

## SUPPLEMENTARY MATERIAL 1

### Sensitivity analysis: Equally weighted Holistic MCID score

#### *Internal Consistency: Multivariate Dimensional Analysis of equally weighted Holistic MCID*

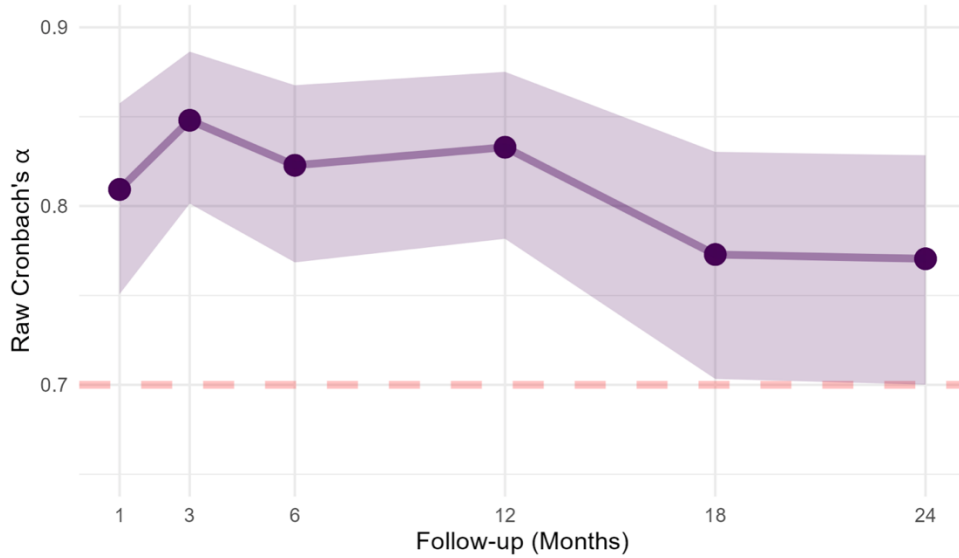


Figure S1. Internal consistency of equally weighted Holistic MCID at each follow-up

#### *Construct Validity: equally weighted Holistic MCID Association with PGIC*

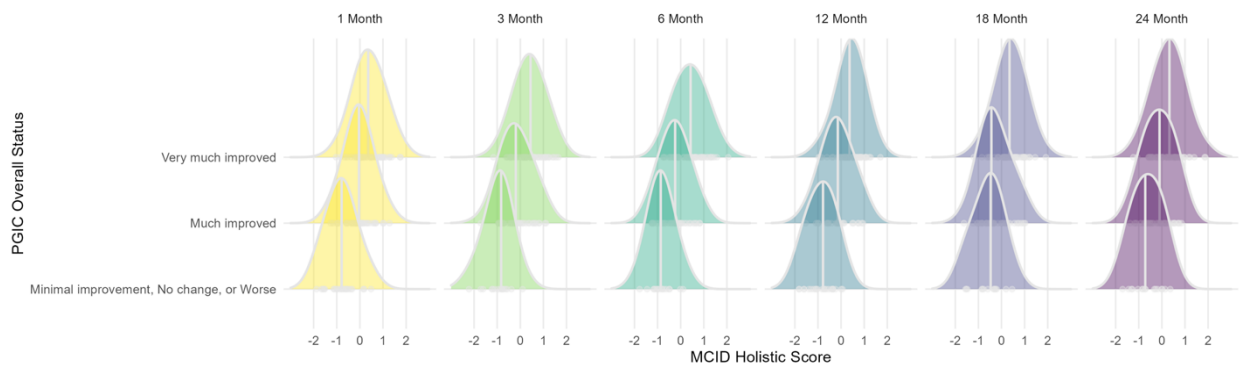


Figure S2. Association between equally weighted Holistic MCID score and PGIC

Table S1. Eigenvalues and Variance Explained by PCA dimensions (equally weighted Holistic MCID)

Dimension	Eigenvalue	Variance Percent	Cumulative Variance Percent
Dimension 1	2.98	59.65	59.65
Dimension 2	0.70	14.11	73.76
Dimension 3	0.58	11.67	85.43
Dimension 4	0.43	8.56	93.99
Dimension 5	0.30	6.01	100.00

Table S2. Comparison of intervention response on the equally weighted Holistic MCID score versus the PGIC scale

