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Knowledge translation intervention to improve evidence-based practice behaviour of allied health professionals: A cluster randomised controlled trial and 2-year follow-up study

Lanie Campbell  
*University of Notre Dame Australia*

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# **CHAPTER 4**

## **RANDOMISED CONTROLLED TRIAL**

### **RESULTS**

#### **Overview**

This chapter presents the results of the cluster RCT including;

- 1) Baseline characteristics of the AHPs included in the study, including profession, grade level, years of employment at Cerebral Palsy Alliance, years of experience in the disability field and whether or not the participant had previously attended EBP training.
- 2) Details about missing data
- 3) Statistical consideration of the clustering effect due to the method of randomisation
- 4) Results of the effectiveness of the KT strategy for primary and secondary outcomes.

#### **Baseline characteristics**

One hundred and thirty five AHPs (n = 73 interventions and n = 62 controls) meeting eligibility criteria agreed to participate in the study. Descriptive statistics were used to describe participant characteristics. For detailed results see Table 8.

Table 8: Baseline characteristics of participants

	KT intervention group (%)			Control group (%)			p value*
	Cluster		Total (n = 73)	Cluster		Total (n = 62)	
	Cluster 1 (n = 40)	Cluster 2 (n = 33)		Cluster 3 (n = 32)	Cluster 4 (n = 30)		
<b>Professional Background</b>							
Occupational Therapy	11 (27.5)	12 (36.4)	23 (31)	12 (37.5)	14 (46.7)	26 (42)	0.060
Physiotherapy	11 (27.5)	5 (15.1)	16 (22)	9 (28.1)	7 (23.3)	16 (25.8)	0.596
Speech Pathology	9 (22.5)	11 (33.3)	20 (27)	8 (25)	8 (26.7)	16 (25.8)	0.835
Psychology	5 (12.5)	2 (6.1)	7 (10)	1 (3.1)	0 (0)	1 (1.6)	0.060
Social Work	4 (10)	3 (9.1)	7 (10)	2 (6.3)	1 (3.3)	3 (4.8)	0.294
Missing	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
<b>Grade Level</b>							
Level 1	9 (22.5)	10 (30.3)	19 (26)	5 (15.6)	9 (30)	14 (22.6)	0.647
Level 2 (clinical specialist)	18 (45)	16 (48.5)	34 (46.6)	21 (65.7)	16 (53.4)	37 (59.7)	0.122
Level 3 (clinical senior)	8 (20)	5 (15.2)	13 (17.8)	4 (12.5)	4 (13.3)	8 (12.9)	0.436
Other	5 (12.5)	1 (3)	6 (8.2)	1 (3.1)	1 (3.3)	2 (3.2)	0.222
Missing	0 (0)	1 (3)	1 (1.4)	1 (3.1)	0 (0)	1 (1.6)	
<b>Years at Cerebral Palsy Alliance</b>							
<2-years	12 (30)	16 (48.5)	28 (38.4)	14 (43.8)	18 (60)	32 (51.5)	0.122
2-4 years 11months	5 (12.5)	10 (30.3)	15 (20.5)	5 (15.6)	5 (16.7)	10 (16.2)	0.510
5-9 years 11 months	15 (37.5)	6 (18.2)	21 (28.8)	8 (25)	4 (13.3)	12 (19.4)	0.205
>10 years	8 (20)	1 (3)	9 (12.3)	5 (15.6)	3 (10)	8 (12.9)	0.902
Missing	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	

