Regarding articles about Cali Cancer Registry 2

Dear editor: With great interest we read the reports on incidence, mortality and particularly survival trends for breast, cervical, colorectal and prostate cancer in Cali, Colombia reported in the September/October 2014 issue of *Salud Pública de México*.[1-4] We applaud the intention of the authors in their attempts to provide, besides the standard measures, indications of survival by socioeconomic status. This is a topic of interest of many countries, but particularly in Latin America which is the continent with largest socioeconomic differences and Colombia within the continent being one of the most unequal countries.[5] Since information on the population distribution of the social strata (SS) by age, sex and calendar years is not available for the different municipalities in Colombia, it is unfortunately not possible to provide incidence or mortality differences by SS. For the same reason it is not possible to construct life-tables by SS, inhibiting providing SS-specific relative survival rates (RSR). The authors of the articles have provided RSR by SS, using the general population life-tables, which however conceal substantial differences in all-cause mortality between the different strata, as is shown on macro level by the differences in life-expectancy for the different departments in the country, which show differences of more than 10 years in male life-expectancy for the period 2000-2005.[6] Unfortunately, using relative survival methods to show differences in survival by socioeconomic levels, without using separate life tables for the different socioeconomic level causes has been shown to cause bias in the estimates.[6] Since socioeconomic differences in life-expectancy are large, the bias may be substantial as well. Relative survival based on average probabilities of dying, regardless of SS, will result in overestimates of survival of the highest SS, and underestimates of survival of the lowest SS. However, as the lower SS is in the majority, the survival estimates for the lower SS will be probably less biased than those of the highest SS.

The data based on the Cox proportional hazards models, as presented in the papers, does not suffer from this problem, but seem to be based on cancer-specific survival, which is highly dependent on quality of death certification, which likely varies by social class. In fact, in the absence of specific life-tables by SS, it is recommended to use cancer-specific survival.[7] However, the hazard ratios by SS presented in the paper are not reliable, as the proportional hazards assumption was violated in one or more of the SS for colorectal, prostate, and breast cancer. In order to obtain valid estimates, time-dependent or stratified Cox models should have been used. In the case of highly aggressive cancers, even general survival may give a good reflection of the existing differences, as most patients will die soon after diagnosis, and most likely because of their cancer.

The Cali cancer registry has shown with the published papers already to be able to collect information by SS for a large majority of their patients but because of the lack of population information by SS this information is of little use. It is unfortunate and difficult to understand that in Colombia, no reliable data on population distribution by SS or other socioeconomic indicators, such as social security type, are known, even though SS is a measure used by governmental institutions for all kind of reimbursement systems and the country is supposed to have the "universal" health system. We would applaud the Colombian authorities for making an effort in reliably collecting and providing these data to cancer registries and other institutions to be able to monitor socioeconomic differences in health. This would also allow evaluation of policies and regulations, including the evaluation of the effects of the introduction on the universal health insurance on socioeconomic differences in health and mortality.

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Response to Dr. de Vries

Dear Dr. de Vries: We appreciate your interest in our work and are grateful for your valuable contributions and comments to clarify the methodology

and to facilitate the results interpretation. Your comments relate to two main aspects of the methods used in our estimates and we have focused our response to your two letters in these two aspects:

1 - Five-year relative survival estimates

The Cancer Registry of Cali (RPCC) was part of the Concord-2 Study.[1] This participation allowed us to evaluate the quality of information[2] and optimize the process of linkage between different databases: Cancer registry, mortality, hospital discharges and affiliation to the health insurance system in Cali. Data quality indicators: Morphologically verified: 87.4%, non-specific morphology: 13.3%, lost to follow-up: 0%, censored: 19.5%.[2]

Five-year relative survival for patients diagnosed during the periods 1995–99 and 2000–04, was estimated using the classic cohort approach with follow-up until 2009. All-cause mortality data were obtained from the *Secretaría Municipal de Salud* of Cali. We constructed life tables of all-cause mortality from the general population of Cali, stratified by age (single year), sex, and calendar year of death. The intraclass correlation coefficient value was high (0.9937) when comparing estimates of life tables obtained from the teams of RPCC vs. Concord-2 groups. Table I shows the comparison between the estimates of relative survival achieved by our working group and those obtained by the team of the London School of Hygiene & Tropical Medicine for the Concord-2 Study.[1] In general the results are similar, but our estimates are slightly lower than those obtained by Concord-2, especially for prostate cancer because we did not use the recently developed Pohar Perme estimator for net survival,[3] which takes into account the competing risks of death, and these are higher for elderly cancer patients.

