A hybrid type-II effectiveness-implementation trial of a redesigned digital brief alcohol intervention in the breast screening setting

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Acknowledgment of Country

Alcohol and breast cancer risk

- Alcohol is a major modifiable risk factor for female breast cancer [1, 2]
  - Globally: 4.4% of cases and 10% of breast cancer deaths [3, 4]
  - **Higher in Australia:** at least 6.6% (**1 in 15**) cases and 18% (**1 in 5**) breast cancer deaths [4, 5]

- It's not just women drinking large amounts who are at risk
  - Increased breast cancer incidence associated with drinking as little as half an Australian standard drink a day [2]
  - Drinking one restaurant serve of wine a day increases breast cancer risk by 23% [1]

- Shouldn't we know this already?
  - 50 years of evidence – yet population awareness remains low [6]
  - ~20% of midlife and older-aged women aware of the alcohol-breast cancer link [7, 8]

Women's alcohol consumption

- Midlife and older-aged women's recent alcohol intake is strongly associated with breast cancer development [9]

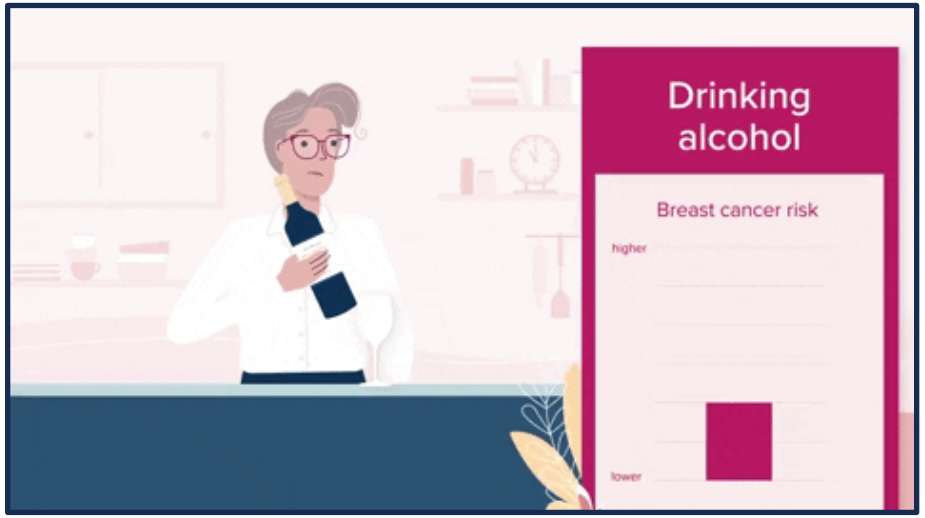
- A population whose drinking patterns are substantially riskier than for previous generations [10]

➢ Brief alcohol intervention in our national breast screening program?

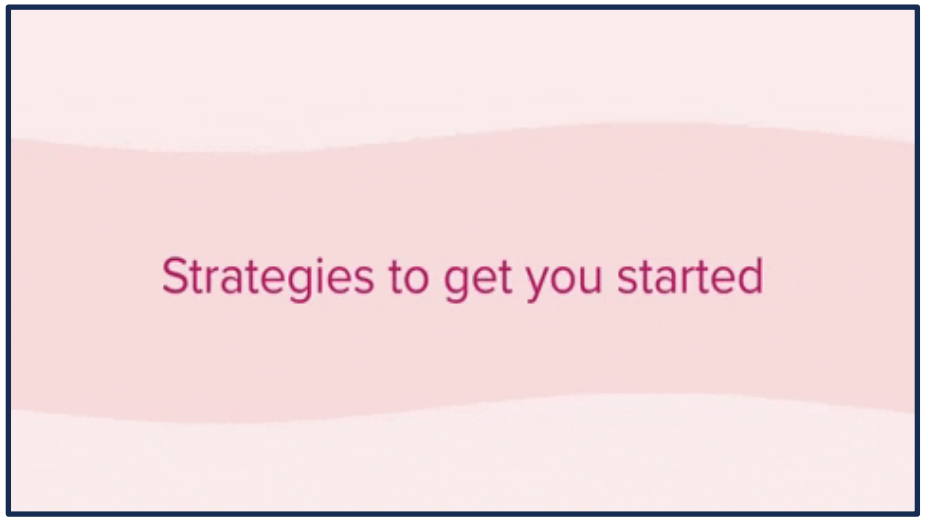
  ➢ ~1 million women in Australia participate in screening annually

