An avatar-based education application to improve knowledge and response to heart attack symptoms in acute coronary syndrome (ACS) patients:

interim analysis from a single-centre, non-blinded, pragmatic randomised controlled trial

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Disclosure

- I have no actual or potential conflict of interest in relation to this presentation.

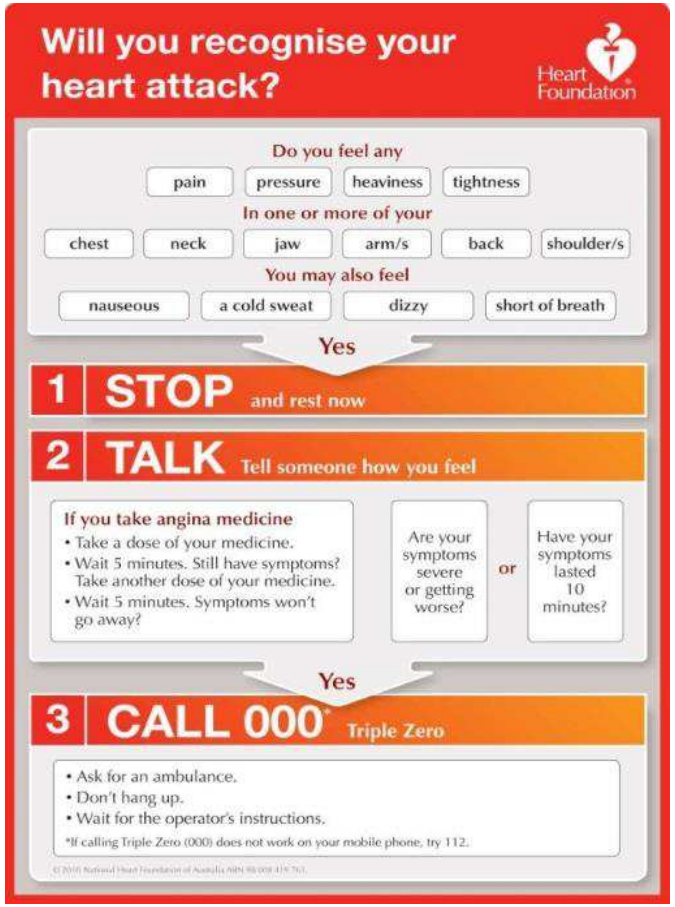
Background

- In Australia, the number of hospitalisations and deaths resulting from repeated cardiac events is predicted to increase by 30% and 42%, respectively by 2020 (Deloitte Access Economics 2011)
- Patient discharge education is essential to prevent avoidable cardiac rehospitalisations (Deloitte Access Economics 2011)
- Delivering bedside education prior to discharge can increase patients' knowledge which ultimately leads to behavioral changes and improved self-management (Ghisi et al 2014)
- Current research has demonstrated that integrating patient education with information technology now plays a significant role in improving patients' knowledge and self-management (Ghisi et al 2014)

Aim

To evaluate the effectiveness of an avatar-based education application (the app) to improve patients' knowledge and response to heart attack symptoms

Avatar-based education application



(Heart Foundation,2015)

Methods

Single-centre, non-blinded, parallel, pragmatic randomised controlled trial

Setting and participants:

- CCU *at a* metropolitan Public Hospital in Adelaide SA
- August 2016 and February 2017

Methods

Ethics

- The Southern Adelaide Clinical Human Research Ethics Committee (SAC HREC)
- Site Specific Assessment (SSA) authorised by SALHN

Trial registration

- Australian New Zealand Clinical Trials Registry (ANZCTR) ACTRN12616000803493

Methods

Sample size: 35 participants in each group (10% attrition rate) (n=70)

Randomisation:

- Interactive voice response system (IVRS)
- NHMRC Clinical Trials Centre, the University of Sydney

Methods

Primary outcome:

