



Epilepsy mortality trends in Cuba compared with England and Wales: 1987–2010

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ABSTRACT

There are limited epilepsy mortality data from developing countries and Latin America in particular. We examined national epilepsy mortality data from Cuba and contrasted them with comparable data from England and Wales. National epilepsy mortality data for Cuba between the years 1987 and 2010 were obtained from the Medical Records and Health Statistics Bureau of the Cuban Public Health Ministry (www.sld.cu/sitios/dne/) with the corresponding mortality data from England and Wales obtained from the UK Office of National Statistics (ONS, www.ons.gov.uk). Indirect standardization with calculation of a standardized mortality ratio (SMR) was used to compare trends.

The overall trend was of a slight decrease in mortality rates over the 23 years in Cuba, with higher mortality rates primarily occurring in young people. Annual age-adjusted rates were consistently lower in Cuba than those seen in England and Wales, with the SMR ranging from 0.35 (95% confidence interval (CI): 0.30 to 0.48) in 2007 to 1.00 (95% CI: 0.85 to 1.15) in 1994.

Cuban epilepsy mortality rates are consistently lower than those of England and Wales. Reasons for this disparity in mortality rates are not immediately apparent but are likely to be multifactorial.

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1. Introduction

Epilepsy is the most common serious neurological disorder affecting over 50 million people worldwide [1] and is associated with significant morbidity and mortality. The incidence of epilepsy is estimated to be 50 per 100,000 per person years but is considered to be significantly higher in Latin America, partly because of different etiological factors, particularly the high prevalence of toxoplasmosis and other infective etiologies [2,3]. People with epilepsy have a 2–3-fold increased risk of premature mortality compared with the general population, a finding which has been replicated in multiple population studies in Europe and the US [4]. However, there is little mortality data from developing countries, particularly in Latin America. There have been no published epilepsy mortality data from Cuba apart from one recent small cohort study in people with drug-resistant temporal lobe epilepsy [5]. We have analyzed national epilepsy mortality data, comparing these with mortality data from England and Wales during the same period.

2. Methods

National mortality data by all types of epilepsy reported as the primary cause of death (first line) on the death certificate, coded as 345 International Classification of Diseases (ICD-9) or G40–G41 (ICD-10), between 1987 and 2010 were used with a total of 2518 and 21,655 deaths from Cuba and England and Wales, respectively. Both countries used the ICD-9 classification until the year 2000 and the ICD-10 classification thereafter.

Mortality data for Cuba between the years 1987 and 2010 were obtained from the Medical Records and Health Statistics Bureau of the Cuban Public Health Ministry (www.sld.cu/sitios/dne/) with the corresponding mortality data from England and Wales obtained from the UK Office of National Statistics (ONS, www.ons.gov.uk). The Cuban database is an automated public health statistical information system established in 1987, which is subject to periodic evaluations both internally (by the National Bureau of Statistics and Information) and internationally (by the World Health Organization (WHO)). In Cuba (as in England and Wales), death certificates for each patient are completed by medical doctors who have received specific training in order to do so. In addition, in Cuba, completed death certificates are routinely

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Table 1
Number of deaths, crude mortality rate, and standardized mortality for epilepsy with 95% confidence intervals in Cuba and England and Wales from 1987 to 2010.

