

What types of food safety information do YOPI consumers seek and/or are currently using?

Most participants were comfortable with their own practices in the home and reported habitual food safety behaviours. Participants could not always describe exactly where or how they had received specific pieces of food safety information – they had absorbed ideas from multiple sources over their lives. Families were a key source of food safety knowledge and practice.

The immunocompromised (cancer) and pregnant groups sought and received a lot of new information about food and food safety. Immunocompromised (cancer), pregnant and parents of young children wanted direct advice about the food safety precautions recommended for their health condition and/or life-stage. All three of these groups were required to manage risk in a way that they had not before. When people had become unwell and were aware of the need to choose foods carefully, they sometimes found decisions overwhelming and confusing. In these times, people particularly valued having a health professional to contact.

Participants also reported a strong preference for access to information at the time that they were ready for it. This may include times such as when health status changes or when children become ready for solid foods. Some information that was not immediately relevant was offered when they were too tired or preoccupied with the current life phase they were in, other times the information offered for a specific life phase was no longer relevant.

The most common theme about information seeking among parents of young children was that they looked at information from multiple sources and weighed it up according to what seemed most trustworthy or relevant to their situation. While parents got a lot of information



from health professionals, they also did their own research as questions arose. Having information easily discoverable online was very important – this could be either via official government channels or through less formal channels such as online groups, social media, and influencers.

Very few participants in the immunocompromised (diabetes) groups reported being told they had lower immunity or vulnerability to foodborne illness because or since they had been diagnosed with diabetes. The advice this group received was more focused on healthy eating and lifestyle changes.

Most people in the old focus groups reported being confident in their food hygiene practices and not actively looking for new information about food safety. People commonly alluded to already having established food handling processes that had proved to work for them with no adverse outcomes.

Where is food safety information obtained from?

Families were a key source of information and advice, and a key influence on most focus group participants. This influence played out in two different ways for participants. On one hand, the family could support and advise in ways that adhered to good food safety practices. On the other hand, family could influence participants towards behaviours not aligned with safe food practices. For example, where family members ate 'unsafe' food during pregnancy with no consequences, participants reported that they then would be more likely to follow this behaviour. Most parents of young children talked about trusting their mother's advice on food safety in general, although some participants noted generational differences and the changing advice over time. Other parents of young children described not following their mother's advice because they were confident that they could make their own decisions.

Health professionals were trusted sources of information for all YOPI groups. Most pregnant participants expressed trust in the sort of information they got from midwives, and Well Child service providers. A few in the pregnant groups would contact their midwife for immediate food safety advice, though this depended on their relationship. Health professionals were an information source for older people with pre-existing health conditions, and who had access to their doctor. Those in the immunocompromised groups who did not find their health providers helpful enough were often inclined to look for alternative food safety information online or to discuss with peers. Peer support groups were also important sources of information for parents. Peer groups, including online groups, were also good sources of links to official or specialised information that people could investigate more at their own pace.

Participants in all focus groups reported using the internet to source information, although not all participants had actively looked for and retrieved food safety information. People would use the internet to either look up a specific food safety question, to do research about a food or health topic they were already considering or to get additional perspectives.

What motivations are there for seeking food safety advice?

The main motivating factors related to risk perception: people's perception of their own risk, the riskiness of different foods, and the likelihood of known bad consequences occurring. Within each of the YOPI groups, people's perception of personal risk varied, and this influenced their motivation to follow food safety advice strictly. This risk perception was partly based on their understanding of their health conditions, and partly of their past experiences,



including of foodborne illness. People adjusted their ideas about risk based on the setting they were in; trust in food providers made a difference as did the type of food and the social influences involved. Risk-minimising behaviour included checking food in shops more intently for freshness, storing and reheating food carefully, and being cautious about food prepared outside of the home.

People also described changing their behaviour when preparing food for others whom they understood could potentially be at higher level of risk. This showed some level of knowledge that some groups of people are at higher risk than others.

What barriers prevent people seeking, receiving, and using food safety advice?

Several barriers were identified to receiving and following food safety advice. Habit was a strong barrier, although in cases where level of risk had suddenly shifted (for example, becoming pregnant or unwell), people were more likely change their food safety habits. Some people felt that they were personally more resilient, and, with no obvious increase in risk, this perception made them less likely to consider changing behaviour.

The cost of food came up regularly in focus groups. Food waste was a particular concern for older people and immunocompromised people on tight budgets; it was also mentioned by parents of young children.

Another barrier is that some people were not receiving appropriate information to support behaviour change. Some were not able to access information or services, and although people were becoming used to weighing up multiple and sometimes conflicting pieces of information, the advice became harder to interpret where it required more nuance or changed over time.

Social pressures were a barrier for some, in particular, pregnant people. They balanced being seen as not doing anything to endanger their baby, against the concern that they did not come across as too 'paranoid' or fussy. The balance of these pressures depended on who they were around, and how strongly they felt the need to bow to pressure. Some would eat known 'risky' things if their peers did, while others who were more risk-averse or less concerned about social pressure would refuse to.

What potential alternative engagement approaches are there?

Across all YOPI groups there were three types of food safety messages participants wanted and used. The first type was situation-specific advice that people wanted so they could manage risk in a way that they had not needed to before. This information would need to be immediately available, and participants thought this should be delivered online, via specialised apps and websites, via social connections (in person or online), via free interactive advice services, like phone lines, or in the sort of printed information that patients and parents are given, to be referred to when needed.

The second type was information connected to and delivered along with the advice people are already getting. Food safety advice can 'piggyback' onto the information parents receive about introducing food to their babies, to the counselling potential parents receive from GPs or other health providers about preconception healthcare, to dietary advice for immunocompromised



patients, and to advice about shifting life phases (i.e., moving to a residential home, adjusting to cooking for one, managing general health) for older people.

The third type was generic information that is relevant to everyone (e.g., 'Clean, Cook, Chill'), promoted via mass media or situational media (i.e., signs) that anyone can see. Such information was thought to be easily recalled by peers and family members who can then remind each other about it.

For most participants, *readily available* information meant it needed to be online. People need to be able to find trustworthy information online, and they do trust government information sources. Materials distributed by health professionals were also valued even though people were not always prepared to read them all at once. Even when participants were not actively looking for advice, reminders about food safety through places and channels that they already trusted and links to further information were valuable.



Recommendations

Recommendation 1	Continue to deliver food safety messages to the general public because these support basic awareness and enable friends and family to support those at higher risk of illness.
Recommendation 2	Continue to promote advice about specific food safe behaviours including handling meat, leftovers and food bought outside the home.
Recommendation 3	Targeted messages are required about the food safe behaviours specific to YOPI consumers, and the reasons these are needed.
Recommendation 4	Communicating food safety messages within food environments and using food-related channels is important.
Recommendation 5	Integrate food safety information with existing material targeted to families and people in changing life stages (dealing with a new diagnosis, becoming a parent or changing living circumstances as an older person).
Recommendation 6	Invest in well-designed and easy to read printed products that can be referred to later and feature links to further information online.
Recommendation 7	Ensure that the health professionals most relevant to YOPI groups (midwives, Well Child providers, specialist nurses, clinicians, and dietitians, those supporting older people in transitional phases) have access to and can distribute tailored food safety advice.
Recommendation 8	Promote NZFS and related information so it comes up early in internet searches and is linked to other popular health-related information sources.
Recommendation 9	Continue to promote specific and general food safety advice via community settings including marae, churches and other cultural community hubs.
Recommendation 10	Focus messages for the general public on who in their community requires extra care around food safety, and what actions are needed to protect them.
Recommendation 11	Carefully develop messages that emphasise the reasons for and importance of food safety precautions.
Recommendation 12	Develop food safety advice that takes into account people's differing cultural preferences and life stage priorities, including minimising waste and sharing food.

1 Introduction

1.1 Background

New Zealand Food Safety/Haumaru Kai Aotearoa (NZFS), a branch of the Ministry for Primary Industries (MPI), is responsible for regulating the food safety system to make sure food is safe and suitable to eat for all New Zealanders. One priority area in *A Strategy for New Zealand Food Safety*² is to improve ways to proactively support consumers to make informed food choices, including providing tools and information to promote safe food handling practices. NZFS has committed to improving its understanding of consumer information needs and behaviours, so that instances of foodborne illness in New Zealand can be minimised.

According to the latest data from the Ministry for Primary Industries, it is estimated that approximately 200,000 people in New Zealand are affected by foodborne illness each year³. This includes illnesses caused by a range of pathogens, including *Campylobacter*, *Salmonella*, and *Escherichia coli* (*E. coli*). It has been reported that approximately half of all notified cases of food poisoning are caused by unsafe food handling and cooking practices in the home. *Campylobacteriosis* is the most commonly notified foodborne disease, accounting for one third of all notifications in 2019⁴. Enhancing consumer education is one of three main measures identified in the MPI NZFS *Campylobacter Action Plan*⁵ to reduce incidence of foodborne *Campylobacter* illness in New Zealand.

Young, old, pregnant, and immunocompromised (YOPI) people are groups most vulnerable to foodborne illnesses. These people may have low immunity due to impaired or underdeveloped immune systems and are more at risk of getting sick from contaminated food. Generally, both notification rates per 100,000 population and hospital admission rates for foodborne illnesses are highest for young children (0 to 4 years age group) and elderly people (70+ years). For example, the highest rates of *Campylobacter* infection in New Zealand have been reported in children under five years of age and the highest hospitalisation rates in people aged 70+. Notification rates for Māori and Pacific people per 100,000 people are the lowest for most foodborne illness⁶. There are several possibilities that may account for low notification rates in Māori and Pacific people, including difficulty in accessing health services, under-reporting of illnesses to the health system or different dietary choices or food-practices in the home⁵.

² <https://www.mpi.govt.nz/dmsdocument/52936-2022-Food-safety-strategy-2019-2024-refresh>

³ <https://www.mpi.govt.nz/dmsdocument/3662-Food-Safety-in-the-Home>

⁴ <https://www.mpi.govt.nz/dmsdocument/3662-Food-Safety-in-the-Home>

⁵ <https://www.mpi.govt.nz/dmsdocument/45430-Campylobacter-Action-Plan-2020-21>

⁶ <https://www.mpi.govt.nz/dmsdocument/53872-Annual-report-concerning-Foodborne-Diseases-in-New-Zealand-2021->



Consumer food safety information

Research suggests many cases of foodborne illness can be avoided or mitigated through following simple food safety guidance. NZFS currently provides food safety advice to consumers through its website, including through free downloadable resources. Hard-copy food safety consumer resources can be ordered through the NZFS website, such as the *Food safety when you have low immunity*⁷ booklet and *Food safety in pregnancy*⁸ guides. Food safety information can also be accessed through Ministry of Health (MOH), MPI/NZFS and Ministry of Education websites. NZFS also recommends pregnant people and people with low immunity talk to their doctor or dietitian for further information. MPI's information campaigns advise that people can reduce their chances of getting unwell from food poisoning in their homes by following the 3Cs – clean, cook, chill.

It is not known whether NZFS resources are reaching YOPI groups at the right time with the right messages, or whether the information supports people to make food safety behaviour change. The last consumer research conducted on behalf of NZFS in October 2020 involved an online survey and focus groups with the general population. It found that compared to a baseline survey by Colmar Brunton in 2016, people were less concerned about food safety in their own homes, but many people were still concerned about the safety of food particularly from takeaway outlets. This was primarily based on people's own experiences, or the experiences of other people that they had heard or witnessed. The research found that generally, food safety knowledge in the home was relatively good, and that people feel they are doing enough to protect themselves and do not generally believe they will get food poisoning at home. A proportion of individuals still neglected food safety information.⁹

There is a lack of information and understanding about whether and how YOPI groups access, receive or use information about food safety, what influences their food safety behaviour, and their preferences for receiving food safety advice. To help reduce foodborne illnesses in YOPI groups, fit-for-purpose, targeted food safety messages and resources may be required. In order to develop relevant messaging, it is essential to gain an understanding of what motivates these groups, any barriers they face in accessing accurate information and following food safety advice, and what influences their behaviours.

1.2 Purpose of this research

Allen + Clarke was commissioned by NZFS to conduct qualitative exploratory research to develop a better understanding of how YOPI consumers in New Zealand access and use food safety information. The overall aim was to describe the types and sources of food safety information YOPI groups use, how information and advice are obtained, and how this influenced their decision-making about food safety practices and related behaviours.

⁷ <https://www.mpi.govt.nz/dmsdocument/7260-Food-safety-when-you-have-low-immunity>

⁸ <https://www.mpi.govt.nz/dmsdocument/3675-Food-Safety-in-Pregnancy>

⁹ *The Navigators – Food Safety General Public Research: Perceptions, attitudes and behaviours – Oct 2020.*
Provided by NZFS May 2022.



The focus of this research was on exploring and understanding YOPI consumers' perspectives and experiences. It also included the perspectives of health care providers in relation to food safety information provision and use by YOPI groups. This research was informed by an earlier rapid review (summarised in [Appendix A](#)) of the food safety literature.

Findings from this research will be used by NZFS and key stakeholders to inform the development of food safety communication and engagement approaches for YOPI groups.

1.2.1 Research questions

This research aimed to answer the following questions:

- 1) What types of food safety information do YOPI consumers seek and/or are currently using?
- 2) Where is this information obtained, how is this information used, and what motivations there are for taking up the advice?
- 3) What barriers exist that may prevent YOPI consumers seeking, receiving, and/or acting on food safety advice?
- 4) What are potential alternative engagement approaches that address, mitigate, and/or remove these barriers for the different segments of the YOPI populations?

2 Methods

This qualitative, exploratory research involved a series of interviews and focus group interviews with YOPI groups and health care providers, guided by the research questions and underpinned by a rapid review of relevant literature and best evidence. The research centres around the focus group interviews of YOPI groups. This method was selected because the interaction between focus group participants allows for a more in-depth exploration of experiences and perspectives (Kitzinger, 1995).

2.1 Health provider interviews

The research began with six health care provider interviews: three individual, and three small-group interviews with nutritionists, dietitians, aged care providers, cancer nurses, Well Child Tamariki Ora providers, and midwives. These health professionals were primary or secondary care health providers working with YOPI groups and with areas of practice that included providing food safety advice and/or resources to YOPI groups.

Health provider participants were purposively recruited through reach outs via existing relationships and networks as well as contacting professional associations. Interviews were conducted in person where possible. Where the providers were located outside of Wellington, interviews were conducted via Zoom. Where there were practical difficulties in organising groups of health care providers, we conducted individual interviews.

The interview was semi-structured in nature, meaning questions within a predetermined framework were asked, however they were in no set order or phrasing and the interviewer could ask additional follow-up or exploratory questions in response to the focus group discussion.

The semi-structured interview explored health providers' insights and experiences around YOPI groups' food safety information use and uptake of advice, including health professionals' perspectives on barriers to following advice. Findings from health provider interviews informed the recruitment approach of YOPI focus groups, the development of the YOPI focus group questions, and the interpretation of findings from YOPI focus groups.

A copy of the interview guide can be found in [Appendix B](#).

2.2 YOPI consumer focus groups

Recruitment and participants

A total of 20 focus groups including 97 people were conducted in three geographical locations: Christchurch, Wellington city, and the Greater Wellington area (see table 1).

In order to reach YOPI consumers, recruitment was based around making contact with people in health and social service provider organisations with an interest in food or food safety. We contacted groups including early child education centres, community health clinics, church-based groups, community health providers and individuals with strong community connections. We were frequently referred on to subsequent contacts within organisations until we found someone with pre-existing relationships with YOPI consumers that could assist us to schedule and conduct the focus groups. For example, we contacted people managing support groups for those with cancer, or young mothers, people working with older adults through social groups, and those who had networks of relevant YOPI

consumers we wanted to interview. This approach meant that most of the focus groups included people known to each other or, with a shared experience.