  ➢ Unexplored potential to also offer *prevention*

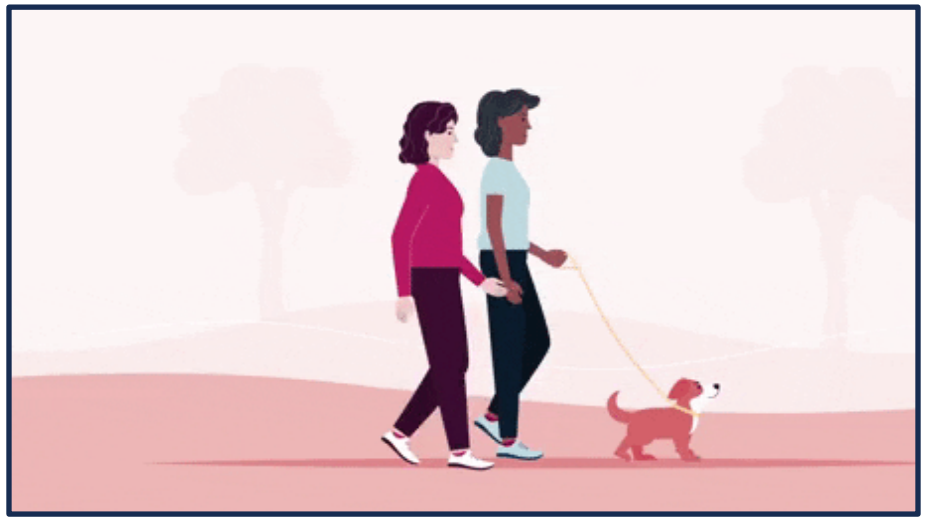
  ➢ Potential for extensive reach and benefit