- ACS knowledge - *ACS response index scores* Riegel et al 2007

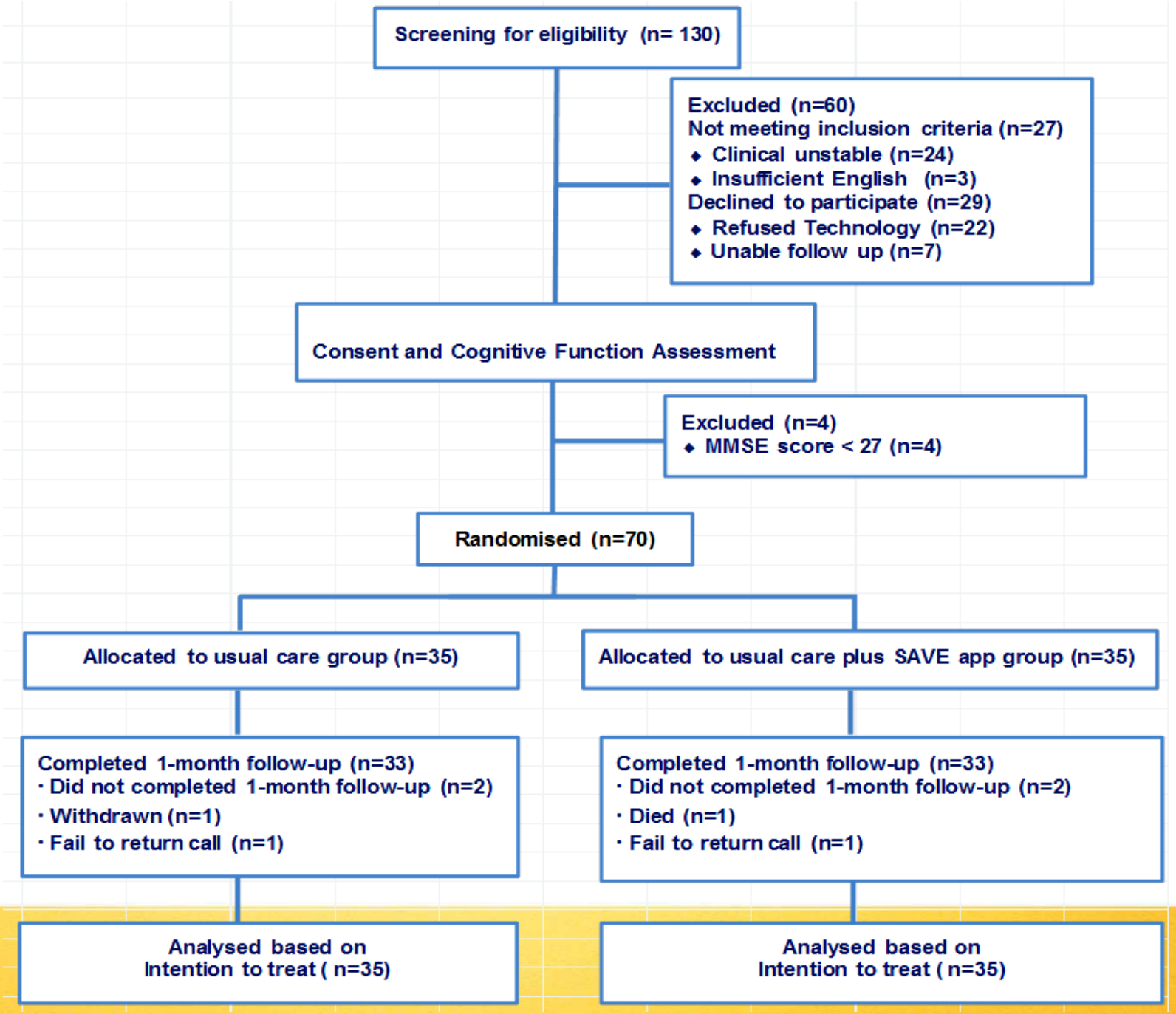
Secondary outcomes:

- Attitude, belief, symptoms recognition, expectation, help-seeking and response action - *ACS response index scores* Riegel et al 2007
- App satisfaction questionnaire

Analysis

- Intention-to-treat
- Pearson chi-squared test
- t-test
- Repeated measures ANOVA
- 95% confidence interval

Results



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Results

Table 1 Baseline demographic characteristics of participants (n=70)