The focus groups were homogenous, comprising either young, old, pregnant, or immunocompromised participants, with separate focus groups within each YOPI group by ethnicity. Separate Māori and Pacific focus groups were conducted to ensure conversations about food safety could occur within a relevant cultural context for participants. The recruitment included a target number of focus groups to be conducted with Māori and Pacific YOPI groups to ensure diversity of experiences and perspectives were represented in this research and to reflect NZFS's interest in developing fit-for-purpose messages and resources for these YOPI populations. Based on the evidence review, health provider interviews and initial recruitment, the immunocompromised group was recruited from two types of populations: those who have experienced cancer and those who are living with diabetes. These two groups were considered to be the largest groups of immunocompromised people in New Zealand and could practically be recruited.

Inclusion criteria for all YOPI focus group participants were that they (or in the case of the young children group, their caregivers) lived independently in a home-like setting, were involved in purchasing, storing, and/or preparing food at home, and were in good health overall and felt well enough to participate in the research. One focus group conducted online also required that participants had internet access.

The total number of focus groups conducted was stratified by YOPI group, and within each YOPI group by population type. Further details about the focus groups are in [Appendix C](#).

Table 1 – Number of YOPI focus groups by ethnicity and location

YOPI group	Number and ethnicity of focus group	Location	Total
Young	2 Māori groups	Wairarapa	5 groups
	1 Pacific group	Christchurch city	
	2 Other groups	Greater Wellington	
Old	2 Māori groups	Greater Wellington	6 groups
	2 Pacific groups	Greater Wellington Christchurch city	
	2 Other groups	Greater Wellington	
Pregnant	1 Māori group	Wellington city	4 groups
	1 Pacific group	Christchurch city	
	2 Other groups	Wairarapa Christchurch city	



Immunocompromised	2 Māori groups (1 diabetes group and 1 diabetes & cancer group)	Greater Wellington	5 groups
	1 Pacific (diabetes) group	Greater Wellington	
	2 Other (cancer) groups	Wellington city New Zealand (online)	
Total 20 groups			

Focus group administration

The focus groups were held between September 2022 and March 2023. With the exception of one focus group with immunocompromised people held via Zoom near the start of the data collection phase, the remaining 19 focus groups were held in person. The focus groups varied in size, ranging from one to 15 participants. Working with our contacts, we usually invited four to seven people to each focus group. In some cases, participants invited others on the day, leading to larger-than-expected groups. Participant unavailability on the scheduled day also meant that some groups included only two participants, or in one case only one participant attended (we included this data). Reasons for non-attendance on the day included change of mind, being sick, or being too close to their baby due date.

Each focus group was conducted by two interviewers. We used a semi-structured interview guide informed by findings from the rapid evidence review, the research questions, and input from NZFS. It was structured as an interactive conversation, using active listening, follow-up and clarifying questions, and curiosity, to encourage participants to discuss their views and perspectives. We ensured that all participants had an opportunity to contribute and created an environment that allowed participants to feel comfortable sharing their experiences and offering their own views. The focus groups were facilitated based around the following seven components:

1. *Introductions and consent:* each focus group began with a welcome and an explanation of the purpose of the research and the rights of the participant, followed by introductions and informed consent.
2. *Food safety knowledge:* the session started with a series of questions designed to understand the level of food safety knowledge within the group, including knowledge of foodborne illnesses.
3. *Perception of individual risk:* an individuals' perception of risk was identified in the literature as a barrier or motivator to follow advice. Questions in this section were used to understand individuals understanding of their risk, and whether they have been told by health professionals that they are at an increased risk or not.
4. *Motivations and barriers to following food safety advice:* this section was focused on identifying specific motivations and barriers to following advice. It explored the reasons between actual behaviour, what people think they should do, and where they have learnt certain behaviours.



5. *Trusted sources*: this section explored who individuals trust and go to for information, as well as through what channels and what type of advice people seek, and how they manage any disparities in information.
6. *The role of information*: this was a discussion focused on understanding whether having more information makes it more likely for individuals to change their behaviours, and participants were asked if they required anything else to help them follow advice.
7. *Engagement approaches*: participants were asked for potential engagement approaches that might influence behaviour change, focusing on specific channels and types of messaging.

As part of the ethical obligations for this research, all participants received an information sheet and were provided with the opportunity to ask questions prior to the start of the focus group questions. Informed consent was obtained from all participants. A copy of the information sheet and consent form can be found in [Appendix B](#).

The venue for the focus group was organised in collaboration with the focus group contacts. We ensured it was somewhere that participants felt comfortable, which was often in a community hub or local venue. Transport to the venue via a taxi was provided to participants who required this. Koha was given to each participant and kai that was safe and considered the participants' needs was provided for each group. Parents and caregivers were welcome to bring their children along and a support person if they wanted. For Māori and Pasifika groups, a trusted or well-known contact of the participants was invited to the focus group, usually the person who helped organise the focus groups, and facilitated the opening and closing of the session with a karakia, or prayer.

One Pacific focus group required translation for some participants; this was done by a group member who ensured everyone understood the question, translated this to the participant, and then relayed their answer to the researchers.

A copy of the focus group interview guide can be also found in [Appendix B](#).

Data analysis

Each focus group was recorded and transcribed using the transcription service Otter.ai¹⁰. The transcriptions were managed by the research team, who completed the gaps in the transcriptions and ensured each transcript was anonymised with any identifying details removed. The transcripts were reviewed for completeness and sense. The recordings and transcripts from the discussions were stored securely by *Allen + Clarke* and remained confidential to the research team. Summaries identifying the main themes of the focus group were prepared and the information was then used to identify key findings.

The transcripts were analysed in two ways. Key themes were collated in Miro¹¹, an interactive white board, and transcripts were coded using NVivo¹², a qualitative data analysis tool that provides easy access to and coding of data. NVivo was used to analyse different themes, sub-themes and to understand participant experiences and motivations. Similarities

¹⁰ <https://otter.ai/home>

¹¹ <https://miro.com/>

¹² QSR International Pty Ltd. (2020) NVivo (released in March 2020), <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>



and differences between the focus groups findings were explored as a first step in the analysis to compare to previous themes, so that we could identify when saturation had occurred.

The research team conducted a series of collaborative analysis sessions to review and test the relevance of each theme, ensuring that the analysis answered the research questions and accurately reflected the commonalities and differences in peoples' experiences. Findings from the health provider focus groups were then triangulated with findings from the YOPI focus groups to provide a more rounded understanding of the findings. These are presented in the results section (Section 4 Key Findings).

3 Segmentation analysis

In addition to the thematic analysis of the data we sought to develop typologies of participants to provide further depth of understanding of participants' motivations for their behaviours and to understand the implications of attitudes and beliefs about food safety for future NZFS communications.

A typology is an ordered set of categories that can be used to organise and understand people according to their similarities and differences (Mandara, 2003, as cited in Stapley et al., 2022). A typology is formed by grouping participants into different types based on common features, in this case: attitudes, beliefs, and experiences.

Consumer segmentation is a relatively common undertaking, and there are several examples of segmentation based on food safety related knowledge, attitudes and behaviours (Kendall et al., 2013; Kennedy et al., 2008; McCarthy et al., 2007). However, there are no examples in the food safety literature of segmentation based on qualitative data only. For guidance in constructing typologies from the focus group data, we used the *ideal-type analysis* methodology described by Stapley et al (2022). Although this approach is 'not prominent within existing qualitative research' it provides the most relevant and accessible methodological approach in this space in the absence of other practical guidance (Stapley et al., 2022).

Ideal-type analysis is a method that can be used with any type of qualitative data and provides a systematic approach to comparing participants' patterns of behaviour, attitudes, and beliefs to form 'ideal types' or groupings of similar cases (Stapley et al., 2022). The use of the word 'ideal' in this context refers to an idea rather than 'best' or 'preferred'. The aim is to identify groupings ('types') of participants within the dataset (with common attitudes, beliefs, and experiences). There should be clear distinctions, differences, and heterogeneity between groups, with homogeneity within groups (Stuhr & Wachholz, 2001, as cited in Stapley et al, 2022).

It is important to note that not all cases within each group will have had the exact same experience, nor will share the exact same perspective, however there must be something fundamentally similar about the cases within each group that links them together and apart from the other groups of cases (Stapley et al., 2022). The basis for the construction of the types is the comparison between participants, so that together the types form a typology. In doing this, the researcher is making interpretations of the data, so that the final typology described may not be objectively true but reflect and make sense of some key differences in people's attitudes and behaviours (at a group level).

The segmentation analysis involved conducting the following steps.

First, we familiarised ourselves with the content and extent of the data, including transcripts of all focus groups and initial analysis of these. Verbatim quotes were extracted for each participant, where possible, where they spoke about their experiences, perspectives, attitudes, and motivations for their behaviours in relation to food safety. This familiarisation step also involved the identification of emerging ideas and themes from each focus group, that were later incorporated into the thematic analysis undertaken around the research questions.

Where possible, we wrote notes about participants' context or background and combined these with the verbatim quotes to develop analytical notes about relevant insights or themes

then collated on a team online whiteboard. These provided a short narrative description of each participant's 'story'. This collation of quotes and insights was used to form the ideal types.

We could complete this step for some but not all of the participants in each focus group, depending on their level of participation and how much information each person shared in the group. Participants were excluded from the segmentation analysis where we could not develop a sufficient picture of their behaviours, based on the data we had. In total, there was sufficient information from 34 participants to be included in the segmentation analysis¹³.

We identified key recurring themes that were linked to participants' food safety behaviours. These formed the initial factors for the development of the typology. We then used the participant 'stories' to compare the similarities and differences around these factors and to identify patterns of attitudes and behaviour across the dataset. We identified some distinction between participants with respect to perception of risk and trust in and levels of advice-seeking from health professionals, with adequate homogeneity within the groups.

We tried but discarded other characteristics because they were interrelated and difficult to separate. For example, we initially tried to use previous experience of a foodborne illness, which was common among participants and seemingly directly related to changing behaviour, primarily around the specific food in question. However, this was a factor related to participants' overall perception of their own risk. We also tried to use 'trusted sources of information', but this was related to the factor 'trust in health professionals'. Further, almost all participants we had data for said they looked to family and friends as one source of information, and we were unable to identify sufficient difference between them to use this as a factor.

Through systematically comparing and contrasting each participants' 'story', we were able to identify three types of groups. Because these groups were based on a small number of factors, we could not be certain that there was 'something fundamentally similar about the cases within each group that links them together and apart from the other groups of cases' (Stapley et al., 2022). Therefore, we did not identify optimal cases or construct detailed descriptions of each group type as outlined by Stapley et al (2022).

Segmentation analysis findings

Based on the work that we have done, we identified three groups of YOPI consumers and can offer the following insights about these three groups.

There is one group of people that is characterised by being vigilant about their health (or, their children's health). These people have a high perception of risk, based on their current health status or experience or their personality type. People used terms such as 'paranoid' or 'I'd be too afraid (not to follow advice)' to describe their attitudes and behaviours around food safety. These people read information they received and searched for more. They also generally trusted health professionals, perhaps because of their interaction with them at a vulnerable time, for example being unwell or having babies to look after. Family and friends

¹³ We considered we had insufficient data to understand attitudes and behaviours of the remaining focus group participants, based on their comments in the focus group. All participant data is included in the thematic analysis presented in the remainder of this report.



were also a source of information, but this group was more likely to err on the side of caution, rather than always follow advice or behaviour of their families.

A second, large group of people could be characterised as people who weighed up information more and trusted their ability to make good decisions. This group often reported first or second-hand adverse experiences of foodborne illnesses that made them more careful in some situations. However, this group's perception of risk was lower overall than the first group, because they had not experienced any adverse effects of foodborne illness when they have been sick, or when feeding their baby or themselves. Participants in this group may describe themselves as more laid back or may note that they are more relaxed once they have recovered from illness or are pregnant for the second or third time. This group was generally open to receiving information from health professionals, but some also did their own research and were sceptical of some advice. Some considered food safety a low priority compared to other issues, as outlined in Section 4: Key findings of this report.

Finally, there was a third, small group with low awareness of their individual risk. This group included many of the older age group, who did not see that they should be characterised as more vulnerable. However, it also included some immunocompromised people who would have a greater reason for additional care around food safety. This group, as with the second group, had habitual food safety practices, and it was generally recognised that additional care needed to be taken for some more vulnerable people.

These groups appeared to hold true across all demographic groups, with the exception that healthy older people were more likely to fit with the second or third group, based around their low general perception of their individual risk. A qualification of the above analysis is that we believe that participants would not necessarily be characterised in such ways at all times. Because perception of individual risk appeared to be related to a particular place and time (i.e., health status, pregnancy etc) we predict that people will move in and out of these groups at different time points and in different situations.

4 Key Findings

The following sections present focus group findings that address the research questions. Due to some overlap of topics within these questions and the way the topics were discussed, the findings are arranged in the following subsections:

1. Food safety knowledge
2. Types of food safety information sought and used by YOPI consumers
3. Where food safety information is obtained from
4. Motivations for seeking and using food safety advice
5. Barriers to seeking, receiving, and using food safety advice
6. Ideas about effective approaches to engagement

Cultural or ethnic group differences are noted only where they came up, because in many cases there was not enough difference in response to warrant separate reporting in this way. Where ideas were raised by some of the YOPI groups only, this is specified.

4.1 Food safety knowledge

4.1.1 Overall, food safety behaviours of participants indicated good food safety knowledge

Overall, people across all the groups demonstrated that they had good knowledge of some food safety risks and what they should be doing at home to keep food safe. Almost all participants were aware that chicken was a high-risk food and were aware of needing to avoid cross contamination. Other frequently mentioned foods were raw or undercooked meat (including needing to be careful with not letting it contaminate other things), and raw fish (including ideas about the safest ways to prepare it). Sushi, chilled café food, and deli meat were known as risky by the pregnant groups in particular.

Many participants recalled hearing messages or learning about the risk of foodborne illness from chicken, through advertising, news, and education settings. When participants recalled their own or others' experiences with foodborne illnesses, they often attributed this to chicken, causing many participants to be particularly cautious when handling chicken.

Most participants reported checking chicken was cooked by seeing if the juices ran clear or cutting it open to check it was cooked through. Most of the participants reported good hand hygiene when preparing food, with some attributing this to the recent COVID-19 pandemic and messaging around the importance of hand washing during this time.

To avoid cross contamination, many participants used a separate board and knife when preparing the chicken compared to the vegetables. Alternatively, many participants reported they would wash the board with hot soapy water between preparing vegetables and chicken or would prepare vegetables first and then the chicken on the same board to avoid contaminating the vegetables and then immediately wash the board. Most of these participants also described taking these types of actions for any other raw meat and were also aware that they should be stored at the bottom of the fridge, to avoid juices leaking and contaminating other foods, with some placing their raw meats on a plate or wrapping them in additional plastic to avoid this.



When handling leftovers, many participants noted they would store these in a sealed or covered container in the fridge or freezer and consumed these within a couple of days or would throw them out. Some participants noted the need to reheat food until it was piping hot, particularly if the food contained chicken. Most of the participants were aware of use-by dates and would not consume a product after they expired, however some found best-before dates more ambiguous and thus less useful; while they were understood as a guide only, people's understanding of how to use best-before date information varied.

Many of the participants in the focus groups demonstrated they had knowledge of the seven food safety behaviours identified by MPI, as the most important for the general public to adhere to in order to keep food safe (Turner P & Benson M, 2020).

4.1.2 The term 'food safety' was understood to mean more than avoiding foodborne illness

Overall, when participants were asked what 'food safety' meant to them, they associated the term with nutrition, food quality and general healthiness, along with food hygiene and handling practices.