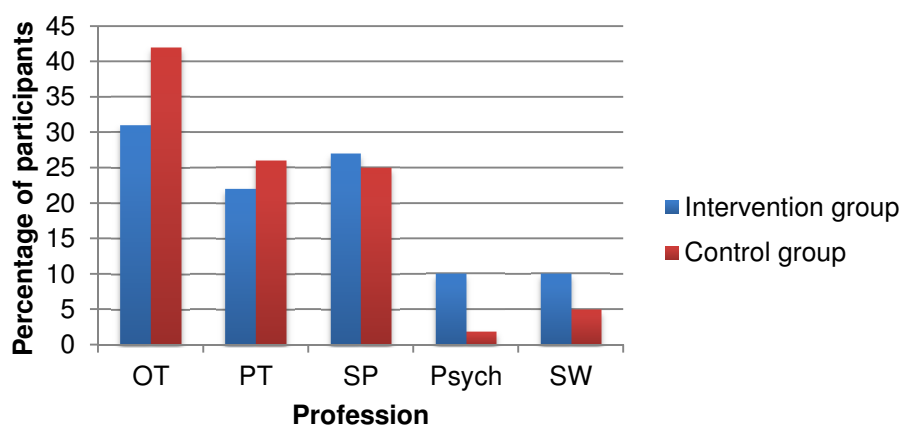
	KT intervention group (%**)			Control group (%**)			p value*
	Cluster			Cluster			
	Cluster 1 (n = 40)	Cluster 2 (n = 33)	Total (n = 73)	Cluster 3 (n = 32)	Cluster 4 (n = 30)	Total (n = 62)	
<b>Years' experience in disability field</b>							
<2-years	4 (10)	7 (21.2)	11 (15)	5 (15.6)	11 (36.7)	16 (25.8)	0.120
2-4 years 11months	7 (17.5)	3 (9.1)	10 (13.7)	2 (6.3)	10 (33.3)	12 (19.4)	0.375
5-9 years 11 months	10 (25)	15 (45.5)	25 (34.3)	10 (31.3)	4 (13.3)	14 (22.6)	0.136
>10 years	19 (47.5)	8 (24.2)	27 (37)	15 (46.9)	5 (16.7)	20 (32.2)	0.566
Missing	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
<b>Previous EBP continuing education?</b>							
Yes	35 (87.5)	29 (87.9)	64 (87.7)	19 (59.4)	22 (73.3)	41 (66.1)	0.003
No	5 (12.5)	4 (12.1)	9 (12.3)	13 (40.6)	8 (26.7)	21 (33.9)	
Missing	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	
<b>English first language</b>							
Yes	36 (90)	30 (90.9)	66 (90.4)	31 (96.9)	30 (100)	61 (98.4)	0.013
No	4 (10)	3 (9.1)	7 (9.6)	1 (3.1)	0 (0)	1 (1.6)	
Missing	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	

\* Pearson's chi square test was used to determine whether distributions of variables differed from one another, resulting in a p value (p < 0.05 indicated a statistically significant difference in proportions between groups).

\*\* Percentages have been documented to one decimal place in this table for accuracy, however have been rounded to whole numbers in the text for clear reporting

## Professional background

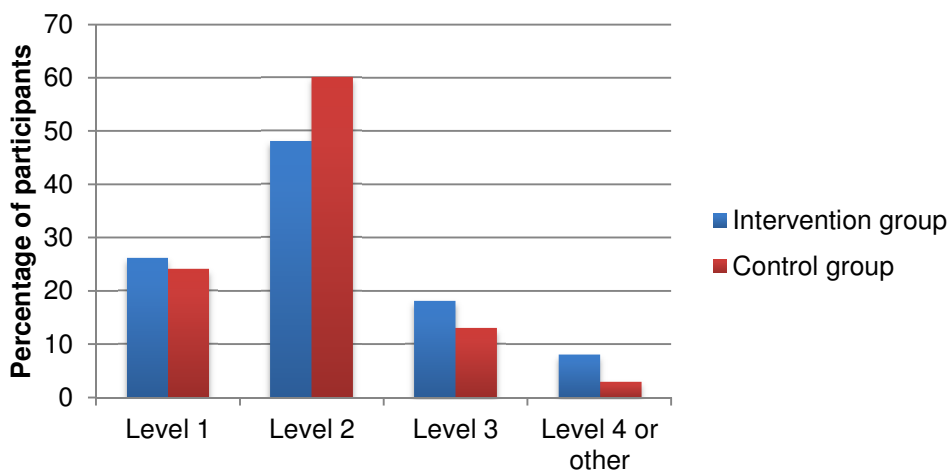
Included professionals were occupational therapists (n = 49; 36%), physiotherapists (n = 32; 24%), speech pathologists (n = 30; 26%), psychologists (n = 8; 6%) and social workers (n = 10; 8%). Figure 7 displays the proportion of each profession according to group allocation (KT intervention group or control group). The professional background of participants was comparable between the KT intervention group and the control group (see Table 8), indicating that there was no statistically significant difference of the distribution of professional background of participants between groups ( $p > 0.05$ ).



