

Cost-effectiveness of Early Journey of Life for promoting child development

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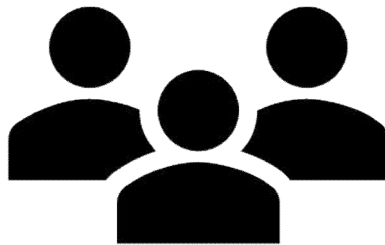
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How much
does it
cost?

Is it
affordable?

Value for
money?



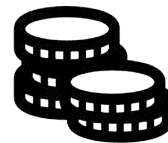
Cost-effectiveness analysis



Estimate how much it costs to gain health outcome

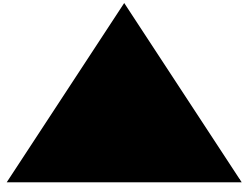


Determine if the value of an intervention justifies its cost

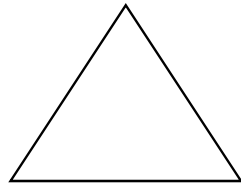


Support resource allocation decision making

Cost-effectiveness analysis



New child health
intervention



Standard of care
(comparator)

① Cost

② Health outcome

Incremental cost-effectiveness ratio= (ICER)

$$\frac{Cost_i - Cost_c \text{ (differences in cost)}}{Outcome_i - Outcome_c \text{ (difference in outcome)}}$$

→ Additional cost to gain additional outcome

Promoting early childhood development in Vietnam: Cost-effectiveness analysis alongside a cluster- randomized trial

Objective

To estimate the cost-effectiveness of 'Early Journey of Life' in rural Vietnam

Methods

Cost-effectiveness analysis alongside a cluster-randomized controlled trial

Publication: Accepted in Lancet Global Health

BMJ Open Protocol for an economic evaluation alongside a cluster randomised controlled trial: cost-effectiveness of Learning Clubs, a multicomponent intervention to improve women's health and infant's health and development in Vietnam

Trang Nguyen,^{1,2} Kim Sweeny ³, Thach Tran ¹, Stanley Luchters,^{4,5} David B Hipgrave,⁶ Sarah Hanieh,⁷ Tuan Tran,² Ha Tran,² Beverley-Ann Biggs,⁸ Jane Fisher¹

Nguyen T, Sweeny K, Tran T, Luchters S, Hipgrave DB, Hanieh S, Tran T, Tran H, Biggs BA, Fisher J. Protocol for an economic evaluation alongside a cluster randomised controlled trial: cost-effectiveness of Learning Clubs, a multicomponent intervention to improve women's health and infant's health and development in Vietnam. *BMJ Open*. 2019 Dec 15;9(12):e031721.

Early Journey of Life



- A cluster randomized controlled trial (2018-2021)
- Multicomponent intervention
 - Physical and mental health of women
 - Health and development of their infants

