Table I
Change in lactate level by exercise according to fluid replenishment method after dehydration

Condition/ time	Baseline	At the 15 min time point of exercise	Immediately upon cessation of exercise	60 min post-exercise
Control	1.10±0.34	6.40±1.43*	7.04±2.35*	1.09±0.49
Dehydration	1.24±0.73	7.84±1.72*	9.79±1.18*,‡	1.44±0.38
Water supplement after dehydration	0.97±0.21	6.99±0.76*	7.47±1.27*	1.39±0.43
Sports beverage supplement after dehydration	1.50±0.23	6.60±0.93*	7.37±1.62*	1.31±0.21

	F	p
Time	6.908	0.003
Group	286.665	<0.001
Interaction	2.736	0.010

Data are presented as mean ± standard deviation (Unit: mmol/l)

* Significantly different from rest in all trials (p<0.05)
‡ Significantly higher in dehydration than control trial (p<0.05)

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Lung cancer mortality trends in Mexico, 1999-2014

Dear editor: Lung cancer (LC) is the number one cause of death among all cancers worldwide[1] and in Mexico.[2] LC mortality rates in Mexico increased for both sexes between 1970 and 1999,[3] but recent studies have shown a favorable decreasing trend.[4,5] However, these studies included all ages in the analysis, or specific age groups (30-74, 35-64, 0-80 years of age), resulting in variable mortality rates. Considering that the majority of malignant lung neoplasms (97%) are usually seen in those age ≥40 years it would be more accurate to determine mortality rates in this population. In this letter we compare the age-standardized mortality rates (ASMR) of LC in people of all ages (ASMR-all) vs people age ≥40 years (ASMR≥40), to determine the degree of underestimation if all ages are considered; compare medians of ASMR≥40 for the periods before and after 2008, when new tobacco taxes and laws were implemented in Mexico, to determine their impact on LC mortality, and determine trends of age-specific rates and of ASMR for the period 1999-2014.

De-identified LC mortality and population growth data were obtained from official websites.[6,7] ASMR were calculated according to the World Standard Population[8] and joinpoint regression analysis[9] was used to determine national rate trends. Lung cancer deaths were identified as ICD-10th codes C33 and C34.

The results showed that ASMR≥40 were about three times higher than ASMR-all (table I). Compared to the first period (before 2008), the ASMR≥40 medians of the second period (after 2008) decreased from 26.6 to 20.5 overall, from 15.8 to 13.6 in females and from 38.7 to 28.3 in males. All changes were statistically significant (p<0.001, data not shown). From 1999 to 2014, the annual percent change (APC) of age-specific rates decreased for the whole sample, for females and for males (table II). The largest decline was seen in males aged 65-69, from 2004 to 2008 (APC -8.0). From 1999 to 2014, the ASMR≥40 decreased 36% in the whole sample, 25.6% in females and 39.8% in males, with an APC of -3.0, -2.1 and -3.3, respectively (p<0.05). Higher APC from 2008 to 2014 were found in the whole sample (-3.4) and in males (-4.0) (figure 1, tables I and II). This study shows that LC's ASMR will be underestimated about threefold if all ages are considered in the analysis. Trend analysis showed a persistent favorable trend in LC mortality in Mexico, which is likely associated with the implementation of smoking laws and taxes in 2008, and the decrease over time of the prevalence of smoking[10,11] and of the use of wood as the main cooking fuel.[12] Prevalence of biomass smoke exposure (BSE) resulting from cooking is still high in rural areas of Mexico (44.5% in 2012-2013[12]) and has been associated with lung cancer in Mexican women,[13] who usually perform the cooking. BSE may be contributing to the slower pace of decrease in ASMR in women, as they have a lower smoking prevalence than men.

