**SUPPLEMENTAL MATERIAL**

**Table S1.** Summary of findings for study outcomes.

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| --- | --- | --- | --- | --- |
| **First Author**  **(year)** | | **Tool** | **Statistics** | ***N*** |
| **Disease-related knowledge (n=5)** | | | | |
| Goossense (2015) | | LKQ-CHD | * 27-month follow-up\*  MD±SD=1.18±9.65 | Exp.=106  Cont.=65 |
| Lee (2019) | | LKQ-CHD  (Korean version) | * Post\*  MD±SD=10.64±15.12 | Exp.=27  Cont.=25 |
| Mackie (2014) | | MyHeart | * 1-month follow-up  MD=14.0±21.94 * 6 month follow up\*  MD±SD=15.0±21.94 | Exp.=24  Cont.=26 |
| Mackie (2018) | | MyHeart | * 18-month follow-up\*  Hedge’s g=0.72  Vg=0.04 | Exp.=58  Cont.=63 |
| Mackie (2022) | | MyHeart | * 6-month follow-up\*  MD±SD=20.00±22.10 | Exp.=27  Cont.=25 |
| **Loss to follow-up (n=4)** | | | | |
| Bushee (2021) | - | | * For 3 years\*  OR=0.38, LogOR=-0.96,   VlogOR=0.08 | Exp.=212  Cont.=216 |
| Gaydos (2020) | - | | * For 26 months\*  OR=0.23, LogOR=-1.49,   VlogOR=0.46 | Exp.=41  Cont.=54 |
| Hergenroeder  (2018) | - | | * For 3 years\*  OR=0.06, LogOR=-2.77,   VlogOR=2.21 | Exp.=15  Cont.=30 |
| Mackie (2018) | - | | * For 24 months\*  OR=0.76, LogOR=-0.27,   VlogOR=0.16 | Exp.=58  Cont.=63 |
| **Self-management (n=4)** | | | | |
| Lee (2019) | | Self-care of Heart Failure Index | * Post\*  MD=10.02±8.56 | Exp.=27  Cont.=25 |
| Mackie (2014) | | TRAQ:  self-management | * 1-month follow-up  MD=0.22±0.95 * 6 month follow up\*  MD±SD=0.61±1.00 | Exp.=24  Cont.=26 |
| Mackie (2018) | | TRAQ:  self-management | * 18-month follow-up\*  Hedge’s g=0.46  Vg=0.03 | Exp.=58  Cont.=63 |
| Mackie (2022) | | TRANSITION-Q | * 6-month follow-up\*  MD±SD=11.89±0.67 | Exp.=27  Cont.=25 |

**Table S1.** Continued.

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| --- | --- | --- | --- |
| **First Author**  **(year)** | **Tool** | **Statistics** | ***N*** |
| **Quality of life (n=3)** | | | |
| Hwang (2022) | PCQLI | * Post\*  MD=6.49±3.66 * 1-month follow-up  MD±SD=5.84±3.69 | Exp.=14  Cont.=14 |
| Lee (2017) | PCQLI | * Post\*  MD=1.58±14.57 * 6-month follow-up  MD±SD=1.36±14.23 | Exp.=25  Cont.=31 |
| Lee (2019) | PedsQL (generic) | * Post  MD±SD=0.94±15.12 | Exp.=27  Cont.=25 |
| PedsQL (cardiac) | * Post\*  MD±SD=2.35±13.37 |
| **Excess time between pediatric and ACHD care (n=2)** | | | |
| Hergenroeder  (2018) | - | * MD±SD=-5±0.28 | Exp.=15  Cont.=30 |
| Mackie (2018) | - | * MD±SD=-10.7±14.63 | Exp.=58  Cont.=63 |
| **Self-advocacy (n=2)** | | | |
| Mackie (2014) | TRAQ:  self-advocacy | * 1-month follow-up  MD=0.27±0.71 * 6-month follow-up  MD±SD=0.49±0.78 | Exp.=24  Cont.=26 |
| Mackie (2018) | TRAQ:  self-advocacy | * 18-month follow-up  Hedge’s g=0.09  Vg=0.03 | Exp.=58  Cont.=63 |
| **Health behavior (n=1)** | | | |
| Hwang (2022) | Average daily steps (step/day) | * Post  MD=1599.45±638.66 * 1-month follow-up  MD±SD=2626.73±590.76 | Exp.=14  Cont.=14 |
| Weekdays sedentary behavior (min/day) | * Post  MD=-60.46±25.34 * 1-month follow-up  MD±SD=-105.68±25.56 |
| Weekend sedentary behavior (hr/day) | * Post  MD=-2.23±0.76 * 1-month follow-up  MD±SD=-0.45±0.77 |
| Average MVPA per day (min/day) | * Post  MD=9.91±9.12 * 1-month follow-up  MD±SD=31.12±9.41 |

