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Table 1. Potential explanatory variables explored in univariate meta-regression

| Variable | Levels* |
|---|---|
| Targeting of psychological interventions | 'non-selected population (including not |
| | reported)', 'population with clinically |
| | established psychological disorder' |
| Mode of intervention delivery | 'individual (including not reported)', 'group |
| | or mix of individual & group' |
| Family involvement in intervention | 'no (including not reported)', 'yes' |
| Cardiac risk factor education included as part of | 'no (including not reported)', 'yes' |
| the intervention | |
| Behaviour change for cardiac risk factors | 'no (including not reported)', 'yes' |
| included as part of the intervention | |
| Psychological treatment targets | |
| Depression | 'no (including not reported)', 'yes' |
| Anxiety | 'no (including not reported)', 'yes' |
| Stress management | 'no (including not reported)', 'yes' |
| Type A behaviour | 'no (including not reported)', 'yes' |
| Psychological components | |
| Relaxation | 'no (including not reported)', 'yes' |
| Cognitive techniques | 'no (including not reported)', 'yes' |
| Emotional support and/or client-led discussion | 'no (including not reported)', 'yes' |
| Adjunct pharmacology | 'no (including not reported)', 'yes' |

^{*} First level coded '0', second level coded '1' in regression models

Table 2. Study, participant, and intervention characteristics

| Study characteristics (35 Studies) | n studies | | |
|---|----------------|--|--|
| Study location | | | |
| Europe | 19 | | |
| North America | 12 | | |
| Australia | 4 | | |
| China | 1 | | |
| Median sample size (range) | 123 (42, 2481) | | |
| Duration of follow-up, months (range)* | 12 (6, 128) | | |
| Median duration of follow-up, months (range)* | 12 (6, 128) | | |
| Population characteristics | | | |
| Median of study mean ages, years (range) | 59.6 (53, 67) | | |
| Median proportion of males (range) | 77 (0, 100) | | |
| Cardiac indication on referral, % | | | |
| MI | 65.7 | | |
| Revascularisation procedure | 27.4 | | |
| Psychological disorder present at baseline | | | |
| All sample (inclusion criterion) | 12 | | |
| Mixed (observed, not required)‡ | 11 | | |
| None (exclusion criterion) | 3 | | |
| Not reported | 11 | | |
| Intervention characteristics | | | |
| Setting† | | | |

| Hospital | 9 |
|--|------------|
| Clinic | 7 |
| Home-based | 4 |
| Mixed (inpatient, other support) | 2 |
| Not reported | 13 |
| Median treatment contact hours (range) | 12 (2, 96) |
| Mode of delivery | |
| Group | 20 |
| Individual (including not reported) | 10 |
| Mixed (group/individual) | 5 |
| Family involvement with treatment | |
| Yes | 11 |
| Not reported | 24 |
| Psychological treatment aims/components | |
| Multiple aims/components | 23 |
| Single aim/component | 12 |
| Treatment aims | |
| Stress | 22 |
| Depression | 17 |
| Anxiety | 16 |
| Type A behaviour (including anger/hostility) | 12 |
| Improving disease adjustment | 11 |
| Treatment components | |
| Relaxation techniques | 20 |

| Self-awareness and self-monitoring | 20 |
|--|----|
| Cognitive challenge or restructuring | 19 |
| Emotional support or client-led discussion | 15 |
| Treatment co-interventions | |
| Behavioral change for cardiac risk factors | 19 |
| Awareness of cardiac risk factors | 16 |
| Psycho-pharmacological prescribing | 3 |

^{*} The length of follow-up of clinical events; psychological outcomes were often followed-up for shorter periods within the overall assessment schedule.

[†] Clinical settings can include cardiac rehabilitation units, hospital out-patient clinics or community centres.

[‡] Includes 2 studies where the inclusion criterion was a confirmed psychopathology and/or another indicating condition.

Table 3. Results from the pooled analysis of mortality and cardiovascular morbidity

| | | Number | of events | | | |
|-------------------|------------------------|--------------|------------|-------------------|---------------------------|---------------|
| Outcome (median | Number of | | | | Statistical Heterogeneity | GRADE Quality |
| follow-up) | Participants (Studies) | Intervention | Comparator | RR (95% CI) | I ² (p-value) | of Evidence |
| Total mortality | 7776 (23) | 319/3899 | 352/3877 | 0.90 (0.77, 1.05) | 2% (0.43) | Moderate* |
| (13 months) | | | | | | |
| Cardiovascular | 4792 (11) | 140/2561 | 161/2231 | 0.79 (0.63, 0.98) | 0% (0.76) | Low*† |
| mortality | | | | | | |
| (57 months) | | | | | | |
| Revascularisation | 6822 (13) | 395/3429 | 412/3393 | 0.94 (0.81, 1.11) | 8% (0.36) | Moderate* |
| (CABG/PCI) | | | | | | |
| (12 months) | | | | | | |
| Non-fatal MI | 7845 (13) | 340/4114 | 355/3731 | 0.82 (0.64, 1.05) | 41% (0.07) | Low*‡ |
| (30 months) | | | | | | |
| | | | | | | |

^{*}Random sequence generation, allocation concealment or blinding of outcome assessors poorly described in \geq 50% of included studies.