Information about the alcohol-breast cancer link



Strategies to support reduced alcohol consumption

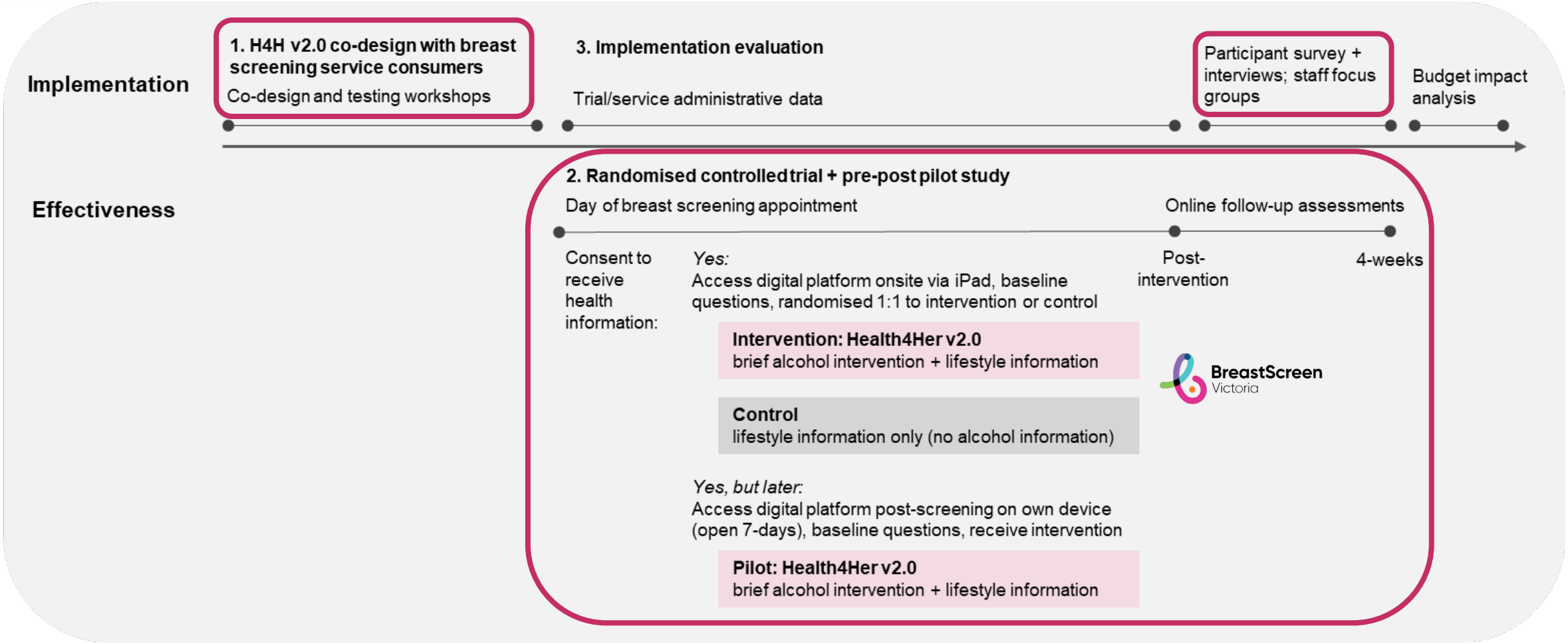


Other breast cancer risk reduction information
(physical activity, healthy weight)

Aim

To examine the *effectiveness* and *implementation* of a *self-completed*, production-ready version of the Health4Her intervention in the breast screening setting

health4her Hybrid type II effectiveness-implementation trial



Implementation frameworks utilised:

- Reach, Effectiveness, Adoption, Implementation, and Maintenance (RE-AIM) [12]
- Nonadoption, Abandonment, Scale-up, Spread, and Sustainability (NASSS) [13]

Co-design and testing workshops

Co-design and testing workshops

Participants: Peter MacCallum Cancer Centre's Lifepool Cohort of breast screening service consumers living in Victoria, Australia

Co-design workshops (Mar-Apr 2023)	Testing workshops (Jul 2023)
N=14	N=8
Participants provided feedback on Health4Her v1.0, and input on the content and functionality of the new version.	After development, participants provided feedback on content and functionality.

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Co-design and testing workshops