**Table S1.** Continued.

|  |  |  |  |
| --- | --- | --- | --- |
| **First Author**  **(year)** | **Tool** | **Statistics** | ***N*** |
| **Health behavior (n=1)** | | | |
| Hwang (2022) | Consumption of convenience food | * Post  OR=0.72, 95% CI=0.24 to   2.18 * 1-month follow-up  OR=0.72, 95% CI=0.39 to   1.34 | Exp.=14  Cont.=14 |
| Total sleep time (min/day) | * Post  MD=0.43±16.24 * 1-month follow-up  MD±SD=-22.09±16.05 |
| **Transition to ACHD care (n=1)** | | | |
| Bushee (2021) | - | * For 2 years  OR=1.62, LogOR=0.48,   VlogOR=019 | Exp.=212  Cont.=216 |
| **Unplanned cardiac hospitalizations (n=1)** | | | |
| Bushee (2021) | - | * For 2 years  OR=0.60, LogOR=-0.52,   VlogOR=0.15 | Exp.=350  Cont.=303 |
| **Deterioration of heart failure status (n=1)** | | | |
| Hergenroeder  (2018) | NYHAFS | * For 2 years  OR=0.10, LogOR=-2.92,   VlogOR=2.24 | Exp.=15  Cont.=30 |

ACHD: adult congenital heart disease; CI: confidence interval; Cont.: control group; Exp.: experimental or exposure group; LKQ-CHD: Leuven Knowledge Questionnaire for Congenital Heart Disease; MD: mean difference; MVPA: moderate to vigorous intensity physical activity; NYHAFS: The New York Heart Association Functional Classification of Heart failure; OR: odds ratio; PCQLI: Pediatric Cardiac Quality of Life Inventory; PedsQL: Pediatric Quality of Life; SD: standard difference; TRAQ: Transition Readiness Assessment Questionnaire; Vg: variance of Hedge’s g; VlogOR: variance of logOR.

\*Statistics utilized for meta-analysis.

**Table S2.** GRADE scores of transition programs to adulthood for adolescents and young adults with congenital feart disease.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Patient or population:** adolescents or young adults with congenital heart disease  **Setting:** hospital-based or community-based settings  **Intervention:** transition programs to adult health care  **Comparison:** usual care or no intervention | | | | |
| **Outcomes** | **No. of Participants (Studies)** | **Anticipated Effects**  **(95% CI)** | **Certainty of**  **the Evidence (GRADE)** | **Comments** |
| Disease-related knowledge | 414  (5) | Hedge's g=0.89  (0.29 lower to  1.48 higher) | ⊕⊕⊝⊝abc  Low | Transition interventions may increase disease-related knowledge. |
| Self-management | 243  (4) | Hedge's g=0.67  (0.38 lower to  0.95 higher) | ⊕⊝⊝⊝d  Very low | The evidence is very uncertain about the effect of transition intervention on self-management. |
| Disease-related QoL | 136  (3) | Hedge's g=0.60  (-0.24 lower to  1.44 higher) | ⊕⊝⊝⊝ade  Very low | The evidence is very uncertain about the effect of transition intervention on disease-related QoL. |
| Loss to follow-up | 689  (4) | OR=0.41  (0.22 lower to  0.77 higher) | ⊕⊕⊝⊝af  Low | Transition interventions may decrease loss to follow-up. |
| **GRADE Working Group grades of evidence**  **High certainty:** we are very confident that the true effect lies close to that of the estimate of the effect.  **Moderate certainty:** we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.  **Low certainty:** our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.  **Very low certainty:** we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect. | | | | |

CI: confidence interval; OR: odds ratio; QoL: quality of life.

aThere was a high risk of bias in some of the studies included. Therefore, the certainty of evidence was downgraded by 1 level due to risk of bias.