When prompted, people associated food safety with kitchen hygiene practices such as washing hands, storing raw meat carefully so it would not drip, using separate chopping boards to avoid contamination, and keeping surfaces clean. They also thought about making safe food choices when shopping or eating in cafes, although again these choices overlapped with finding foods that were of good quality or provided good nutrition.

For parents of young children, keeping food safe also meant avoidance of food-related hazards such as infants choking or being exposed to food that was inappropriate for them.

A few participants mentioned food recalls (administered by MPI) when food for sale was found to be contaminated.

Participants recalled simple mantras ('if in doubt, throw it out') and food safety messaging from government and commercial advertising. The Clean, Cook, Chill (CCC) campaign was well-recalled across many of the groups. In some groups, people mentioned and quoted the campaign spontaneously. In some others where the conversation required more prompting, it was asked about directly as an example of government messaging.



4.2 What types of food safety information do YOPI consumers seek and/or are currently using?

4.2.1 People in all groups relied on information acquired throughout their lives

Most participants were comfortable with their own practices in the home and reported habitual food safety behaviours. These showed they were aware of which foods to be careful of and had clear ideas about how to reduce risk. Participants could not always describe exactly where or how they had received specific pieces of food safety information – they had absorbed ideas from multiple sources over their lives.

Families were a key source of food safety knowledge and practice. Participants in all groups discussed learning about food safety behaviours by watching their parents in the kitchen, picking up tips and guidelines and hearing ideas about which foods they needed to be most careful with.

People also discussed aspects of food safety practice where their parents would have done things differently due to culture or not having access to the same resources. Some had grown up with tikanga Māori around food hygiene, washing food dish cloths separately and keeping anything that touched people's hair or bottoms away from food. Older participants from various cultural backgrounds (Pacific, Māori, British) mentioned the drive towards thrift and avoiding food waste that they had picked up from the older generation. They also passed on cooking techniques through generations.

You learn that from the island ... since we're young, parents, I've seen my parents cooking and that's like know how to cook it too like, so even my children right now, everyone knows how to cook the taro and the banana and make sure it's cooked.
(Participant 1, Focus Group 9, Old, Pacific).

In addition to family role modelling, most participants had also learned some kitchen hygiene practices through school home economics classes, and some had picked up further knowledge through hospitality trade training or work.

4.2.2 Immunocompromised (cancer) people sought and received a lot of new information about food and food safety

The immunocompromised cancer participants reported receiving a lot of information about their illness at the time of their diagnosis or treatment. Most people in these groups had been told that they had lower immunity and needed to be cautious about becoming ill. In general, this corresponded to a high level of interest and knowledge about food safety risks and to care being taken when preparing food in the home and when eating food while out.



When I had chemotherapy, we were instructed to be extra careful – hand towels, gloves – ever since then I've been very careful. I wear gloves to mix scones – I wouldn't have before. Also, when handling chicken or handling meat. It's something that always stayed with me. (Participant 9, Focus Group 3, Immunocompromised).

Any written food safety information people received at the time of their diagnosis had potential to be less memorable or become lost because they received a large amount of information about their condition and how to manage it at the same time. This participant said she could not recall what information she received '*[I] may have to search for it within all the pamphlets – we had a lot to read.*' (Participant 6, Focus Group 3, Immunocompromised).

Some found their situation and the amount of new information overwhelming and so could require some time before they were ready to take up all the advice on offer. One participant said, '*I think I have blocked out everything I was told right at the time I was diagnosed with cancer*' (Participant 3, Focus Group 20, Immunocompromised).

Many immunocompromised people became very vigilant about their health so sought information about all aspects of staying healthier, including eating safely. One participant explained that '*back in the day you knew and heard about [food safety] but now you're immunocompromised, you know everything*' (Participant 5, Focus Group 3, Immunocompromised).

4.2.3 Immunocompromised (cancer) and pregnant people were focused on what foods were safe or unsafe to eat

The immunocompromised (cancer) groups and pregnant people were generally very interested in knowing what foods were safe and unsafe to eat, and how to prepare or choose foods to reduce the risk of harm. They also wanted foods that were palatable considering that their current condition could make some food less appealing. In particular, some pregnant people wanted to know what alternative foods they could eat instead of their usual foods that were not safe to eat, but some noted that they tended to be given general nutrition advice instead.

I was never, you don't get any information about that [ideas for safe foods to swap for foods you should be avoiding]. You've got to just figure it out yourself. Try this instead of this, try like are you eating enough meat and enough vegetables? My midwife asked me that quite a lot. Like are you eating well? (Participant 1, Focus Group 10, Pregnant).

When people had become unwell and were aware of the need to choose foods carefully, they sometimes found decisions overwhelming and confusing. In these times, people particularly valued having a health professional to contact.

The community cancer nurse, she was really great, I remember sending her a photo of an avocado to ask if it was brown or rotten or bruised or what. I think when you first get cancer, or at least I was, you're just so confused about everything and you're not going to ring the hospital so I sent her a photo of this avocado and she was like 'oh it's fine' (Participant 7, Focus Group 6, Immunocompromised).



Some immunocompromised people just wanted to be reminded what they should be eating – to ‘avoid this, or you can eat this’ (Participant 8, Focus Group 3, Immunocompromised). One participant suggested ‘it would be good if there was a document tailored to you ... to take home and put on the fridge – a physical reminder’ (Participant 1, Focus Group 3, Immunocompromised).

4.2.4 YOPI consumers valued information that was specific to their situation at the time

Immunocompromised (cancer), pregnant people, and parents of young children wanted direct advice about the food safety precautions recommended for their health condition and/or life-stage. All three of these groups were required to manage risk in a way that they had not before.

Participants reported a strong preference for access to information at the time that they were ready for it. This may include times such as when health status changes or when children become ready for solid foods. Some information that was not immediately relevant was offered when they were too tired or preoccupied with the current life-phase they were in, other types of information were offered too late. This highlighted the importance of staging information.

I think that before pregnancy you read kind of what pops up in your mind. Like, Oh, I wonder what this or if something. If you get given a pamphlet, something in particular intrigues you? Yeah, then you'll look more into it. But after you've had baby I feel like it's not until you come across it and mothering you actually think to look it up. You know what I mean? Like it's not like oh, let me look at that pamphlet got from the hospital kind of thing.... I was more prone to going online and searching something otherwise Plunket or ...like food safety, or not food safety, but like “baby food NZ”. (Participant 2, Focus group 11, Young).

Upon becoming pregnant, participants had received minimal advice about food from their GP before being passed on to a midwife, but the early appointments were infrequent and antenatal groups with more advice about prenatal food safety were usually held later in the pregnancy. One participant stated that at antenatal class ‘they talk about food but you’re in your third trimester so it’s way too late. All these things we wished we knew six months ago’ (Participant 3, Focus Group 7, Pregnant).

People in the pregnant groups were seeking and receiving a lot of information about their current life stage and risk status. This could be overwhelming, particularly when it was contradictory or when the rationale for risk avoiding behaviour was not well explained.

I feel like they don't explain the risks to its full potential with pregnancy. Like when pregnant, you know, they say, you know, it is risky, but you could still eat it. But I'm like okay, so what's the what's the real answer? Is it risky or not? ... Is my baby gonna die or not, just tell me you know. So I feel like if people actually saw the risk or actually knew sort of stats around that food safety issue ... they'll be more inclined to want to know more about it. (Participant 1, Focus Group 12, Pregnant, Pacific).



People in the immunocompromised groups were more likely than those in the other groups to feel they had not received all the information they needed. Some cancer patients who recalled food safety advice from having previously been pregnant, found that it seemed similar – avoiding things like sushi and deli foods – although they were unsure that this information was getting to people in their situation as clearly as it did to those who were pregnant.

People in the immunocompromised groups were also concerned about eating appropriately despite the high cost of healthy food. More information about this would be valued.

4.2.5 Information from health professionals is valued but not always accessible

Participants in all groups valued face-to-face advice from health professionals. However not all would seek food safety advice specifically, particularly because of a feeling that time with health professionals was limited and would be used for other priorities. The exception to this was some in the pregnant and immunocompromised groups who had a relationship with a health professional (midwife or community nurse, usually) who they felt they could contact directly to ask about food safety precautions that they were unsure of.

Access to health advice about their specific conditions appeared to vary. In several immunocompromised groups, people mentioned experiences of diagnosis overseas (Australia, Canada, Ireland) that either they or a relative had experienced, where the amount of specialist advice seemed to be better and more comprehensive than what was offered in New Zealand.

Several people in the immunocompromised groups would have liked to be referred to a dietitian or similar professional but were not; those who had had access to this sort of service found it very valuable. Community dietitians could give advice about how to structure grocery shopping to include foods that were best for managing health while also fitting with budgetary and other considerations.

A number of older people were concerned about how difficult it is becoming to get access to GP visits, and it was commonly mentioned that, given everything they needed to do in a 15-minute appointment, there was little chance they would talk with a GP about food. The exception was older people who also had health conditions like diabetes; some had got information from health professionals, but the amount of information varied.

COVID-19 had increased participants' impressions of an overstretched health system in which food safety questions were unlikely to be a priority topic in health appointments.

I trust the doctor and nurse but with COVID and all these sickness I don't want to waste their time on an appointment when they are booked out for 3 weeks, they've got more important people to see than me asking about a food question that I can be searching elsewhere for. (Participant 1, Focus Group 2, Young, Māori).

Views among parents were mixed about whether Well Child Tamariki Ora (including Plunket and Whai Ora) services, which start after the baby is six weeks old, provided enough advice and support. Several felt that face-to-face visits from these services was less a priority in recent years since COVID-19, and that people might be missing out on help.

4.2.6 People do their own research and decide how to weigh up information from different sources

The most common theme about information seeking among parents of young children was that they looked at information from multiple sources and weighed it up according to what seemed most trustworthy or relevant to their situation.

People in the pregnant groups described a frequent weighing up of information, and making judgment calls about how seriously to follow each recommendation according to their existing knowledge about the risk from the food type, their circumstances and preferences, and their personal risk perception. Often, participants in these groups would conduct their own research to find out what foods are suitable or safe to eat during these periods. One participant said *'I go do my own little research. And then I go with what I found and then double check with my midwife'* (Participant 1, Focus Group 10, Pregnant).

While parents got a lot of information from health professionals, they also did their own research as questions arose. Having information easily discoverable online was very important – this could be either via official government channels or through less formal channels such as online groups, social media, and influencers. They already received some information about infant feeding through health professionals, family, and peers. They would look up more specific advice at transitional times like introducing foods and deciding on feeding approaches.

Some parents described being sceptical of advice they had received from health professionals or from commercially-produced infant feeding resources that were distributed via health services (for example some referred to 'the Wattie's sheet'¹⁴ when discussing handouts they had been given about baby food). Some had sought additional information from expert media personalities from New Zealand such as Dr Julie Bhosale, or international online education from child feeding brands like Solid Starts¹⁵.

People in the Immunocompromised groups would take advice from health professionals, but then sometimes look it up themselves or ask peers in order to confirm details and work out how to best implement the advice. They asked their peers with similar conditions because they knew they had received and recalled different amounts of information from health professionals.

When doing their own research online, some people latched on to content that appealed to them while discarding other advice. Others were careful about checking sources, given the aforementioned wariness about the amount of untrustworthy information.

Authoritative sources, not the crap you get in there... Something from NHI or wherever ... medical universities. There are all sorts of sources. As long as it can

¹⁴ Likely this resource: <https://www.forbaby.co.nz/article/100145300067/wattie's-guide-to-baby-feeding>. It is also linked and promoted by Plunket: <https://www.plunket.org.nz/caring-for-your-child/feeding/solids/introducing-solid-foods/>

¹⁵ <https://solidstarts.com/>

show me the people who put the information out know, then I'll take notice of it.
(Participant 1, Focus Group 3, Immunocompromised).

4.2.7 Parents of young children seek out information relevant to their child's age, and some require better advice about milk use and storage

From around six months, parents wanted information about how to safely introduce solid food to their babies. Safety considerations included avoiding choking, planning appropriate exposure to allergens and choosing nutritionally appropriate options. The hygiene side of 'food safety' was a connected aspect of this advice but was not generally the first reason that people were looking for child feeding information, particularly given they already had techniques for handling food hygienically for the rest of the family.

For younger babies, the main food safety considerations were around using and storing milk. Some of the parents felt that they knew a lot about storing breastmilk, or that they just got on and did the breastfeeding or figuring out how to safely use formula without needing much outside advice beyond the information provided on the product label.

Some parents reported they did not receive information about how to safely store expressed breast milk or leftover formula milk, or how to safely prepare infant formula and bottles. Several described feeling unsupported and having to figure out what to do by themselves by experimenting, asking around or looking up formula companies. Some reported receiving conflicting advice from family and friends about how long expressed breastmilk should be stored in the fridge or freezer for, although those who had received advice from their midwife were more confident about following it.

Sometimes you are just expected to know it if you don't ask ... With breastfeeding and all that I didn't get told to put in the fridge or whatever ... and I guess just being a new mum there is so much to process. (Participant 2, Focus Group 2, Pregnant, Māori).

One woman recalled how she asked for but did not receive information about how to feed her infant when she could not breastfeed. She relied on information gleaned from her work in childcare to know what to do.

I didn't know what was accurate or not so I just picked a formula based on what the majority of children had at work. And sterilising, I just brought one and put it in the microwave cause that's what we did at work. Just read what was on the formula, otherwise there was nothing really out there for formula. And even Plunket hasn't really been helpful with that either. (Participant 2, Focus Group 5, Young).



4.2.8 Immunocompromised (diabetes) people received little specific information about food safety

Very few participants in the immunocompromised (diabetes) groups reported being told they had lower immunity or vulnerability to foodborne illness because or since they had been diagnosed with diabetes. The advice this group received was more focused on healthy eating and lifestyle changes. All participants reported their main food-related concerns involved eating the right types of food and, monitoring and managing blood sugar levels. No participants reported receiving advice about food safety in New Zealand. The following quote is indicative of the type of information diabetes patients received.

My diabetes nurse, when I have my check up, or you know review my diabetes ... she just encouraged me to eat the right food. Not too much meat. A little bit, like a portion like the palm of your hand, salad as much as you can and not much carbs. It's more of what... the best food that we can. but not as much of safety. (Participant 1, Focus Group 18, Immunocompromised, Pacific).

Participants with diabetes were more likely than those with cancer to feel that the disease had not been well-explained to them. In one focus group in particular people discussed being diagnosed by doctors who just gave them prescriptions for medication and told them to take that but did not provide many other details about the condition or how to manage it. This was not consistent across groups, as some others who had both cancer and diabetes recalled getting more information about diabetes.

4.2.9 Some people are not seeking food safety information

4.2.9.1 Older people are confident in their existing habits

Most people in the old focus groups reported being confident in their food hygiene practices and not actively looking for new information about food safety. People commonly alluded to already having established food handling processes that had proved to work for them with no adverse outcomes. They did not see any reason to change what they were already doing, with one participant stating *'I started cooking when I was about eight or nine. And I'm 81. So if I don't know it now I'm never going to know ... We must have got it right, because we're still here!'* (Participant 1, Focus Group 14, Old).

Despite this confidence in their practices, some older people (particularly the younger older people in their 60s rather than 80s) did report when asked that they would be open to learning new ideas about cooking, including food safety tips.

4.2.9.2 Concern about food safety changes between first and subsequent pregnancies

For those on their second or subsequent pregnancies, there was a mix between those who felt more relaxed and that they did not need new information – more participants fell into this category - and those who felt they were becoming better informed, more responsible, and more open to new information this time.



Yeah, I feel like I just seen some stuff like that in pamphlets when I was last pregnant. That was like five years ago. Yeah. So I can't really remember much... And now that I'm older I feel like I'm gonna be like, more cautious (Participant 2, Focus Group 16, Pregnant, Māori).