Table I

MORTALITY FROM LUNG CANCER IN ALL AGES AND THOSE AGE≥40 YEARS BY GENDER AND YEAR OF DEATH. MEXICO 1999-2014

	All ages									*Age≥40 years*								
	Both sexes			*Females*			*Males*			*Both sexes*			*Females*			*Males*		
Year of death	*N=**	*Crude Rate*	*ASMR*	*N=*	*Crude Rate*	*ASMR*	*N=*	*Crude Rate*	*ASMR*	*N=*	*Crude Rate*	*ASMR*	*N=*	*Crude Rate*	*ASMR*	*N=*	*Crude Rate*	*ASMR*
1999	6 303	6.3	10.1	1 979	3.9	5.9	4 324	8.8	14.6	6 110	26.5	28.6	1 908	16.0	16.8	4 202	37.8	41.7
2000	6 271	6.2	9.8	2 014	3.9	5.9	4 257	8.6	13.7	6 080	25.5	27.5	1 936	15.7	16.5	4 144	36.2	39.8
2001	6 377	6.2	9.6	2 005	3.9	5.5	4 372	8.7	13.6	6 204	25.2	27.2	1 934	15.1	15.9	4 270	36.2	39.7
2002	6 609	6.4	9.5	2 117	4.0	5.5	4 492	8.8	13.8	6 422	25.3	27.3	2 052	15.5	16.2	4 370	36.0	39.6
2003	6 645	6.3	9.1	2 100	3.9	5.4	4 545	8.8	13.7	6 455	24.6	26.6	2 036	14.9	15.8	4 419	35.3	38.7
2004	6 802	6.4	9.1	2 214	4.1	5.6	4 588	8.8	13.2	6 583	24.3	26.3	2 125	15.0	15.7	4 458	34.6	38.1
2005	6 938	6.5	9.2	2 202	4.0	5.4	4 736	9.0	13.3	6 760	24.2	26.0	2 130	14.6	15.2	4 630	34.8	38.3
2006	6 795	6.3	8.6	2 276	4.1	5.3	4 519	8.5	12.4	6 605	22.9	24.5	2 195	14.5	15.3	4 410	32.2	35.5
2007	6 590	6.0	8.1	2 240	4.0	5.1	4 350	8.1	11.6	6 403	21.5	23.2	2 155	13.8	14.3	4 248	30.1	33.2
2008	6 635	6.0	7.8	2 234	3.9	4.9	4 401	8.1	11.2	6 432	20.9	22.5	2 153	13.3	13.9	4 279	29.4	32.4
2009	6 625	5.9	7.6	2 255	3.9	4.9	4 370	7.9	10.8	6 428	20.2	21.7	2 184	13.1	13.8	4 244	28.2	31.0
2010	6 734	5.9	7.5	2 361	4.0	4.9	4 373	7.8	10.6	6 533	19.9	21.4	2 264	13.1	13.6	4 269	27.5	30.4
2011	6 646	5.7	7.2	2 409	4.1	4.8	4 237	7.5	9.9	6 465	19.1	20.5	2 339	13.1	13.6	4 126	25.8	28.3
2012	6 355	5.4	6.6	2 227	3.7	4.5	4 128	7.2	9.4	6 173	17.7	19.0	2 148	11.6	12.1	4 025	24.4	26.9
2013	6 650	5.6	6.8	2 441	4.0	4.5	4 209	7.3	9.3	6 448	17.9	19.2	2 352	12.4	12.9	4 096	24.2	26.5
2014	6 564	5.5	6.3	2 436	4.0	4.4	4 128	7.1	8.8	6 369	17.2	18.3	2 356	12.0	12.5	4 013	23.0	25.1
mean	6 594	6.0	8.2	2 215	4.0	5.1	4 374	8.2	11.7	6 404	22.0	23.5	2 141	14.0	14.5	4 262	31.0	33.6
Total	105 539			35 510			70 029			102 470			34 267			68 203		
% change, 1999-2014	4.1	-13.3	-37.6	23.1	1.6	-25.4	-4.5	-19.7	-39.7	4.2	-35.1	-36.0	23.5	-24.8	-25.6	-4.5	-39.1	-39.8

* Total lung cancer deaths. ASMR= age-standardized mortality rate. Rates are per 100 000 population

Source: Mexican Ministry of Health, Dirección General de Información en Salud[6]