Coefficient	Odds Ratio	95% CI	<i>p</i> -value
Minimal improvement, No change, or Worse ⇒ Much improved	0.042	(0.02, 0.09)	< 0.001***
Much improved ⇒ Very much improved	2.032	(1.05, 3.93)	0.035*
Visit - 3 Month	1.868	(0.95, 3.66)	0.068 .
Visit - 6 Month	2.039	(1.03, 4.04)	0.041*
Visit - 12 Month	1.458	(0.73, 2.91)	0.284
Visit - 18 Month	1.415	(0.71, 2.84)	0.327
Visit - 24 Month	1.306	(0.65, 2.63)	0.457
<b>Holistic Standardized MCID Score</b>	<b>25.293</b>	<b>(14, 45.74)</b>	<b>&lt; 0.001***</b>

(\*\*\*) < 0.001, (\*\*) < 0.01, (\*) < 0.05, (.) < 0.1

### Construct Validity: equally weighted Holistic MCID Association with EQ-VAS

Table S3. Comparison of intervention response on the equally weighted Holistic MCID score versus the EQ-VAS

100% Response-inflated Mixed-effect Beta Regression (Inverted Scale)

Evidence of Significant Association between **HMCID** & EQ5D VAS (0-100)

Coefficient	Odds Ratio	95% CI	p-value
(Intercept)	<b>0.330</b>	(0.3, 0.36)	< 0.001***
visit3 Month	0.937	(0.87, 1.01)	0.099 .
visit6 Month	0.909	(0.84, 0.98)	0.016*
visit12 Month	1.058	(0.98, 1.14)	0.152
visit18 Month	1.016	(0.94, 1.1)	0.702
visit24 Month	1.079	(1, 1.17)	0.062 .
<b>Holistic MCID Score</b>	<b>0.486</b>	<b>(0.46, 0.52)</b>	<b>&lt; 0.001***</b>