Those who had eaten things that were not recommended, but suffered no consequences, often felt less worried about food safety advice the next time around, although they were still aware of what foods were considered risky and did make some effort to assess how fresh they were. This assessment included only eating small amounts of 'risky' foods, or only eating them when the packaging had just been opened or when they had been prepared freshly, but no longer being worried enough to avoid them altogether.

Raw fish is what everyone's like, seems concerned about... we've been told not to eat it ... I think each to their own, I guess because, you know, this isn't my first time eating raw fish during this pregnancy.... And I found that my body hasn't reacted to it. And you know, I've talked about it with my midwife and she said that it's fine as long as you are aware it's, you know, fresh and you've made it or someone else that you know, can confirm that they've made it on that day ... I was younger than what [some relatives] are now carrying their first and I think they're really cautious around food and stuff like that whereas I am way more relaxed now. However, I would have probably been the same had I been their age and having my first as well. (Participant 1, Focus Group 12, Pregnant, Pacific).

I remember getting the same advice from the midwife I went to when I was pregnant, not eating soft cheeses and raw like salmon and first time around I listened to all of that. Second time around I ate everything... the main thing around that was that I was aware how it was prepared, it was either prepared in front of me or I prepared it myself, as opposed to I guess eating something I didn't know how long it had been out for... I guess the first time you're kinda scared and worry more that possibly "if I ate this does that mean my child will be deformed?" or something along those lines. I guess I didn't have that worry in my mind the second time round, the risk was probably there the same but personally I wasn't as worried about it (Participant 3, Focus Group 11, Young, Pacific).

A couple of participants in the young parents' groups mentioned that they felt confident enough in their existing food safety knowledge that they didn't need to look for extra information about food safety specifically for their child. Others were simply too busy, compared to when they only had one infant to look after.

Findings on information-seeking from interviews with health professionals

Compared with the focus group findings, interviews with health providers showed similar ideas about the way YOPI consumers sought information.



A common theme among YOPI health providers was that YOPI consumers or their caregivers would come to them seeking clarification of differing advice they had heard. They reported the conflicting advice usually came from friends living abroad, and generational information that had been passed down from parents and grandparents.

Health providers reported the main areas of concern to YOPI groups are the use and meaning of 'best before' and 'use by' dates, foods to avoid during treatment or pregnancy, and what foods are best to give to vulnerable groups. The concern around 'best before' dates was particularly linked to food wastage, with old and immunocompromised YOPI consumers feeling they are throwing away 'good food' just because it has passed a date. Health providers considered this was an issue that influenced food safety risk for older and immunocompromised people. Many mothers, pregnant people, and carers of immunocompromised people were interested in finding out what foods to avoid as well as which foods are best to give to babies, and people undergoing treatments.

4.3 Where is food safety information obtained from?

Some of the key sources for food safety information have already been discussed. This section includes how participants reported seeking and using information from different sources, and how well they trusted this information.

4.3.1 Family is a key source of information, despite generational differences

Families were a key source of information and advice, and a key influence on most focus group participants. However, some of the participants described being interested in and receptive to family advice about what they should eat and food practices, and some participants clearly were not.

Some participants had family members who were more vigilant about food safety, and these people often became especially careful and offered food safety advice during the pregnancy. One participant shared *'my Nan is really careful with food and I think I learned that from her, so she's always telling me things now I'm pregnant, "cook that properly, don't have that!"'* (Participant 2, Focus Group 16, Pregnant, Māori).

This receptiveness to family influence played out in two different ways for participants. On one hand, as quoted above, the family could support and advise in ways that adhered to good food safety practices. On the other hand, family could influence participants towards behaviours not aligned with safe food practices. For example, where family members ate 'unsafe' food during pregnancy with no consequences, participants reported that they then would be more likely to follow this behaviour.

Most parents of young children talked about trusting their mother's advice on food safety in general, although some participants noted generational differences and the changing advice over time about baby care, and feeding specifically. Other parents of young children described not following their mother's advice, because they were confident that they could make their own decisions. One participant said *'I feel like the research changes all the time from what my mum will say, to what I think ... then I'm like "well I'm the mum, so too bad"'* (Participant 1, Focus Group 2, Young, Māori).

In some cases older people sought advice from their spouses or family when they were unsure about which foods were still usable. Some older people got new food safety information from their children or younger relatives and found this advice helpful, particularly when the younger relative had gone to a hospitality or safety course and was passing on tips. Some were not interested and took a certain enjoyment from refusing to listen. In a number of the groups, even when people accepted advice from their children, they mentioned feeling that younger people were more prepared to throw things out sooner and potentially waste food.

Some in a group of Pacific parents discussed how they and their parents had different impressions of whether food was acceptable. One participant said *'what smells bad to me doesn't smell bad to my mum.'* (Participant 3, Focus Group 11, Young, Pacific). These participants expressed the difference between being 'Islander born' (have been born in a Pacific Island nation) and being 'New Zealand born'. They noted differences in knowledge or



practices between these, largely due to the way they had been brought up or the technology or equipment available to them when they learnt to cook (e.g. fridges).

I think the other part of what like she was saying with that older generation is that they're from the islands like no fridges, no microwaves you know, no reheating but there's left overs. (Participant 3, Focus Group 11, Young, Pacific).

These groups also shared that the way of doing things is changing with exposure to more information or with acculturation to a new environment. They discussed that 'island born' people have had less information about food safety and so they learn from their parents and do what is right for their context. For 'New Zealand born' people with access to different information and equipment, they have different practices. Some participants also expressed a nuanced understanding of the reasons for relatives brought up elsewhere having different, though not "wrong", ideas.

And then they are first time moms that are first generation Samoans that are still reliant on their parents at home, who live a whole different life to us. So their information is completely different... My mother-in-law gives me information that is like, way out the gate. The other day we were having like Coco Rice, Koko Laisa, for breakfast and she was like, 'Oh, it's good that you're starting him you know on...' [commenting about feeding baby solids] I was like no no no, my husband was like, 'just say yes'. Yeah, but like, I'm lucky because I have that information. But there are other moms that their moms are the ones that feed them and so they do do that. Because that is what they know. And that is what they're taught. And that is trusted information to them. Yeah, it's not misinformation or like wrong, because that's what they know. (Participant 3, Focus Group 11, Young, Pacific).

4.3.2 Health providers are a trusted source

Those with a health condition spoke the most about health providers, but people in all groups would trust food safety information from these sources.

The most commonly mentioned source of information for the immunocompromised groups were health professionals. People had received advice about avoiding foodborne illnesses from various places, including booklets at the doctor's office and speaking to a dietitian during treatment. A lot of participants were very complimentary about the surgeons and specialists they had seen. Community cancer nurses, and nurses running community diabetes clinics, were seen as very good sources of information and support.

While I was in hospital I had the dietitian come and they did tell me a lot about food safety and what I can and can't eat They also gave me a booklet on food safety that I could read. So I got quite a lot of information. (Participant 9, Focus Group 6, Immunocompromised).

Those in the immunocompromised groups who did not find their health providers helpful enough were often inclined to look for alternative food safety information online or to discuss with peers.

Most pregnant participants expressed trust in the sort of information they got from midwives, and Well Child service providers. A few in the pregnant groups felt a close enough relationship that they would contact their midwife for immediate food safety advice. Not all



had access to this type of service, however (see section 4.5.3 regarding barriers to receiving advice).

Some parents kept and referred to information from health professionals in the form of pamphlets and handouts, or information in their Well Child books, which they had had since the baby was born. Some people found these handouts more useful than others. For example, some discussed finding that the information about baby feeding in these resources was limited – only covering a few food types or forms of preparation – and others wondered whether there should be more detail about safe preparation of first foods provided in their Well Child books. A few other participants mentioned that they hadn't gone back to look at the handouts enough to recall what was in them.

Health professionals were information sources for those older people with pre-existing health conditions. People who had experienced foodborne illnesses remembered talking to doctors after they had become sick but did not recall getting advice from health professionals earlier about how to avoid food poisoning.

4.3.3 Peer support groups were important sources of information for those who were immunocompromised and parents

Community health providers, including those based at marae, provided some highly valued in-person courses including antenatal groups and groups where immunocompromised people could access more information. Some participants felt they had got more useful information about food that was safe for them from marae-based hui about diabetes management than they had from their doctor.

Peer support groups (online or in person) were a useful way for many of the participants who were parents or immunocompromised to compare notes with others in their situation. Peer groups, including online groups, were also good sources of links to official or specialised information that people could investigate more at their own pace.

So we have a really good myeloma Facebook group. And so I ask in there. And there are some really good videos from some of the myeloma organisations in the States. They've got some really good ones around food safety post-transplant.
(Participant 7, Focus Group 6, Immunocompromised).

Discussions with friends, peers and members of parenting support groups were common sources of information. One participant said '*I love (in-person) mums groups cause there's always someone going through the same thoughts and feelings as you*' (Participant 1, Focus Group 5, Young).

These discussions could also take place online, and some parents valued the semi-anonymous groups where they could post questions without fear of judgement. In all these discussions, parents recognised that they would hear different opinions. They used their own judgement and common sense to decide what advice to apply.

I do look on my Facebook feed, there are a lot of things from Breastfeeding New Zealand comments come up, or (Area) Mums. It's more like I take it all with a grain



of salt ... as to whether it would work for you or not. So you could apply your own common sense or your own judgement and knowledge in terms of what people have put up there. But it is sort of handy to know others are in the same boat as you and have the same questions. (Participant 2, Focus Group 11, Young, Pacific).

4.3.4 Information sourced online was used by all who wanted immediate or additional information

Participants in all focus groups reported using the internet to source information, although not all participants had actively looked for and retrieved food safety information. People would use the internet to either look up a specific food safety question, to do research about a food or health topic they were already considering or to get additional perspectives.

People also came across food safety related information from social media sites. Parents came across food safety related information from online entertainment and social media that could feature parenting-related content. Some followed (for example) Instagram that promoted parenting advice.

Some groups reported using online sources more than others. Those in the pregnant and young parent groups used the internet as an information source a lot, as did many in the immunocompromised groups and fewer in the older groups (more the 'younger' old people in their sixties).

Online resources included tailored pregnancy apps with information about what was happening at each stage, along with more general information. Among those in the pregnant groups who were already parents, social media such as online mum groups, forums and influencers were more likely to be mentioned.

4.3.5 Online information complements health advice with useful but potentially confusing perspectives

Many people did their own research online about the advice they had been given, and this could help them to understand the rationale for that advice, which made it more salient and motivating to them. On the other hand, online research could lead people to become confused about contradictory views or to distrust health advice.

The internet was a large source of information for some immunocompromised people, particularly those who wanted to know as much as possible or who were skeptical about some of the medical advice they had received. Opinions varied about the value of online information; while some had found new ideas about how to eat that had been helpful to them personally, others were wary of social media scams relating to health, or of the legitimacy of some sources.

A consequence of seeking information online was that it adds to the contradictory views that people heard about safe practice in pregnancy, for example differences between international advice, which then they had to weigh up. Some participants reported opening ten different webpages *'and see if they contradict'* (Participant 1, Focus Group 7, Pregnant), and another described *'just keep scrolling if it doesn't apply'* (Participant 4, Focus Group 11, Young, Pacific).



if I am doing research, there are all these forums where it is everyone's opinion, I tend to go to more scientific or government sites, like Health Navigator etc, things like that or nutritionists you have heard of that have credentials and stuff. Everyone has an opinion of what should be done, but I want that trustworthy person who has the credentials, has the experience yea, has done the research themselves and what have you. Evidence based sort of stuff. (Participant 2, Focus Group 4, Young, Māori).

Some people were aware of an official food guidelines resource that could be found online, however had mixed views on whether they found it easy to use the page or to follow the guidelines in practice. One participant offered this perspective: *'It changes all the time... You don't have to follow (them) to a T. They're all guidelines'* (Participant 2, Focus Group 7, Pregnant).

4.3.6 Other sources of information

4.3.6.1 Television media

People from all groups recalled food safety-related television advertising, although many also reported they were less likely to view television advertising these days due to using streaming or other ways of watching.

Food safety topics in the media, such as news stories about outbreaks and recalls, were memorable even though people did not actively seek such information out. Television remained a common source of information for older people who mentioned news and current affairs programmes with items about food issues. They also reported watching celebrity chefs like Jamie Oliver. The TV cooks' food safety practices were generally reinforcing what people already knew rather than teaching them new ideas.

Actually, they had a very good programme. Last year about rice on TV. Okay, and all the pros and cons and that you shouldn't keep it in the fridge too long. You certainly shouldn't freeze it. But it was done by the Health Department. (Participant 4, Focus Group 15, Old).

Māori TV do have quite a lot of your food safety ads. Okay. I haven't seen it on channel 3 or 1. But they have them there, and I thought well that's good. Yeah, we could do some more of that on the (other) channels as well. (Participant 8, Focus Group 15, Old).

Television was a source of information for some in the pregnant groups. Cooking shows gave general food safety ideas, and some people recalled specific shows like Gordon Ramsay's Kitchen Nightmares which showed improvements to restaurant hygiene. Some people mentioned that pregnancy diets were alluded to in passing in various media, which had helped them become aware that pregnancy was a time for extra rules around food, but were perhaps not aware of the details until they became pregnant themselves.

4.3.6.2 Food products

Participants in various groups mentioned getting food safety information from the packaging of food and, more rarely, from dining venues and vendors.



Some older people found the writing on food packaging hard to read, thus interpreting the best-before or use-by information was difficult. One participant mentioned looking carefully for the date information then writing it on the package with a marker pen so they could easily see when the food expired.

Food vendors were also occasionally mentioned as a source of information, and one that people would be happy to see more information from. For example, one participant was interested to see a note on a bubble tea menu saying that drinks containing aloe vera were not suitable for pregnant women.

4.3.6.3 New Zealand Food Safety

NZFS was not identified by any immunocompromised participant as a source that they had previously used for information specifically about managing their health risks. One participant noted that they would not have thought of looking to NZFS for advice and commented '*none of us have looked for NZFS as a source – I saw them as an auditor and regulator for retail and hospitality rather than aimed at the consumers*' (Participant 3, Focus Group 3, Immunocompromised).

Other people with cancer and diabetes were interested in NZFS as a source of information about food recalls, which was relevant to them needing to be particularly careful but was more a general source of information relevant to anyone's health. A few in the pregnant groups also considered going straight to NZFS websites for advice.

Comparison with findings from health provider interviews: Methods of information provision

Health providers use a variety of methods and resources to provide information to YOPI groups. Most could distribute handouts of food safety information, including resources providers had developed themselves, or government resources such as the MOH pregnancy guidelines. Verbal communication and face-to-face provision of information was both a common and preferred method of providing information. Other methods used by some providers included demonstrations, referral to official websites (such as MPI, MOH, Australian government), cooking classes, and face-to-face hui.

Type of information provided

The type of food safety information provided varies between health providers and there is little consistency between them. The discussion was not specific about which resources were provided by health providers, however some specific resources were referenced.

Health professionals working with pregnant people or mothers of young children reported using the MOH food safety guidelines for pregnant people and commented that this resource was useful. Other providers referred to the Plunket website¹⁶ and app, as well as the Wattie's guide to baby feeding resource¹⁷.

Providers working with older people developed their own resource to accompany cooking classes which included information on best before and use by dates as well as some basic food safety information such as hand hygiene. These resources were provided as paper copies.