2 - Assumption of proportional hazards

With certain types of cancer such as cervical and breast there was no problem with our estimates using the Cox proportional hazards model because there were important explanatory variables such as staging. The Cox proportional hazards model relies on the assumption that the effect of a given covariate does not change over time. Rates nonetheless depend on the particular biological process and the shape of their change over time for the main effect is the most important issue. Violation of the PH assumption for the main effect would effectively invalidate the findings, but the examination of subgroups calls for a more careful examination, where a particular test is less important than the shape of the rates over time. The graphical depiction of the lack of proportionality is probably the best way to assess departures from the assumption. The so-called Arjas plot is generally the most effective at detecting this issue, and the maximum deviation (Kolmogorov-Smirnov like) criterion for rejection the best test.[8] Figure 1 shows the Arjas plot of estimated cumulative hazard versus number of failures in each stratum of SES and period for prostate and colorectal cancer in Cali, Colombia.

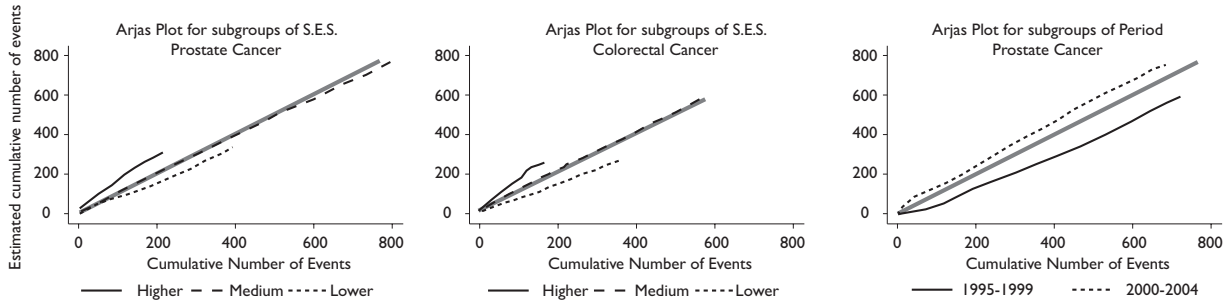
The curves may differ from the 45 degree line as seen in figure 1, but they are still fairly linear. Arjas plot therefore rises the doubt that proportional hazards assumption for these variables is not so heavily questionable.

Our suggestion in the case of a major departure in the proportionality assumption would be Poisson regression.[8] Excess hazards can be incorporated by introducing a time-dependent interaction term for

Table I
Cancer Registry of Cali, Colombia. Five-year Relative Survival Estimates (5Y-RS) for selected cancer sites from 1995 to 2004. Comparison with Concord-2 Study

Period		*Cervix uteri*[4]		*Breast*[5]		*Prostate*[6]		*Colon*[†7]	
		5Y-RS	*95%CI*	*5Y-RS*	*95%CI*	*5Y-RS*	*95%CI*	*5Y-RS*	*95%CI*
1995-1999[‡]									
	SPM	48.0	[45-52]	62.0	[59-65]	63.0	[60-67]	29.7	[25.9-33.7]
	Concord-2	50.5	[46.3-54.6]	65.7	[61.0-70.3]	66.7	[62.6-70.8]	27.5	[23.1-31.9]
2000-2004[‡]									
	SPM	57.0	[53-61]	69.0	[66-71]	74.0	[70-76]	39.8	[36.0-43.6]
	Concord-2	57.1	[53.3-61.0]	69.2	[65.7-72.7]	80.3	[77.4-83.3]	43.3	[38.7-48.0]
2005-2009[‡‡]	Concord-2	59.2	[54.8-63.5]	73.1	[69.2-77.1]	78.7	[75.4-82.0]	44.1	[39.3-48.9]

SPM= Salud Pública de Mexico(4, 5, 6, 7): †C18-C19, ‡ Cohort-based analysis (1995-2004)
Conconrd-2 Study (1): †C18. ‡ Cohort-based analysis (1995-2004). ‡‡ Period-based analysis (2005-2009)



Arjas plot for subgroups of SES, adjusted for age, period and sex (colon) and for subgroups of period

