

Effectiveness of a mental health stepped-care programme for healthcare workers with psychological distress during the COVID-19 pandemic: a multi-centre randomised controlled trial

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List of abbreviations

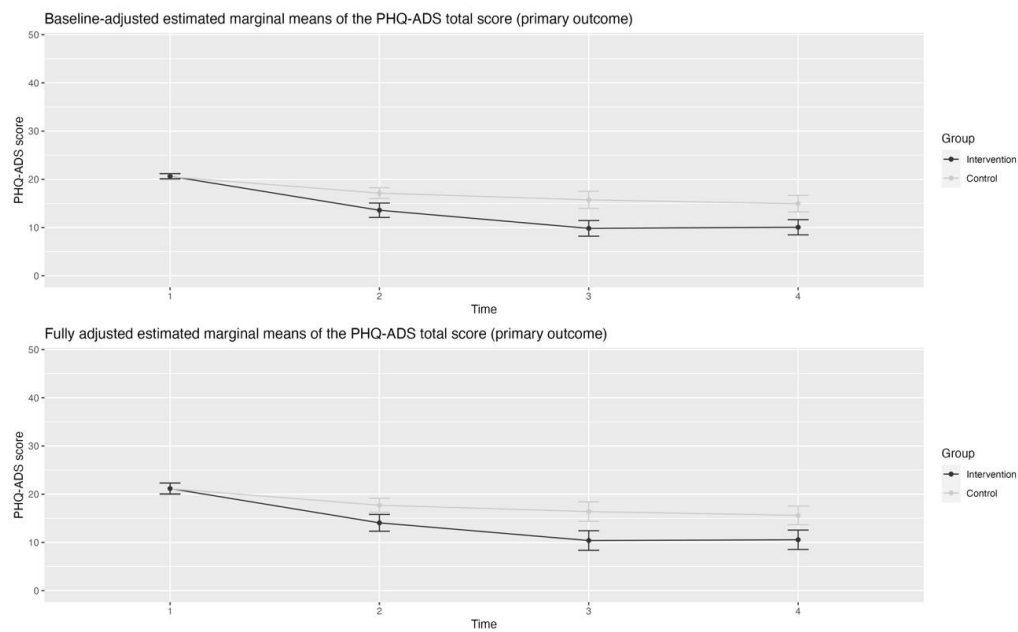
CI	confidence interval
DWM	Doing What Matters in times of stress
GAD-7	Generalised Anxiety Disorder Questionnaire
HCWs	healthcare workers
ITT	intention-to-treat
NNT	number needed to treat
OR	odds ratio
PCL-5	PTSD checklist for the DSM-5
PHQ-9	Patient Health Questionnaire
PHQ-ADS	Patient Health Questionnaire – Anxiety and Depression Scale
PM+	Problem Management Plus
PTSD	Posttraumatic stress disorder
SES	standardised effect size

Secondary analyses (pre-specified)

Results of the three pre-specified three secondary analyses confirmed our main models. The ITT analyses using fully adjusted models and secondary outcomes are reported in Table 2 and Figure 3 of the manuscript, along with the main analysis, to ease readability and interpretability. The results of the subgroup analyses are presented below.

Female HCWs

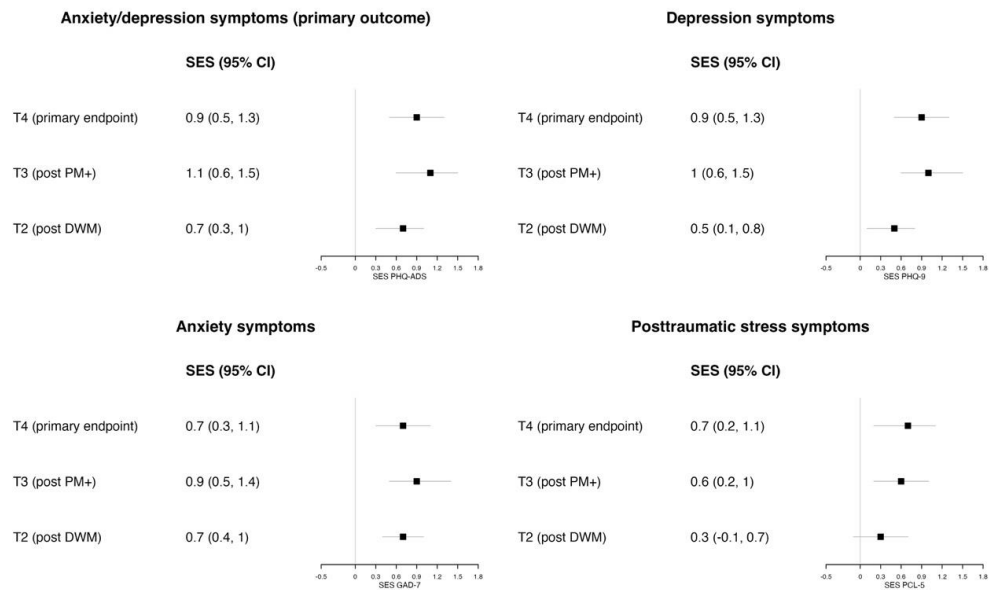
This analysis includes 101 participants on the intervention arm and 99 participants on the control arm (n = 200, 86%).