**Figure 7: Percentage of participants in various professional backgrounds in intervention and control groups**

## Grade level

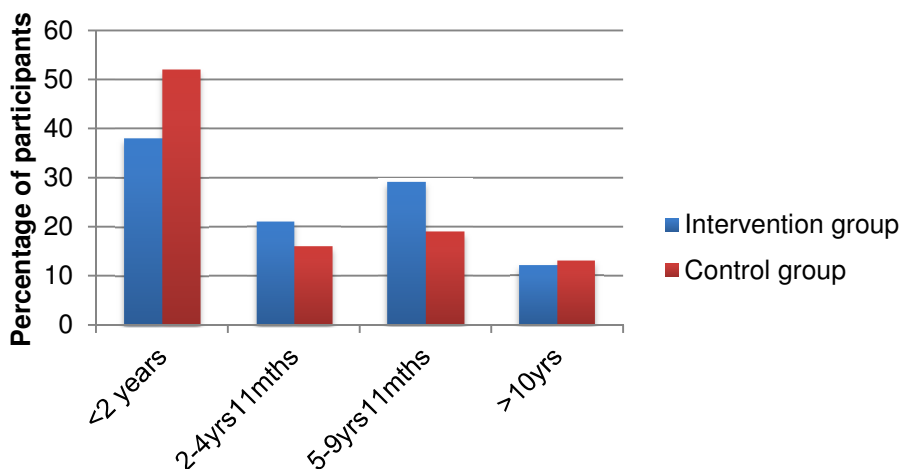
Twenty-four per cent of the sample were employed at the Cerebral Palsy Alliance as level 1 AHPs (entry level AHP), 53% were level 2 (clinical specialist), 15% were level 3 (clinical senior with supervision responsibilities for level 1 and 2s) and the remaining 8% were either level 4 (knowledge brokers with clinical caseloads) or clinical managers (with clinical caseloads and AHP qualifications). The distributions between the KT intervention and control groups were comparable ( $p > 0.05$ ) (see Table 8 and Figure 8).



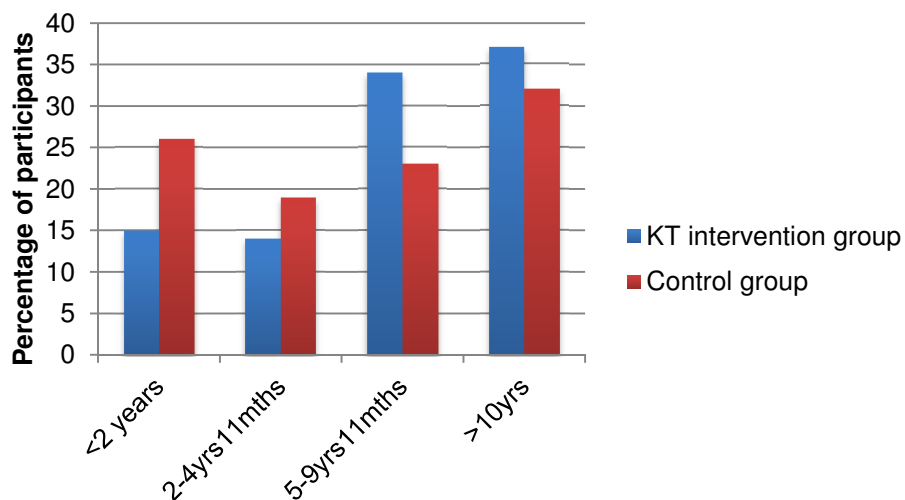
**Figure 8: Percentage of participants for AHP grade levels in intervention and control groups**

### **Years at Cerebral Palsy Alliance and experience in the disability field**

Although 45% of participants had worked at the Cerebral Palsy Alliance for less than 2 years, 34% had over 10 years’ experience in the disability field. Only 13% of participants had worked at Cerebral Palsy Alliance for more than 10 years. There were no significant differences between years of employment at the study site or overall years of experience between groups (see Table 8 and Figures 9 and 10).