[†]Egger tests suggests evidence of asymmetry. ‡ 95% confidence intervals includes both no effect and appreciable benefit or harm (i.e. 95% confidence interval <0.75 or >1.25).

GRADE: moderate = further research is very likely to have an important effect in confidence of the estimated effect, and may change the estimate; low = further research is very likely to have an important effect in confidence in the estimated effect and is likely to change the estimate.

Table 4. Results from the pooled analysis psychological outcomes

| Outcome (median | Number of | SMD (95% CI) | Statistical Heterogeneity | GRADE Quality of |
|-----------------|------------------------|-----------------------------|---------------------------|------------------|
| follow-up) | Participants (Studies) | (Intervention – Comparator) | I ² (p-value) | Evidence |
| Depression | 5829 (19) | -0.27 (-0.39, -0.15) | 69% (<0.001) | ++ |
| (12 months) | | | | Low*‡ |
| Anxiety | 3165 (12) | -0.24 (-0.38, -0.09) | 47% (0.03) | ++ |
| (12 months) | | | | Low*† |
| Stress | 1255 (8) | -0.56 (-0.88, -0.24) | 86% (0.<0.001) | + |
| (12 months) | | | | Very low*‡§ |

^{*}Random sequence generation, allocation concealment or blinding of outcome assessors were poorly described in \geq 50% of included studies.

GRADE: moderate = further research is very likely to have an important effect in confidence of the estimated effect, and may change the estimate; low = further research is very likely to have an important effect in confidence in the estimated effect and is likely to change the estimate; very low quality= the estimate is very uncertain.

[†] Egger tests suggests evidence of asymmetry. ‡ Moderate heterogeneity ($I^2 > 50\%$). § 95% CIs around the SMD did not include the value of a +5 at either lower or upper limits (indicative of clinical significance).

Figure 1. Forest plot of psychological intervention versus usual care: cardiovascular mortality

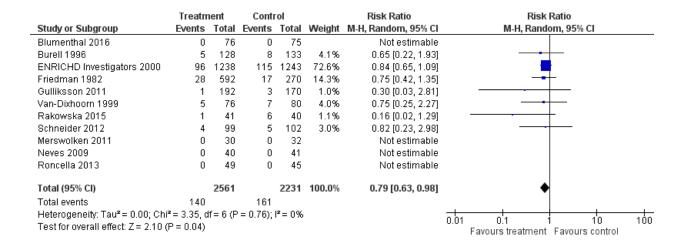


Figure 2. Forest plot of psychological intervention versus usual care: depression

| | Treatment | | | Control | | | | Std. Mean Difference | Std. Mean Difference |
|---|----------------------|------------|----------|---------|-------------------|-------|--------|----------------------|-----------------------------------|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| Black 1998 | -5.4 | 9.68 | 30 | -0.2 | 7.12 | 30 | 3.5% | -0.60 [-1.12, -0.09] | |
| Burgess 1987 | 0.3 | 7.511 | 68 | -0.3 | 6.144 | 68 | 5.5% | 0.09 [-0.25, 0.42] | |
| Claesson 2005 | -1.63 | 9.09 | 80 | -1.03 | 7.31 | 86 | 6.0% | -0.07 [-0.38, 0.23] | |
| Davidson 2010 | 13.2 | 9.58 | 80 | 17.7 | 9.18 | 77 | 5.8% | -0.48 [-0.79, -0.16] | |
| ENRICHD Investigators 2000 | -7.6 | 8.8 | 916 | -4.7 | 8.6 | 869 | 9.2% | -0.33 [-0.43, -0.24] | - |
| Freedland 2009 | 7.7 | 6.48 | 42 | 10.3 | 6.63 | 20 | 3.3% | -0.39 [-0.93, 0.14] | |
| Freedland 2009 | 5.5 | 6.4 | 41 | 10.3 | 6.63 | 20 | 3.2% | -0.73 [-1.28, -0.18] | |
| Jones 1996 | -0.05 | 2.85 | 1060 | -0.01 | 2.98 | 1068 | 9.3% | -0.01 [-0.10, 0.07] | + |
| Koertge 2008 | -2.3 | 5.07 | 87 | -1.8 | 5.58 | 82 | 6.0% | -0.09 [-0.40, 0.21] | |
| Lie 2007 | 2.7 | 3.1 | 93 | 3.5 | 4 | 92 | 6.2% | -0.22 [-0.51, 0.07] | |
| McLaughlin 2005 | -2.4 | 5.43 | 45 | 0.1 | 2.87 | 35 | 4.1% | -0.55 [-1.00, -0.10] | |
| Merswolken 2011 | -0.4 | 2.8 | 25 | -0.2 | 2.7 | 27 | 3.2% | -0.07 [-0.62, 0.47] | |
| Michalsen 2005 | -2.9 | 4.7 | 48 | -2.2 | 5.5 | 53 | 4.8% | -0.14 [-0.53, 0.26] | |
| O'Neil 2015 | -5.13 | 14.88 | 61 | -2.37 | 19.18 | 60 | 5.2% | -0.16 [-0.52, 0.20] | |
| Roncella 2013 | 6 | 1.25 | 49 | 8 | 2.25 | 45 | 4.3% | -1.10 [-1.54, -0.67] | |
| Schneider 2012 | -0.25 | 6.57 | 85 | 0.686 | 6.56 | 93 | 6.1% | -0.14 [-0.44, 0.15] | |
| Sebregts 2005 | -1.6 | 4.93 | 83 | -0.6 | 3.78 | 75 | 5.9% | -0.23 [-0.54, 0.09] | |
| Stern 1983 | -1.94 | 6.6 | 31 | 0.04 | 6.2 | 25 | 3.4% | -0.30 [-0.83, 0.23] | |
| Turner 2013 | 17.4 | 10.3 | 20 | 16.6 | 10.5 | 27 | 3.0% | 0.08 [-0.50, 0.65] | |
| Turner 2014 | 11.95 | 7.87 | 14 | 18 | 10.61 | 15 | 2.0% | -0.63 [-1.37, 0.12] | |
| Total (95% CI) | | | 2958 | | | 2867 | 100.0% | -0.27 [-0.39, -0.15] | • |
| Heterogeneity: Tau ^z = 0.04; Chi | ² = 61.08 | 6, df = 15 | 9 (P < 0 | .000013 |); I² = 69 | 1% | | _ | |
| Test for overall effect: Z = 4.33 (| | | | , | | | | | -1 -0.5 0 0.5 1 |
| | | , | | | | | | | Favours treatment Favours control |