	Total (n=70)	Usual care plus SAVE app group (n=35)	Usual care group (n=35)
Age, mean (SD)	64.7 (11.68%)	65 (12.00)	64 (11.0)
Primary language spoken, n (%)			
English	63 (90%)	33 (94.3%)	30 (85.7%)
Living status, n (%)			
Living with spouse, carer or relative(s)	51 (72.9%)	28 (80%)	23 (65.7%)
Current occupation, n (%)			
Retired/pensioner	44 (62.9%)	24 (68.6%)	20 (51.7%)
Highest education level, n (%)			
Higher school or leaving certificate (or equivalent)	20 (15.4%)	9 (25.7%)	11 (31.4%)
Certificate/diploma(e.g. child care, technician)	27 (20.8%)	13 (37.1%)	14 (40%)
Literacy grade, n (%)			
>9th grade	65 (92.9%)	32 (91.4%)	33 (94.3%)

Results

Table 2 Baseline clinical characteristics of participants (n=70)

		Overall (n=70)	Usual care plus SAVE app group (n=35)	Usual care group (n=35)
Diagnosis , n (%)				
Chest pain		20 (28.6%)	13 (37.1%)	7 (20%)
ACS		8 (11.4%)	2 (5.7%)	6 (17.1%)
STEMI		30 (42.9%)	5 (14.3%)	4 (11.4%)
NSTEMI		9 (12.9%)	14 (37.1%)	17 (48.6%)
Procedure (during admission), n (%)				
CABG		2 (2.9%)	0	2 (5.7%)
Coronary Angiography		39 (55.7%)	20 (57.1%)	19 (54.3%)
PCI		20 (28.6%)	10 (28.6%)	10 (28.6%)

Results

Table 2 Baseline clinical characteristics of participants (n=70)

	Overall (n=70)	Usual care plus SAVE app group (n=35)	Usual care group (n=35)
CVD risk factors			
Diabetes, n (%)	16 (22.9)	9 (25.7)	7 (20.0)
Hypertension, n (%)	47 (67.1)	24 (68.6)	23 (65.7)
High cholesteral, n (%)	42 (32.3)	23 (67.6)	19 (55.9)
History of smoking, n (%)	44 (62.9)	21 (60.0)	23 (65.7)
Body Mass Index, mean (SD)	28.43 (5.54)	27.7 (5.25)	29.09 (5.82)
Family history, n (%)	44 62.9)	24 (68.6)	20 (57.1)
Previous cardiac condition, n (%)			
MI	29 (41.1)	13 (37.1)	16 (45.7)
CAD	36 (51.4)	18 (51.4)	18 (51.4)
Angina	12 (9.2)	6 (17.6)	6 (17.1)
Heart failure	7 (10.0)	3 (8.6)	4 (11.4)
PCI	25 (35.7)	13 (37.1)	12 (34.3)
CABG	9 (12.9)	2 (5.7)	7 (20)
Pacemaker	2 (2.9)	0	2(5.7)
Charlson Index, mean (SD)	3.6 (1.79)	2 (0)	3 (2.0)
GRACE risk scores, mean (SD)	99.64 (24.70)	99 (24.0)	100 (26.0)