Year	Cuba									England and Wales								
	Whole population			Male			Female			Whole population			Male			Female		
	Deaths	CMR	SMR	Deaths	CMR	SMR	Deaths	CMR	SMR	Deaths	CMR	SMR	Deaths	CMR	SMR	Deaths	CMR	SMR
1987	108	1.04	0.72 (0.59–0.86)	68	1.30	0.91 (0.69–1.13)	40	0.78	0.54 (0.37–0.71)	838	1.67	0.96 (0.90–1.02)	438	1.80	1.09 (0.99–1.19)	400	1.55	0.85 (0.77–0.93)
1988	119	1.14	0.78 (0.64–0.93)	87	1.65	1.14 (0.90–1.38)	32	0.62	0.42 (0.27–0.57)	829	1.65	0.95 (0.89–1.01)	473	1.94	1.17 (1.06–1.28)	356	1.38	0.75 (0.67–0.83)
1989	109	1.03	0.71 (0.57–0.84)	77	1.45	1.00 (0.78–1.22)	32	0.61	0.42 (0.28–0.56)	743	1.47	0.84 (0.78–0.90)	415	1.69	1.02 (0.92–1.12)	328	1.27	0.69 (0.62–0.76)
1990	106	0.99	0.68 (0.55–0.81)	74	1.38	0.95 (0.73–1.17)	32	0.60	0.41 (0.27–0.55)	862	1.70	0.97 (0.90–1.04)	465	1.89	1.13 (1.03–1.23)	397	1.53	0.84 (0.76–0.92)
1991	91	0.84	0.57 (0.46–0.69)	64	1.18	0.81 (0.61–1.01)	27	0.50	0.34 (0.21–0.47)	902	1.78	1.01 (0.94–1.08)	501	2.03	1.22 (1.11–1.33)	401	1.54	0.84 (0.76–0.92)
1992	120	1.10	0.75 (0.61–0.88)	84	1.54	1.05 (0.83–1.27)	36	0.67	0.44 (0.29–0.59)	899	1.77	1.01 (0.94–1.08)	512	2.07	1.24 (1.13–1.35)	387	1.48	0.81 (0.73–0.89)
1993	151	1.38	0.93 (0.78–1.08)	89	1.62	1.10 (0.87–1.33)	62	1.14	0.76 (0.57–0.95)	743	1.46	0.83 (0.77–0.89)	433	1.75	1.04 (0.94–1.14)	310	1.18	0.65 (0.58–0.72)
1994	164	1.50	1.00 (0.85–1.15)	114	2.07	1.41 (1.15–1.67)	50	0.92	0.60 (0.43–0.77)	743	1.45	0.83 (0.77–0.89)	434	1.75	1.04 (0.94–1.14)	309	1.18	0.64 (0.57–0.71)
1995	124	1.13	0.75 (0.62–0.88)	73	1.32	0.89 (0.69–1.09)	51	0.93	0.61 (0.44–0.78)	767	1.50	0.85 (0.79–0.91)	429	1.72	1.02 (0.92–1.12)	338	1.28	0.70 (0.63–0.77)
1996	106	0.96	0.63 (0.51–0.75)	67	1.21	0.81 (0.62–1.00)	39	0.71	0.46 (0.32–0.60)	825	1.60	0.91 (0.85–0.97)	508	2.03	1.20 (1.10–1.30)	317	1.20	0.65 (0.58–0.72)
1997	90	0.81	0.53 (0.42–0.64)	61	1.10	0.73 (0.55–0.91)	29	0.52	0.34 (0.22–0.46)	802	1.56	0.88 (0.82–0.94)	485	1.93	1.14 (1.04–1.24)	317	1.20	0.65 (0.58–0.72)
1998	109	0.98	0.63 (0.51–0.75)	69	1.24	0.81 (0.62–1.00)	40	0.72	0.46 (0.32–0.60)	853	1.65	0.93 (0.87–0.99)	499	1.98	1.17 (1.07–1.27)	354	1.33	0.73 (0.65–0.81)
1999	109	0.97	0.62 (0.51–0.74)	66	1.18	0.77 (0.58–0.96)	43	0.77	0.48 (0.34–0.62)	862	1.66	0.94 (0.88–1.00)	503	1.99	1.17 (1.07–1.27)	359	1.35	0.74 (0.66–0.82)
2000	92	0.83	0.51 (0.41–0.62)	63	1.13	0.72 (0.54–0.90)	29	0.52	0.32 (0.20–0.44)	834	1.60	0.90 (0.84–0.96)	519	2.04	1.20 (1.10–1.30)	315	1.18	0.64 (0.57–0.71)
2001	96	0.86	0.54 (0.43–0.64)	52	0.93	0.59 (0.43–0.75)	44	0.79	0.48 (0.34–0.62)	1014	1.94	1.09 (1.02–1.16)	563	2.20	1.29 (1.18–1.40)	451	1.68	0.91 (0.83–0.99)
2002	82	0.73	0.46 (0.36–0.55)	61	1.09	0.69 (0.52–0.86)	21	0.38	0.23 (0.13–0.33)	953	1.81	1.02 (0.96–1.08)	559	2.17	1.26 (1.16–1.36)	394	1.47	0.79 (0.71–0.87)
2003	98	0.87	0.54 (0.43–0.64)	64	1.14	0.71 (0.54–0.88)	34	0.61	0.37 (0.25–0.49)	1075	2.03	1.14 (1.07–1.21)	592	2.29	1.33 (1.22–1.44)	483	1.79	0.97 (0.88–1.06)
2004	102	0.91	0.55 (0.45–0.66)	77	1.37	0.85 (0.66–1.04)	25	0.45	0.27 (0.16–0.38)	969	1.82	1.02 (0.96–1.08)	540	2.08	1.20 (1.10–1.30)	429	1.58	0.85 (0.77–0.93)
2005	92	0.82	0.49 (0.39–0.59)	66	1.17	0.72 (0.55–0.89)	26	0.46	0.27 (0.16–0.38)	1059	1.98	1.10 (1.03–1.17)	610	2.33	1.34 (1.23–1.45)	449	1.64	0.89 (0.81–0.97)
2006	88	0.78	0.47 (0.37–0.57)	59	1.05	0.64 (0.48–0.80)	29	0.52	0.31 (0.20–0.42)	1018	1.89	1.05 (0.99–1.11)	571	2.16	1.24 (1.14–1.34)	447	1.62	0.88 (0.80–0.96)
2007	74	0.66	0.39 (0.30–0.48)	45	0.80	0.48 (0.34–0.62)	29	0.52	0.30 (0.19–0.41)	998	1.83	1.02 (0.96–1.08)	562	2.11	1.21 (1.11–1.31)	436	1.57	0.85 (0.77–0.93)
2008	81	0.72	0.43 (0.34–0.53)	58	1.03	0.63 (0.47–0.79)	23	0.41	0.24 (0.14–0.34)	1045	1.91	1.06 (1.00–1.12)	611	2.27	1.30 (1.20–1.40)	434	1.55	0.84 (0.76–0.92)
2009	105	0.93	0.54 (0.44–0.64)	63	1.12	0.66 (0.50–0.82)	42	0.75	0.42 (0.29–0.55)	1016	1.84	1.02 (0.96–1.08)	564	2.08	1.19 (1.09–1.29)	452	1.61	0.87 (0.79–0.95)
2010	102	0.91	0.52 (0.42–0.62)	65	1.15	0.68 (0.52–0.84)	37	0.66	0.37 (0.25–0.49)	1006	1.81	1.00 (0.94–1.06)	541	1.98	1.13 (1.04–1.22)	465	1.64	0.88 (0.80–0.96)

CMR = crude mortality rates per 100,000 person-years; SMR = standard mortality ratio and 95% confidence interval.

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