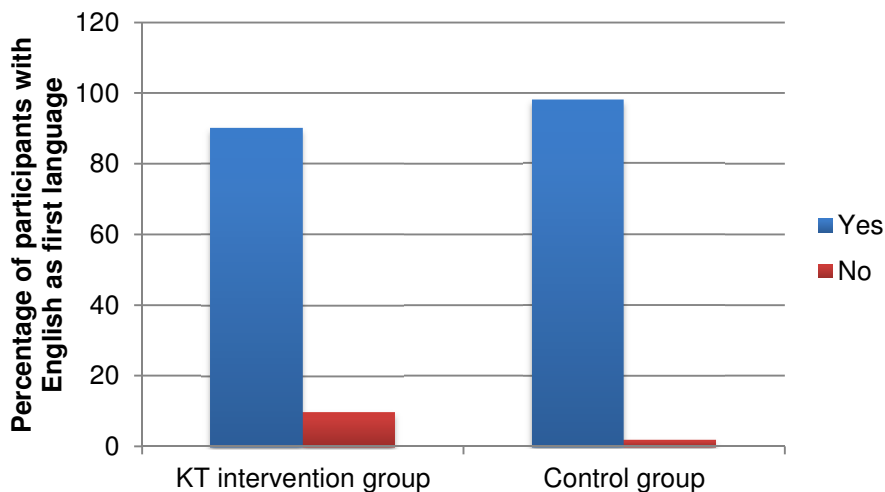
**Figure 9: Percentage of participants according to number of years employed at Cerebral Palsy Alliance in intervention and control groups**



**Figure 10: Percentage of participants according to number of years working in disability in intervention and control groups**

### English as first language

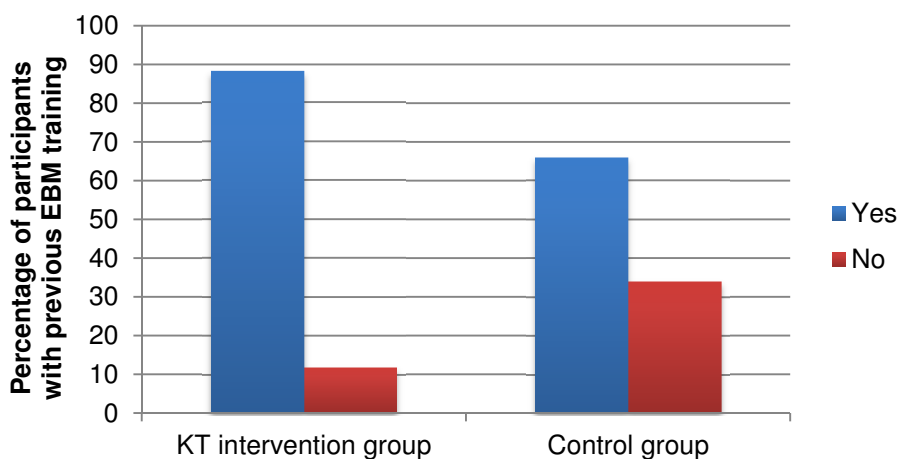
Ninety-four per cent of the sample had English as their first language meaning that 8 participants from the whole sample had a language background other than English (LBOTE) (see Table 8 and Figure 11). The KT intervention group contained 7 of the 8 participants with LBOTE, however the difference in distribution between groups was statistically insignificant ( $p = 0.13$ ).



**Figure 11: Percentage of participants whose first language was English in intervention and control groups**

### Previous continuing education in EBP

Eighty-eight per cent of the KT intervention group had attended an EBP seminar or workshop compared to 66% of the controls (see Table 9 and Figure 12). The distribution between groups was significant ( $p = 0.03$ ) and was therefore included in the regression model as a covariate.



**Figure 12: Percentage of participants who had previous continuing education in EBP in intervention and control groups**



## Participant flow

A total of 154 attendees at the EBP workshop were eligible and invited to participate in the study, with 135 (88%) providing consent and were therefore enrolled. Nineteen eligible participants elected not to take part in the study. Baseline demographic data were collected from all participants as requested by Cerebral Palsy Alliance management, although the remainder of the evaluation form was optional for those who did not participate in the study. One participant in the KT intervention group withdrew from the study via email during the 8-week intervention period (see Figure 13).