SES: Socioeconomic status

FIGURE 1. CANCER REGISTRY OF CALI, COLOMBIA. ARJAS PLOT FOR SUBGROUPS OF SES FOR SELECTED CANCER SITES THROUGH 1995-2004

Table II

ESTIMATED EXCESS HAZARD RATIOS (HR) FOR COLORECTAL AND PROSTATE CANCER DIAGNOSED IN CALI, COLOMBIA DURING 1995-2004

	Colorectal			*Delta Cox Model %*		*Prostate*			*Delta Cox Model %*
	HR	*SE*	*p*			*HR*	*SE*	*p*	
Sex									
Male	1								
Female	0.87	0.06	0.03	-1.5					
Age (years)					Age (years)				
<50	1				<50	1			
50-69	1.24	0.11	0.02	1.3	50-69	0.94	0.23	0.81	7.5
70+	2.24	0.21	0.00	-8.4	70+	1.79	0.44	0.02	-21.4
SES					SES				
Higher	1				Lower				
Medium	1.60	0.16	0.00	6.7	Medium	0.90	0.07	0.17	23.7
Lower	2.41	0.26	0.00	14.2	Higher	0.58	0.06	0.00	33.1
Unknown	0.67	0.12	0.022	-6.1					
Periodo					Periodo				
2000-2004	1				1995-1999	1			
1995-1999	1.31	0.09	0.09	-11.2	2000-2004	0.70	0.05	0.00	-5.0
Deviance:	298.61					203.60			
Df:	275					175			
p:	0.16					0.07			

SES: Socioeconomic status

‡ Generalized Linear Model where the observed number of deaths is assumed Poisson distribution, link: log, offset: logarithm of person-time

There is no evidence of lack-of-fit for the model fitted to the prostate and colorectal cancer data since the deviance is similar in magnitude to the residual degrees of freedom (Df)

that covariate. Table II shows the estimated excess hazard ratios (HR) for colorectal and prostate cancer trough 1995-2004 in Cali, Colombia. The HRs obtained with the Cox model have the same direction as those achieved with the GLM-Poisson but with different magnitude, specially for prostate cancer.

Limitations of our estimates: RPCC was not actively tracking participants, and Cali lacked reliable statistics on the migrant population.[4] Cause of death information is available to the RPCC via death certificates, but they are often vague and it is difficult to determine whether or not cancer is the primary cause of death. Life tables for Cali and Colombia, according to socioeconomic strata, were not available; therefore, the effect of SES on excess mortality due to cancer may be overestimated. During the study period there were changes in follow-up practices. In cases of prostate and breast cancer, there were specific projects that contributed to better tracking compared to colon cancer. Implementation of the new health system in our country improved availability of personal identification number. Since 2000, follow-up practices are similar for all types of cancer. These changes in the practices of follow-up could have caused underestimation of survival for the period 1995-1999, especially for colon cancer. Like any exploratory ecological study, our results must be validated with other designs.

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Sobrecarga del cuidador principal como factor de riesgo para caídas en pacientes geriátricos

Señor editor: Enviamos resultados de un estudio de casos y controles realizado en un hospital de tercer nivel del noreste de México con el objetivo de identificar si la sobrecarga del cuidador principal es un factor de riesgo para la presencia de caídas en pacientes geriátricos.

El envejecimiento de la población adquiere una importancia cada vez mayor en las políticas públicas. Para 2025, más de la mitad de los países latinoamericanos tendrán al menos 10% de población anciana.[1] En países desarrollados, las mejoras en términos de nutrición han aumentado la expectativa de vida de 49.24 años, en 1900, a 77.3 años, en 2002. Para 2030, se espera que 20% de la población tenga más de 65 años.[2]

Lo anterior ha provocado un incremento en el número de personas dependientes que requieren cuidados de larga duración y en las necesidades de asistencia de los sistemas formal e informal.[2] Los cuidadores informales dispensan cuidados sin recibir compensación económica, no poseen formación formal, pertenecen al entorno próximo de las personas a las que cuidan y ayudan a éstas de forma regular, por lo general durante todo el día.[2]

La sobrecarga del cuidador se refiere a las dificultades financieras y psicosociales que resultan de cuidar a un miembro de la familia que padece una condición médica. Muchos familiares que se encuentran al cuidado de un adulto mayor reportan realizar cambios en su estilo de vida y sacrificios personales.[3]

Se realizó un estudio de 20 casos y 20 controles, en el que se incluyó a pacientes mayores de 60 años, índice de Barthel menor a 70, que hubieran experimentado caídas durante los últimos seis meses y cuyos domicilios estuvieran bajo la supervisión de un cuidador principal. A los cuidadores se les aplicó la escala de Zarit para valorar el grado de sobrecarga.

Se utilizaron media, mediana y desviación estándar como medidas de tendencia central y frecuencias y porcentajes. El contraste de hipótesis se realizó mediante prueba de x^2 para variables categóricas y mediante t de Student, para numéricas. Se