Results

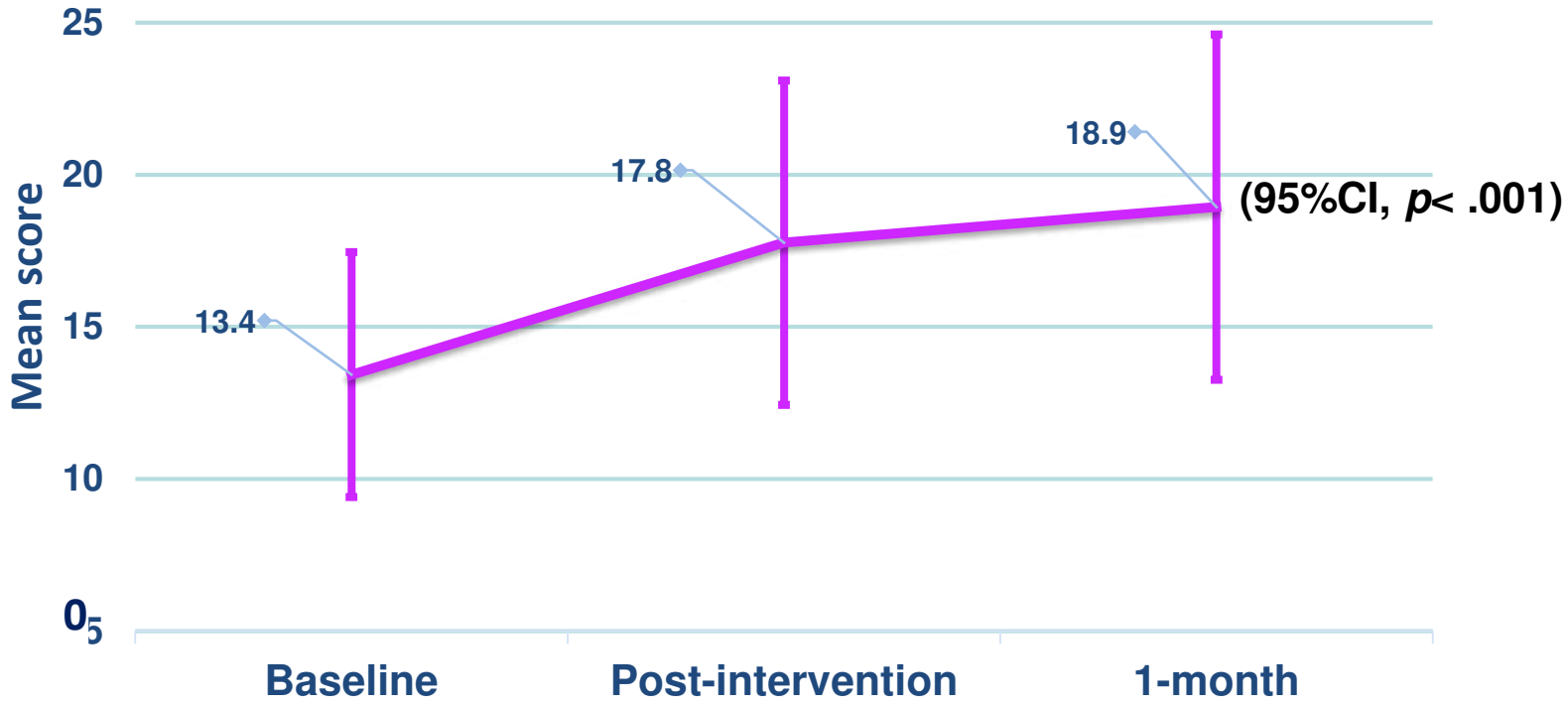


Figure 1 Knowledge scores of ACS response index (Intervention group)