Intervention

669 women

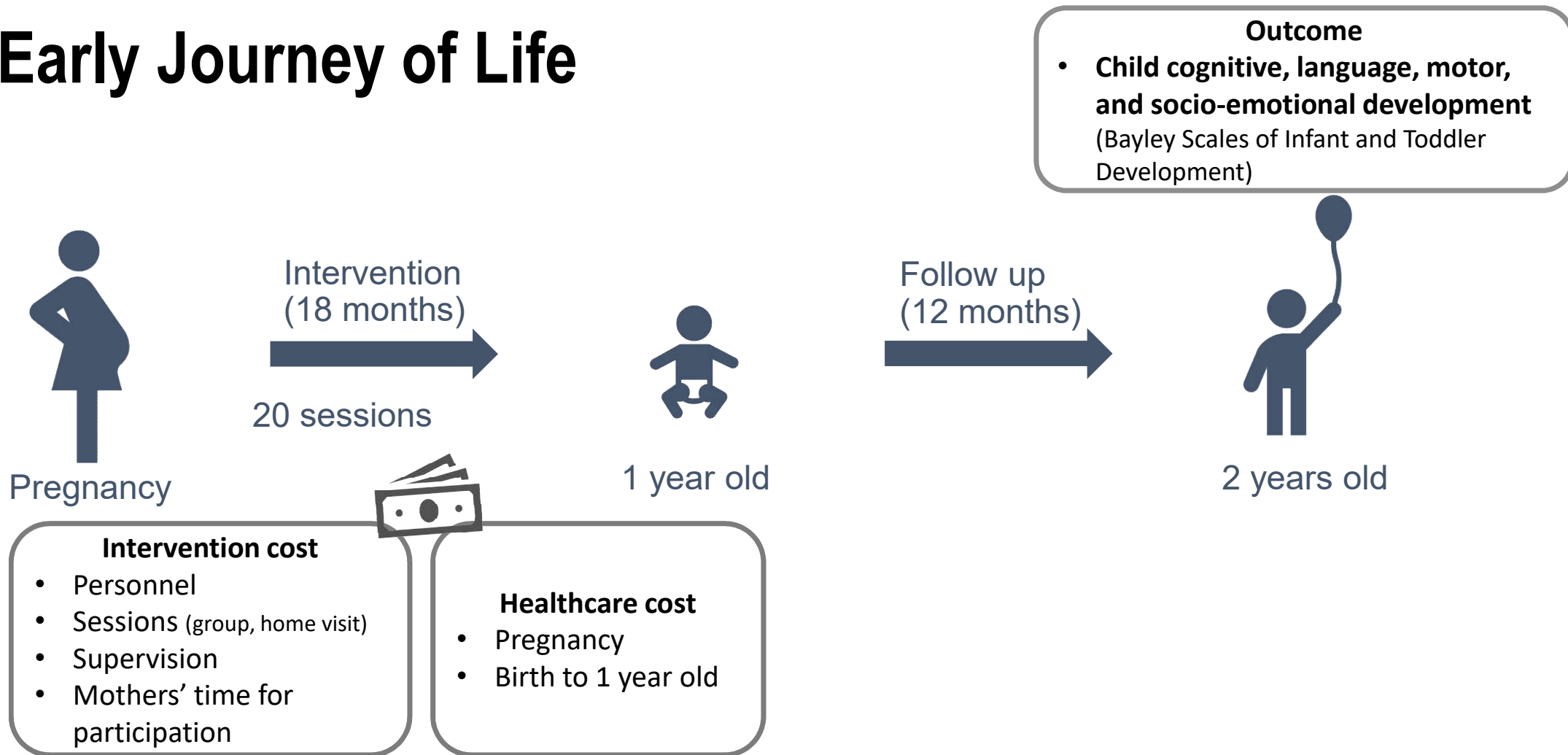
Early Journey of
Life, standard of
healthcare

Control

576 women

Standard of
healthcare

Early Journey of Life



Analysis

- **Incremental cost-effectiveness ratio**
 - Cost: intervention cost, healthcare costs
 - Outcome: child development scores
- **Statistical model** to estimate costs and outcomes
- **Equity measures:** subgroup analyses
 - Household wealth quintile
 - Mother's education levels

Results:

Cost of Intervention

Cost categories	Total costs (VND)
Start-up cost	
Educational package development	1,625,205,583
Materials and supplies	420,560,388
Workshops	189,150,000
Training	846,716,505
Subtotal start-up cost	3,081,632,476
Recurrent cost	
Personnel	103,470,874
Session costs	584,290,152
Supervision/management	145,901,820
Household participation costs	900,157
Subtotal recurrent cost	834,563,004
Total	3,916,195,480
Total cost per child	6,296,134
Recurrent cost per child	1,341,741