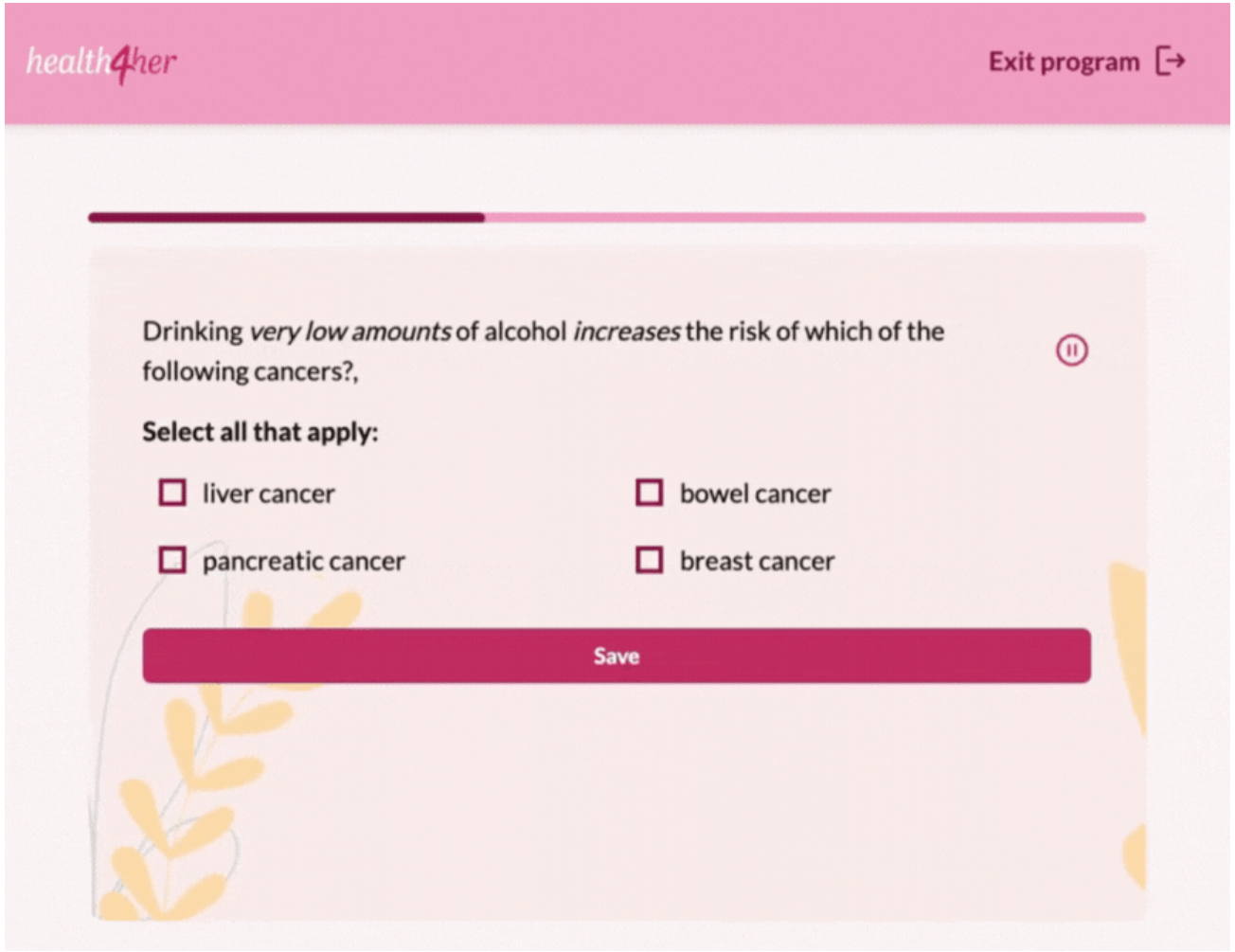
Information about health consequences[14]