Other providers also reported finding the govt.nz inclusive language content guideline¹⁸ useful, and commented that if they were asked any questions about food safety, they would provide links to the MPI website

Health professionals working with immunocompromised (cancer) patients referred to using their own Cancer Society booklet¹⁹ which contained links to the MPI website, as well as referring patients to other websites such as the MOH²⁰, Cancer Council Australia²¹, and Macmillan Cancer Support²². They noted the booklet, which is available online and as a printed copy, deliberately contained light information on food safety so it would be easier to take up. These health providers reported their own booklet contained simple

¹⁶ <https://www.plunket.org.nz/>

¹⁷ <https://www.forbaby.co.nz/article/100145300067/wattie's-guide-to-baby-feeding>

¹⁸ <https://www.digital.govt.nz/standards-and-guidance/design-and-ux/content-design-guidance/inclusive-language/age-inclusive-language/>

¹⁹ <https://www.cancer.org.nz/assets/Downloads/Booklet-eating-well-with-cancer.pdf>

²⁰ Ministry of Health, Healthy Eating, Active Living, 2015: <https://healthed.govt.nz/products/healthy-eating-active-living>

²¹ <https://www.cancer.org.au/>

²² <https://www.macmillan.org.uk/>



advice on reheating food, food hygiene, safe storage and cooking of foods,
and a list of foods to avoid when undergoing treatment.

4.4 What motivations are there for seeking and using food safety advice?

4.4.1 Perception of individual risk strongly influenced behaviour

The main motivating factors related to risk perception: people's perception of their own risk, the riskiness of different foods, and the likelihood of known bad consequences occurring. Risk-minimising behaviour meant checking food in shops more intently for freshness, storing and reheating food carefully and being cautious about food prepared elsewhere. People were motivated by outside influences relating to their circumstances and by internal drivers such as their own personality type and inclination to follow advice.

4.4.1.1 Previous experience of a foodborne illness

People across all YOPI groups described how a previous experience of foodborne illness had resulted in being cautious in similar situations and taking action to ensure it didn't happen again. Many of these participants described foodborne illness had occurred after eating chicken. Commonly it was after eating outside of the home or getting takeaways, although some people also recalled having been sick from eating leftovers that they had stored incorrectly. Participants described being more careful with chicken, eggs, rice, seafood, and prepared café foods containing meat or deli meats.

As mentioned earlier, these types of food were typically what people already knew of as risky, and so that baseline knowledge influenced their behaviour at home (such as separating chopping boards) and when eating out (such as judging café food on its freshness before making a selection).

For some people, particularly in the older groups, their own or peers' experiences of foodborne illness had led them to be less interested in eating out at all unless they were certain they could trust how long ago the food had been prepared.

A few participants knew someone who had miscarried due to foodborne illness, and in these few cases this awareness was highly motivating to follow all advice from health professionals about minimising risks.

So having experienced the sickness [food poisoning while travelling] then having heard of someone that lost their baby I think it's really been drilled into me and I wonder if that's why now I'm so careful about it. (Participant 7, Focus Group 6, Immunocompromised).

4.4.1.2 Those who perceived they had a high level of risk from foodborne illnesses behaved differently to those that did not

This was seen particularly in the immunocompromised (cancer) groups and pregnant groups.



Some participants in the pregnant and young parent groups showed similar levels of caution, although some were more relaxed. Parents tended to have become slightly more relaxed about food for themselves since they were no longer pregnant, but generally understood that their babies did not have fully developed immune systems yet, and that they should take care to avoid any food contamination.

They are so little, they are only learning how to eat and so you're a bit more protective of what they are eating. Whereas we have been eating for years, so we don't care too much because we know what our body can take. (Participant 2, Focus Group 4, Young, Māori).

Given that these groups were conducted in 2022 and 2023, an additional factor that was top of some people's minds was the COVID-19 pandemic response, and the way that people had become more used to taking actions to avoid germs. Changes in habit due to COVID-19 sometimes overlapped with changes to habit around food hygiene to avoid further illness while already immunocompromised through disease or pregnancy. One participant said '*I was never pedantic with "can't eat that" because of illness. But covid exacerbated it, (get) home and sanitise*' (Participant 3, Focus Group 3, Immunocompromised).

Those who already felt cautious around outside food sources due to prior experience of foodborne illness could also become more cautious following their experience of pandemic-related risk minimisation behaviours.

Almost 10 years since [getting food poisoning] I order fish I am always careful. Anywhere I go. Like since the pandemic, my family, we change our mind not buying any food from the street, we just feel like you know, cook our own food... And like food from the restaurant, you don't know how long – like I'm not saying they're bad, but ... it's better you just do your own. (Participant 2, Focus Group 9, Older, Pacific).

4.4.1.3 People take steps to minimise the risk of foodborne illness in situations that they consider risky

People described a range of behaviours that they took to minimise or mitigate food safety risk in different situations. Some participants spoke about taking steps at home to minimise the risk from some foods, like sushi, when it had been freshly prepared – this was their way of eating foods on the unsafe list but adapting to reduce the risk. People generally felt more confident about food they had prepared at home. One participant said '*I still eat sushi [after having had food poisoning from sushi] but just making sure that it's fresh and not, you know, lying around.*' (Participant 1, Focus Group 11, Young, Pacific).

Other participants discussed a range of things they would do to lessen the risk when eating outside the home. This included eating sushi from restaurants they '*know is safe*', based on previous knowledge and appearance. One participant said '*If it was a back street sushi place I hadn't used before and it looked a bit grimy like dirty floors, flies in cabinet, then I'd probably steer clear of that one*' (Participant 2, Focus Group 1, Young).

One immunocompromised (cancer) participant described how she would decide whether to eat sushi based on her blood cell count after she had tests.



In my off-week of [treatment] I get my bloods done the Monday before and if my neutrophils are higher – I would straight-out have sushi for lunch. So I'm more like if my neutrophils are low, I'm more careful but I kinda feel like if they were sort of 2.5 in my 3rd week and hopefully my blood counts have recovered then it might be more safe. So that's when I've had things like sushi a couple times, and poached eggs. So if I'm going to have those things then I'll have them there because I feel like it's the least-risky time for my bloods. (Participant 7, Focus Group 6, Immunocompromised).

Several others mentioned ideas they had heard about how to make fast food less risky while pregnant, such as going to the staff in fast food-chains such as Burger King or KFC and explaining that they were pregnant so needed the food to be cooked fresh and extra hot.

When I get fast food. I tell them that I'm pregnant. So they make it like fresh, so it's not stuff that's really sitting there. Like if you tell Burger King or Maccas that you're pregnant, they'll make it fresh. (Participant 1, Focus Group 10, Pregnant).

4.4.1.4 People balanced perceived level of risk against other drivers of behaviour when making decisions about food safety practices

People's circumstances, including their sense of time pressure, financial pressure, social environment and concern about food waste, all influenced how they applied their risk knowledge to their decisions about how and what to eat.

While each participant had their own understanding of their own risks and the most risky food types, their individual personality types influenced how seriously they could consider changing behaviour to minimise risks. Some in the pregnant and immunocompromised groups described already being vigilant about health and becoming more so upon the change in their health status. Some were more or less inclined to be contrary about following advice, or to be compliant when advised by family or health professionals to change behaviour.

Others were happier to do whatever they felt like despite being aware of their health risks. One diabetic and cancer patient (Participant 1, Focus Group 20) lightheartedly described loading up plates at an all-you-can-eat buffet after a social exercise class with other patients who were all much more careful about what they were allowed to eat. This story provoked a mixture of censure and amusement from the other group participants. It seemed to illustrate a theme among some of these groups that people experienced competing priorities about managing their health and enjoying their life, and felt varying affected by social pressure to 'behave' according to advice about their health risks.

4.4.1.5 People adjust their vigilance depending on their trust in those preparing food

Trust was associated with positive feelings, and not worrying about the safety of food offered. Some people figured that food vendors were all licensed and qualified so should mostly be trusted, or knew which of their friends and family were good cooks. In some situations, this could lead people to take risky behaviours for their current situation, such as eating raw foods figuring at least they knew who had prepared it.



People who were wary about others' food hygiene generally trusted some people they knew, or some food vendors, only as long as they had a good idea of their food safety practices or could ask specifically for food to be prepared in a low-risk way. These included asking for food to be freshly prepared or well-heated. A high level of risk perception was linked to low trust in food providers, which meant more vigilance around food safety but at some mental and emotional cost.

While most older people were confident in their own cooking and what happened in their own kitchen, some were less sure about whether good practices were being followed in other places, so would be more careful when out. Food vendors that were less familiar were sometimes treated with more caution. A number of the older participants mentioned feeling more cautious about food choices while travelling overseas, or even in less familiar parts of New Zealand. One participant said *'I like to see stuff getting cooked. When I'm out of town, and I'm going to a place to eat or something I secretly always look for certain hygiene certificates'* (Participant 2, Focus Group 8. Older, Māori).

4.4.1.6 People adapted their food safety practices when considering the risks to others

People also described changing their behaviour when preparing food for others whom they understood could potentially be at higher level of risk. This showed some level of knowledge that some groups of people are at higher risk than others.

People in all groups were more careful about cooking for large groups or groups including people perceived as higher-risk (elders, children, unwell or pregnant people). There was a sense among those who did this, that they wanted to be seen to take more precautions. They appreciated that there were strong hygiene protocols in places like marae, churches, and other community hubs. One participant shared *'at a marae at any function, your level of hygiene goes up, yeah, when you're receiving people in public. Your hygiene actually goes right up'* (Participant 3, Focus Group 8, Old, Māori).

Parents of young children frequently took more care about the safety of food that they offered their child, and some were pickier about choosing the safest and best-quality food for their child, where they would be less worried about eating something questionable themselves. In some cases, parents reported developing more safety-conscious food storage habits compared to before they had children.

Like last night we had boil up and he [husband] put that in the fridge, so I was like "yeah we are winning now!". Usually he would just leave it out, but now because the kids are getting bigger, and she'll be eating it and he's getting better at [putting leftovers in the fridge] (Participant 3, Focus Group 4, Young, Māori).

4.4.2 Changing life stages motivates interest in new food safety practices

People who had recently become pregnant or immunocompromised were, as discussed, most aware of their own risk and most likely to be dealing with new information about how to manage that risk. They were thus also the most likely to be changing their food safety practices.



Many of the older people were not experiencing a significant shift in circumstances so were not feeling a particular need to adjust their risk perception or risk-minimising practices. In some cases however they had to adjust their cooking practices when moving or downsizing, getting used to cooking for only one or two people and developing new habits for freezing and defrosting extra meals.

Some in the groups of older Pacific people reported having to learn new techniques around storing and preparing food when they came to live in New Zealand. Buying frozen food was a new and slightly odd concept and using refrigeration in their homes was also new. This meant these participants were having to adapt their cooking behaviours and learn how to safely handle frozen foods.

Yeah, no as far as I can see what we consume in the island is the same as here. But the only difference is what we consume in the island is all fresh. It's all fresh. It's nothing from the freezer. Nothing from the freezer because there's no freezer in the island the last 40 or 50 years ago. But then we got in New Zealand. So we have to now store everything in the freezer for the next month or the next few months.
(Participant 1, Focus Group 13, Old, Pacific).

In the groups of older Pacific people a particular technique that came up several times was to pre-boil chicken before adding it to the dish they were making. The reason for this behaviour was because the chicken they are used to cooking in Samoa is fresh, and they are aware of where it has come from, so cook it straight away. Since moving to New Zealand and handling frozen meats, they have adapted their behaviour to defrost it by boiling it, and then use fresh water to boil the chicken in to cook it. Some participants described the method of boiling meats was to remove the fat from them, clean them, or described that they did this with canned products such as coconut milk to make them fresher. One participant said *'sometimes you wash it and sometimes you can just put it in the boiling water and then you boil it. And if you boil it, fat will go out from it'* (Participant 1, Focus Group 9, Old, Pacific).

Some participants boiled the chicken first even when the chicken was not frozen, this method was used to 'half cook' the chicken before cooking it in the pan or oven. When asked where they learnt this method, there was uncertainty, however some participants suggested they learnt this from an islander chef on TV.

But you know, I think the cleaning is the number one thing that you got to do with your meat before you put it in the pot. Even though, once you boil it without washing, you can see the top of the water, it's just like brown stuff that's coming up there, that's the dirty of the meat, you know, with those things, pour it, get another water and then boil it again then you can do your soup (Participant 2, Focus Group 9, Old, Pacific).

4.4.3 Motivations to follow food safety vary by setting

Overall, participants described their approach to food safety as varying according to three main setting types.

1. Communal and shared catering: high vigilance. People were aware of a higher need for food safety when catering for large groups and community events, and when following the protocols in shared spaces like marae.
2. Home cooking: confident and not thinking as consciously about food safety practices. People were generally more relaxed at home because they felt they knew what they



were doing, they knew their equipment and knew how long their groceries had been stored for. They worked by habit so did not need to put as much direct thought into what they were doing.

3. Eating outside the home: mixture of suspicion and confidence. Participants' feelings on food safety practices by food vendors varied. Some were highly cautious about choosing food to purchase while out.



4.5 What barriers prevent people seeking, receiving, and using food safety advice?

4.5.1 Habit

Having set habits did not necessarily mean people were not behaving safely around food. It meant that they were less open to new advice about food safety because they felt they already knew enough and that their habits worked for them.

In cases where their own risk profile had suddenly shifted (becoming pregnant or unwell), people were more likely change their food safety habits. In cases where they were just carrying on as usual, particularly the older people, there was no sense of needing to change any behaviours.

4.5.2 Not wanting to waste food can be a barrier to safe food practices in the home

The cost of food came up regularly in focus groups. Food waste was a particular concern for older people and immunocompromised people on tight budgets; it was also mentioned by parents of young children. One participant said *'I find it's quite hard to marry up that making sure you do not use food past its day but also trying to reduce food waste'* (Participant 2, Focus Group 4, Young).

Some participants in the parent groups talked about being too busy looking after their children to be very particular about food. Some in the immunocompromised groups described making food last several days due to concerns about price and avoiding waste; their peers in the focus groups did not all judge that these practices were safe enough.

A number of participants jokingly talked about their disapproval of parents or family members' habit of keeping food for too long. Some also had their own questionable habits to reduce waste, which they knew others might not share.

(To test milk) I would put it in a cup of tea, if it comes in little lumps I would throw it away. [laughs] Otherwise I put it on my cereal and it doesn't matter because I'm putting yoghurt on anyway and it's only going into yoghurt. (Participant 1, Focus Group 14, Old).

Although it could be a barrier, motivation to reduce food waste was also linked to careful food safety behaviours. Older people in particular described how they had grown up knowing of the need to plan in order to afford just enough food. Their activities included cooking only as much as was needed per meal, storing carefully and either eating things in two days or freezing portions for later, cooking and freezing in bulk, keeping track of dates, distributing leftovers to family, and in some cases freezing parts of products they could not use up by themselves, such as small portions of milk (before it could go off).

Some older people's practices were an adaptation to new life stages in which they had less space and equipment, were cooking for fewer people, cooking less, or adapting to a smaller kitchen if they had downsized or moved to a retirement village.



In these cases, although they had their own techniques for handling food safely, people had varying ideas about the best way to handle leftovers and did not appear to have received a lot of direct advice about this.

4.5.3 Some people are not receiving appropriate information to support behaviour change

As discussed in section 3.4, YOPI consumers want information relevant to their immediate needs. However, they are not always able to access this.

The major reasons given for lack of information were:

- an understanding that health services were already overstretched;
- feeling they were just expected to figure out new practices around parenting in particular;
- not being referred to the relevant health specialists; and
- being confused by contradictory sources of information.

Too much advice was also a problem; and conflicting advice was a particular issue for those who were pregnant or had young children. One participant said *'I think it's hard because there's so much more information now...'* (Participant 1, Focus Group 7, Pregnant).

Although people were becoming used to weighing up conflicting sources of advice, it became harder to interpret the more advice changed as more nuance was required to determine if a food was acceptable or not.

There's 17 years between my two kids. I recall with my oldest, it was like "no you can't have pasteurised cheese" – a blanket statement and then it became more like, as long as you open and eat it that same day, it was okay. And ham off the bone was okay but it used to be don't touch ham at all. So as long as it was fresh you could have it, but couldn't have it 24 hours later. So, I think there was a little bit of change [in the guidance]. (Participant 3, Focus Group 1, Young).