Figure 3. Forest plot of psychological intervention versus usual care: anxiety

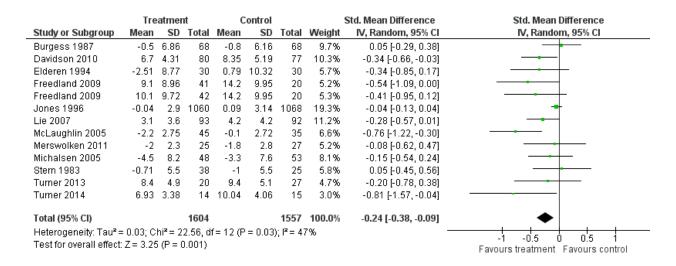


Figure 4. Forest plot of psychological intervention versus usual care: stress

| | Tre | atmer | nt | C | ontrol | | | Std. Mean Difference | Std. Mean Difference |
|--|-------|-------|-------|-------|--------|-------|---|----------------------|----------------------|
| Study or Subgroup | Mean | SD | Total | Mean | SD | Total | Weight | IV, Random, 95% CI | IV, Random, 95% CI |
| Claesson 2005 | -6.3 | 9.2 | 77 | -2.8 | 6.7 | 82 | 12.0% | -0.43 [-0.75, -0.12] | |
| Freedland 2009 | 14.6 | 7.78 | 41 | 18.6 | 7.96 | 20 | 9.8% | -0.50 [-1.05, 0.04] | |
| Freedland 2009 | 14 | 7.68 | 41 | 18.6 | 7.96 | 20 | 9.8% | -0.58 [-1.13, -0.04] | |
| Gallacher 1997 | -9 | 21.8 | 184 | -4.2 | 22.2 | 194 | 12.9% | -0.22 [-0.42, -0.02] | |
| Koertge 2008 | 34 | 7.8 | 113 | 35.3 | 8.7 | 122 | 12.5% | -0.16 [-0.41, 0.10] | + |
| Michalsen 2005 | -3.58 | 7.1 | 48 | -2.08 | 6.6 | 53 | 11.3% | -0.22 [-0.61, 0.17] | |
| Neves 2009 | 23.4 | 4.1 | 40 | 31.5 | 4.9 | 41 | 10.1% | -1.77 [-2.29, -1.26] | |
| Rakowska 2015 | 22.02 | 1.93 | 41 | 24.69 | 1.76 | 40 | 10.3% | -1.43 [-1.92, -0.94] | |
| Roncella 2013 | 5 | 1.25 | 49 | 5 | 1 | 45 | 11.2% | 0.00 [-0.40, 0.40] | + |
| Total (95% CI) | | | 634 | | | 617 | 100.0% | -0.56 [-0.88, -0.24] | • |
| Heterogeneity: $Tau^2 = 0.20$; $Chi^2 = 55.74$, $df = 8$ (P < 0.00001); $I^2 = 86\%$ Test for overall effect: $Z = 3.41$ (P = 0.0007) | | | | | | | -2 -1 0 1 2 Favours treatment Favours control | | |