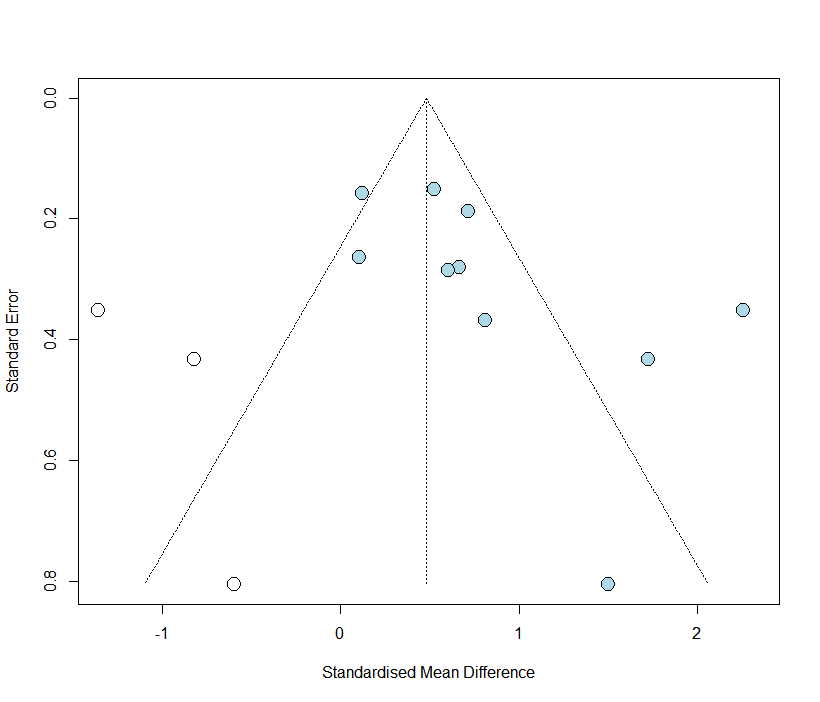
bStatistical heterogeneity was considerable (I2 > 80%). However, it was explained using a sub-group analysis. Therefore, we decided not to downgrade the   
evidence by 1 level due to inconsistency.

cThe Hedge's g showed a large effect size (Hedge’s g > 0.75). Therefore, the certainty of evidence was upgraded by 1 level due to large effect;

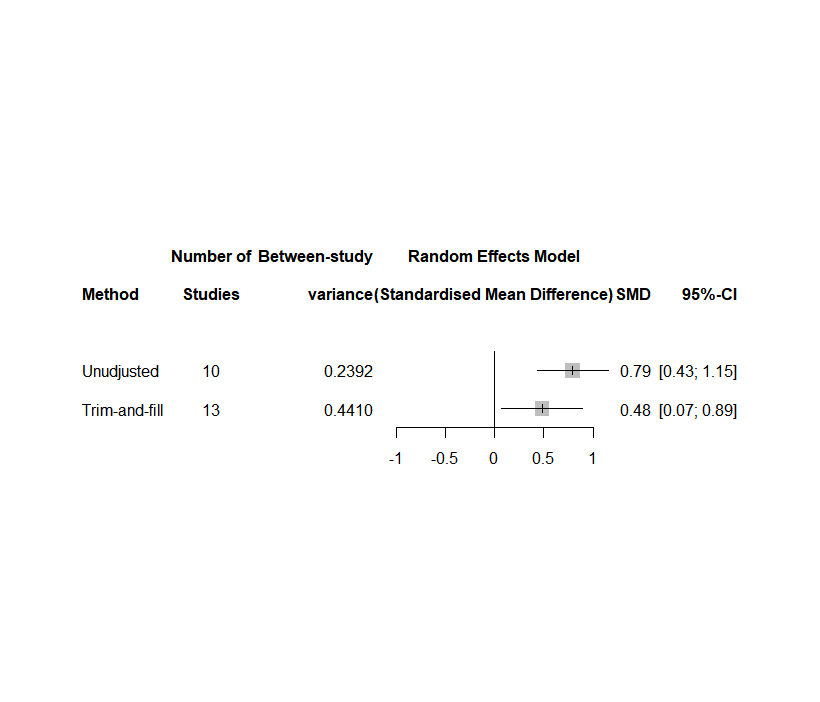
dImprecise due to small sample size (< 400) (Higgins et al., 2022). Therefore, the certainty of evidence was downgraded by 1 level due to imprecision.

eStatistical heterogeneity was considerable (I2 > 80%). Therefore, the certainty of evidence was downgraded by 1 level due to inconsistency.

fThe OR showed a large effect size (OR < 0.5). Therefore, the certainty of evidence was upgraded by 1 level due to large effect.



**Figure S1.** Funnel plot for the 10 included studies.



**Figure S2.** Combining two analyses with metabind.