Appendix Figure 1. Estimated marginal means of the PHQ-ADS (female HCWs)

Appendix Table 1. Estimated marginal means and 95 percent CIs (female HCWs)

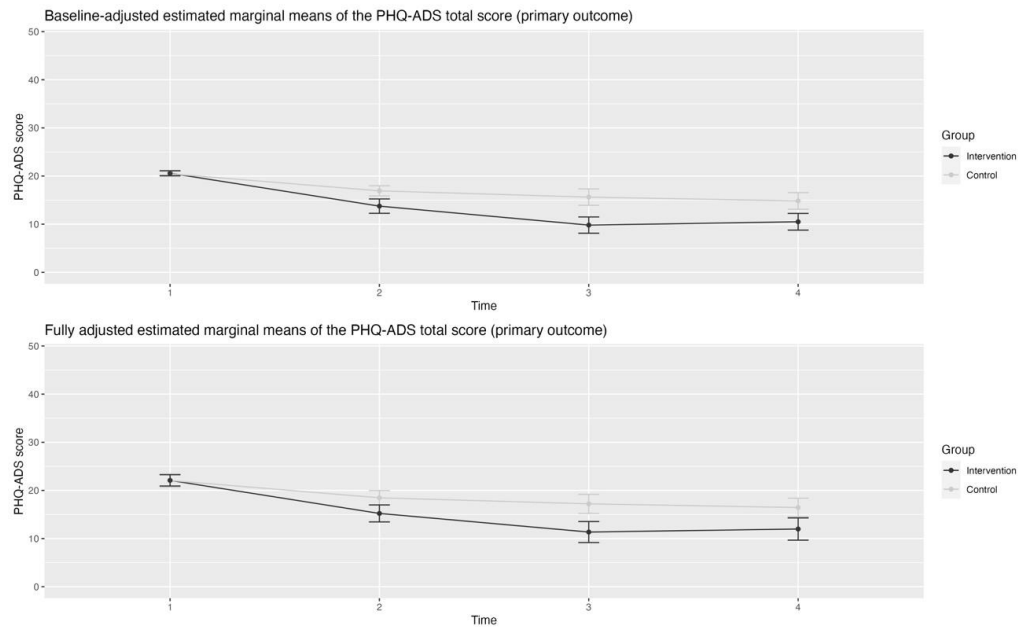
		Baseline-adjusted models [‡]			Fully adjusted models [†]		
		Control	Intervention	Difference	Control	Intervention	Difference
PHQ-ADS ¹	Week 21 (follow-up)	15 (13.2, 16.7)	10.1 (8.5, 11.6)	4.9 (2.6, 7.2)	15.6 (13.7, 17.5)	10.5 (8.5, 12.6)	5.1 (2.7, 7.4)
	Week 13 (post PM+)	15.7 (14, 17.5)	9.8 (8.2, 11.5)	5.9 (3.5, 8.3)	16.4 (14.4, 18.4)	10.4 (8.4, 12.4)	6 (3.6, 8.5)
	Week 7 (post DWM)	17.1 (16, 18.2)	13.6 (12.1, 15.1)	3.6 (1.7, 5.4)	17.7 (16.2, 19.2)	14.1 (12.3, 15.8)	3.6 (1.8, 5.5)
PHQ-9 ²	Week 21 (follow-up)	7.6 (6.7, 8.5)	4.9 (4, 5.8)	2.7 (1.4, 4)	8.1 (7, 9.1)	5.3 (4.2, 6.3)	2.8 (1.5, 4.1)
	Week 13 (post PM+)	7.8 (6.9, 8.8)	4.6 (3.8, 5.5)	3.2 (1.9, 4.5)	8.3 (7.2, 9.4)	5.1 (4, 6.1)	3.2 (1.9, 4.6)
	Week 7 (post DWM)	8.2 (7.6, 8.9)	6.8 (5.9, 7.6)	1.5 (0.4, 2.6)	8.6 (7.8, 9.4)	7.1 (6.1, 8.1)	1.5 (0.5, 2.6)
GAD-7 ³	Week 21 (follow-up)	7.3 (6.5, 8.2)	5.2 (4.4, 6)	2.2 (0.9, 3.4)	7.6 (6.5, 8.6)	5.3 (4.2, 6.4)	2.2 (1, 3.5)
	Week 13 (post PM+)	7.9 (6.9, 8.9)	5.2 (4.4, 6)	2.7 (1.5, 4)	8.1 (7, 9.3)	5.4 (4.2, 6.5)	2.8 (1.5, 4.1)
	Week 7 (post DWM)	8.9 (8.3, 9.5)	6.8 (6, 7.6)	2.1 (1.1, 3.1)	9.1 (8.3, 10)	7 (6, 7.9)	2.1 (1.1, 3.2)
PCL-5 ⁴	Week 21 (follow-up)	9.7 (8.3, 11.2)	7 (5.8, 8.1)	2.8 (0.9, 4.6)	9.8 (8.1, 11.5)	7 (5.4, 8.6)	2.8 (1, 4.7)
	Week 13 (post PM+)	9.8 (8.5, 11.1)	7.3 (6.1, 8.4)	2.5 (0.8, 4.2)	9.9 (8.4, 11.5)	7.3 (5.8, 8.9)	2.6 (0.9, 4.3)
	Week 7 (post DWM)	11.1 (10, 12.2)	9.9 (8.8, 10.9)	1.3 (-0.3, 2.8)	11.2 (9.7, 12.6)	9.9 (8.5, 11.4)	1.2 (-0.4, 2.8)
Note.							
All models include participant as a random effect. All confidence intervals calculated using robust standard errors.							
PHQ-ADS = Patient Health Questionnaire - Anxiety and Depression Scale; PHQ-9 = 9-item Patient Health Questionnaire; GAD-7 = 7-item Generalised Anxiety Disorder; PCL-5 = PTSD checklist for DSM-5; PM+ = Problem Management Plus; DWM = Doing What Matters.							
[‡] Adjusted for outcome score measured at baseline							
[†] Adjusted for age, level of education, use of mental health services prior to enrolment, outcome score measured at baseline, and site.							
¹ Ns valid at weeks 21, 13, and 7 are 83, 77, and 88, in the control arm, and 81, 77, and 89, in the intervention arm							
² Ns valid at weeks 21, 13, and 7 are 83, 78, and 88, in the control arm, and 81, 77, and 89, in the intervention arm							
³ Ns valid at weeks 21, 13, and 7 are 83, 77, and 88, in the control arm, and 81, 77, and 89, in the intervention arm							
⁴ Ns valid at weeks 21, 13, and 7 are 79, 72, and 85, in the control arm, and 79, 76, and 87, in the intervention arm							



Appendix Figure 2. Standardised effect sizes (female HCWs)