health4her v1.0

health4her v2.0

Co-design and testing workshops

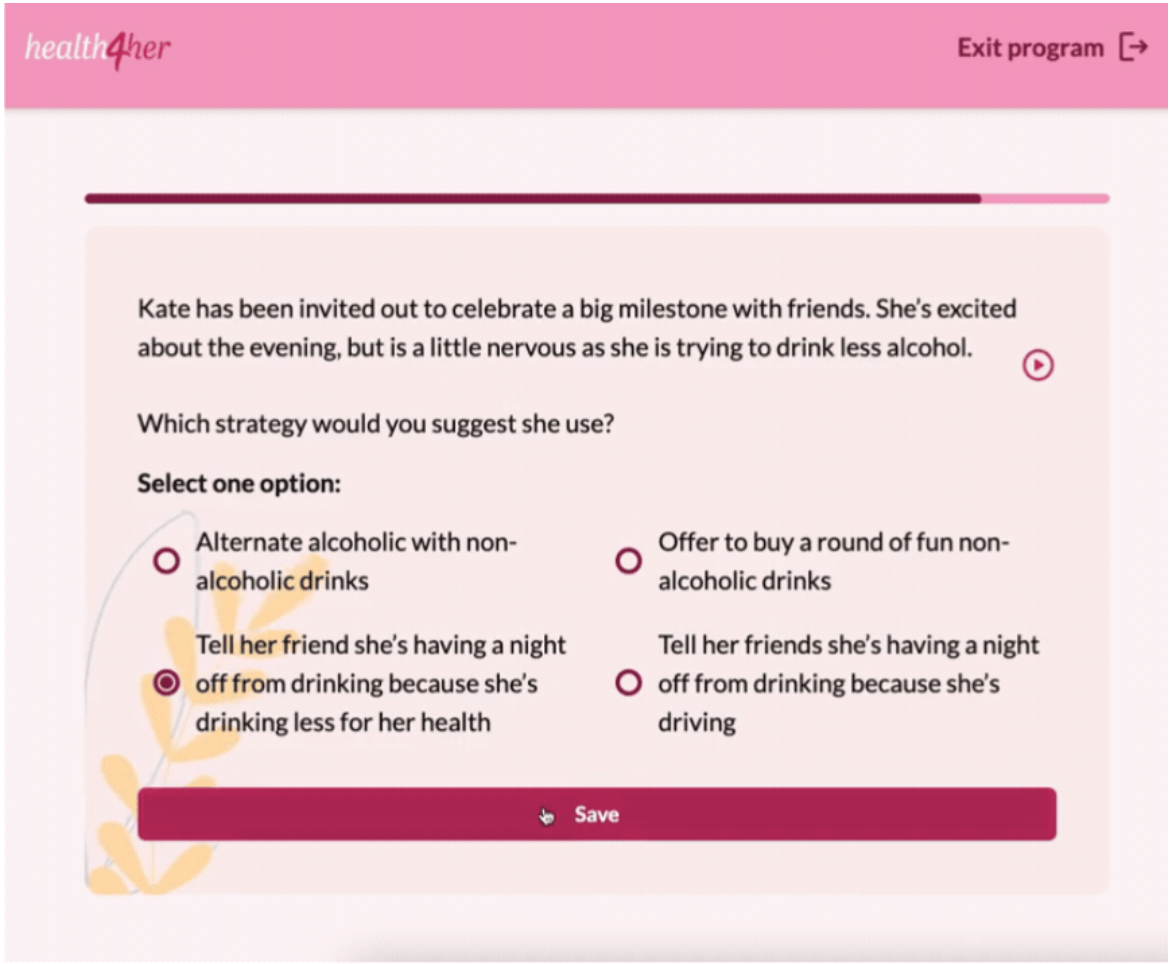
New interactive activity – information about health consequences [14]



Co-design and testing workshops

New interactive activity – problem solving [14]

"[When] you go out for dinner… if you don't [drink], sometimes people look at you a bit strangely."
(Jane, DW01_05)



Co-design and testing workshops

Testing workshops

User experience feedback:

- Able to navigate the intervention platform easily
- Animations and activities reported to be clear and engaging

➢ Suggested increasing font size to improve readability

➢ Suggested changes to presentation of some baseline assessment questions to improve usability

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Effectiveness and implementation evaluation