(\*\*\*) < 0.001, (\*\*) < 0.01, (\*) < 0.05, (.) < 0.1

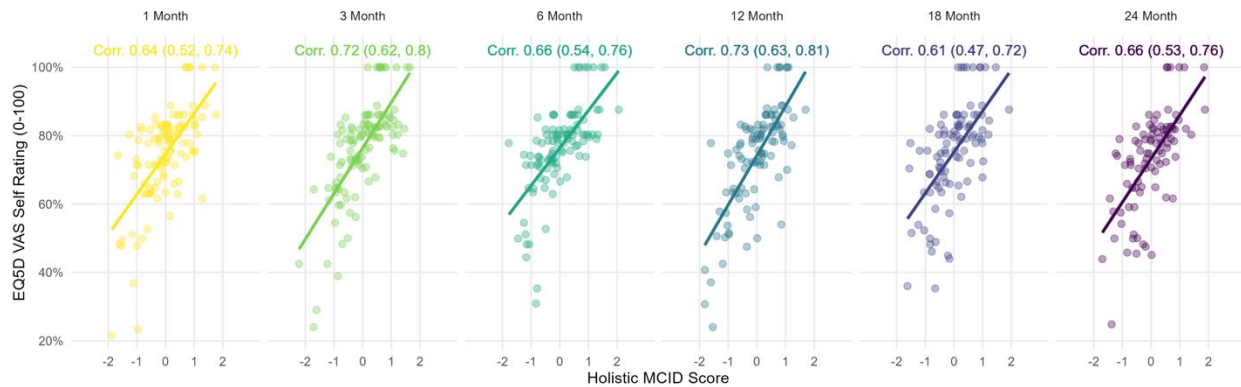


Figure S3. Association between equally weighted Holistic MCID score and EQ-VAS

## SUPPLEMENTARY MATERIAL 2

### Sensitivity analysis: VAS MCID alone

#### VAS MCID Association with PGIC

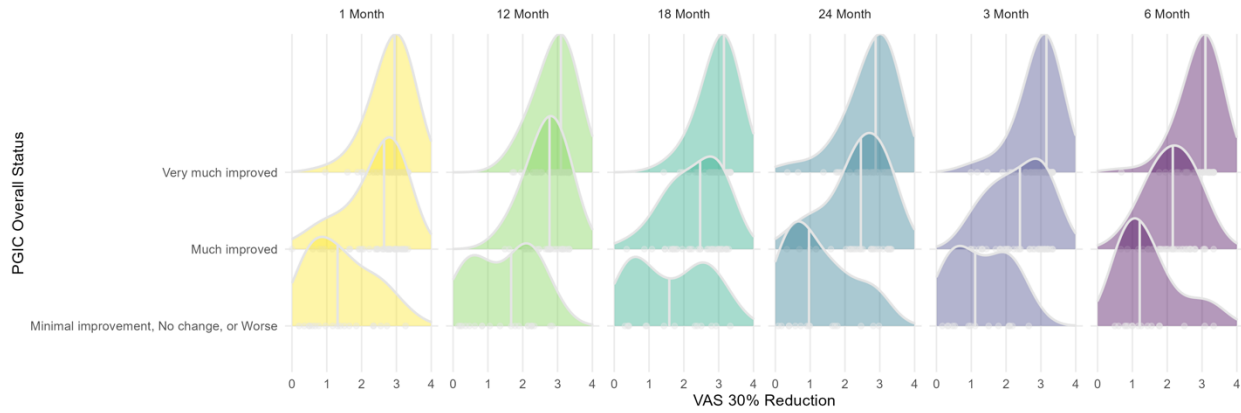


Figure S4. Association between VAS MCID score and PGIC

Table S4. Comparison of intervention response on the VAS MCID score versus the PGIC scale

Coefficient	Odds Ratio	95% CI	<i>p</i> -value
Minimal improvement, No change, or Worse ⇒ Much improved	0.051	(0.03, 0.1)	< 0.001***
Much improved ⇒ Very much improved	1.833	(1, 3.35)	0.049*
Visit - 3 Month	1.445	(0.76, 2.75)	0.263
Visit - 6 Month	1.490	(0.78, 2.85)	0.229
Visit - 12 Month	0.982	(0.51, 1.9)	0.956
Visit - 18 Month	0.989	(0.51, 1.92)	0.973
Visit - 24 Month	1.387	(0.7, 2.75)	0.351
<b>VAS 30% Reduction</b>	<b>6.735</b>	<b>(4.71, 9.62)</b>	<b>&lt; 0.001***</b>

(\*\*\*) < 0.001, (\*\*) < 0.01, (\*) < 0.05, (.) < 0.1

## VAS MCID Association with EQ-VAS

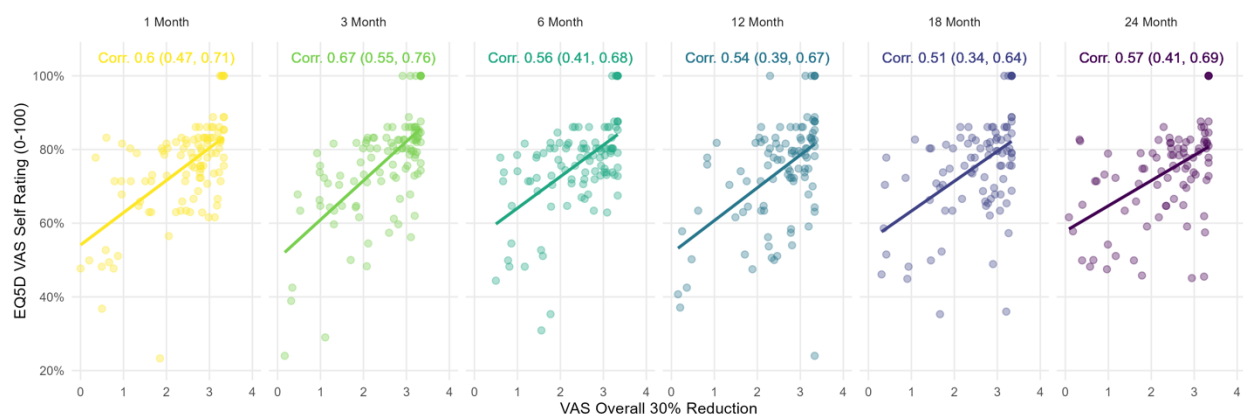


Figure S5. Association between VAS MCID score and EQ-VAS

Table S5. Comparison of intervention response on VAS MCID versus EQ-VAS

100% Response-inflated Mixed-effect Beta Regression (Inverted Scale)

Evidence of Significant Association between **VAS** & EQ5D VAS (0-100)