HCWs involved in the direct care of COVID-19 patients

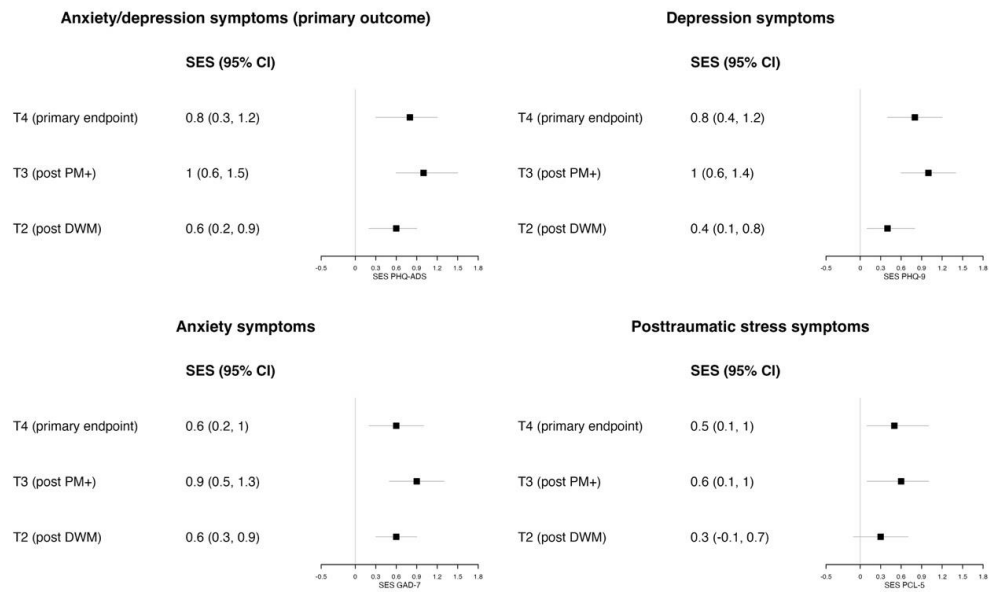
This analysis includes 107 participants on the intervention arm and 108 participants on the control arm (n = 215, 93%).



Appendix Figure 3. Estimated marginal means of the PHQ-ADS (frontline HCWs)

Appendix Table 2. Estimated marginal means and 95 percent CIs (frontline HCWs)

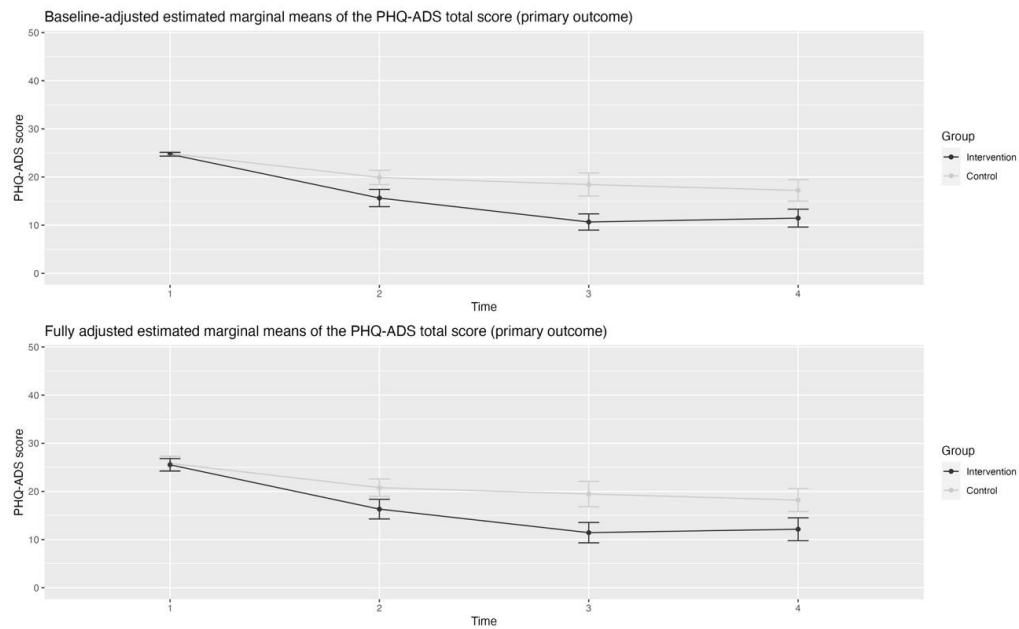
		Baseline-adjusted models [‡]			Fully adjusted models [†]		
		Control	Intervention	Difference	Control	Intervention	Difference
PHQ-ADS ¹	Week 21 (follow-up)	14.8 (13.1, 16.6)	10.5 (8.8, 12.2)	4.3 (1.9, 6.8)	16.4 (14.5, 18.4)	12 (9.7, 14.3)	4.5 (2, 6.9)
	Week 13 (post PM+)	15.6 (13.9, 17.3)	9.8 (8.1, 11.5)	5.8 (3.4, 8.2)	17.2 (15.2, 19.2)	11.4 (9.2, 13.5)	5.9 (3.4, 8.3)
	Week 7 (post DWM)	16.9 (15.9, 18)	13.7 (12.3, 15.2)	3.2 (1.3, 5)	18.5 (17, 20)	15.2 (13.5, 17)	3.2 (1.4, 5.1)
PHQ-9 ²	Week 21 (follow-up)	7.6 (6.7, 8.6)	5.2 (4.2, 6.1)	2.5 (1.1, 3.8)	8.4 (7.3, 9.4)	5.8 (4.7, 7)	2.5 (1.2, 3.9)
	Week 13 (post PM+)	7.9 (6.9, 8.8)	4.7 (3.8, 5.6)	3.1 (1.8, 4.4)	8.6 (7.6, 9.7)	5.4 (4.4, 6.5)	3.2 (1.9, 4.5)
	Week 7 (post DWM)	8.3 (7.7, 8.9)	6.9 (6, 7.7)	1.4 (0.4, 2.5)	9 (8.2, 9.7)	7.5 (6.6, 8.5)	1.4 (0.4, 2.4)
GAD-7 ³	Week 21 (follow-up)	7.2 (6.3, 8.1)	5.3 (4.4, 6.2)	1.9 (0.6, 3.2)	8.1 (7, 9.3)	6.2 (4.9, 7.5)	1.9 (0.6, 3.2)
	Week 13 (post PM+)	7.8 (6.8, 8.7)	5.1 (4.2, 6)	2.7 (1.4, 3.9)	8.7 (7.5, 9.8)	6 (4.7, 7.3)	2.7 (1.4, 4)
	Week 7 (post DWM)	8.7 (8.1, 9.3)	6.9 (6.1, 7.7)	1.8 (0.8, 2.8)	9.6 (8.7, 10.5)	7.7 (6.7, 8.8)	1.8 (0.8, 2.8)
PCL-5 ⁴	Week 21 (follow-up)	9.6 (8.2, 11.1)	7.4 (6.1, 8.6)	2.3 (0.4, 4.2)	9.9 (8, 11.8)	7.6 (5.7, 9.5)	2.3 (0.4, 4.3)
	Week 13 (post PM+)	9.9 (8.7, 11.1)	7.6 (6.4, 8.8)	2.3 (0.6, 4)	10.2 (8.5, 11.9)	7.8 (6, 9.6)	2.4 (0.7, 4.1)
	Week 7 (post DWM)	11.3 (10.2, 12.3)	10 (8.9, 11.1)	1.3 (-0.3, 2.8)	11.5 (9.9, 13.1)	10.2 (8.6, 11.9)	1.2 (-0.3, 2.8)
Note.							
All models include participant as a random effect. All confidence intervals calculated using robust standard errors.							
PHQ-ADS = Patient Health Questionnaire - Anxiety and Depression Scale; PHQ-9 = 9-item Patient Health Questionnaire; GAD-7 = 7-item Generalised Anxiety Disorder; PCL-5 = PTSD checklist for DSM-5; PM+ = Problem Management Plus; DWM = Doing What Matters.							
[‡] Adjusted for outcome score measured at baseline							
[†] Adjusted for age, gender, level of education, use of mental health services prior to enrolment, outcome score measured at baseline, and site.							
¹ Ns valid at weeks 21, 13, and 7 are 87, 83, and 94, in the control arm, and 83, 79, and 92, in the intervention arm							
² Ns valid at weeks 21, 13, and 7 are 87, 83, and 94, in the control arm, and 83, 79, and 92, in the intervention arm							
³ Ns valid at weeks 21, 13, and 7 are 87, 83, and 94, in the control arm, and 83, 79, and 92, in the intervention arm							
⁴ Ns valid at weeks 21, 13, and 7 are 84, 77, and 91, in the control arm, and 81, 78, and 89, in the intervention arm							