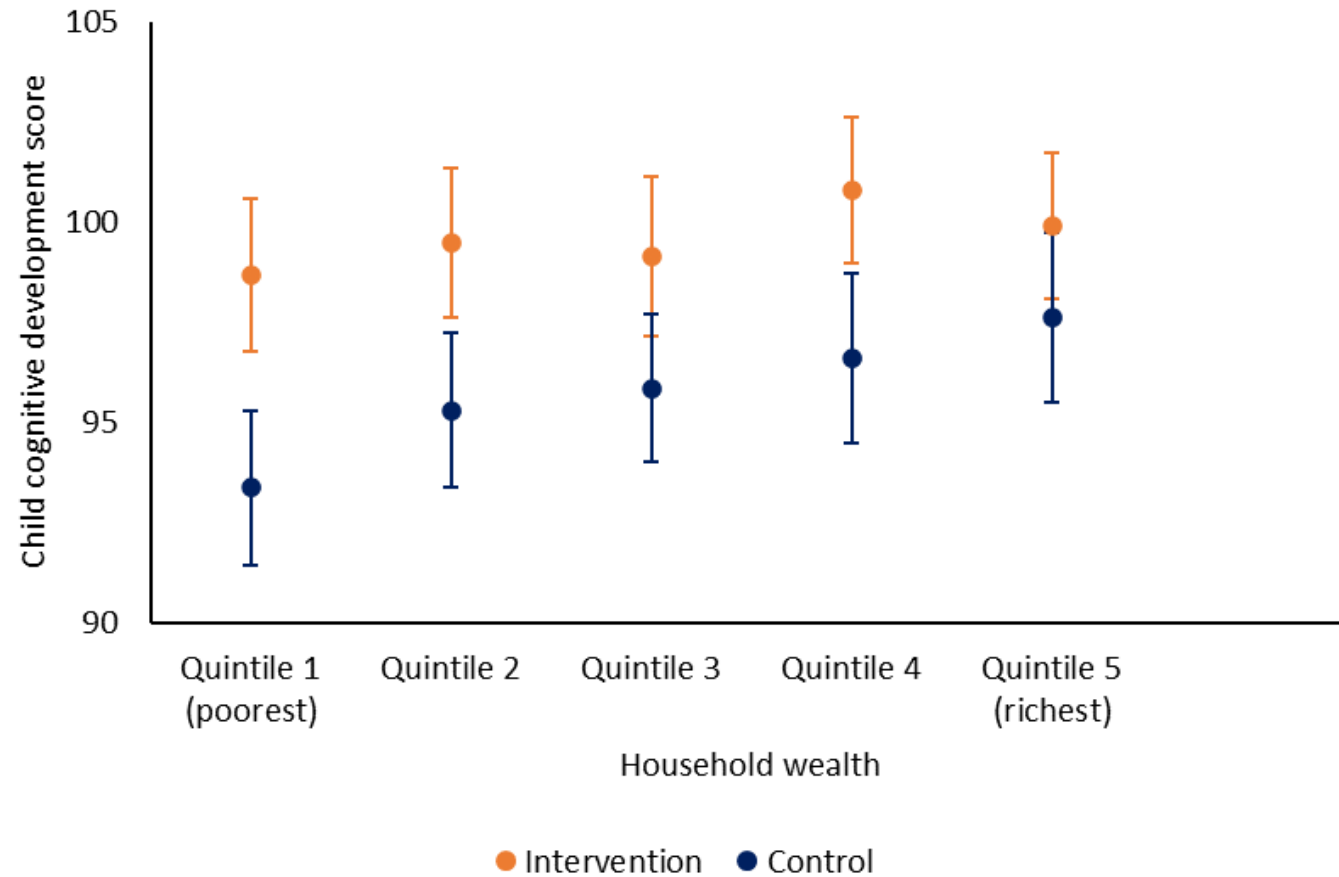
Out-of-pocket healthcare costs (thousand VND)

	Intervention	Control	Difference
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
Maternal and child healthcare costs	3,481 (2420 to 4541)	3,550 (2420 to 4656)	-69 (-1614 to 1475)