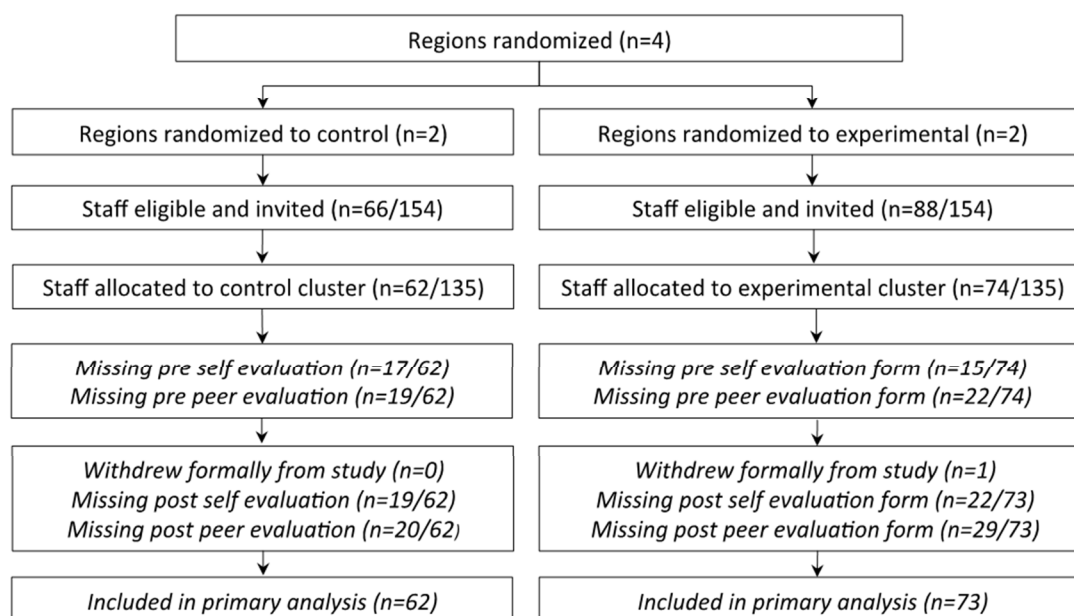


Figure 13: Participant flow diagram for RCT – from randomisation to primary analysis

## Missing Data

Data were classified as missing if a participant did not submit an evaluation form or submitted a completely blank evaluation form. Missing data were analysed using the last observation carried forward analysis (LOCF).<sup>179</sup> The return rate for the GAS and EBPAS ratings were between 60-82% (see Figure 13), with the primary endpoint having more missing data. The KT

intervention group had 19/73 (31%) 8-week GAS forms missing, compared to the control group who had 17/62 (30%). This difference between groups was not statistically significant (chi square  $p = 0.95$ ).

## **Clustering effect**

The ICC for the primary endpoints were 0.33 (95% CI 0.16, 0.69) for self-rated GAS T-scores, that is 33% of the total variation observed in self-rated GAS T-scores can be attributed to differences between the sites, (rather than differences between individuals within each site), and 0.64 (95% CI 0.36, 0.80) for peer-report GAS T-scores (see Table 9), that is 64% of the total variation observed peer-rated GAS T-scores can be attributed to differences between sites. These results demonstrate the correlation of GAS T-scores within sites was very large, whereas there was a large variation in scores between sites. This cluster effect substantially depleted the study power (because participant scores within each site cannot be regarded as independent). ICCs were smaller for secondary outcomes (see Table 9).

## **Effectiveness of KT strategy**

### **Primary outcome – EBP practice behaviours**

Self-rated GAS T-scores increased more in the intervention group compared to controls, however this difference was not statistically significant after adjusting for the cluster effect (effect size 4.43; 95% CI -10.63,19.49;  $p = 0.56$ ) (see Table 9). Baseline self-rated GAS T-scores were a predictor in the model (effect size 0.71; 95% CI 0.52, 0.90); ( $p < 0.0001$ ); indicating lower performers improved but remained lower performers, and higher performers improved and remained leading performers. No other covariates were significantly predictive of outcome.