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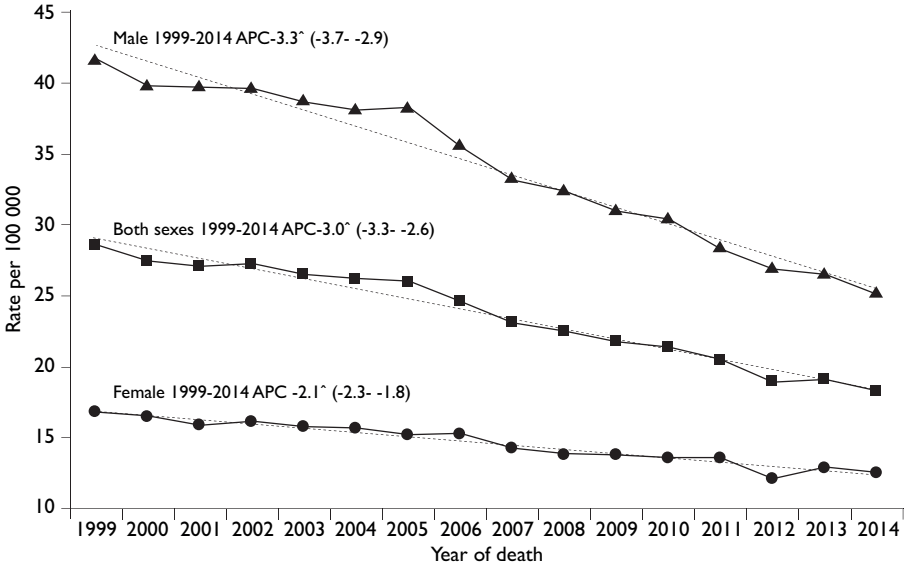
Table II

ANNUAL PERCENT CHANGE ESTIMATES BY JOINPOINT ANALYSIS OF AGE-SPECIFIC MORTALITY RATES FOR LUNG CANCER IN BOTH SEXES, IN FEMALES AND MALES. MEXICO 1999-2014