4.5.4 Lack of experience of the consequences of foodborne illnesses leads to low motivation

Across the groups, people's perception of their personal risk varied. We cannot say whether any of these participants had unrealistically low perceptions of their own risk of foodborne illness; even those with lower perceptions of risks did not believe they were exempt from taking any precautions at all. However, some felt that they were personally more resilient, due to not having personal experience of a foodborne illness, and this made them less likely to consider changing behaviour.

In several groups, older people raised the concept of them or their relatives having particularly strong stomachs, 'iron puku', or perception that those who grew up in the Pacific Islands or other countries overseas before modern refrigeration and sanitation were somehow more robust. Some clarified that this notion was not taken particularly seriously, it was partially a joke, albeit a widespread one.

Those who felt more personally resilient were generally still concerned about keeping others safe.



It must be because we grew up in the islands, because the New Zealand born ones they grew up in the food is so where they prepare, so clean? Well, where we prepare now is so clean. They might get sick when they go to Samoa...When we take them to the islands we are kind of quite careful with what they eat. Because we, we think that the immunity level is not the same as the kids in Samoa.
(Participant 3, Focus Group 11, Young, Pacific).

Observations about having avoided foodborne illness despite risky practices were stored in people's minds when they thought about food safety, even when they were undertaking the recommended behaviours themselves. Older people who recalled a time before refrigeration were living proof that food practices that would not be recommended now had done them no obvious harm.

I grew up in England ... in the middle of the war and the end of the war. Where we didn't have fridges. And if the bacon just had a slight smell we just wiped it with vinegar and cooked it. I'm still alive. (Participant 1, Focus Group 14, Old).

A number of those who were pregnant were also feeling less certain whether all food safety advice had to be followed strictly, because they had seen other people not following it with no obvious consequences.

Think my mindset has changed from then to now. Because I've seen others that have also suffered from the whole feeling like they had to be really cautious of you know, the foods with their first pregnancies and now they've had like their third or fourth kid and they've just been absolutely relaxed. So a lot of that has been a projection from what I have seen, or from girls in my family ... All from the same bloodline. And I'm like, okay, well, if they are more relaxed now, I would be the same. (Participant 1, Focus Group 12, Pregnant, Pacific).

4.5.5 Social pressure

Social pressures on those who were pregnant were on the one hand, not to be seen to be doing anything to endanger their baby, but on the other hand, concern that they did not come across as too 'paranoid' or fussy. The balance of these pressures depended on who they were around, and how strongly they felt the need to bow to pressure. Some would eat known 'risky' things if their peers did, while others who were more risk-averse or less concerned about social awkwardness would refuse.

Some people in the pregnant groups would avoid food that their family and friends had warned them off, to avoid being hassled and appear compliant. Some said their partners or family members were less interested in the food safety advice they had been given or were not always on the same page with regard to how to store and prepare food safely, which meant they needed to put in more effort to control how safe the food was for them.

Older people seemed less affected by social pressure, other than the (positive) pressure to ensure that anything they cooked for their community was safe. Some in the older groups were comfortable refusing to eat food from kitchens they did not trust, or when they were suspicious of the hygiene practices of the people cooking, even extended family members.

There were however cultural and social considerations about whether people felt comfortable refusing food; in certain settings people would be more concerned about creating social awkwardness.



Especially when you are invited for any special occasion. You know, and when you get there, there's only food there that the doctor said to you not to eat. So how can you, how can you stay in that special occasion without eating these nice big foods on the table? It is rude. (Participant 1, Focus Group 13, Old, Pacific).



4.6 What potential alternative engagement approaches are there?

When conducting these focus groups it became clear that there is a certain amount of overlap between the demographics in YOPI groups (particularly Young/Pregnant and Immunocompromised/ Old), but also that people are not the same within these groups and do not look for messages in the same way. YOPI consumers are diverse and would all receive information from a variety of approaches, methods, and sources.

Focus group participants were asked what they would do if they were NZFS to get information about food safety to people like themselves. Many of these ideas about effective ways to engage have already been covered in the section about preferred sources of information. This section focuses on the types of messages people wanted and how they should be delivered.

4.6.1 YOPI consumers are interested in different types of messages

Across all YOPI groups there were three types of food safety messages participants wanted and used:

1. Situation-specific advice: in the specific life stages of YOPI consumers, people sometimes want new information related to managing risk in a way that they had not before. This information would need to be immediately available – answering queries about *‘is it ok for me to eat this at the moment?’*, *‘is this ok for my child?’* – and responsive. Participants thought this should be delivered online, via specialised apps and websites, via social connections (in person or online), via free interactive advice services, like phone lines, or in the sort of printed information that patients and parents are given, to be referred to when needed.
2. Information connected to and delivered along with the advice they are already getting: food safety advice can ‘piggyback’ onto the information parents receive about introducing food to their babies, to the counselling potential parents receive from GPs or other health providers about preconception health, to dietary advice for immunocompromised patients, and to advice about shifting life phases (ie., moving to a residential home, adjusting to cooking for one, managing general health) for older people.
3. Generic messages: information that is relevant to everyone (e.g., ‘Clean, Cook, Chill’), promoted via mass media or situational media (i.e., signs) that anyone can see. Such information was thought to be easily recalled by peers and family members who can then remind each other about it.

4.6.2 Specific advice should be readily available – primarily searchable online

For immediate queries – such as *‘is this food ok for me at the moment?’* – some people would use health-related phone lines. There is a dedicated Cancer Society line, though this



could be better publicised, and a Plunket line for parents, which was not mentioned much in focus groups.

For most participants, *readily available* information meant it needed to be online. People need to be able to find trustworthy information online, and they do trust government information sources. Both parents and immunocompromised people were likely to use Google for specific queries about managing their food safety, and were also often interested in peers' experiences as found through social media groups and forums. Official advice from health authorities, if linked via these groups, would generally be respected as a good source of information.

4.6.2.1 There are notable differences in internet use by age

Internet use varied greatly between different age groups within the 'older' group. Kaumatua in their sixties reported being very active online, getting ideas from social media and searching for information frequently. Some followed Māori chef content creators to see examples of preparing traditional foods in a modern way and could imagine listening to advice from such personalities.

Those in their eighties on the other hand, tended to be less interested in seeking information using the internet; a few were confident online but some had no interest at all in getting information this way, or if they did, would rely on a relative to show them. There was some scepticism about how information online could be contradictory or covertly designed to sell something, but older people generally trusted that if they could find information from a government source, this would be worth reading.

4.6.3 Personalised recommendations ideally come from health professionals

As discussed earlier, some people in YOPI groups have good access to health professionals, while others feel that they need more support and are concerned in general about people missing out on access due to health system pressures. While people would continue to pick and choose how they followed advice, almost all would value having a health professional explain to them what was most relevant for their particular situation. This was most likely from specialists like cancer and diabetes nurses at the time of diagnosis, and midwives. GPs had a potential role to play but many people felt they were too busy.

People would value opportunities to receive food safety information at clinics – some immunocompromised participants mentioned that they spent a lot of time in waiting rooms so would read material there. Other suggestions for waiting rooms were posters or the television displays that sometimes show jokes or health information and could include food safety advice for patients' conditions.

Key points of engagement for other providers include Well Child checks, vaccinations, and other standard child health appointments. Some participants wondered whether these could provide an avenue for further advice on food safety, if there is capacity.



4.6.4 Information to take away for later can back up or replace one-on-one advice

'Readily available' also meant material able to be referred back to later. The materials distributed by health professionals were also valued even though people were not always prepared to read them all at once. Participants in a number of the older age focus groups and some parents were keen on pamphlets and written material that they could take home and use when needed. These could be provided via health providers, residential homes or some of the social support groups and associations at their events.

Pacific older people in particular liked the idea of pamphlets with advice for the whole family. A key consideration noted by some older participants was that any printed information needed to be visually striking and without too much dense writing, while some in the young groups had clear preferences for modern design.

What I did notice was like because we do get given lots of pamphlets and stuff, like actually quite a lot of it looks quite dated, to be honest... there are other ones that are ... just more appealing to the eye? And looks newer. Then I'd be like "Oh, yeah. I'll read that because it looks like it wasn't from the 90s. Yeah, that's modern."
(Participant 2, Focus Group 11, Young, Pacific).

Participants also provided ideas on how information from different sources can be linked:

The support group is great because even if you can't make the whole forum, you can go and watch it later on YouTube and people's questions are there as well. So being able to have that visual ... that's how I came across MPI because it was in that booklet Living Well and Eating Well. It's a great link and there's some really good information on there, but as people have said you've got to be able to ask the question... some of them have a chat so you can ask a question when everybody is online. I know that's a big thing to do, but you can ask and someone will come back with the answer for you... In this booklet, "call this 0800 number" – having someone to ask "what do I have to do when..." (Participant 3, Focus Group 6, Immunocompromised).

4.6.5 Information about general food safety is useful when repeated through familiar places and channels

Participants were not always actively looking for advice but valued reminders about food safety through places and channels that they already trusted. People liked to see linkages between the varied sources of information they accessed: for example, advice provided via peer support groups being linked to official sources, television campaigns connected to websites. Therefore, if the information raised more questions for them, they could follow up.

4.6.5.1 Communal settings

Group-specific food safety information is desired in places relevant to food preparation. This includes shared kitchens at marae and other gathering places, food retailers and venues,



and childcare providers. Messages from these sources could remind YOPI consumers about other places' approaches to food safety, which could then influence their own practices. For example, if childcare service providers tell parents about the details of their own food safety precautions, this can prompt consideration of the family's own practices.

Some Pacific people talked about how cooking in groups meant role modelling food safety practice as well as getting used to different equipment and food products. Some retirement village residents were interested in peer-led cooking demonstrations or attending cooking courses tailored to their lifestyle. Although they might not feel they learned new food safety information, it could reinforce their ideas of best practice.

Older people liked the idea of having food safety information delivered among other information at communal events such as fairs and markets, or meetups held by social support groups which often featured guest speakers.

4.6.5.2 Apps and websites that are currently used

Parents could imagine looking for food safety information in the types of apps and websites they had already seen, about tracking pregnancies, finding child health information, looking for advice about breast and bottle feeding, or food introduction. People wanted to be confident that information relating to their current queries would be immediately available on a phone or device. They said they would be more likely to use health and parenting-related sites or apps they already used rather than go specially to the NZFS website.

If immunocompromised people were already using apps connected to blood sugar monitoring or other condition management, they could imagine having food safety advice included here. It would be more appealing to have it delivered along with the information they were already looking at about their health conditions, so they didn't need to go to a new app. Similarly for websites, for those people who did a lot of searching online they would like to have the food safety advice in a similar place to the other dietary advice they were already researching.

4.6.5.3 Social media influence has mixed potential

Many focus group participants used social media such as Facebook and Instagram to connect to peers, and could get information about others' views on health topics by either actively looking for it or by scrolling through posts and promotions. Some people did specifically recall advertising messages from social media. People from several of the immunocompromised and parent groups looked at YouTube for ideas, although often skipped the ads.

There were mixed views about newer social media forms. TikTok was often seen as more for entertainment and marketing; although ideas promoted there might be good for conversation starters, it was not a site people would go to as much for health or parenting advice.

Some participants followed influencers for cooking and parenting-related content. Some of this content was taken as legitimate advice, while some was more entertainment. Discussions around influencers acknowledged these blurred lines; while some parents could imagine they would value advice from their preferred influencers about safely feeding their families, others were aware that some influencers were selling certain products and ideas, and said things that contradicted official advice.



4.6.5.4 Advertising

While people did not actively look for advertising, signs and billboards provided background reminders about key messages, as did television and online advertisements. The most memorable television and video advertisements were those that engaged people by telling an interesting story; loud and abrasive ads could be memorable but off-putting.

Some people suggested that print advertisements needed to be simple and eye-catching, but again the main message here was that the content needed to link to other sources so people could find out more details if interested.

4.6.5.5 Print media as a lower-priority information source

While people did see some messages via print media, and this was one avenue for backing up and reinforcing messages, there was less consensus about how appealing it would be. Older people felt that magazines were expensive. Parents could sometimes imagine getting food safety information from the advertorial content in glossy parenting magazines, but this was also often connected to recommendations to use expensive products.

4.6.6 Considerations about messaging content

Participants suggested various ways in which messages could be made more salient to them.

4.6.6.1 Effective messages are easy to remember

All groups recalled catchy mass media campaigns (such as CCC) and valued simple repeated reminders like easy to remember visuals, slogans and messages delivered in places they often saw.

People in a number of groups found simple visual representations of health advice – such as the plate with proportions dedicated to vegetables, protein and carbohydrate – appealing. Some would appreciate having something to put on the fridge, like magnets or printouts showing advice about what to do to stay safe with food and what foods were currently recommended given their health condition.

4.6.6.2 Understanding the severity of consequences is a motivator

People wanted to know the reasons behind food safety advice; having the rationale explained made them more likely to take the advice seriously. Most found experiences or stories about severe consequences memorable.

When talking about advertising that they remembered, participants across groups felt that messages that provoked a disgust or fear reaction could be very effective. However, given that a number of people in these groups were already concerned about their health or were busy living their lives using the food safety techniques that worked for them, messages that further emphasised their vulnerability would need to be used carefully.

4.6.6.3 Information delivery needs to be culturally appropriate

It was important for participants in all groups to have contact with health professionals from their own cultural background. Some Pacific participants mentioned listening to palagi doctors but not necessarily taking all their advice. Marae-based health and wellbeing



services were a trusted source of information for Māori parents and parents-to-be. Antenatal and child health courses in these settings were appealing. People with immune conditions also found a lot of value from their involvement with marae-based health groups.

One critical piece of advice though was that a number of the Pacific mothers wanted to ensure that advice was culturally appropriate. Firstly, that providers did not assume without asking, that a Pacific-looking person wanted resources in a certain language. But also, that different cultures' ideas about food should be taken into account.

I've got a Pacific background. So there's foods that we might think is really good for our souls and you know, really good for the well being of our children, but it might not be in the face of a European midwife. So some of the barriers is that they won't understand that difference and, ... it might be fresh fish or ... it's well cooked with amazing vegetables and stuff, they might just see it as like, "oh, no, actually, you can't". But what if it's like a thing that we can only eat you know? ... So it's just an understanding of your own culture and your own beliefs or that someone that probably comes from you know, a different background around food. You know, my, my way of washing chicken might not be the same way as someone else's, and they might consider that wrong, you know? ...I could probably be carrying in Samoa and still be eating from a pot or a stew that was cooked outside under the ground, but that's still fresh. Like it still I consider it safe. Because it's how our people have been eating all these years. (Participant 1, Focus Group 12, Pregnant, Pacific).



Health professionals' views of engagement methods

We heard from health providers that the preferred and most effective method of engagement was face-to-face conversations. They stated that this facilitates individualised support and allows for individuals to ask direct questions around food safety. Health providers suggested ensuring no group of people is treated as a homogenous group; each individual has different circumstances and these need to be taken into consideration when sharing information and advice.

Health providers for pregnant people and parents of young children favoured having open group discussions with subject experts providing information. They suggested this is the best way to share information as people are enabled to ask questions and seek clarification in an engaging way. These providers suggested online videos are a quick and accessible way to share information and engage with this group.

Health providers for immunocompromised people recommended multiple methods for delivering information is required to ensure messaging gets across. They suggested video resources, and online resources such as TikTok, because so much information is accessed online. These providers also recommended group discussions with experts presenting information is a great way to share information to this group.

Health providers of older people suggested being careful with what you try and pitch to this group. They suggested not to push hygiene information on these groups, as these people have been cooking their whole lives and these practices tend to be strong in this group. They also recommended making sure the campaigns and resources feature older people, this allows the targeted populations to see themselves in the campaign and relate the information to their lives.