Peer-rated GAS T-scores of the intervention group also increased compared to controls, but this difference was also not statistically significant after adjusting for the cluster effect (effect size 6.75; 95% CI -16.95, 30.44;  $p = 0.57$ )

(see Table 9). Similar to the self-rated GAS T-scores, the final peer-rated GAS T-score was predicted by the baseline peer-rated GAS T-score (effect size 0.30; 95%CI 0.15, 0.45;  $p < 0.0001$ ). No other covariates were significantly predictive of peer-rated GAS T-scores. The peer-rated GAS T-scores for each cluster mirrored the self-rated GAS cluster T-scores, suggesting the observed study effects were behaviourally meaningful, despite low study power to demonstrate a statistically significant difference.

### **Secondary outcomes – knowledge, attitudes and EAS**

EBP knowledge scores increased compared to controls, with a statistically significant effect size of 2.97 (95% CI 1.97, 3.97;  $p < 0.0001$ ). The ICC for this outcome was zero, and this effect remained statistically significant after adjusting for the cluster effect of 2.97 (95% CI 1.97, 3.97;  $p < 0.0001$ ). Baseline score ( $p < 0.0001$ ) and professional category ( $p = 0.03$ ) were also predictors in the model. There was minimal to no correlation between participants within sites for self- or peer-rated EBP attitudes, however we did not demonstrate a statistically significant intervention effect (see Table 9). The intervention group accessed the EAS more than the control group (KT intervention group 6123 total hits; control group 1677 hits).

### **Additional analyses**

Secondary analyses examining mean outcome scores for each cluster revealed that both clusters in the KT intervention group improved their self- and peer-rated GAS T-scores as expected (see Table 10). One of the control group clusters (cluster 3) also responded as expected, with very minimal increases in self- and peer-rated GAS T-scores from baseline to 8-weeks (self-rated T-score change = 0.22; peer-rated T-score change = 2.27). The other control group cluster (cluster 4) had high baseline scores (self-rated GAS T-score = 66.41; peer-rated GAS T-score = 73.32) and further improved by 10.15 points over the 8-week study period, despite not receiving the KT strategy (see Table 10). We performed post-hoc Spearman's correlation tests to assess for correlation between knowledge and attitude scores (at baseline, 8-weeks

and change scores) overall, by treatment group, and within individual clusters. No statistically significant positive correlations were found.

## **Synopsis**

This chapter presented the cluster RCT results including baseline characteristics, missing data, clustering effect and the effectiveness of the KT strategy. The next 2 chapters (Chapters 5 and 6) present the methods and results of the 2-year follow-up study. The discussion and conclusion chapter (Chapter 7) explores the results from this chapter in more depth, as well as offering an interpretation of the RCT and follow-up study.

Table 9: Primary and secondary outcomes - RCT

Outcome		Treatment (n = 73)		Control (n = 62)		Base model			Mixed effects model		
		n*	Mean (sd)	n*	Mean (sd)	Difference (95% CI)	p	ICC (95% CI)	Difference (95% CI)	p	
EBP Behaviour											
Self	baseline	59	54.05 (13.80)	45	55.42 (10.92)						
	8-weeks	51	65.96 (13.49)	43	62.45 (19.50)	5.08 (0.40,10.55)	0.07	0.33 (0.16,0.69)	4.43 (-10.63,19.49)	0.56	
Peer	baseline	52	61.83 (13.69)	43	61.52 (16.95)						
	8-weeks	44	74.26 (8.51)	42	68.41 (16.63)	7.86 (1.97,13.75)	0.01	0.64 (0.36,0.80)	6.75 (-16.95,30.44)	0.57	
EAS page hits**		6123		1677							
EBP Knowledge	baseline	57	7.91 (3.05)	50	8.09 (3.52)						
	8-weeks	52	10.69 (2.23)	45	8.02 (3.13)	3.29 (2.25,4.33)	0.00	0.01 (0.0,0.26)	3.29 (2.18,4.40)	0.00	
EBPAS	Self subset 3	baseline	55	2.67 (0.75)	47	2.57 (0.70)					
		8-weeks	50	2.63 (0.74)	44	2.77 (0.61)	-0.27 (-0.57,0.03)	0.08	0.0 (0.0,0.32)	-0.27 (-0.57,0.03)	0.08
	subset 4	baseline	55	3.00 (0.51)	47	2.98 (0.58)					
		8-weeks	50	3.03 (0.61)	44	2.98 (0.59)	0.03 (-0.22,0.28)	0.82	0.0 (0.0,0.25)	0.03 (-0.22,0.28)	0.82
	Peer subset 3	baseline	42	2.93 (0.63)	38	2.90 (0.72)					
		8-weeks	32	3.17 (0.56)	39	1.17 (0.80)	0.03 (-0.37,0.42)	0.88	0.0 (0.0,0.51)	0.03 (-0.37,0.43)	0.88
	subset 4	baseline	42	0.89 (0.78)	32	3.19 (0.61)					
		8-weeks	32	0.87 (0.75)	32	1.13 (0.93)	-0.23 (-0.75,0.23)	0.37	0.12 (0.0,0.65)	-0.29 (-1.06,0.48)	0.45