Coefficient	Odds Ratio	95% CI	p-value
(Intercept)	0.708	(0.61, 0.82)	< 0.001***
visit3 Month	0.986	(0.89, 1.09)	0.79
visit6 Month	0.963	(0.87, 1.07)	0.472
visit12 Month	1.137	(1.03, 1.26)	0.014*
visit18 Month	1.090	(0.98, 1.21)	0.11
visit24 Month	1.093	(0.98, 1.22)	0.101
<b>30% VAS Reduction</b>	<b>0.734</b>	<b>(0.7, 0.77)</b>	<b>&lt; 0.001***</b>

(\*\*\*) < 0.001, (\*\*) < 0.01, (\*) < 0.05, (.) < 0.1

## Individual Holistic MCID domains versus VAS MCID

Each of the 4-item Holistic MCID domains were compared to VAS MCID alone. Stronger ad-hoc Pearson correlation were observed for the 4-item Holistic MCID, and LMM estimates indicated that 4-item Holistic MCID scores were anywhere from 50-100+% more quantitatively representative of HRQoL, physical function, emotional function, and sleep quality, than VAS MCID alone.



Figure S6. Association between VAS 30% reduction in pain intensity and EQ-5D MCID score

### SUPPLEMENTARY MATERIAL 3

Table S6. Eigenvalues and Variance Explained by PCA dimensions (Holistic MCID)

Dimension	Eigenvalue	Variance Percent	Cumulative Variance Percent
Dimension 1	2.95	58.98	58.98
Dimension 2	0.70	13.97	72.95
Dimension 3	0.59	11.84	84.79
Dimension 4	0.46	9.23	94.02
Dimension 5	0.30	5.98	100.00

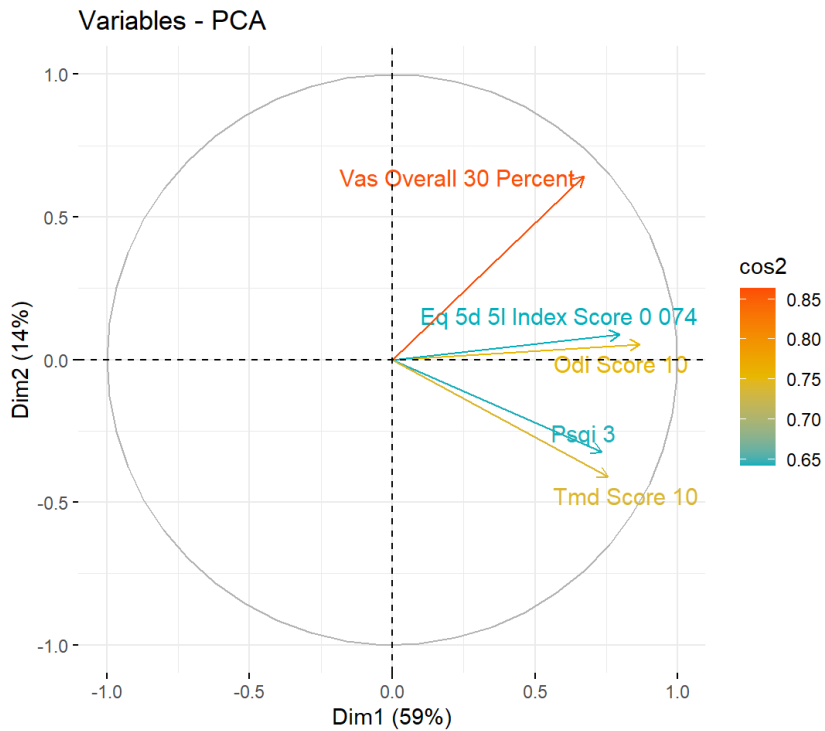


Figure S7. Relative contribution of each domain projected onto the first 2 PCA dimensions, with  $\cos^2$  distance showing relative magnitude or 'importance' of each domain

