

Promoting lifestyle health behaviours using mixed-methods design in a digital health behaviour change intervention: Feasibility study

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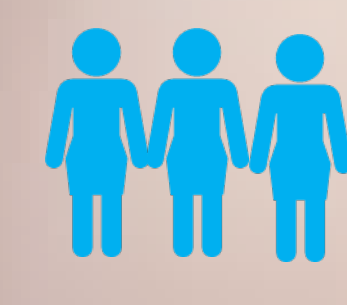
Background

- Lack of existing literature involving theory and evidence based digital health behaviour change interventions (DHBCIs) targeting midlife women ⁴
- DHBCIs underpinned by behaviour change theory can provide individual states of a person's status (e.g., activity, emotions) and support improvements in unhealthy lifestyle behaviours (e.g., unhealthy diet, sedentary behaviour) ⁵

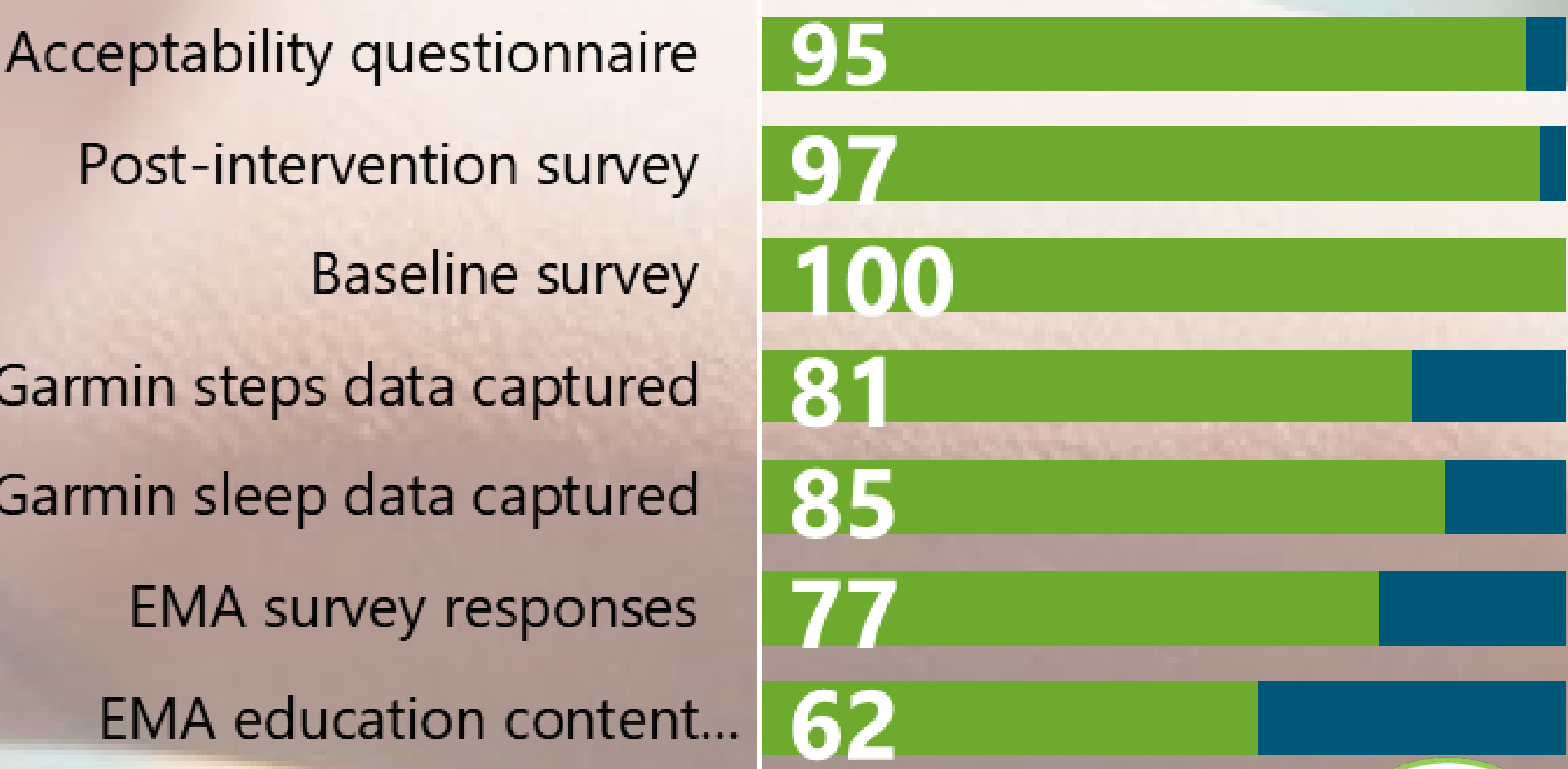
Methods

- Multi-study (e.g., systematic review, focus groups, co-production), mixed-methods design underpinned by the BCW ⁸, COM-B⁸, TDF⁷, overlaid with complementary model of PBA ¹¹ and MOST ¹² frmk
- Utilising 32 BCTs (BCTTv1 ¹⁰) to operationalise components of complex interventions ⁶
- Multiple modalities (e.g., EMA, fitness tracker, surveys) used in data collection

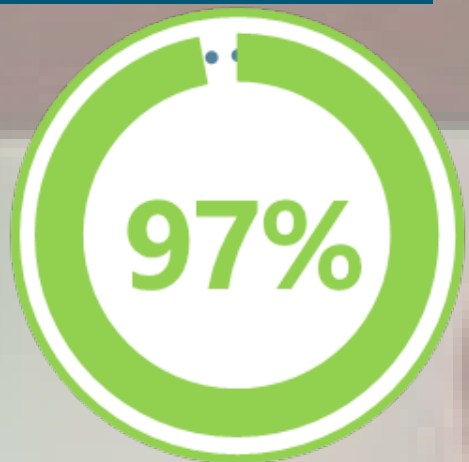
Results

 Participants: UK-residing midlife women (N=37)
average age 48 years (range 40-65 years)

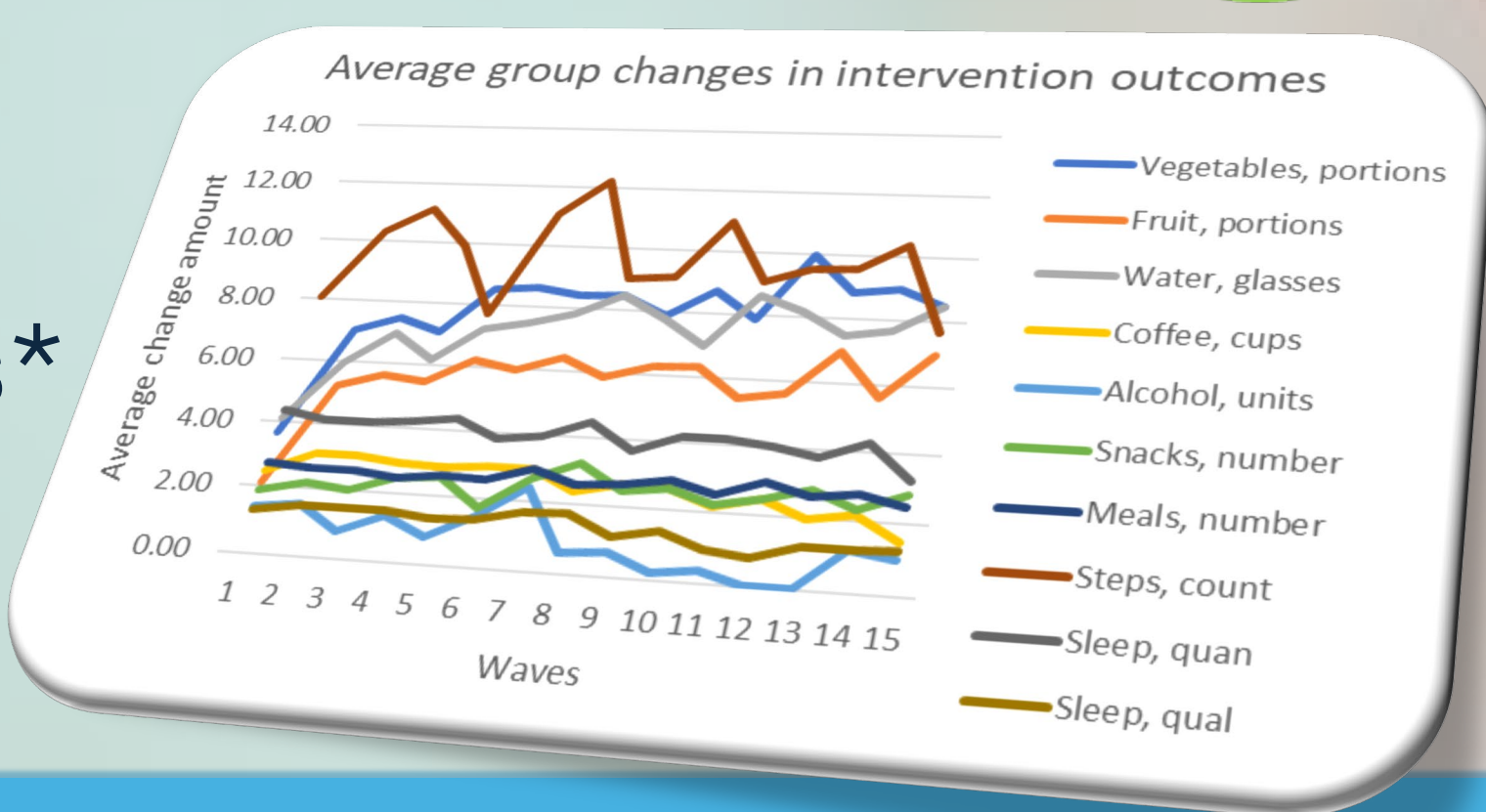
✓ Feasibility: (% completed)