Results

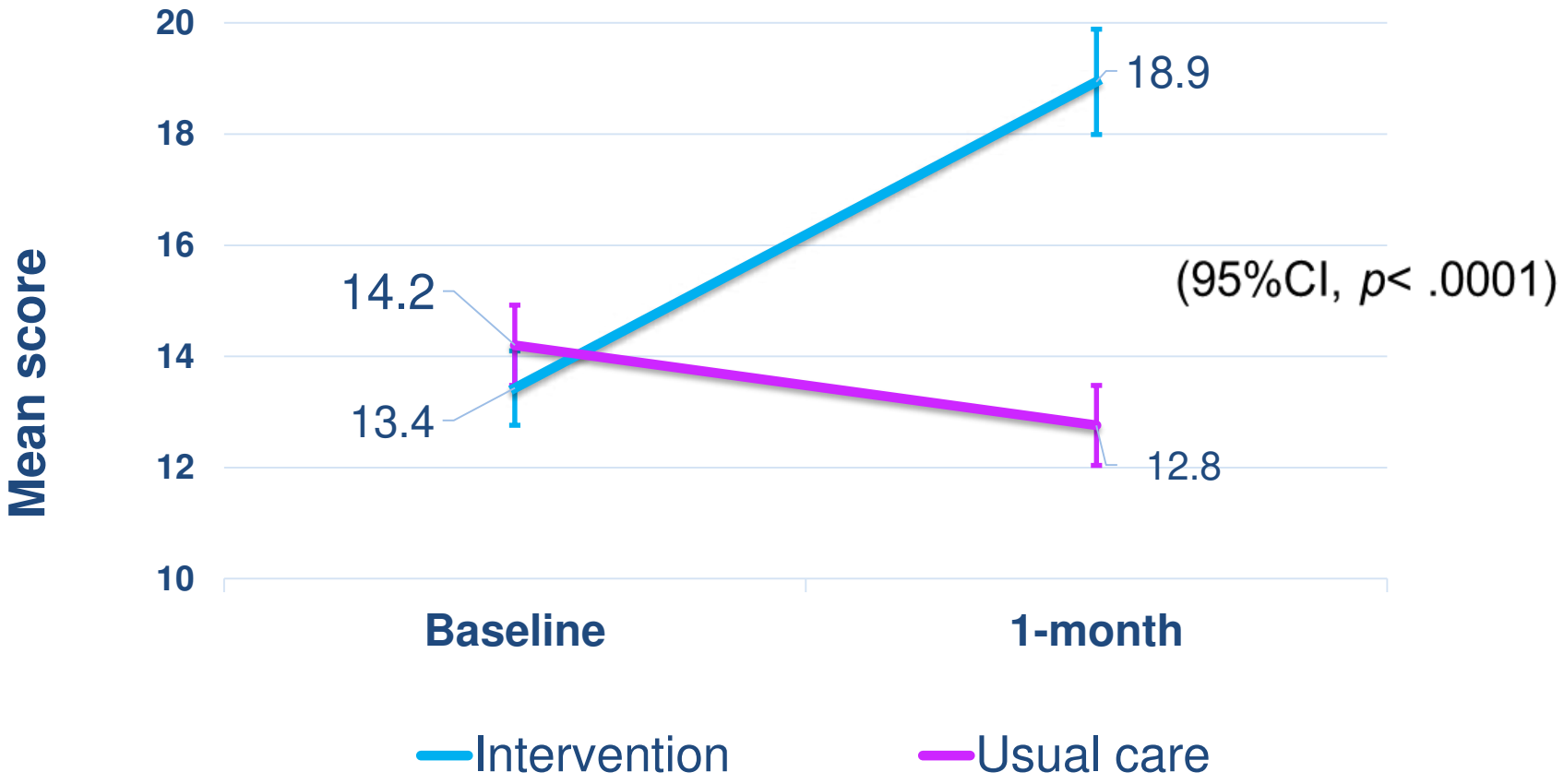


Figure 3 Knowledge scores of ACS response index (between group)

Table 3 Comparison of secondary outcomes of usual care group and intervention group

		Baseline	1 months	
		Mean±SD	Mean±SD	p-valve
Attitude	Usual care	15.34 (2.13)	14.36 (1.87)	.000*
	Usual care plus SAVE app	15.11 (2.13)	17.69 (1.82)	
Belief	Usual care	23.11 (2.36)	22.79 (2.69)	.000*
	Usual care plus SAVE app	23.06 (2.46)	25.81 (2.27)	
Symptom recognition	Usual care	8.63 (1.66)	8.39 (1.43)	.000*
	Usual care plus SAVE app	8.23 (1.54)	10.24 (1.35)	
Help-seeking	Usual care	6.71 (0.83)	5.97 (1.19)	.000*
	Usual care plus SAVE app	6.89 (0.96)	7.45 (0.75)	
Expectation	Usual care	12.80 (1.75)	12.55 (1.75)	.000*
	Usual care plus SAVE app	12.83 (1.81)	14.30 (1.65)	
Action	Usual care	10.31 (1.28)	10.24 (1.28)	.000*
	Usual care plus SAVE app	10.23 (1.31)	11.51 (0.79)	