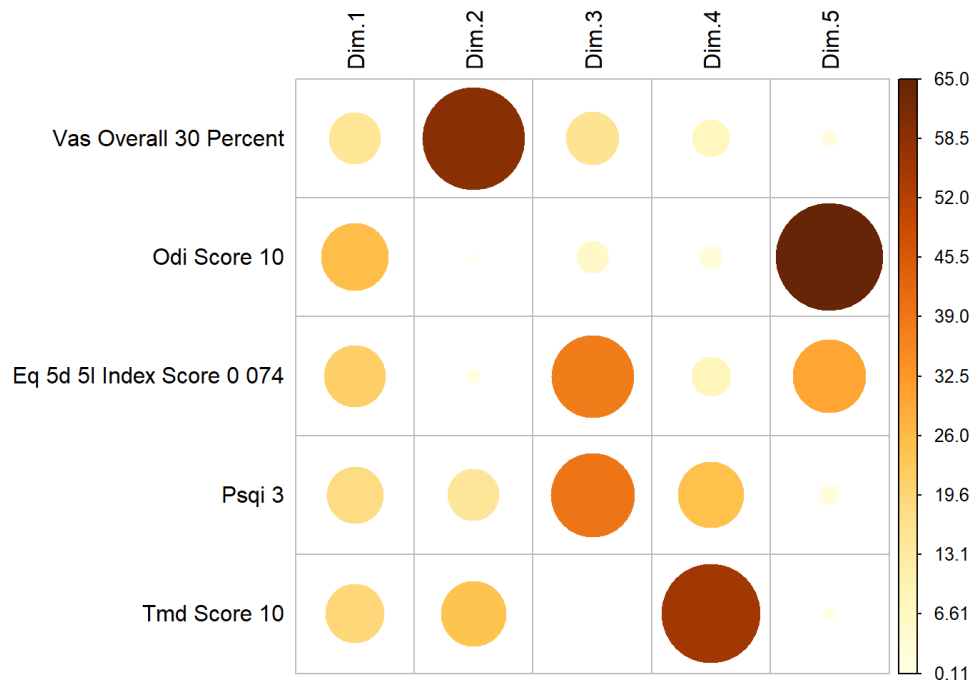


Figure S8. Correlation plot showing contribution of each domain to the PCA dimensions

Each of the 5 domains contributes roughly equally to the first dimension (i.e., same size circles), whereas only certain variables are the highest contributors to the remaining lower-variance explained dimensions.

Table S7. Comparison of intervention response on the Holistic MCID score versus the PGIC scale

Ordinal-Logistic Mixed Effect Regression Results			
Evidence of Significant Association between <b>HMCID</b> & PGIC			
Coefficient	Odds Ratio	95% CI	p-value
Minimal improvement, No change, or Worse Much improved	4.314	(1.61, 11.56)	0.004**
Much improved Very much improved	192.729	(60.86, 610.01)	< 0.001***
visit3 Month	1.316	(0.68, 2.56)	0.419
visit6 Month	1.527	(0.78, 2.98)	0.216
visit12 Month	1.230	(0.62, 2.44)	0.555
visit18 Month	1.318	(0.66, 2.63)	0.434
visit24 Month	1.484	(0.74, 2.98)	0.267
<b>Holistic MCID Score</b>	<b>6.694</b>	<b>(4.62, 9.69)</b>	<b>&lt; 0.001***</b>

(\*\*\*) < 0.001, (\*\*) < 0.01, (\*) < 0.05, (.) < 0.1



Table S8. Comparison of intervention response on the Holistic MCID score versus the EQ-VAS

100% Response-inflated Mixed-effect Beta Regression (Inverted Scale)

Evidence of Significant Association between **HMCID** & EQ5D VAS (0-100)

Coefficient	Odds Ratio	95% CI	p-value
(Intercept)	1.091	(0.96, 1.24)	0.172
visit3 Month	1.016	(0.95, 1.09)	0.66
visit6 Month	0.966	(0.9, 1.04)	0.332
visit12 Month	1.094	(1.02, 1.17)	0.011*
visit18 Month	1.018	(0.95, 1.09)	0.635
visit24 Month	1.024	(0.95, 1.1)	0.527
<b>Holistic MCID Score</b>	<b>0.609</b>	<b>(0.59, 0.63)</b>	<b>&lt; 0.001***</b>

(\*\*\*) < 0.001, (\*\*) < 0.01, (\*) < 0.05, (.) < 0.1

## SUPPLEMENTARY MATERIAL 4

Table S9. Comparison of 4-item Holistic MCID (minus EQ-5D) association with EQ-5D MCID