Appendix Figure 4. Standardised effect sizes (frontline HCWs)

HCWs with probable depression and/or anxiety disorders

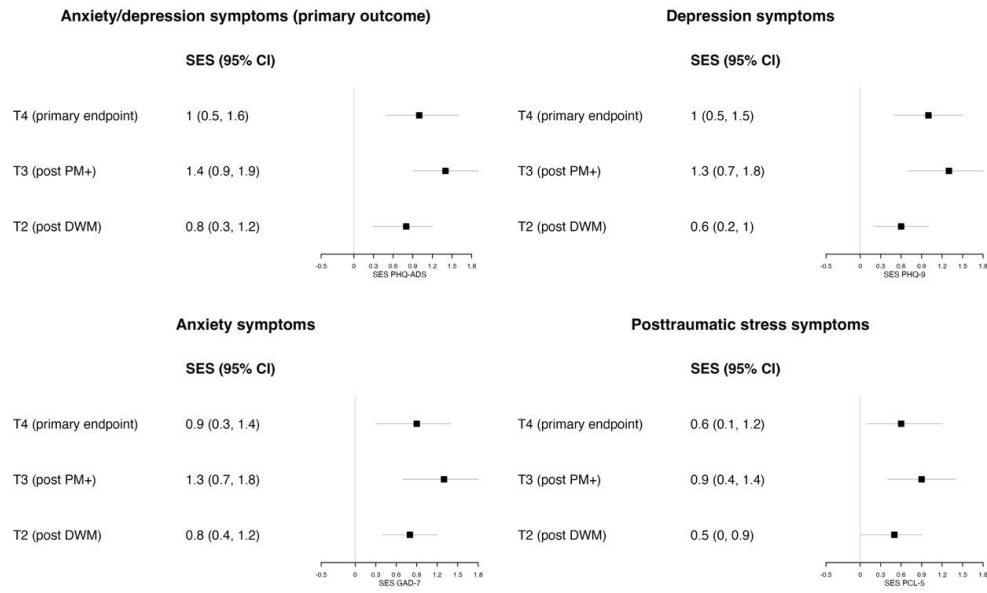
This analysis includes 80 participants on the intervention arm and 75 participants on the control arm (n = 155, 67%).



Appendix Figure 5. Estimated marginal means of the PHQ-ADS (HCWs with probable depression and/or anxiety disorders)

Appendix Table 3. Estimated marginal means and 95 percent CIs (HCWs with probable depression and/or anxiety disorders)