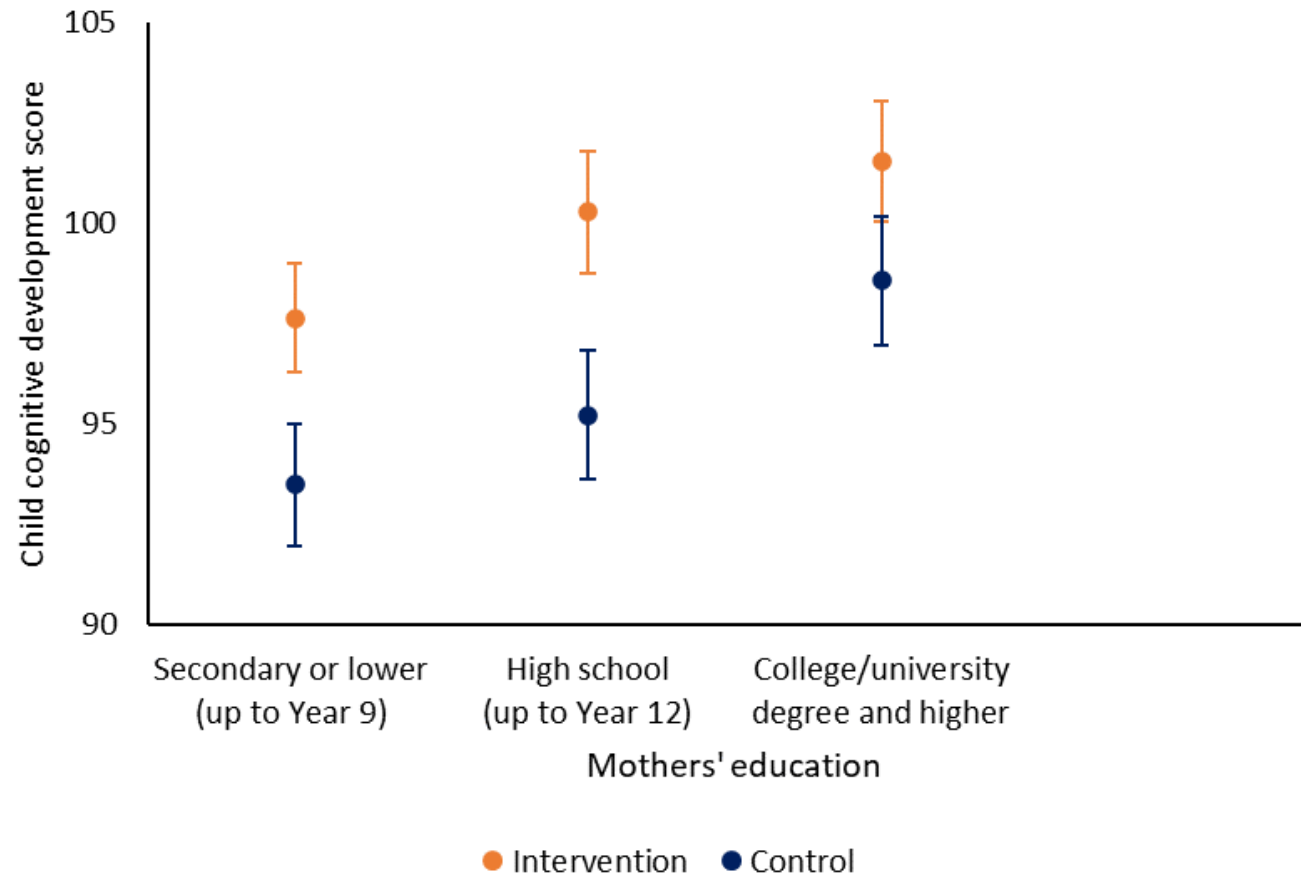
Child development scores

	Intervention	Control	Difference
	Mean (95% CI)	Mean (95% CI)	Mean (95% CI)
Cognitive	99.7 (98.7 to 100.7)	95.7 (94.6 to 96.7)	4.0 (2.5 to 5.5)
Language	99.5 (98.2 to 100.9)	97.0 (95.6 to 98.5)	2.5 (0.5 to 4.4)
Motor	104.0 (103.0 to 105.1)	101.3 (100.2 to 102.4)	2.7 (1.2 to 4.2)
Social-emotional	103.2 (100.5 to 105.8)	100.9 (98.2 to 103.6)	2.3 (-1.5 to 6.1)