Effectiveness-implementation evaluation

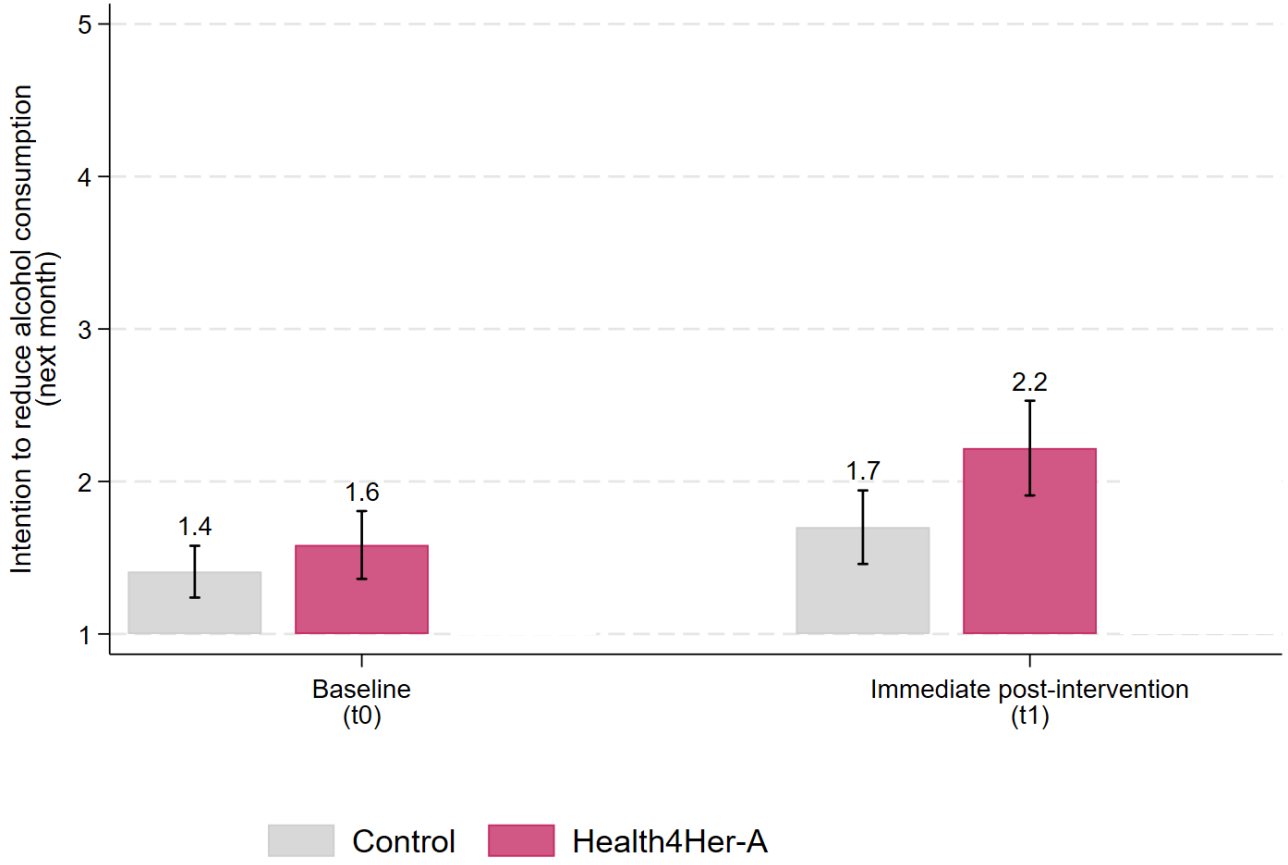
Participants: Clients and staff of Maroondah BreastScreen, Melbourne, Australia

Effectiveness		Implementation		
Randomised controlled trial	**Pre-post pilot study**	**Participant survey**	**Participant interviews**	**Staff focus groups**
N=143	N=61	N=165	N=30	N=8
Inclusion: ➢ Women 40+ years attending screening Implementation: ➢ iPad during screening appointment Interventions: ➢ Health4Her ➢ Control (digital lifestyle information only, no alcohol information) Assessments (online): ➢ Baseline, immediately and/or 4-weeks post-intervention	Inclusion: ➢ Women 40+ years unable to stay to participate after screening Implementation: ➢ Post-screening on own device Intervention: ➢ Health4Her Assessments (online): ➢ Same as trial	Quantitative feedback about the health information received	Qualitative feedback about the alcohol health information received and implementation	Insights on expanding the breast screening service model to provide breast cancer ***prevention***

Trial and pilot results

Primary outcome – next month drinking intentions

Between baseline (t0) and immediately post-intervention (t1), change in intentions to reduce next-month alcohol consumption was ***significantly greater*** (p=0.042) in the ***intervention arm*** (b=0.63, 95% CI=0.40, 0.87), compared to control (b=0.29, 95% CI=0.06, 0.52).