		Baseline-adjusted models [‡]			Fully adjusted models [†]		
		Control	Intervention	Difference	Control	Intervention	Difference
PHQ-ADS ¹	Week 21 (follow-up)	17.2 (15, 19.5)	11.5 (9.6, 13.3)	5.8 (2.9, 8.7)	18.2 (15.8, 20.6)	12.1 (9.8, 14.5)	6.1 (3.1, 9)
	Week 13 (post PM+)	18.4 (16, 20.8)	10.7 (9, 12.3)	7.8 (4.9, 10.7)	19.5 (16.8, 22.1)	11.4 (9.3, 13.5)	8 (5, 11)
	Week 7 (post DWM)	19.9 (18.4, 21.4)	15.6 (13.8, 17.4)	4.3 (1.9, 6.6)	20.8 (19, 22.6)	16.3 (14.3, 18.4)	4.5 (2.1, 6.8)
PHQ-9 ²	Week 21 (follow-up)	9 (7.7, 10.3)	5.7 (4.6, 6.8)	3.3 (1.7, 5)	9.5 (8.1, 10.9)	6 (4.7, 7.2)	3.5 (1.8, 5.2)
	Week 13 (post PM+)	9.4 (8, 10.7)	5.2 (4.2, 6.2)	4.1 (2.5, 5.8)	9.9 (8.4, 11.4)	5.6 (4.5, 6.7)	4.3 (2.6, 6)
	Week 7 (post DWM)	9.9 (9, 10.8)	7.9 (6.8, 9)	2 (0.6, 3.4)	10.2 (9.2, 11.3)	8.2 (7, 9.4)	2.1 (0.7, 3.4)
GAD-7 ³	Week 21 (follow-up)	8.2 (7.1, 9.3)	5.8 (4.8, 6.7)	2.5 (1, 3.9)	8.8 (7.5, 10.1)	6.2 (4.8, 7.6)	2.6 (1.1, 4.1)
	Week 13 (post PM+)	9.1 (7.8, 10.3)	5.4 (4.6, 6.2)	3.7 (2.2, 5.2)	9.7 (8.2, 11.2)	5.9 (4.6, 7.2)	3.8 (2.2, 5.3)
	Week 7 (post DWM)	10 (9.2, 10.8)	7.7 (6.8, 8.6)	2.3 (1.1, 3.5)	10.6 (9.5, 11.7)	8.2 (7, 9.4)	2.4 (1.2, 3.6)
PCL-5 ⁴	Week 21 (follow-up)	11.1 (9.2, 13.1)	8.3 (6.9, 9.8)	2.8 (0.4, 5.2)	11.5 (9, 14.1)	8.6 (6.4, 10.9)	2.9 (0.4, 5.4)
	Week 13 (post PM+)	12 (10.4, 13.6)	8.1 (6.7, 9.6)	3.9 (1.7, 6)	12.5 (10.3, 14.6)	8.4 (6.3, 10.6)	4 (1.8, 6.2)
	Week 7 (post DWM)	13.2 (11.7, 14.8)	11.2 (10, 12.5)	2 (0, 4)	13.5 (11.4, 15.7)	11.6 (9.7, 13.5)	2 (-0.1, 4)
Note.							
All models include participant as a random effect. All confidence intervals calculated using robust standard errors.							
PHQ-ADS = Patient Health Questionnaire - Anxiety and Depression Scale; PHQ-9 = 9-item Patient Health Questionnaire; GAD-7 = 7-item Generalised Anxiety Disorder; PCL-5 = PTSD checklist for DSM-5; PM+ = Problem Management Plus; DWM = Doing What Matters.							
[‡] Adjusted for outcome score measured at baseline							
[†] Adjusted for age, gender, level of education, use of mental health services prior to enrolment, outcome score measured at baseline, and site.							
¹ Ns valid at weeks 21, 13, and 7 are 60, 55, and 65, in the control arm, and 62, 60, and 69, in the intervention arm							
² Ns valid at weeks 21, 13, and 7 are 60, 55, and 65, in the control arm, and 62, 60, and 69, in the intervention arm							
³ Ns valid at weeks 21, 13, and 7 are 60, 55, and 65, in the control arm, and 62, 60, and 69, in the intervention arm							
⁴ Ns valid at weeks 21, 13, and 7 are 56, 52, and 63, in the control arm, and 61, 59, and 67, in the intervention arm							



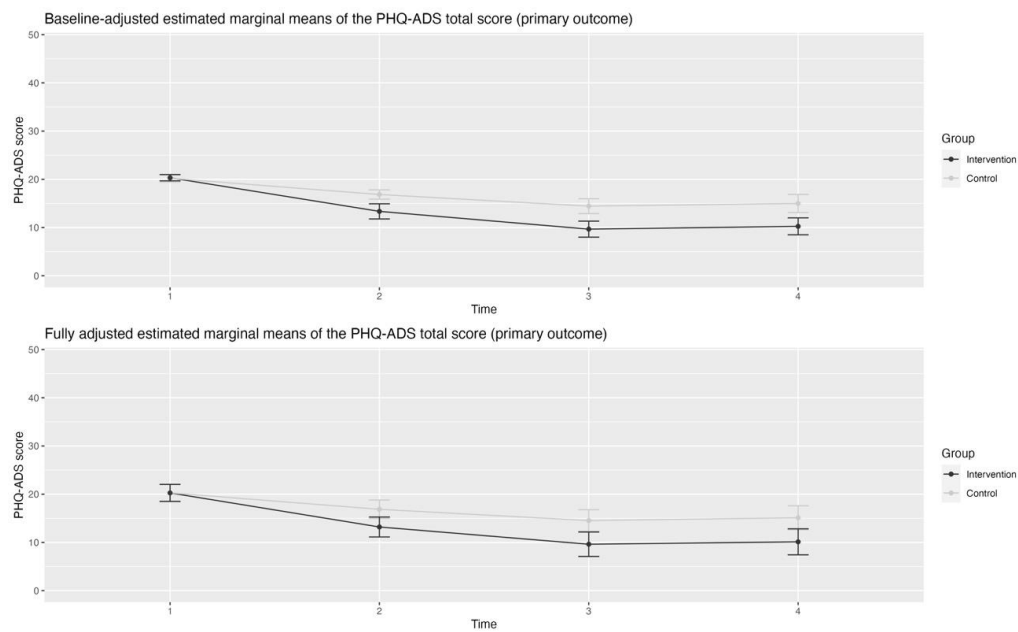
Appendix Figure 6. Standardised effect sizes (HCWs with probable depression and/or anxiety disorders)

Sensitivity analyses (exploratory)

We ran three exploratory analyses on our primary and secondary outcomes that were not specified in the study protocol: a complete-case analysis, a modified per-protocol analysis, and a binary logistic regression analysis. The results are presented below.

