

Health-related quality of life among adults with and without key behavioural risk factors for chronic disease: A systematic review and meta-analysis

Nirmali Sivapragasam, MPP¹, David Brain, PhD¹, Gayani Amarasinghe, MBBS, MPH¹, Sanjeewa Kularatna, PhD^{1,2}, Sameera Senanayake, MBBS, PhD^{1,2} and Nicole White, PhD¹

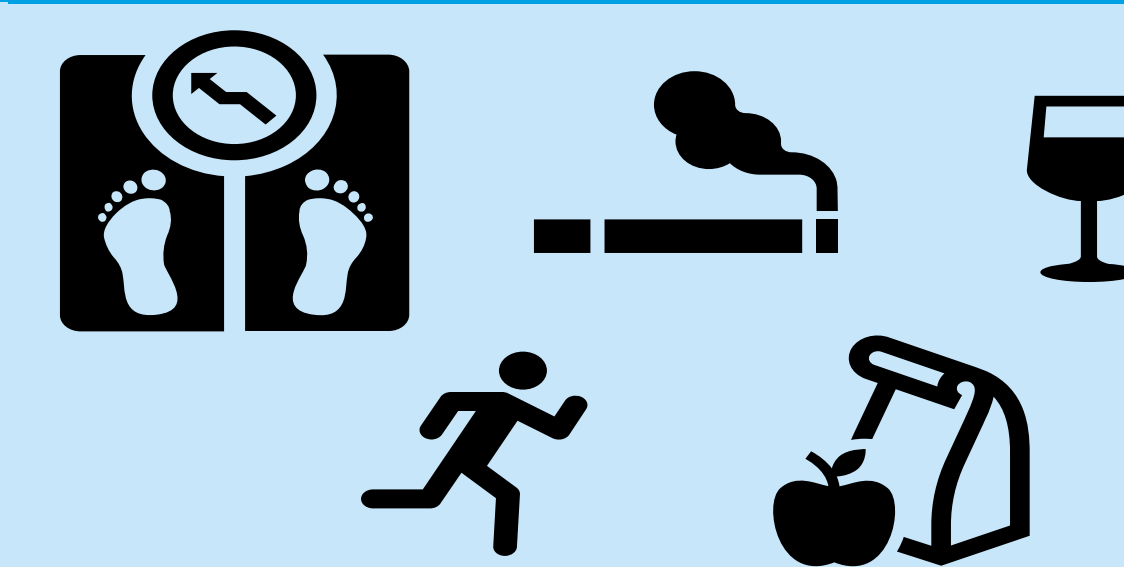


¹ Australian Centre for Health Services Innovation, School of Public Health and Social Work, QUT Centre for Healthcare Transformation, Faculty of Health, Queensland University of Technology

² Programme in Health Services and Systems Research, Duke-NUS Medical School, Singapore

Background

- The proportion of Australians with ≥ 1 chronic health condition has risen from 41.1% in 2007-08 to 47.7% in 2022¹.
- Cost-effectiveness analyses (CEAs) of preventive interventions for chronic disease are limited and often require modelling of health-related quality of life (HRQoL) to estimate long-term health benefits².
- Limited evidence exists on population-level utility values by key behavioural risk factors for chronic disease that can be used to inform CEAs³.



Aims

- Estimate HRQoL population norms among those with and without the following behavioural risk factors: high BMI, smoking and alcohol use.
- Estimate differences in HRQoL utility scores by type of preference-based instrument used in population-based studies.

Methods

- Systematic review of 4 databases: PubMed, Embase, Web of Science & EconLit between 1 January 2009-12 October 2023
 - Abstract screened: 5,493
 - Full texts screened: 197
 - Articles included in meta-analysis: 39
- Key inclusion criteria
 - Respondents aged ≥ 18 years
 - Population-based observational studies
- Key exclusion criteria
 - Disease-specific population groups
 - RCTs, case reports and case series
 - Non-English publications

Results

Table 1: Pooled utility values by risk factor category and level

Risk factor	Risk factor category	No. of studies	No. of study groups	Sample size	Utility score (mean, 95% CI)	I ² (%)	p-value for group differences
BMI	Underweight	17	53	11,293	0.810 (0.786, 0.834)	98.34	< 0.001
	Normal weight	23	60	186,115	0.863 (0.845, 0.881)	99.90	
	Overweight	23	60	164,818	0.857 (0.841, 0.874)	99.86	
	Obese	25	63	93,217	0.817 (0.797, 0.837)	99.51	
Tobacco use	Never smoker	15	20	121,875	0.875 (0.839, 0.911)	99.96	0.506
	Former smoker	15	20	49,354	0.848 (0.809, 0.886)	99.86	
	Smoker	23	31	92,423	0.849 (0.812, 0.885)	99.94	
Alcohol use	Never drinker	2	3	7,466	0.884 (0.808, 0.961)	99.59	0.459
	Former drinker	2	3	3,729	0.848 (0.704, 0.993)	99.77	
	Drinker	6	8	83,182	0.921 (0.890, 0.952)	99.92	

Table 2: Multivariable meta-regression analysis of utility scores for BMI

Subgroup	Meta-regression 1					Meta-regression 2				
	Adjusted β	SE	Lower 95% CI	Upper 95% CI	p-value	Adjusted β	SE	Lower 95% CI	Upper 95% CI	p-value
Proportion of females	-	-	-	-	-	-0.007	0.001	-0.008	-0.006	< 0.001
BMI category										
Underweight	(reference)	-	-	-	-	(reference)	-	-	-	-
Normal weight	0.021	0.001	0.019	0.024	< 0.001	0.019	0.001	0.017	0.022	< 0.001
Overweight	0.014	0.001	0.011	0.016	< 0.001	0.012	0.001	0.010	0.015	< 0.001
Obese	-0.025	0.001	-0.028	-0.022	< 0.001	-0.023	0.002	-0.026	-0.020	< 0.001
Instrument type										
EQ-5D-3L	(reference)	-	-	-	-	(reference)	-	-	-	-
EQ-5D-5L	0.008	0.030	-0.050	0.066	0.789	-0.010	0.042	-0.092	0.072	0.806
HUI	0.004	0.046	-0.086	0.094	0.933	0.013	0.048	-0.081	0.107	0.788
SF-6D	-0.111	0.039	-0.186	-0.035	0.004	-0.122	0.042	-0.204	-0.041	0.003

Conclusions

- This is the first systematic review and meta-analysis to estimate pooled HRQoL population norms by key behavioural risk factors for chronic disease.
- Some evidence of higher utility scores among those without the presence of key behavioural risk factors.
- Estimates can be applied in cost-effectiveness models of behavioural risk reduction interventions for chronic disease.

References

- Australian Institute of Health and Welfare. Chronic conditions and multimorbidity. Updated 14 December 2023. Accessed 27 March 2024, 2024. <https://www.aihw.gov.au/reports/australias-health/chronic-conditions-and-multimorbidity>
- Vos, R Carter, J Barendregt, et al. *Assessing cost-effectiveness in prevention (ACE-Prevention): Final report*. 2010.
- Brazier JE, Yang Y, Tsuchiya A, Rowen DL. A review of studies mapping (or cross walking) non-preference based measures of health to generic preference-based measures. *The European Journal of Health Economics*. 2010/04/01 2010;11(2):215-225. doi:10.1007/s10198-009-0168-z