Linear Mixed Model Results for 4-Item No-EQ5D MCID score vs. EQ5D alone

Evidence of Significant Association between **No-EQ5D MCID** and EQ5D

Coefficient	Estimate	95% CI
(Intercept)	0.88630971	(0.45, 1.32)
visit3 Month	0.04256748	(-0.22, 0.31)
visit6 Month	0.13006210	(-0.14, 0.4)
visit12 Month	-0.29190207	(-0.56, -0.02)
visit18 Month	-0.02302897	(-0.3, 0.25)
visit24 Month	-0.11397825	(-0.39, 0.17)
<b>4-Item No-EQ5D Holistic MCID</b>	<b>1.44098505</b>	<b>(1.27, 1.62)</b>

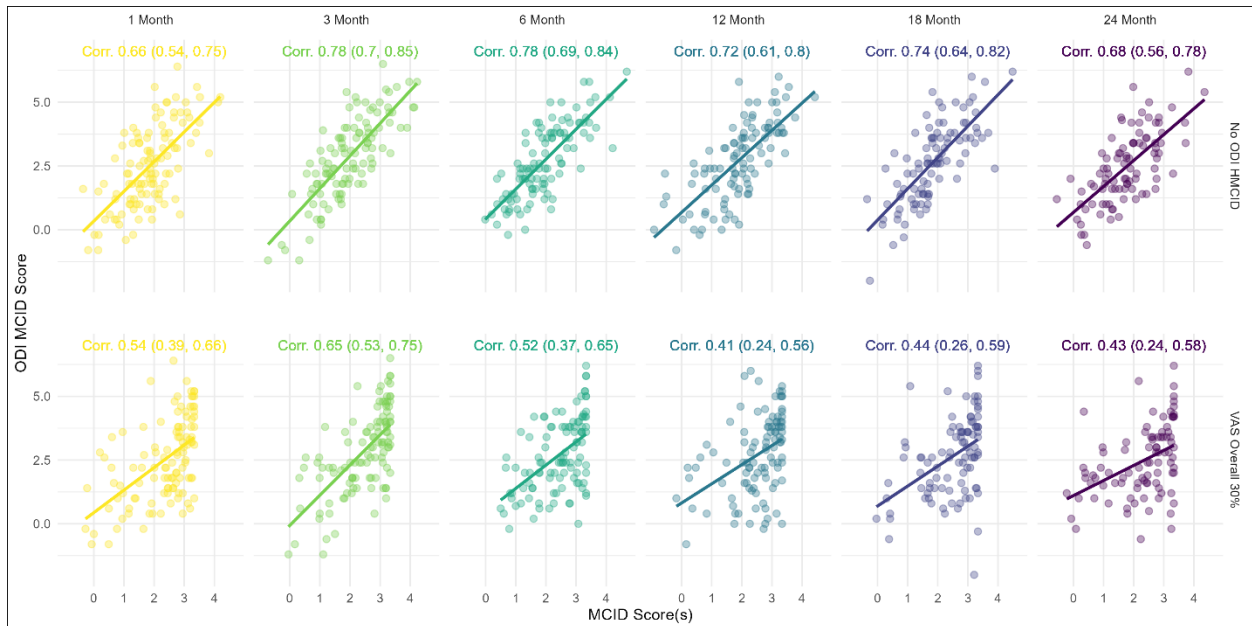


Figure S9. Significant correlations over time were observed between 4-Item HMCID (minus ODI) and ODI MCID score, and were much stronger than ODI MCID score association with VAS MCID alone