Complete-case analysis

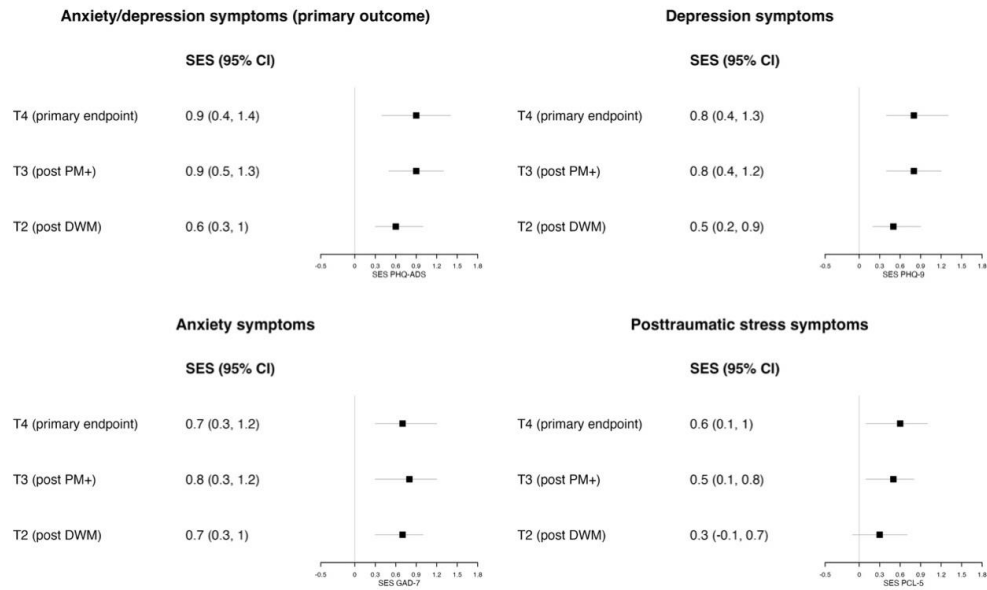
The complete-case analysis includes all participants reporting the primary outcome measure at all time points, i.e., 79 participants on the intervention arm and 70 participants on the control arm (n = 149, 64%).



Appendix Figure 7. Estimated marginal means of the PHQ-ADS (complete-case analysis)

Appendix Table 4. Estimated marginal means and 95 percent CIs (complete-case analysis)

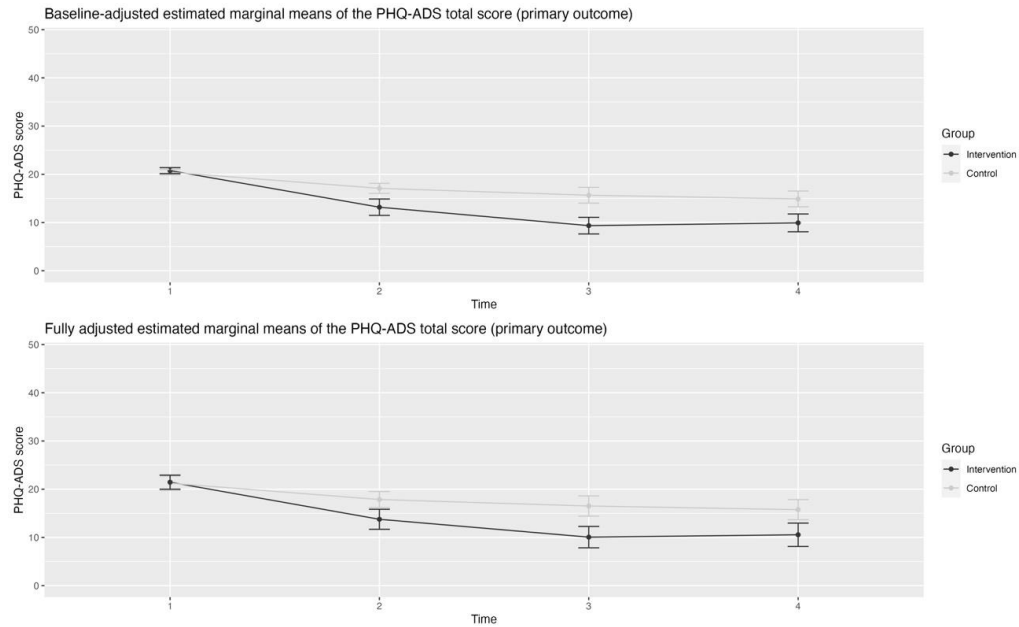
		Baseline-adjusted models [‡]			Fully adjusted models [†]		
		Control	Intervention	Difference	Control	Intervention	Difference
PHQ-ADS ¹	Week 21 (follow-up)	15 (13.1, 16.9)	10.2 (8.5, 12)	4.7 (2.2, 7.3)	15.1 (12.6, 17.6)	10.1 (7.4, 12.8)	5 (2.4, 7.6)
	Week 13 (post PM+)	14.4 (12.9, 16)	9.7 (8, 11.3)	4.8 (2.5, 7)	14.5 (12.3, 16.8)	9.6 (7.1, 12.2)	4.9 (2.6, 7.2)
	Week 7 (post DWM)	16.8 (15.9, 17.8)	13.4 (11.8, 14.9)	3.5 (1.7, 5.3)	16.9 (15, 18.8)	13.2 (11.1, 15.3)	3.7 (1.9, 5.4)
PHQ-9 ²	Week 21 (follow-up)	7.5 (6.5, 8.5)	5 (4, 5.9)	2.5 (1.1, 3.9)	7.8 (6.5, 9.2)	5.2 (3.9, 6.4)	2.7 (1.2, 4.1)
	Week 13 (post PM+)	7.1 (6.2, 7.9)	4.6 (3.7, 5.5)	2.5 (1.3, 3.7)	7.4 (6.2, 8.6)	4.8 (3.7, 6)	2.6 (1.3, 3.8)
	Week 7 (post DWM)	8.1 (7.6, 8.7)	6.6 (5.7, 7.5)	1.5 (0.5, 2.6)	8.4 (7.4, 9.4)	6.8 (5.7, 7.9)	1.6 (0.6, 2.6)
GAD-7 ³	Week 21 (follow-up)	7.5 (6.5, 8.4)	5.3 (4.3, 6.2)	2.2 (0.9, 3.5)	7.3 (5.9, 8.7)	4.9 (3.4, 6.5)	2.3 (1, 3.7)
	Week 13 (post PM+)	7.4 (6.5, 8.3)	5.1 (4.2, 5.9)	2.3 (1, 3.5)	7.1 (5.8, 8.4)	4.8 (3.3, 6.3)	2.4 (1.1, 3.6)
	Week 7 (post DWM)	8.7 (8.1, 9.3)	6.8 (5.9, 7.6)	1.9 (0.9, 3)	8.5 (7.4, 9.6)	6.4 (5.2, 7.6)	2.1 (1, 3.1)
PCL-5 ⁴	Week 21 (follow-up)	9.5 (8, 11.1)	7.1 (5.8, 8.3)	2.4 (0.5, 4.4)	9.8 (7.9, 11.8)	7.2 (5.3, 9.2)	2.6 (0.6, 4.6)
	Week 13 (post PM+)	9.2 (8, 10.4)	7.3 (6.2, 8.4)	1.9 (0.3, 3.6)	9.6 (7.9, 11.2)	7.4 (5.7, 9.2)	2.1 (0.4, 3.8)
	Week 7 (post DWM)	11.4 (10.2, 12.7)	10.1 (9, 11.3)	1.3 (-0.4, 3)	11.7 (9.9, 13.5)	10.3 (8.7, 12)	1.4 (-0.3, 3)
Note.							
All models include participant as a random effect. All confidence intervals calculated using robust standard errors.							
PHQ-ADS = Patient Health Questionnaire - Anxiety and Depression Scale; PHQ-9 = 9-item Patient Health Questionnaire; GAD-7 = 7-item Generalised Anxiety Disorder; PCL-5 = PTSD checklist for DSM-5; PM+ = Problem Management Plus; DWM = Doing What Matters.							
[‡] Adjusted for outcome score measured at baseline							
[†] Adjusted for age, gender, level of education, use of mental health services prior to enrolment, outcome score measured at baseline, and site.							
¹ Ns valid at weeks 21, 13, and 7 are 70, 70, and 70, in the control arm, and 79, 79, and 79, in the intervention arm							
² Ns valid at weeks 21, 13, and 7 are 70, 70, and 70, in the control arm, and 79, 79, and 79, in the intervention arm							
³ Ns valid at weeks 21, 13, and 7 are 70, 70, and 70, in the control arm, and 79, 79, and 79, in the intervention arm							
⁴ Ns valid at weeks 21, 13, and 7 are 70, 70, and 70, in the control arm, and 79, 79, and 79, in the intervention arm							