Age group (years of age)	*Both sexes*						*Females*						*Males*					
	Period		*APC**	*95%CI**		*p-value*	*Period*		*APC*	*95%CI*		*p-value*	*Period*		*APC*	*95%CI*		*p-value*
	1999	2001	15.6	-12.7	53	0.2	1999	2001	10.8	-28.4	71.4	0.6	1999	2001	18.1	-49.8	178	0.6
	2001	2004	-10.5	-32.6	19	0.4	2001	2004	-14.8	-46.5	35.7	0.4	2001	2008	-6.1	-19.2	9.1	0.3
40-44	2004	2010	-0.6	-7	6.1	0.8	2004	2007	6.8	-35.1	75.9	0.7	2008	2011	0.8	-60.2	155.5	1
	2010	2014	-6.5	-15.5	3.5	0.1	2007	2014	-2.9	-9.2	3.8	0.3	2011	2014	-10.3	-46.2	49.7	0.6
	1999	2014	-3.0^	-4.6	-1.4	0.001	1999	2014	-2.4^	-4	-0.7	0.01	1999	2014	-3.7^	-6	-1.2	0.006
	1999	2006	-1.1	-3.7	1.5	0.3	1999	2001	-7.4	-29.3	21.2	0.5	1999	2003	-0.3	-9.2	9.5	0.9
	2006	2009	-6.2	-24.3	16.2	0.5	2001	2006	2.1	-6.8	11.8	0.6	2003	2007	-2.8	-17.1	14	0.7
45-49	2009	2012	-8.7	-27.7	15.3	0.4	2006	2012	-7.6^	-13.9	-0.9	0.05	2007	2012	-8.7	-18.5	2.3	0.1
	2012	2014	4.1	-18.3	32.7	0.7	2012	2014	6.1	-23.3	46.7	0.7	2012	2014	3.6	-29.5	52.1	0.8
	1999	2014	-3.7^	-4.7	-2.6	<0.0001	1999	2014	-3.0^	-4.5	-1.4	0.001	1999	2014	-4.1^	-5.3	-2.9	<0.0001
	1999	2001	-10.5	-25.4	7.3	0.2	1999	2001	-12.3	-37.7	23.4	0.4	1999	2001	-9.2	-24.8	9.7	0.2
	2001	2006	-1.3	-7.3	5.1	0.6	2001	2006	2.1	-8.8	14.4	0.7	2001	2006	-3.4	-9.6	3.3	0.2
50-54	2006	2009	-6.2	-24.5	16.5	0.5	2006	2009	-6.5	-36.3	37.3	0.7	2006	2012	-4.9	-10	0.4	0.1
	2009	2014	-1.6	-6.5	3.6	0.5	2009	2014	2.9	-5.4	11.9	0.4	2012	2014	-6.4	-28.8	23	0.6
	1999	2014	-3.4^	-4.1	-2.7	<0.0001	1999	2014	-1.1^	-2.3	-0.0	0.05	1999	2014	-4.7^	-5.4	-4	<0.0001
	1999	2003	-1.7	-7.6	4.6	0.5	1999	2001	-4.3	-21	16	0.6	1999	2003	-2.4	-8.3	3.8	0.4
	2003	2008	-4.3	-10.6	2.4	0.2	2001	2004	1.3	-15.7	21.8	0.9	2003	2006	-5.3	-23.3	16.8	0.5
55-59	2008	2011	-1.1	-21.3	24.2	0.9	2004	2009	-3.9	-9.8	2.4	0.2	2006	2011	-2.8	-9.6	4.4	0.4
	2011	2014	-4.3	-15.4	8.2	0.4	2009	2014	0.9	-3.7	5.7	0.6	2011	2014	-6	-17.4	6.9	0.3
	1999	2014	-3.0^	-3.5	-2.6	<0.0001	1999	2014	-1.6^	-2.5	-0.6	0.002	1999	2014	-3.8^	-4.2	-3.3	<0.0001
	1999	2004	-1.6	-4.6	1.6	0.3	1999	2002	1	-10.3	13.9	0.8	1999	2004	-1.6	-4.3	1.3	0.2
	2004	2007	-7.2	-20.2	7.8	0.3	2002	2008	-4.5	-9.9	1.3	0.1	2004	2007	-7.9	-19.6	5.5	0.2
60-64	2007	2010	-2.7	-17.4	14.6	0.7	2008	2012	-2.4	-14.8	12	0.7	2007	2010	-2.6	-16.1	13.1	0.7
	2010	2014	-4.7	-9.9	0.8	0.1	2012	2014	0.1	-24.6	32.9	1	2010	2014	-6.3^	-11.1	-1.3	0.02
	1999	2014	-4.0^	-4.6	-3.4	<0.0001	1999	2014	-2.9^	-3.7	-2.1	<0.0001	1999	2014	-4.4^	-5.1	-3.7	<0.0001
	1999	2001	-6.5	-14.2	1.7	0.1	1999	2001	-8	-20.7	6.8	0.2	1999	2001	-5.7	-12.8	1.9	0.1
	2001	2004	1.1	-7.3	10.2	0.8	2001	2006	-1.4	-6.4	3.8	0.5	2001	2004	2	-5.7	10.3	0.6
65-69	2004	2008	-6.8^	-11.1	-2.2	0.01	2006	2009	-4.8	-19.8	13	0.5	2004	2008	-8.0^	-11.9	-4	0.004
	2008	2014	-3.5^	-5.3	-1.7	0.004	2009	2014	-2.2	-6.2	1.9	0.2	2008	2014	-3.8^	-5.4	-2.2	0.001
	1999	2014	-4.0^	-4.5	-3.4	<0.0001	1999	2014	-3.0^	-3.6	-2.4	<0.0001	1999	2014	-4.3^	-5	-3.6	<0.0001
	1999	2002	-3	-7.1	1.3	0.1	1999	2004	-1.7	-4	0.7	0.1	1999	2002	-3.4	-8.6	2	0.2
	2002	2005	1.9	-6.8	11.4	0.6	2004	2008	-0.9	-6.2	4.6	0.7	2002	2005	2.9	-7.9	15.1	0.5
70-74	2005	2012	-5.1^	-6.7	-3.6	0.0003	2008	2012	-5.3	-10.6	0.3	0.1	2005	2012	-5.7^	-7.6	-3.8	<0.001
	2012	2014	-3.4	-13.3	7.6	0.4	2012	2014	-1.4	-13.1	11.9	0.8	2012	2014	-3.5	-15.9	10.7	0.5
	1999	2014	-3.0^	-3.7	-2.3	<0.0001	1999	2014	-2.4^	-2.9	-1.9	<0.0001	1999	2014	-3.2^	-4	-2.3	<0.0001
	1999	2004	-0.8	-3.9	2.5	0.6	1999	2001	-4.7	-20	13.5	0.5	1999	2002	0.8	-8.6	11.2	0.8
	2004	2007	-4.6	-17.9	10.8	0.5	2001	2004	3	-13.7	22.9	0.7	2002	2007	-3.8	-9.9	2.7	0.2
75-79	2007	2010	-0.9	-15	15.7	0.9	2004	2007	-4.6	-20.6	14.5	0.5	2007	2010	-1.6	-20.5	21.9	0.9
	2010	2014	-3.6	-8.5	1.6	0.1	2007	2014	-1.5	-4	1	0.2	2010	2014	-3.6	-10.3	3.7	0.3
	1999	2014	-2.4^	-2.9	-1.9	<0.0001	1999	2014	-1.7^	-2.3	-1	<0.0001	1999	2014	-2.6^	-3.2	-2	<0.0001
	1999	2001	1.6	-5	8.7	0.6	1999	2001	5.3	-15.1	30.7	0.6	1999	2004	0.1	-1.2	1.3	0.9
	2001	2004	-0.1	-6.6	6.8	1	2001	2008	-1.4	-4.9	2.2	0.3	2004	2008	-2.2	-5.1	0.7	0.1
80+	2004	2010	-2.3^	-3.8	-0.8	0.01	2008	2011	-0.6	-20.2	23.8	0.9	2008	2011	-3.9	-9.6	2.2	0.2
	2010	2014	-2.7^	-5	-0.4	0.03	2011	2014	-3.7	-14.2	8.1	0.4	2011	2014	-1.9	-5.1	1.3	0.2
	1999	2014	-1.7^	-2.1	-1.2	<0.0001	1999	2014	-1.1^	-1.8	-0.4	0.004	1999	2014	-1.9^	-2.4	-1.5	<0.0001
	1999	2001	-2.1	-7.6	3.7	0.4	1999	2001	-2.3	-8.9	4.8	0.4	1999	2001	-2.1	-6	2	0.2
	2001	2005	-1.3	-4.1	1.7	0.3	2001	2004	-0.7	-7.5	6.7	0.8	2001	2005	-1.2	-3.2	0.9	0.2
Age ≥40	2005	2008	-4.6	-10.4	1.6	0.1	2004	2012	-2.6^	-3.6	-1.6	0.001	2005	2008	-5.2^	-9.3	-0.9	0.02
	2008	2014	-3.4^	-4.5	-2.3	<0.001	2012	2014	-0.4	-8.1	7.9	0.9	2008	2014	-4.0^	-4.8	-3.2	<0.001
	1999	2014	-3.0^	-3.3	-2.6	<0.0001	1999	2014	-2.1^	-2.3	-1.8	<0.0001	1999	2014	-3.3^	-3.7	-2.9	<0.0001