5 Discussion and recommendations

The aim of this research was to explore types and sources of food safety information YOPI groups use, how information and advice are obtained, and what attitudes and beliefs influence their decision-making about food safety practices and related behaviours. It also explored information needs of YOPI groups. The research focused on developing an understanding of YOPI consumers' experiences and perspectives, including a particular focus on Māori and Pacific YOPI populations.

This section includes a discussion of the main findings, with reference to the literature found for the earlier YOPI evidence review and other key documents. Recommendations based on these findings are interspersed.

5.1 Baseline food safety awareness is good but there are gaps in knowledge

We found that food safety knowledge in general was relatively good across all YOPI groups, particularly when it came to handling and preparing chicken and avoiding cross contamination of foods. Although there was some variation in the exact techniques people used, most reported paying attention to keeping food safe and, contrary to some findings in the evidence review, were not lacking in general food safety knowledge (Al-Sakkaf, 2013; Turner P & Benson M, 2020).

We found that the most common food safety practices aligned with the types of messages promoted by NZFS, such as cooking meat safely, avoiding contamination between chopping boards, even if participants could not recall where they learnt this or if they had got this information from NZFS. The evidence review for this project included a positive evaluation of the Clean Cook Chill campaign (Dias Poujade & Tien, 2021). These focus groups concurred with the finding that this campaign achieved good recall among many YOPI groups.

While participants generally understood food safety precautions and were good at avoiding cross-contamination, the areas in which their behaviour and understanding varied most included methods for defrosting saved meals, how to cook meat from frozen, whether to wash or wipe raw chicken, and how to choose café and takeaway food to reduce the risk of foodborne illness.

Most of the people in the focus groups had a reasonable knowledge of the riskiest foods for pregnancy and immune deficiency, although interpretations varied and it was easy for people to rationalise occasionally consuming riskier foods in some circumstances. Studies with pregnant women have shown a good knowledge of the food safety issues, and some evidence for people altering their diets accordingly, though knowledge of all the details varied and a significant minority of pregnant women did still consume or misidentify high-risk foods (Brown et al., 2020; Bryant et al., 2017; Taylor et al., 2012).

Based on this study's findings and the priorities that participants told us about, we recommend that food safety messages should focus on things that people in YOPI groups can do to make



their lives easier and less stressful. Messages should not add burden in terms of things to be vigilant or confused about. Messages could convey information about:

- achievable but impactful modifications/changes or additions to existing habits
- how to quickly find trustworthy, situation-specific advice
- how to support others in their lives to minimise their risks of foodborne illness, with explanation for why people in YOPI groups or life stages need more care
- managing food safety and nutrition needs without waste or overspending
- why certain foods raise the risk of foodborne illness, and how to handle these (not just chicken).

Recommendation 1: Continue to deliver food safety messages to the general public because these support basic awareness and enable friends and family to support those at higher risk of illness.

Recommendation 2: Continue to promote advice about specific food safe behaviours including handling meat, leftovers and food bought outside the home.

Recommendation 3: Targeted messages are required about the food safe behaviours specific to YOPI consumers, and the reasons these are needed.

5.2 YOPI consumers connect food safety with other food-related issues and information

Across the YOPI groups, the term ‘food safety’ was commonly associated with the nutrition and quality of foods, as well as food hazards such as choking for the parents of young children. From what we heard, people would expect food safety advice to be tied in with related to information they were receiving from professionals about managing their health and life stage. They would also find food safety information relevant when presented in channels relating to food. This included the environments in which people shopped, dined out, and cooked (both in communal settings and at home) as well as food and cooking-related media content.

Recommendation 4: Communicating food safety messages within food environments and using food-related channels is important.

Recommendation 5: Integrate food safety information with existing material targeting families and people in changing life stages (dealing with a new diagnosis, becoming a parent, or changing living circumstances as an older person).

5.3 There are varying levels of readiness to and interest in receiving food safety information

Within the YOPI groups we spoke to, we identified three types of mindset: those who were very worried and vigilant, so would be open to as much information as possible; those who



were unaware or unconcerned about being at any greater risk so would not look actively for any new advice; and a larger group who tended to weigh up various sources of information to decide what risk-minimising actions they were most motivated to take in their particular circumstances. People are likely to move between these groups as their circumstances change. The influence of information provision on behaviour change is also likely to differ as people move between these groups.

YOPI consumers seek information when their situations change: upon becoming pregnant, introducing their child to solid foods, or being diagnosed with a condition such as cancer. These situational changes coincided with people receiving more information from health professionals. Older people were the outlier among YOPI groups in this respect: unless they were also dealing with changing health, they were mostly getting on with their lives and did not have the sense of crossing an obvious threshold into becoming more 'at-risk' or in need of food safety advice. This finding in older people is consistent with other evidence (Berger et al., 2022).

Immunocompromised (cancer) people and many of those who were pregnant tended to be seeking information about food safety. Some with cancer and with diabetes felt that they had not got all the information they needed, while some parents noted they had not received timely enough food safety advice during pregnancy.

Our findings partially concurred with the literature suggesting that information overload is a challenge for immunocompromised people and may lead to food safety information not being prioritised (Evans & Redmond, 2017). The people we spoke to did want such information and most did not say it was less important, even though the focus of their health-related consultations were often on medical management of their condition. Some people also noted feelings of overwhelm or not being able to recall everything they were told at the point of diagnosis; an important consideration for timing was that they also needed access to information they could refer back to, or look up again once they felt ready to consider it.

Recommendation 6: Invest in well-designed and easy to read printed products that can be referred to later and feature links to further information online.

Recommendation 7: Ensure that the health professionals most relevant to YOPI groups (midwives, Well Child providers, specialist nurses, clinicians and dietitians, those supporting older people in transitional phases) have access to and can distribute tailored food safety advice.

5.4 People in YOPI groups weigh up information from trusted sources

Ultimately, YOPI consumers trust their own judgement to make decisions that work best for them. YOPI consumers like to gather information from a variety of sources and decide how to act based off their own reasoning; this process is not always conscious as people have absorbed ideas about food safety from so many sources (media, family, observation, word of mouth as well as more formally delivered messages from educators or health professionals).



Consistent with our findings, the evidence review found that trusted sources of food safety included from health professionals and government departments (Brown et al., 2020; House & Coveney, 2013). Food labels/packaging and friends and family members were also identified as key sources in other studies, while the internet was an increasingly important source for most people in YOPI groups (Jeffs et al., 2020; Turner P & Benson M, 2020).

Participants in our focus groups were less likely to ask their GP for advice but did value having a one-on-one relationship with a relevant health professional who could advise them about food safety. Face-to-face message delivery was emphasised in the literature (Dias Poujade & Tien, 2021). Focus group findings similarly emphasised the value of direct contact with experts, although in a number of cases having this contact online or on the phone was just as acceptable.

Inconsistent and confusing messages from multiple sources increase the cognitive load on YOPI consumers who are weighing up advice, and can be a barrier to following advice. There is value in receiving the right information at the right time and ensuring consistent messaging across all groups. In most cases, having a trusted source delivering the messaging was critical, highlighting the importance of health providers – and potentially other trusted community contacts – in delivering food safety messaging. A few participants from different YOPI groups mentioned looking directly at NZFS website or products for food safety advice, but most did not mention this as the top-of-mind source for personalised advice. Nonetheless, it was clear that people valued the type of information that could be distributed from NZFS via other trusted sources.

Social support for those who were pregnant and parenting young children was important in encouraging food-safe behaviour. Social influences in group settings tended to motivate people to increase their vigilance around food safety, partly due to a sense of care for others. The Māori focus group participants mentioned marae-based services and events as channels that they would especially trust and appreciate information from. The well-received CCC campaign has already done some outreach to promote messages through marae and other cultural networks, which seems a promising approach (Dias Poujade & Tien, 2021).

Recommendation 8: Promote NZFS and related information so it comes up early in internet searches and is linked to other popular health-related information sources.

Recommendation 9: Continue to promote specific and general food safety advice via community settings including marae, churches, and other cultural community hubs.

Recommendation 10: Focus messages for the general public on who in their community requires extra care around food safety, and what actions are needed to protect them.

5.5 Personal risk perception influences behaviour

Evidence from other studies shows that adequate information does not always translate to safe food handling behaviours (Losasso et al., 2012; Meysenburg et al., 2014). While we heard



some examples of people acting against their own knowledge about best food safe practices, for the most part people had formed clear ideas of how they would minimise their risks – at least until their sense of their own risk profile changed.

We found risk perception was a key driver for behaviour. YOPI consumers' perception of personal risk, or memorable personal experiences of consequences, are the largest influence on food safety behaviours. This is consistent with the literature that demonstrates that a belief in not being at risk is a barrier to following or seeking advice (*Elderly Food Hygiene Qualitative Research Findings*, 2014). This was evidenced in this research by pregnant people reporting they were less vigilant with food safety in subsequent pregnancies if they had not seen evidence of harm from consuming riskier foods in their earlier pregnancies (House & Coveney, 2013). Similarly, the evidence review showed that pregnant women still consumed some high risk foods (Bryant et al., 2017; Taylor et al., 2012).

We also found older people did not view themselves as being at any higher risk of foodborne illnesses or of being considered 'vulnerable' purely because of their age. This is consistent with findings in other research (Berger et al., 2022; Byrd-Bredbenner et al., 2013; *Elderly Food Hygiene Qualitative Research Findings*, 2014). Also similar to our findings, the evidence review included studies showing older people being confident in their home practices and trusting their instincts regarding food safety, even if some of their practices were inconsistent. A tendency to use senses to decide on keeping food, as a part of not wanting to waste food, was mentioned (*Elderly Food Hygiene Qualitative Research Findings*, 2014; Wills et al., 2015).

YOPI consumers require some variation of information and touch points to provide food safety information. There is a need for specific information, along with the same food safety information that applies to anyone. While some may need convincing that they are at higher risk, most are somewhat aware of their need to take care with their health, and are already accessing advice about this, of which food safety may or may not be a large component.

Findings in the evidence review indicate that it is important to emphasise the meaning and severity of food safety risks, in order to motivate people to take them seriously (*Consumer Forums Outcomes: Perceptions of Food Safety Risk*, 2019; *Elderly Food Hygiene Qualitative Research Findings*, 2014; *Scottish People's Priorities and Preferences for Food Safety Information*, 2019; Meysenburg et al., 2014). This was an area that could be worked on for YOPI groups as some of the information they recalled seemed ambiguous or likely to change, in terms of their personal risk and which practices needed to be made less risky. Some people in these focus groups did state that being scared by potential consequences of foodborne illnesses was motivating.

Recommendation 11: Carefully develop messages that emphasise the reasons for and importance of safe food behaviours for YOPI groups.

Recommendation 12: Develop food safety advice that takes into account people's differing cultural preferences and life stage priorities, including minimising waste and sharing food.

5.6 Conclusion and considerations for messaging

This research looked at food safety knowledge, behaviour and information needs of people defined as (the caregivers of) young children, older (over 65), pregnant and immunocompromised (in this case living with cancer and/or diabetes), and included Māori and Pacific participants within each of these groups. We found some consistent baseline food safety knowledge among all groups. We also found three distinct types of attitudes and behaviours relating to perception of risk and readiness to receive food safety information: those who were highly vigilant and aware of their risk of foodborne illnesses and the consequences, those who did not consider themselves at risk or need more information about food safety, and a larger group who were in a constant process of weighing up ideas from different sources to decide which food safety practices to follow, and how strictly.

The findings suggest that messages are best delivered via the multiple channels that people already use, and that people want connections between messages and information from online and other sources, health professional advice, social networks, and out-of-home food environments. As noted in the evaluation of the CCC campaign, people like to receive information via different sources including radio, online, through community engagement and collateral (Dias Poujade & Tien, 2021). The media analyses from such campaigns already give some indication of where different demographic groups will be most likely to see promoted content, however we note that people's readiness to receive food safety information was not purely linked to their demographic profile.

Communication about levels of risk and potential consequences of certain behaviours will need to tread a careful line between making people aware of the severity of risks and not undermining their confidence and trust in the source and veracity of the message. This is particularly relevant for some people in YOPI groups because they are already dealing with potentially stressful messages about managing their own or their family member's health.

At the same time, people do respond to messages that show the severity of consequences. People do want to understand the rationale for why certain food safety advice is targeted at them. However, messages that limit self-efficacy, or messages that appear to tell people to be suspicious of food provided by their community or local businesses, could be damaging and counterproductive.

We recommend ensuring that food safety messages are empowering and build on the assumption that people are competent. They should also consider that people are already weighing up many types of information in order to make sensible choices, and are surrounded by others who also care about keeping people in their community safe.

6 Strengths and limitations

A strength of this research is that it contributes rich, in-depth perspectives from a range of YOPI consumers about the use of information and food safety attitudes and behaviours that supplements existing evidence from qualitative food safety research in the general public.

The focus group method ensures insights into complex issues are derived, using the interactions between focus group participants to obtain a more in-depth exploration of experiences and perspectives (Kitzinger, 1995). Participants are encouraged to talk to each other, ask questions and challenge thinking, compare, and build off others' discussion points. This creates space for participants to clarify their views and the reasons for these. The group dynamic helps surface not only what people think but how they think, why they think that way, and can generate new and unanticipated themes for the research. This method, combined with the approach of recruiting focus groups through trusted organisations or people and with focus groups being made up of people who were already familiar with each other or had an experience in common, meant that we obtained a rich understanding of motivations and behaviours. Conducting groups where participants are familiar should reduce the power differential between interviewers and participants. The semi-structured interviewing style and the flexibility it allowed for interviewers to follow relevant lines of conversation also meant that it was responsive to cultural context and ensured that participants felt comfortable to share views even when it was opposite to another's opinion. Overall, the research team found that the participants volunteered a lot of information and were open and honest.

Limitations of this research are that the focus group data can only represent the views and perspectives of participants and are not generalisable to the wider YOPI population. Despite our best efforts we were unable to recruit focus groups in other parts of the country. We found no observable differences in food safety knowledge, attitudes or behaviours in participants from larger centres compared to those living in smaller locations. There is no published research we are aware of that indicates differences by location (including rural or urban) would be found. Nevertheless, we did obtain information from a diverse range of people from the YOPI groups. We also found no evidence in this research for ethnic differences in attitudes, motivations and barriers and behaviours around food safety. While some baseline cultural understandings about food safety practice were discussed by Māori and Pacific participants, there were only minor differences in food safety practices and beliefs. These were not large enough to support the identification of different themes. This could suggest several things. It is possible that our sample was too small to detect cultural or ethnic differences, although we note that the sample included 12 out of 20 focus groups with Māori or Pacific participants, or our questioning did not elicit this information. Researcher reflexivity could also suggest that our inherent beliefs and judgements have influenced the research process and we have been unable to see and interpret meaningful differences. In the future, having a Māori and Pacific team member could support this aspect of the research. Finally, it could also suggest that ethnic differences in food safety attitudes may not be meaningfully present.

Another limitation to focus group research is that all information is self-reported, although the findings in this research are consistent with findings in other qualitative research about attitudes and motivations around food safety. The presence of others in the focus group may also influence answers to questions, although this was mitigated in part by the open and respectful style of questioning. We found that the larger focus groups were more difficult to obtain an in-depth understanding of attitudes and behaviours, and that a more surface level



description resulted. It also meant that the data collected was uneven across participants and YOPI groups, with the immunocompromised groups yielding less-rich data than other groups.

Our research will likely also have been limited by self-selection bias. Because of the purposive sampling approach to this research, it is possible that those who attended had some awareness of or interest in food safety that meant they were different from the rest of the YOPI consumer population. If this is the case, then our findings may be more representative of those at higher risk of foodborne illnesses than the general population.