Appendix Figure 8. Standardised effect sizes (complete-case analysis)

Per-protocol analysis

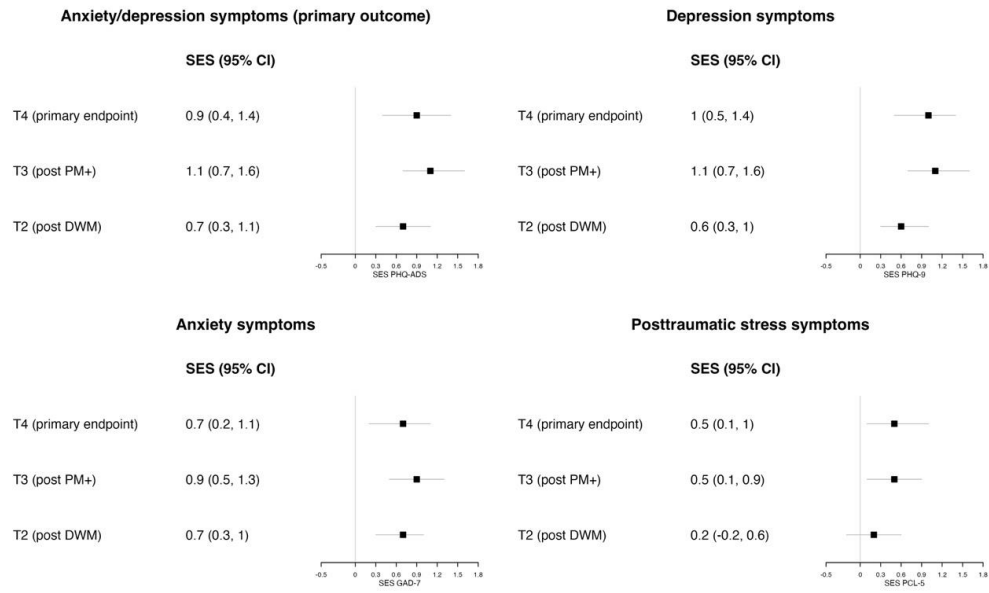
The modified per-protocol analysis includes all participants in the control arm (117) and all participants who completed the intervention programme (n = 73, 64%). Completers were participants who stepped up and finished both DWM (i.e., clicked through at least three modules) and PM+ (i.e., attended at least four sessions) and participants who did not step up and finished DWM.