* APC: Annual percent change, ^significantly different from zero at alpha= 0.05, 95%CI confidence interval

Source: Mexican Ministry of Health, Dirección General de Información en Salud[6]



APC= annual percent change (95% confidence interval) by joinpoint regression analysis, ^ $p<0.05$

Source: Mexican Ministry of Health, Dirección General de Información en Salud[6]

Figure 1. Age-standardized mortality rates from lung cancer in Mexico. Age ≥40 years only 1999-2014

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Candiduria: impacto ecológico de los antibióticos

Señor editor: El uso previo de antibióticos se considera clásicamente un factor de riesgo para candiduria; sin embargo, su asociación específica apenas se ha abordado en la literatura médica.[1,2] Para conocer el impacto ecológico de los antibióticos sobre las levaduras, realizamos un estudio ecológico y retrospectivo durante el periodo comprendido entre 2008 y 2011 en el área sanitaria La Mancha-Centro (España), en el que adaptamos el análisis de series temporales del modelo autorregresivo integrado de promedio móvil (ARIMA, en inglés), utilizado previamente para predecir la emergencia de resistencias bacterianas.[3]

Recopilamos datos mensuales del consumo de antibióticos hospitalarios, expresado en dosis diarias definidas (DDD) y del número de candidurias diagnosticadas mediante cultivo en medios microbiológicos (punto de corte $\geq 10^3$ unidades formadoras de colonias por mililitro). Las levaduras aisladas se identificaron mediante asimilación de compuestos de carbono por el método ID32C*. Como antibióticos predictores de candiduria, consideramos todos aquéllos sistémicos, de la guía farmacoterapéutica hospitalaria, con efecto simultáneo sobre flora grampositiva y gramnegativa, incluyendo o no microorganismos anaerobios. Para estimar los componentes de tendencia y estacionalidad de la serie de candidurias, utilizamos un modelo de regresión de Poisson. Para explorar la relación entre el consumo de antibióticos y el número de candidurias, en el mismo mes y con un mes de retraso, construimos modelos ARIMA de series temporales.[3]

El promedio de candidurias fue de 13.2 (rango 4-29) casos mensuales. La serie mostró tendencia creciente significativa (incremento mensual

* bioMérieux, Francia.