✓ Acceptability: General acceptability, Theoretical Framework of Acceptability¹⁰




✓ Improvements in all ten target behaviours*



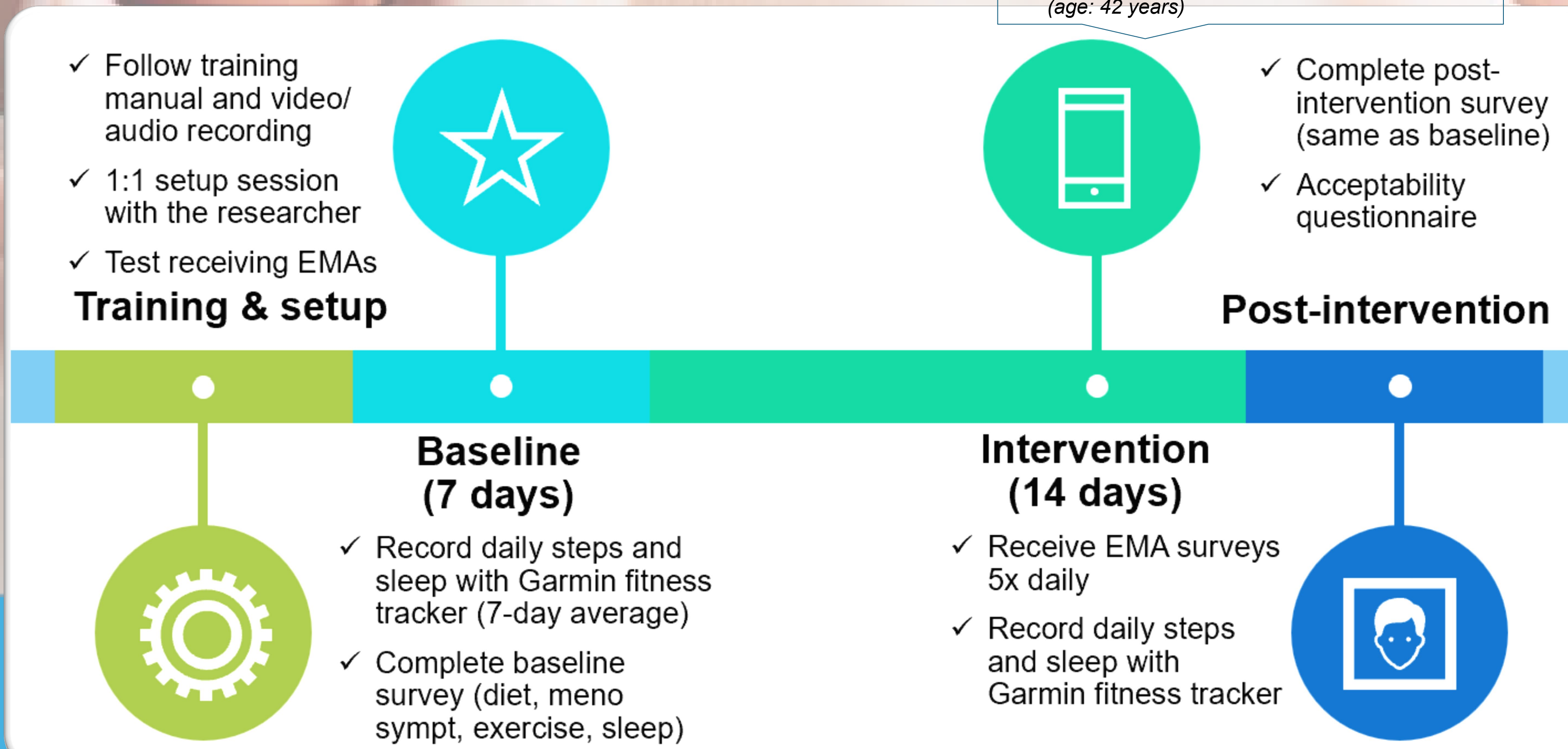
mode of delivery	interaction on #	interaction type	task category	Interaction with the user	Input options	Questionnaire source	BCTs
EMA Morning	1	Input 1	Review	Good morning! How was your sleep last night?	4-scale slider (Very good, Fairly good, Fairly bad, Very bad)	PSQI, question 6 (Buysse et al., 1989)	2.3. Self-monitoring of behaviour
	2	Input 2	Review	How bothersome is your energy level this morning?	7-scale slider (scale 0 to 6)	MENQOL, question 18 (Hilditch et al., 1996; Lewis, Hilditch and Wong, 2005)	2.3. Self-monitoring of behaviour
	3	Input 3	Review	Did you drink any alcohol yesterday?	Radio button (Yes/No)	SFFQ question 6 (Clegghorn et al., 2016)	2.3. Self-monitoring of behaviour
	4	Sub-input 1 to Input 3	Assess Counselling	How much alcohol did you have?	If yes, a free textbox (number of drinks or units) - If the reported consumption is at optimal level, congratulate. - If consumption is higher, provide link to education on how to reduce alcohol	SFFQ question 6a	1.2. Problem solving 2.2. Feedback on behaviour 2.3. Self-monitoring of behaviour 4.1. Instruction on behaviour 4.4. Social Reward

96

 bpm

"I feel fitter after two weeks and have more energy. The main changes have been that even though walking has been my main form of exercise, I now walking much faster. Also, I am drinking much more water which has made me feel so much better." (age: 44 years)

"The study has been a great motivation to improve physical activity, diet and mental health."



Conclusion

1. The feasibility, acceptability, and preliminary improvements* in all target behaviours demonstrate that defining group-level intervention components (specific to a group of UK-residing midlife women) can provide the foundation for improving personalisation of interventions to individuals or groups of individuals
2. Greater between- and within-person variability in the target behaviours indicate that there is an opportunity to address inter- and intra-individual fluctuations through further improved individualisation of the intervention components
3. In the next study, we are therefore taking the first step in utilising machine learning (ML) to identify groups of predictors, linked to BCTs (based on this dataset and design), with the greatest contribution to predicting each intervention outcome

Limitations: Feasibility study -> No conclusions can be made on the effectiveness of the intervention or on the effectiveness of the BCTs. See the next poster on how we identified the most relevant BCTs in predicting each intervention outcome, using ML with this the dataset.

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