Appendix Figure 9. Estimated marginal means of the PHQ-ADS (per-protocol analysis)

Appendix Table 5. Estimated marginal means and 95 percent CIs (per-protocol analysis)

		Baseline-adjusted models [‡]			Fully adjusted models [†]		
		Control	Intervention	Difference	Control	Intervention	Difference
PHQ-ADS ¹	Week 21 (follow-up)	14.9 (13.3, 16.5)	9.9 (8.1, 11.8)	5 (2.5, 7.5)	15.8 (13.7, 17.8)	10.5 (8.1, 13)	5.2 (2.7, 7.7)
	Week 13 (post PM+)	15.7 (14, 17.3)	9.4 (7.6, 11.1)	6.3 (3.9, 8.7)	16.5 (14.4, 18.6)	10.1 (7.8, 12.3)	6.5 (4, 8.9)
	Week 7 (post DWM)	17.1 (16, 18.1)	13.2 (11.5, 14.9)	3.9 (1.9, 5.9)	17.9 (16.2, 19.5)	13.8 (11.7, 15.8)	4.1 (2.1, 6.1)
PHQ-9 ²	Week 21 (follow-up)	7.6 (6.7, 8.5)	4.6 (3.6, 5.6)	3 (1.7, 4.4)	8.2 (7.1, 9.3)	5 (3.8, 6.3)	3.1 (1.8, 4.5)
	Week 13 (post PM+)	7.9 (7, 8.8)	4.4 (3.5, 5.3)	3.5 (2.2, 4.8)	8.5 (7.3, 9.6)	4.9 (3.8, 6)	3.6 (2.3, 4.9)
	Week 7 (post DWM)	8.4 (7.8, 9)	6.5 (5.5, 7.4)	1.9 (0.8, 3)	8.9 (8, 9.8)	6.9 (5.7, 8)	2 (0.9, 3.1)
GAD-7 ³	Week 21 (follow-up)	7.3 (6.4, 8.1)	5.3 (4.4, 6.3)	1.9 (0.6, 3.2)	7.6 (6.4, 8.7)	5.5 (4.2, 6.8)	2.1 (0.7, 3.4)
	Week 13 (post PM+)	7.7 (6.9, 8.6)	5 (4.1, 5.8)	2.8 (1.5, 4)	8 (6.9, 9.2)	5.2 (4, 6.4)	2.8 (1.6, 4.1)
	Week 7 (post DWM)	8.7 (8.1, 9.3)	6.7 (5.8, 7.6)	2 (0.9, 3.1)	9 (8.1, 9.9)	6.9 (5.8, 8)	2.1 (1, 3.2)
PCL-5 ⁴	Week 21 (follow-up)	9.6 (8.2, 11)	7.3 (6, 8.6)	2.3 (0.4, 4.2)	10.2 (8.4, 12)	7.7 (5.8, 9.5)	2.5 (0.6, 4.4)
	Week 13 (post PM+)	9.8 (8.6, 10.9)	7.5 (6.2, 8.7)	2.3 (0.6, 4)	10.4 (8.7, 12)	7.9 (6.1, 9.6)	2.5 (0.8, 4.2)
	Week 7 (post DWM)	11 (10, 12.1)	10.3 (9, 11.5)	0.8 (-0.9, 2.4)	11.6 (10, 13.2)	10.7 (9, 12.5)	0.9 (-0.8, 2.6)
Note.							
All models include participant as a random effect. All confidence intervals calculated using robust standard errors.							
PHQ-ADS = Patient Health Questionnaire - Anxiety and Depression Scale; PHQ-9 = 9-item Patient Health Questionnaire; GAD-7 = 7-item Generalised Anxiety Disorder; PCL-5 = PTSD checklist for DSM-5; PM+ = Problem Management Plus; DWM = Doing What Matters.							
[‡] Adjusted for outcome score measured at baseline							
[†] Adjusted for age, gender, level of education, use of mental health services prior to enrolment, outcome score measured at baseline, and site.							
¹ Ns valid at weeks 21, 13, and 7 are 94, 88, and 102, in the control arm, and 71, 72, and 73, in the intervention arm							
² Ns valid at weeks 21, 13, and 7 are 94, 89, and 102, in the control arm, and 71, 72, and 73, in the intervention arm							
³ Ns valid at weeks 21, 13, and 7 are 94, 88, and 102, in the control arm, and 71, 72, and 73, in the intervention arm							
⁴ Ns valid at weeks 21, 13, and 7 are 90, 82, and 99, in the control arm, and 70, 71, and 70, in the intervention arm							



Appendix Figure 10. Standardised effect sizes (per-protocol analysis)

Binary logistic regression models

Binary logistic regression analyses include the full ITT sample.

Appendix Table 6. Estimates and 95 percent CIs for baseline- and fully adjusted intention-to-treat models

	PHQ-ADS ^y	PHQ-ADS [†]	PHQ-9 ^y	PHQ-9 [†]	GAD-7 ^y	GAD-7 [†]
Intervention at time 2	5.13	5.47	6.30	6.40	2.79	3.22
	[1.76, 14.97]	[1.90, 15.71]	[2.01, 19.70]	[2.07, 19.76]	[0.94, 8.27]	[1.08, 9.60]
Intervention at time 3	11.10	10.93	10.68	9.98	7.82	8.24
	[3.27, 37.69]	[3.25, 36.78]	[2.93, 38.90]	[2.76, 36.06]	[2.04, 30.01]	[2.14, 31.75]
Intervention at time 4	4.48	4.91	8.34	9.02	2.73	3.24
	[1.43, 14.03]	[1.57, 15.35]	[2.41, 28.85]	[2.58, 31.49]	[0.84, 8.85]	[0.99, 10.66]

Note.

All models include participant as a random effect. All confidence intervals calculated using robust standard errors.
 PHQ-ADS = Patient Health Questionnaire - Anxiety and Depression Scale; PHQ-9 = 9-item Patient Health Questionnaire; GAD-7 = 7-item Generalised Anxiety Disorder; PCL-5 = PTSD checklist for DSM-5; PM+ = Problem Management Plus; DWM = Doing What Matters.
^yAdjusted for outcome score measured at baseline
[†]Adjusted for age, gender, level of education, use of mental health services prior to enrolment, outcome score measured at baseline, and site.

Using Agresti's generalised odds ratios (R package *genodds*) we obtained the following NNT estimates:

Appendix Table 7. NNT and 95 percent CIs

	PHQ-ADS	PHQ-9	GAD-7
Week 21 (<i>t</i> ₄)	6 (3 to 24)	6 (4 to 27)	6 (4 to 24)
Week 13 (<i>t</i> ₃)	4 (3 to 8)	7 (4 to 27)	4 (3 to 9)
Week 7 (<i>t</i> ₂)	5 (3 to 14)	7 (4 to 50)	5 (3 to 14)