\* Number of participants who completed outcome measure.

\*\* EAS page hit raw data could only be collected and analysed at the cluster level, not the individual level because the electronic data were collected in batches.

Table 10: Mean outcome scores for each cluster

Outcome	Variable	Time	Outcome score, n mean (sd)			
			Cluster 1 (Exp)	Cluster 2 (Exp)	Cluster 3 (Control)	Cluster 4 (Control)
	Self GAS	baseline	35 50.73 (13.75)	24 58.88 (12.64)	28 48.75 (10.85)	17 66.41 (15.46)
		8-weeks	24 66.39 (16.02)	27 65.58 (11.08)	22 48.97 (15.34)	21 76.56 (11.92)
		baseline	33 60.19 (14.26)	19 64.68 (12.51)	28 55.20 (15.69)	15 73.32 (12.57)
		8-weeks	21 72.69 (9.93)	23 75.69 (6.90)	23 57.47 (13.11)	19 81.66 (9.05)
EBP behaviour	Peer GAS	baseline	35 7.69 (2.76)	22 8.27 (3.51)	28 6.50 (3.08)	22 10.11(3.04)
EBP knowledge	Exam score	8-weeks	25 10.80 (2.37)	27 10.59 (2.14)	23 6.98 (3.26)	22 9.11(2.65)
		baseline	35 2.73 (0.73)	20 2.57 (0.79)	27 2.53(0.61)	20 2.64(0.83)
	Self EBPAS subset 3 score	8-weeks	24 2.55(0.78)	26 2.70 (0.70)	22 2.52 (0.57)	22 3.01 (0.55)
		baseline	20 2.86 (0.48)	35 3.08 (0.54)	27 2.84 (0.56)	20 3.16 (0.58)
	Self EBPAS subset 4 score	8-weeks	24 3.10 (0.59)	26 2.96 (0.64)	22 2.85 (0.60)	22 3.11 (0.58)
		baseline	30 2. 80 (0. 60)	12 3.24 (0.63)	23 2.87 (0.74)	15 2.95 (0.73)
EBP attitude	Peer EBPAS subset 3 score	baseline	30 2. 80 (0. 60)	12 3.24 (0.63)	23 2.87 (0.74)	15 2.95 (0.73)

Outcome	Variable	Time	Outcome score, n mean (sd)			
			Cluster 1 (Exp)	Cluster 2 (Exp)	Cluster 3 (Control)	Cluster 4 (Control)
			16	16	17	15
		8-weeks	3.20 (0.47)	3.14 (0.65)	3.07 (0.63)	3.32 (0.57)
			30	12	23	16
		baseline	0.83 (0.64)	1.03 (1.08)	1.45 (0.86)	0.77 (0.48)
			16	16	17	15
	Peer EBPAS subset 4 score	8-weeks	1.05 (0.86)	0.69 (0.60)	1.41 (0.99)	0.82 (0.76)
Web hits	Page hits	8-weeks	2987	3136	928	749