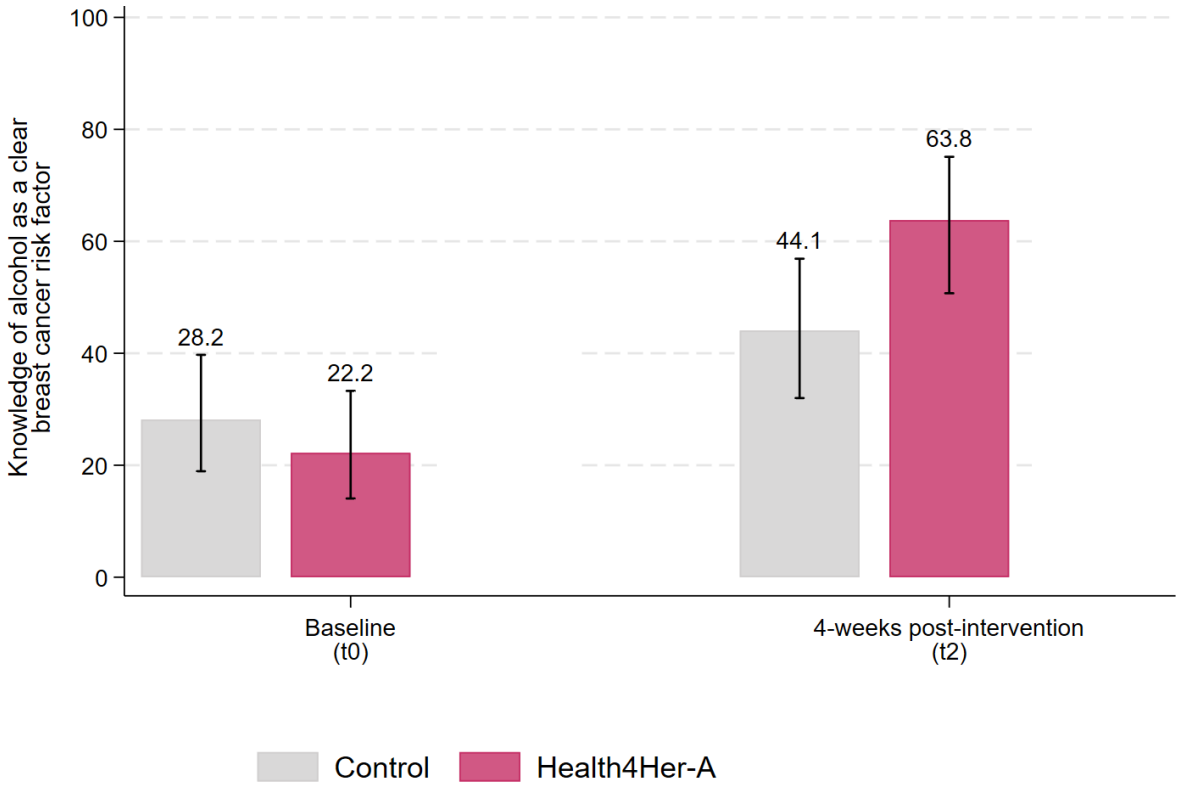


Trial and pilot results

Alcohol and breast cancer literacy

At baseline, **just 1 in 4** (n=36, 25.17%) were aware that alcohol consumption increases breast cancer risk.

At 4-weeks post-intervention (t1), change in the proportion of participants accurately identifying alcohol as a breast cancer risk factor was ***significantly greater*** (p=0.024) in the ***intervention arm*** (OR=18.41, 95% CI=5.08, 66.72), compared to control (OR=3.35, 95% CI=1.18, 9.57).