Child cognitive score by household wealth quintile



Child cognitive score by mother's education level



Incremental cost-effectiveness ratios per child development score gained (VND)

	Mean 95%CI
Child development score increased	
Based on start-up and recurrent cost	
Cognitive	1,555,352 (1045548 to 2309810)
Language	2,982,175 (1369186 to 7962760)
Motor	2,333,713 (1388201 to 4080398)
Based on recurrent cost	
Cognitive	314,443 (-11027 to 682534)
Language	613,361 (-17875 to 2213570)
Motor	476,471 (-16111 to 1188094)

Incremental cost-effectiveness ratios (US\$) per child development score gained

	Mean 95%CI
Child development score increased	
Based on start-up and recurrent cost	
Cognitive	\$68 (45 to 100)
Language	\$129 (59 to 346)
Motor	\$101 (60 to 177)
Based on recurrent cost	
Cognitive	\$14 (-0.5 to 30)
Language	\$27 (-0.8 to 96)
Motor	\$21 (-0.7 to 52)

Incremental cost-effectiveness ratios (VND) per child cognitive development score gained, equity

Based on recurrent cost	Mean (95% CI)
Household wealth	
Quintile 1 (poorest)	-207,452 (-968110 to 368804)
Quintile 2	-299,653 (-1429115 to 484055)
Quintile 3	161,352 (-207452 to 622356)
Quintile 4	576,256 (-46100 to 2005371)
Quintile 5 (richest)	92,201 (-3273134 to 5140204)
Mother's education	
Secondary (up to Year 9) or lower	-2,305 (-484055 to 414904)
High school (up to Year 12)	461,005 (-46100 to 1267763)
College/university degree and higher	207,452 (-92201 to 599306)

Incremental cost-effectiveness ratios (US\$) per child cognitive development score gained, equity

Based on recurrent cost	Mean (95% CI)
Household wealth	
Quintile 1 (poorest)	-\$9 (-42 to 16)
Quintile 2	-\$13 (-62 to 21)
Quintile 3	\$7 (-9 to 27)
Quintile 4	\$25 (-2 to 87)
Quintile 5 (richest)	\$4 (-142 to 223)
Mother's education	
Secondary (up to Year 9) or lower	-\$0.1 (-21 to 18)
High school (up to Year 12)	\$20 (-2 to 55)
College/university degree and higher	\$9 (-4 to 26)

Findings

- **Cost-effectiveness:** Incremental cost-effectiveness ratio was 314,443 VND (US\$14) per child cognitive development score increased
 - G20's initiative benchmark for investment in early childhood development: 2% of GDP (minimum 1%)
 - Early Journey of Life: 0.5% of Vietnam's GDP per capita to improve cognitive development, alongside other benefits in language and motor development → **low cost**
- **Equity impacts:** greater cost-effectiveness in disadvantaged groups

- **Strengths**

- Planned well ahead
- Cluster randomized controlled trial-based cost-effectiveness analysis
- Potential source for future health economic modelling

- **Limitations**

- No single standard outcome to capture multiple outcomes
- Long-term benefits not considered

Next steps

- **Return on investment analysis**
 - Long-term economic benefits of the intervention
 - Child cognitive development \uparrow \rightarrow lifetime earning \uparrow
 - How much could the intervention generate net benefits?

Conclusions

Early Journey of Life EJOL is likely to



Improve child development



Be cost-effective



Promote equity

THANK YOU

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