Results

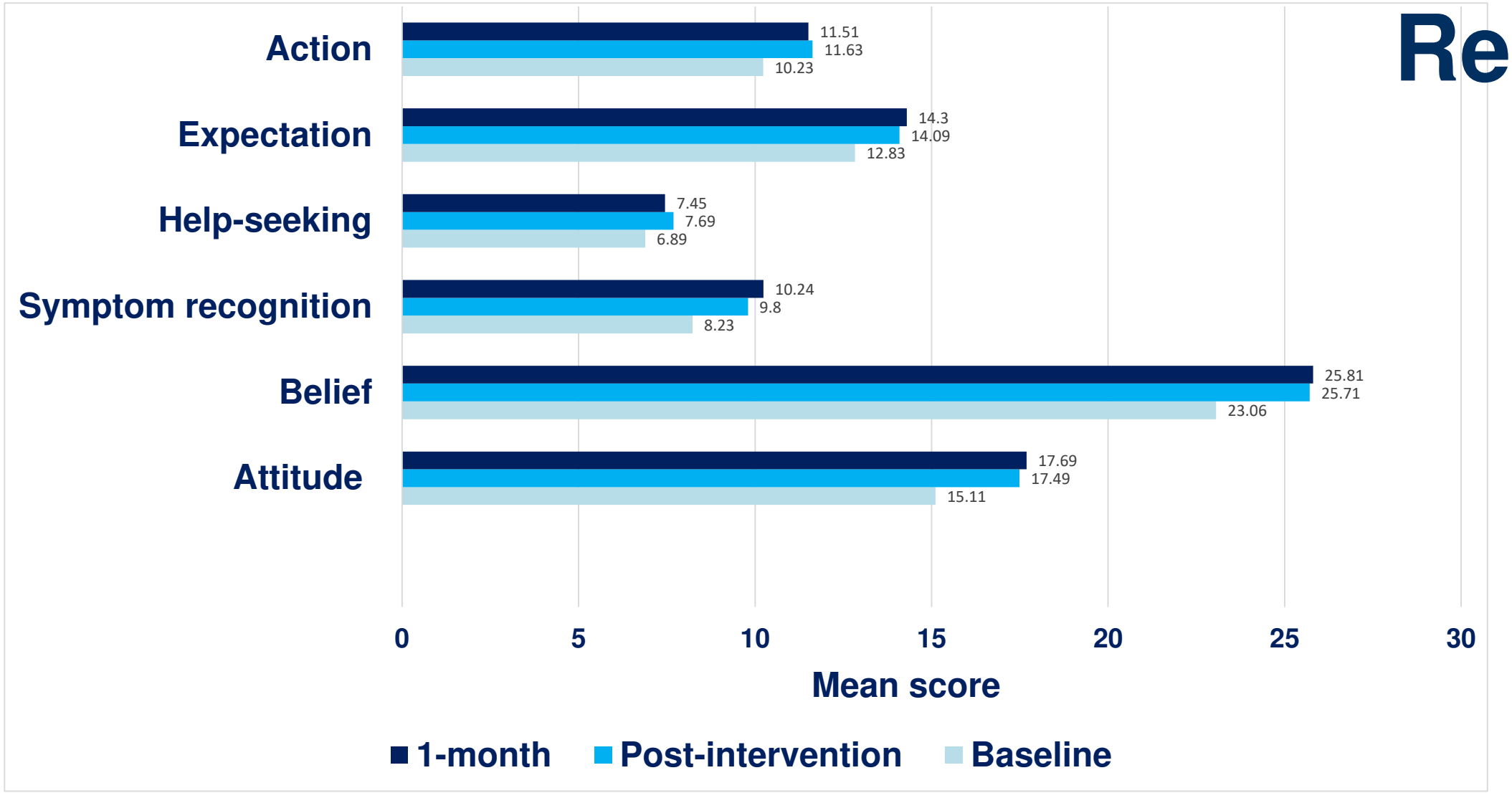


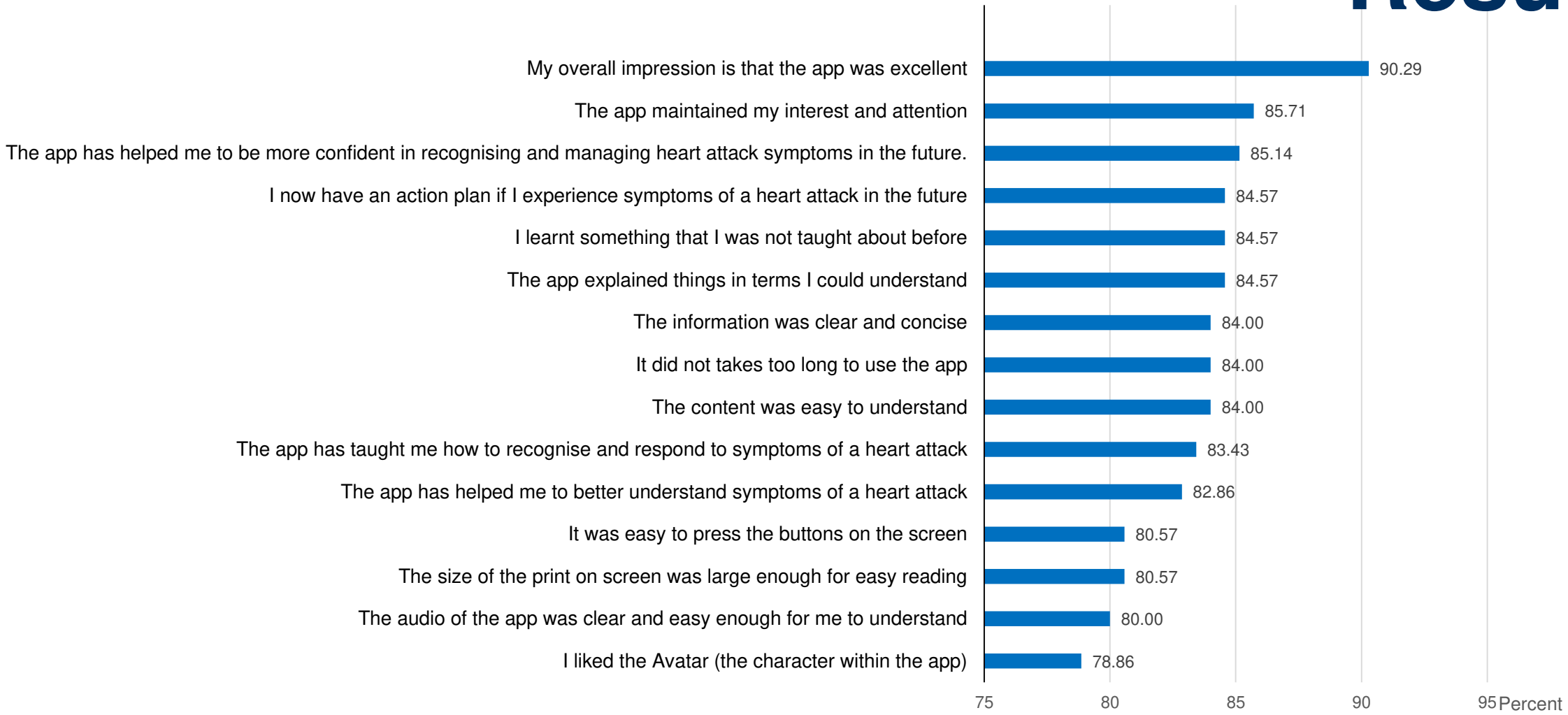
Figure 4 Secondary outcomes scores of ACS response index (Intervention group)

Results

Figure 5 Secondary outcomes scores of ACS response index (Usual care group)

App satisfaction (n=35)

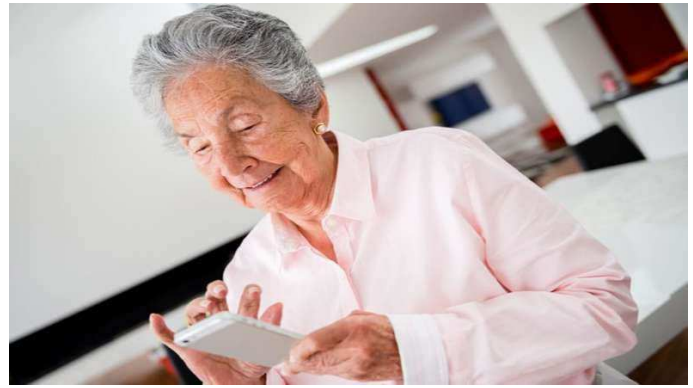
Results



App's satisfaction

Participants satisfaction : *90.29%*

- Simplicity and utility
- Enjoyment
- Easy navigation



http://allindiaroundup.com

"The app is advanced, but the interface is easy to understand"

" The app was easy to learn, how to recognise and respond to symptoms of heart attack'

"The app had help me to be more confident in recognising and managing heart attack symptom in the future"

Discussion

- Significant change in knowledge score
- Feasible and effective
- Achieving long-term and sustainable improvement is challenging

Limitations

- Single-centre
- English language only (the app)
- Non-blinded
- Preliminary results

Summary and conclusion

- Patient-centred collaborative research
- Designed for elderly and low health literacy ACS patients
- Interactive/voice /visual aids
- Engaging and retention of information
- Bedside education

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Acknowledgement

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http://www.goldenheartcharlotte.com

http://cdn.stannahstairlifts.co.uk/wp-content/uploads/2016/08/mobile-apps-1024x683.jpg

Thank you

Q&A