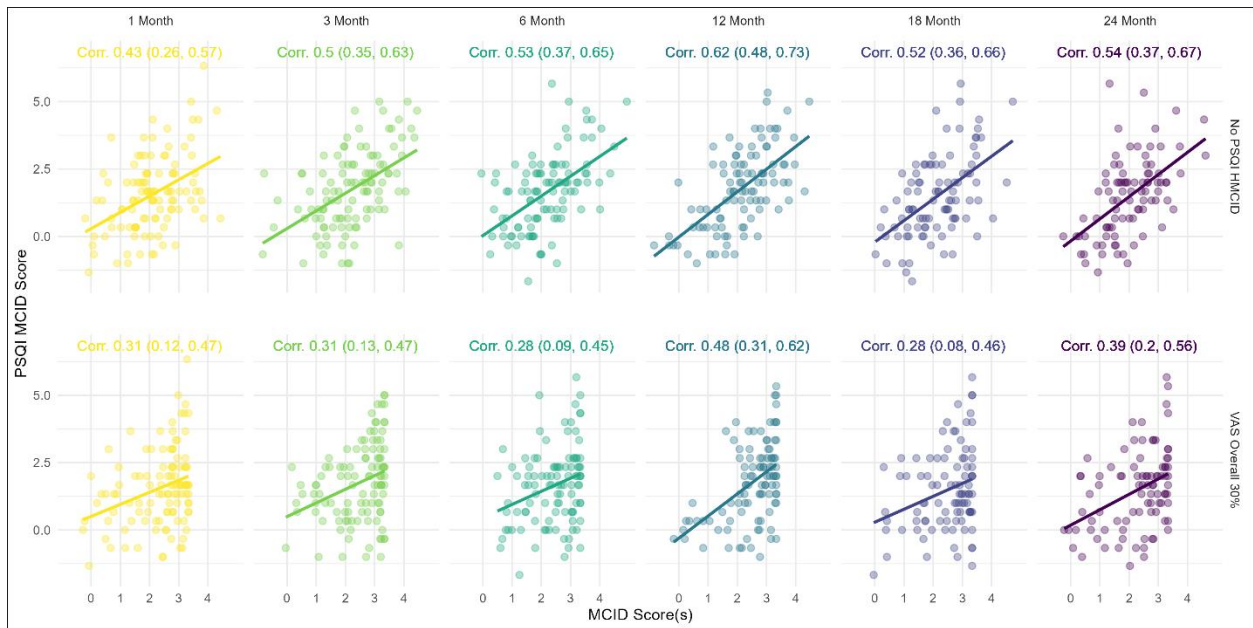


Figure S10. Significant correlations over time were observed between 4-Item HMCID (minus PSQI) and PSQI MCID score, and were much stronger than PSQI MCID score association with VAS MCID alone

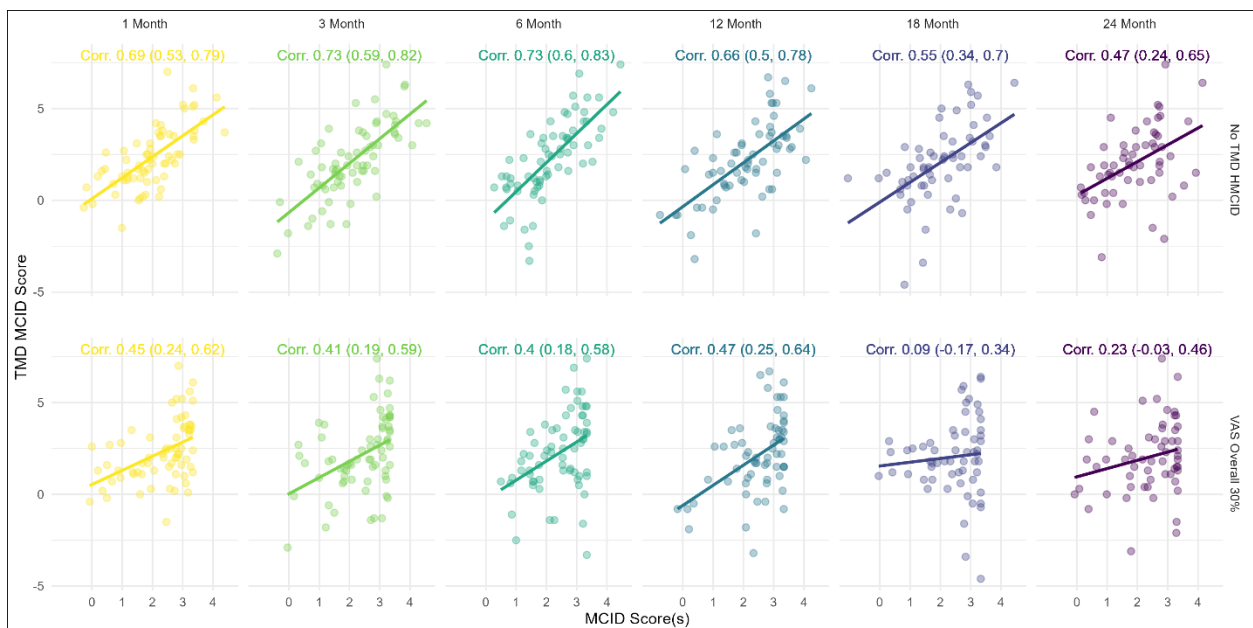


Figure S11. Significant correlations over time were observed between 4-Item HMCID (minus POMS) and POMS MCID score, and were much stronger than POMS MCID score association with VAS MCID alone