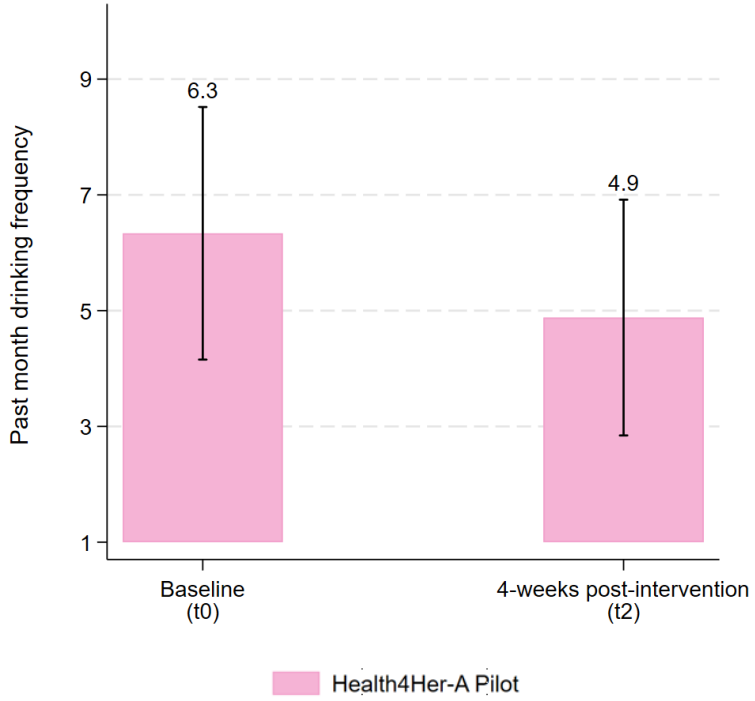


Trial and pilot results

Past month alcohol consumption (quantity [Q], frequency [F], QF)

For the trial, no significant arm x time interactions were observed on any of the alcohol consumption outcomes (p > 0.05).

For the pre-post pilot study, between t0 and t1, a ***significant decrease*** in past month drinking frequency was observed (b=-1.03, 95% CI=-2.03, -0.03, p = 0.043).



Implementation evaluation

Change in drinking intentions, knowledge, and behaviour

"I'd got into the habit of having a drink every afternoon… now I realise that's fairly dangerous behaviour. It's made me think about it." (Jen, P15)

"I might have had a glass of wine three or four nights a week, now I only have it one or two nights a week." (Sally, P16)

"Shocking. A total surprise…If you haven't heard it before, it's a real eye opener." (Fiona, P2)

NB. Pseudonyms used

Expanding the breast screening service model to provide breast cancer *prevention*?

Implementation evaluation

Participant acceptability (N=165 completing survey 4-weeks post-intervention)

95%

endorsed the health information they received was **acceptable**

90%

endorsed the health information they received should be **part of the standard service provided**

90%

reported the self-completed digital intervention was **easy to use**

"I've got to tell you, I'm far from computer literate, but it was all easy to follow."
(Sue, P4)

Implementation evaluation

Adoption and implementation by breast screening service staff (N=8)

- Well-aligned with the BreastScreen service model

"It goes hand-in-hand with the service that we offer." (Staff 3)

"Modifiable breast cancer risk factors have never been prioritised in the breast screening setting, so we can actually make a paradigm shift here." (Staff 5)

Implementation evaluation

New implementation strategy – accessed post-screening on own device

"I had to get home, and I just would not have taken it in if I'd stayed… So, for me, it was better that I could just do it quietly at home." (Beth, P6)

"I think the [post-screening model] works much better with BreastScreen… it fits in nicely with the shortness of the appointment." (Staff 6)

"With us taking their details. That would be prohibitive [in practice]… It's time consuming." (Staff 7)

Implementation evaluation

Adoption and implementation by breast screening service staff (N=8)

- Suggested adaptations for future implementation: ‘opt-out’ approach, using BreastScreen’s client information system to facilitate implementation

“I think that if we can implement it as an opt-out [rather than something women sign up for], that would take the workload off… and you could even get more ladies doing it, if it's just automatically sent to them.” (Staff 4)

“The BreastScreen client information system would have to be [updated] to accommodate [Health4Her], that’s a bigger piece of work than what we can do at our [individual] service level.” (Staff 5)

Conclusion

- Builds upon our previous work to provide support for an enhanced breast screening service model, which also incorporates breast cancer ***prevention***
- The redesigned Health4Her intervention was effective in ***reducing women's drinking intentions***, and ***increasing alcohol and breast cancer literacy***
  - Preliminary evidence for ***reducing drinking frequency***
- Participants and service staff were highly supportive of the intervention and its wider implementation across breast screening services
  - Staff provided valuable insights for future adaptation

➢ **Next steps:** 1) broaden consumer co-design, 2) large trial powered to detect effects on alcohol consumption, and 3) optimise the implementation strategy through co-design with expert stakeholders, to support large-scale implementation.

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Collaborating Organisations

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Thank you

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