

Low social economic status is associated with higher cardiovascular mortality in a country of the African region

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Background

- Low socioeconomic status (SES) is consistently associated with higher mortality in high income countries.
- This association remains largely unexplored in low and middle income countries (LMIC), largely because of limited availability of reliable mortality data.
- The few studies examining social differences in mortality in LMICs have generally found higher mortality in low SES groups, but some studies found a positive SES gradient.
- **This study explores SES differences in overall and cardiovascular mortality in the Seychelles, a rapidly developing small island state in the African region.**

Methods

- Three independent population-based examination surveys of persons aged 25-64 conducted with n=1081 participants (86% participation) in 1989; n=1067 (87%) in 1994; and n=1255 (80%) in 2004. Total: 1585 men and 1818 women and 3246 with complete data.
- Vital status of all participants ascertained by linkage with deaths registry in 1989-2012. All deaths are medically certified with certificates as recommended by WHO.
- SES measured by current or last occupation, with similar questions in 3 surveys, summarized along 3 categories "professionals and skilled non manuals", "semi-skilled non-manuals and skilled/semi-skilled manuals" and "unskilled manuals, non-qualified".
- Smoking: ≥ 1 cig. per day; heavy drinking: $>75g$ ethanol per day; obesity: BMI ≥ 30 kg/m²; diabetes: fasting BG ≥ 7.0 mmol/l (126 mg/dl) (1989, 2004) or glycosuria or Hx of diabetes (1994); hypertension: BP $\geq 140/90$ mmHg or Rx; high cholesterol: total cholesterol ≥ 6.2 mmol/l (240 mg/dl).
- Associations between mortality, SES and risk factors using Cox proportional regression with age as the time scale.

Results

Figure. Survival probability from the age of 25 years by socioeconomic category

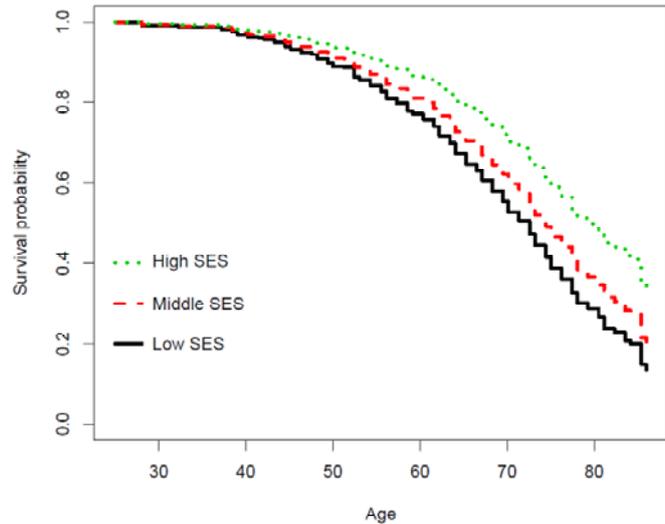


Table. Socioeconomic differences in all-cause and cardiovascular mortality and contribution of modifiable risk factors

	SOCIOECONOMIC STATUS				
	High	Middle		Low	
	HR (95% CI)	HR (95% CI)	% Δ	HR (95% CI)	% Δ
ALL-CAUSE MORTALITY					
Model 1 ^a	1.00	1.45 (1.00-2.10)		1.80 (1.24-2.62)	
Model 1 + smoking	1.00	1.37 (0.94-1.99)	-15	1.64 (1.13-2.39)	-16
Model 1 + heavy drinking	1.00	1.41 (0.97-2.05)	-7	1.68 (1.16-2.44)	-12
Model 1 + obesity	1.00	1.43 (0.94-2.08)	-4	1.81 (1.24-2.62)	0
Model 1 + diabetes	1.00	1.44 (0.99-2.09)	-2	1.83 (1.26-2.66)	3
Model 1 + hypertension	1.00	1.43 (0.99-2.08)	-3	1.81 (1.25-2.63)	1
Model 1 + high cholesterol ^b	1.00	1.45 (1.00-2.10)	0	1.79 (1.23-2.60)	-1
Model 1 + all risk factors	1.00	1.30 (0.89-1.89)	-30	1.57 (1.08-2.28)	-24
CARDIOVASCULAR MORTALITY					
Model 1 ^a	1.00	1.66 (0.88-3.11)		1.95 (1.04-3.65)	
Model 1 + smoking	1.00	1.62 (0.86-3.04)	-5	1.87 (1.00-3.51)	-6
Model 1 + heavy drinking	1.00	1.65 (0.88-3.09)	-2	1.91 (1.02-3.58)	-3
Model 1 + obesity	1.00	1.58 (0.84-3.08)	-10	1.95 (1.04-3.65)	0
Model 1 + diabetes	1.00	1.64 (0.84-2.97)	-2	1.99 (1.07-3.73)	3
Model 1 + hypertension	1.00	1.62 (0.87-3.12)	-4	1.98 (1.05-3.69)	2
Model 1 + high cholesterol	1.00	1.66 (1.00-2.10)	1	1.97 (1.03-3.60)	2
Model 1 + all risk factors	1.00	1.47 (0.78-2.77)	-23	1.82 (0.97-3.42)	-11

CI: Confidence Interval; HR: Hazard ratio; SES: Socioeconomic status; Δ: Difference
^a Sex- and year of birth-adjusted.

During a mean follow-up of 15.0 years (range: 0-23 years), 523 participants died (overall mortality rate 10.8 per 1000 person-years). The main causes of death were cardiovascular disease (219 deaths) and cancer (142 deaths). Mortality was larger for all cause mortality (HR=1.80; 95%CI: 1.24-2.62) and CVD mortality (HR=1.95; 1.04-3.65) in low vs. high SES participants. Lifestyle-related risk factors (smoking, drinking, obesity, diabetes, hypertension, hypercholesterolemia) explained a small proportion of associations between SES and all-cause/CVD mortality. A limitation is that risk factors were measured only once at baseline.

Conclusion

Low SES (measured by occupational position) was strongly associated with overall and CVD mortality in a country of the African region. Our findings support the view that the burden of NCDs may disproportionately affect people of low SES in LMICs.