Separating findings about behaviour and information needs by Young, Old, Pregnant, and Immunocompromised people was challenging, because there is effectively a lot of overlap between the demographics and life stages of people in these groups. We also found that not all people within each of the four YOPI groups are the same – it is their attitudes and behaviours that are different. We have reported findings as they related to multiple groups at once, while endeavoring to make clear which findings relate to only some YOPI consumers.

A final limitation was the challenge in conducting the segmentation analysis. When deciding to do this analysis we underestimated the amount of data needed in order to successfully construct a typology. While we had more than the 30 participants or cases recommended by Stapley et al, we were unable to elicit the depth of information required from many participants that would give sufficient variation and breadth of experiences required to build participant narratives for use in constructing types.

A notable challenge to this research was the recruitment of focus group participants. We frequently found that people invited to the focus groups were unable to attend on the day, or that others attended instead, meaning that the size of the focus groups varied unexpectedly. The other challenge related to recruitment was the time it took to schedule focus groups. Our approach of working through existing health and social services providers provided benefit in terms of being able to access people in focus groups who had something in common, but was difficult to manage and was time-consuming. People who we contacted were interested in helping but were busy and found it difficult to make time to help us organise focus groups. In total we made contact with at least 100 people throughout recruitment. Having established connections to the communities and groups that are being recruited was a factor in being able to schedule groups, as was the goodwill of the contacts in the organisations.

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Appendices





Appendix A: Summary of the evidence review

A rapid evidence review was provided to New Zealand Food Safety on the 10 June 2022. This review was commissioned to inform the research to better understand how young, old, pregnant, and immunocompromised (YOPI) consumers in New Zealand use food safety information.

The topics of this review included food safety issues and risks for YOPI, the knowledge, practices, and perceptions of risk among YOPI groups, behaviour change theories related to food safety, barriers to YOPI following food safety advice, where YOPI seek and obtain food safety information and successful food safety communication approaches for YOPI.

Food safety knowledge and behaviours

The review summarised the knowledge and behaviours of YOPI groups in relation to food safety. These suggested:

- adequate knowledge does not always translate to safe food handling behaviours,
- pregnant people felt they understood food-related risks but could not identify all high-risk foods and still consumed some high-risk foods during pregnancy,
- older adults feel confident in their food safety knowledge and do not perceive themselves as a high-risk group for contracting foodborne illness at home, and
- immunocompromised groups do not prioritise food safety among other information they are provided throughout treatment.

Barriers to following food safety information

The barriers to following food safety advice were broadly summarised into 5 topics.

1. Lack of knowledge of food safety risks and safe food handling practices for some YOPI was reported as a barrier, however knowledge was not always enough to influence behaviour in some YOPI groups.
2. The belief that they are not at a high risk or not affected by foodborne illness is a barrier for many YOPI. Evidence suggests that some YOPI groups, such as cancer patients, consider food safety advice to be less important than other information provided to them.
3. Lack of motivation to follow food safety advice was apparent, with the convenience of risky behaviours (such as defrosting meat on the bench and consuming high risk convenience foods such as deli meats and sushi) being a barrier to following advice.



4. Not wanting to waste food was a barrier to following advice for older adults. Ignoring use-by dates and using sensory behaviours such as sight and smell to determine the safety of food instead of following food labelling was reported.
5. Inconsistent messaging was a barrier to following food safety advice as conflicting information caused confusion amongst YOPI groups.

Where YOPI obtain and seek food safety information

The review found YOPI consumers obtain food safety information from a range of sources. Trusted sources of information included General Practitioners, the MOH and New Zealand Food Safety webpages, food labels/packaging, and family members. The internet was also found to be an increasingly common source for most YOPI groups, with some variation between and within YOPI groups.

Communication approaches and strategies

Evidence of effective strategies for communicating and engaging with young, old, pregnant, and immunocompromised people on food safety matters suggested:

- providing knowledge or education alone is not always enough to change behaviour, but this may depend on the YOPI group and their preferred format for receiving food safety information,
- consistent messaging throughout communications that is meaningful, simple to understand and gives actionable advice is important for YOPI and emphasising the risks of not following safe food handling advice is a promising strategy to improving compliance,
- health professionals are critical to the delivery of food safety advice as they are a trusted and preferred source of information, and
- people experience a range of barriers to safe food practices, and these differ within YOPI population groups.

Behaviour change theories

Behaviour change theories were not drawn upon in all the literature which may be a limitation of the body of evidence. Six behaviour change theories were identified in the literature, and from two behaviour change theories covered in the literature (The Health Belief Model and Habit Theory) we know that:

- individuals are unlikely to implement food safety advice if they do not see foodborne illness as a risk to them, and
- individuals are inclined to follow habitual behaviours contrary to advice because they are automatic and easy.



Appendix B: Data collection documentation

Health Provider Interview Guide

Intro and consent process

Interview questions

Objective 1: explore health professionals insights and experiences in relation to YOPI groups' food safety information use and uptake of advice

Your role

1. To start with, can you briefly describe what your role is and how your role involves advising people on food safety?
2. What sort of groups of people do you see about food and nutrition issues?

YOPI groups food safety information use

3. What food safety information or advice do you provide to young, old, pregnant or immunocompromised people?
4. What are the food safety issues of concern or interest to them?
(Interviewer prompt by YOPI group if relevant)
5. What sort of methods or resources do you use to provide information and advice?
6. How does this differ by different YOPI or population groups?
(Interviewer- interest in Māori and Pacific groups)
7. Do YOPI people ever come to you with information they have found, for example on the internet or from friends or family, seeking advice or clarification about this information? Can you describe this?
8. What do you think are effective ways of engaging with people or providing information about food safety? And why?
9. What do you think is good about current food safety information resources, and what is not so good?

Objective 2: explore health professional's perspectives on barriers to following this advice

10. How important do you think food safety practices are to the YOPI groups you see as a factor in helping them be well and healthy?
11. What challenges do you think YOPI groups face that prevent them from acting on food safety advice? How do you know this?

Objective 3: inform engagement and recruitment methods for the YOPI focus groups

12. As mentioned earlier, we will be recruiting people for YOPI focus group interviews for this research. Can you suggest any organisations or people or methods/platforms we could use to help us recruit?
13. Do you have any suggestions for how we might approach recruiting people from Māori and Pacific YOPI groups?



Closing

14. Do you have any other thoughts or comments about the use of information and advice in YOPI groups that we have not already covered today?

Focus Group Interview Guide

Intro and consent process

Interview Guide – YOPI Questions²³

Welcome & Introduction

- *Purpose of the focus group and the research*

Food safety knowledge

Food safety is about making sure that food is safe to eat and does not make people sick. It generally describes ways of handling, preparing and storing foods that prevent foodborne illness.

- What do you think about when you think of food safety? (making sure you don't get sick from food, avoiding food poisoning)
(Why do you think food safety is important?)
(Has anyone ever had food poisoning?)
- Are there times when you are more careful about food safety? What are they?
(Are you more careful with what
- Have you heard of foodborne illnesses? (That is, illness or sickness that is caused by food)
- What do you know about foodborne illnesses, and what do you know about the symptoms and possible consequences of foodborne illnesses?
- How do you know about foodborne illnesses? Where did you learn about foodborne illnesses?
- (Can you name any foodborne illnesses?)

Perception of individual risk

- Has anyone ever told you yourself or have you ever read that you particularly should follow food safety advice? Who told you this/Where did you read this?
- Have you been told or given information about foodborne illnesses or food safety by your GP or nurse or other health professional?
- (Ask about YOPI specific resources)
- Why do you think they told you this?
- Has anyone else given you information about food safety?
- Do you think you are more or less likely to get sick from food than other people?
- (Has anyone ever been sick from food and want to share their experience?)

Motivations and barriers to following food safety advice

²³ Note – these questions have been listed under relevant sections, but were only asked if not previously discussed. Not every question in this list was asked, and not necessarily in this order.



Sources of information about food safety

How food safety information is used

Use prepared scenarios to understand behaviours, motivations and barriers to following advice. And to explore sources of food safety knowledge and information.

Scenarios: washing hands; preparing and cooking meat; storing food; leftovers; food labels

- Tell me about what you do when ...
- Why do you?
- How do you know or where did you learn to do this?
- The advice for this scenario is would you do this – why/why not?
- (If not) Did you know about this advice but choose not to follow it?
- What would help enable you to follow the advice?
- What about information – how would you like to get information about safe food practices?

Sources of food safety information and trusted sources

- If you were looking for information or advice about food safety and how to avoid food poisoning, where would you look or who would you ask?
- What sources of information or advice do you trust the most?
- If you got information that was different to what you thought you knew or you had heard previously, what would you do?
- Does anyone get ideas or advice about food or health from social media?
- Does anyone get ideas or advice about food safety or how to avoid food poisoning from any other place?

Motivation and the role of information

We discussed different practices to make sure food was kept safe in the home. Has anyone learnt anything new from today's discussion?

Link to advice in scenario.

- Knowing this, do you think you will do anything differently when you go home?
- Why/why not?
- What would prompt you to do anything differently?
- What sort of things would you be more likely to do? What things would you not do? Why/Why not?
- Do you think you would do this for a short time or as something permanent
- Was there ever a time you did something new in order to improve your health or your family's health? Why did you decide to do this? What helped you make these change/s?
- Is there anything that would help you to follow the food safety advice (we've discussed today)?
- If you were going to make a change to how you store, prepare or cook food, what would help you do it?
- What do you think the benefits would be?



- Are you personally interested in knowing more about food safety?
- What food safety information would you like to know about?

Engagement approaches and type of information

Thinking back to what NZFS does (refer if required).

- Where do you think NZFS should put information about food safety so that it is easy for people to get? Why?
- What type of messages or information would influence you to change how you prepared and stored food? Why?
- What would the messages need to sound like or look like in order for you to take notice? What would not work?
- Have you ever changed your behaviour in order to do something healthy or good for you or your family as a result of seeing or hearing information? What was this and what influenced you to change your behaviour?
- What is the best way to provide information about how to practically take steps to keep food safe?
- What is the best way to receive information about foodborne illnesses and the consequences of these?
- Would there be any issues or difficulties with these?

Closing



Information sheet

Food safety research



ALLEN+CLARKE
EVALUATION AND RESEARCH

Tēnā koe,

I am part of a team from *Allen + Clarke*, a research company based in Wellington, that has recently been contracted by New Zealand Food Safety/Haumaru Kai Aotearoa (NZFS) to complete some research about what people know about food safety. NZFS wants to know the best way to communicate with and encourage people in New Zealand to follow food safety guidance to protect their health.

We are very interested in hearing about how you prepare and store food in your household and where you get information and advice from about how to avoid food poisoning.

We would like to invite you to participate in a group discussion with other people as part of this research. Your experiences and perspectives will help NZFS to develop better communication methods and resources to help people throughout New Zealand avoid foodborne illness.

Please would you read the following information before the group discussion so that you understand what is involved, and so you can decide whether to participate.

If you have any questions, I will be happy to answer them by email or during the interview time.

Ngā mihi,

Susan Cook

Senior Consultant, Project Lead, *Allen + Clarke*



Food safety research

What will the group discussion involve?

You are being asked to participate in a group discussion that will take up to one and a half hours. The discussion will take place in your community.

Allen + Clarke will ask questions about your food preparation and storage practices, where you get information and advice from about food, what food safety messages you are aware of, and what ways would be effective in reaching you with food safety messages.

There are no right or wrong answers, and you do not have to answer any questions that you feel uncomfortable with. You do not have to prepare, and you do not have to know anything about food safety. We want to know about your everyday experiences with food.

Prior to starting the discussion, we will ask you to sign a consent form that confirms your rights and that you consent to taking part in the discussion.

We will make sure that everyone is comfortable and will provide a small amount of kai. We would also like to give you a koha in recognition of the time you have generously given to this research.

How will the information be used?

Your feedback will be combined with other discussion group feedback to help develop research findings. Findings from this research will be reported to NZFS in late 2022. NZFS may publish the report on its website in 2023. Please be assured that anything you tell us will be in confidence, used only for this project and anonymised so that no person can be identified in the reporting.

What are my rights?

Your participation is voluntary.

You may stop participating in the discussion at any time, and the information you have given us will be deleted. If you choose to participate and then change your mind later, you can pull out by contacting us up to one week after your group discussion. Your decision to withdraw from the research will not affect your current or future relations with NZFS or *Allen + Clarke*.

We will take notes during the discussion and will seek your consent to audio-record the discussion. The recording will be used for the purpose of verifying the written notes we make during the discussion.

How your privacy will be protected

We will be writing a research report based on the information we collect from up to 20 group discussions and interviews with health professionals. We will ensure confidentiality is maintained at all stages of reporting. We will not attribute information to any individual by name and names or identifying details of participants will not appear anywhere in the report.

We treat your information with respect. Notes or audio from your group discussion will be stored securely by *Allen + Clarke* and remain confidential to the research team. Anonymised notes will also be provided to NZFS. Your personal information will not be shared with anyone else. After the project, we will remove these from our physical and digital spaces. *Allen + Clarke* can provide a copy of all the information collected during your discussion if requested.



Why is NZFS doing this research?

Food safety is important for everyone. Some people, including very young, pregnant, old, and immunocompromised people can experience greater effects from foodborne illnesses. Many foodborne diseases can be prevented through simple hygiene and food safety measures. NZFS thinks current food safety resources are probably not effective in reaching all groups in New Zealand and showing them how to avoid foodborne illnesses. To ensure food safety messages and resources are effective, NZFS is seeking to better understand young, pregnant, old and immunocompromised people so they can encourage them to follow food safety guidance to protect their health.

Answering your questions about the research

You can ask the research team any questions you might have in the interview. You can also contact the Project Manager, Susan Cook, before or after the group discussion (email provided).

Allen + Clarke is a corporate member of the Aotearoa New Zealand Evaluation Association (ANZEA); and all of our Evaluation + Research Practice staff also belong to the Australian Evaluation Society (AES). These provide ethical standards for evaluation and research.



Consent form

Research into effective methods for engaging young, old, pregnant and immunocompromised people about food safety

Statement of consent to participate in a focus group interview

I agree to take part in the research

Please select the boxes below, as appropriate:

- ☐ The purpose and nature of this research has been explained to me and I have had the opportunity to ask questions.
- ☐ I understand that my interview will be audio recorded and notes might be taken. These will be used to ensure the accuracy of information collected. This information will be stored securely.
- ☐ I understand that my personal details are confidential and will not be disclosed to anyone outside of the evaluation team.
- ☐ I understand that I have the right to request any information held about myself.
- ☐ I understand that information I provide will not identify me.
- ☐ I consent to take part in the research.

Signature _____ Date _____

Printed name _____



Appendix C: Focus group details

Focus Group number	YOPI classification	Māori/Pacific/Low SES/Other	# participants	Location
1	Young	Other	3	Greater Wellington
2	Young	Māori	3	Greater Wellington
3	Immunocompromised (Cancer)	Other	9	Greater Wellington
4	Young	Māori	4	Greater Wellington
5	Young	Low SES	3	Greater Wellington
6	Immunocompromised (Cancer)	Other	9	Online
7	Pregnant	Other	4	Greater Wellington
8	Old	Māori	5	Greater Wellington
9	Old	Pacific	4	Greater Wellington
10	Pregnant	Low SES	2	Christchurch
11	Young	Pacific	6	Christchurch
12	Pregnant	Pacific	1	Christchurch
13	Old	Pacific	6	Christchurch
14	Old	Other	4	Greater Wellington
15	Old	Other	15	Greater Wellington
16	Pregnant	Māori	2	Greater Wellington
17	Immunocompromised (Diabetes)	Māori	8	Greater Wellington
18	Immunocompromised (Diabetes)	Pacific	2	Wellington
19	Old	Māori	5	Greater Wellington
20	Immunocompromised (Cancer/Diabetes)	Māori	7	Greater Wellington



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