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Letter to the Editor

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Colorectal Cancer Incidence in Korea Is Not the Highest in the World

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Recently, media as well as academic societies have referred to GLOBOCAN 2012 to support the high incidence rate of colorectal cancer in Korea. According to GLOBOCAN 2012, colorectal cancer incidence ranked third for men and fifth for women, and the highest when both sexes were combined among 184 countries (Table 1) [1]. Because GLOBOCAN intended to provide the most recent estimates of cancer incidence, mortality, and prevalence for 28 cancers worldwide, the quality of country estimates varied from high quality national or regional data to no data [1]. Therefore, the accuracy of estimates are dependent on the availability and the accuracy of the data from each country [1]. Korean data is high quality national data with rates projected to 2012. The most recent incidence data used for GLOBOCAN estimates was for the year 2009 [2]. Indeed, the age-standardized incidence of colorectal cancer increased by 5.3% annually between 1999 and 2012 [3]. However, according to the Korea Central Cancer Registry data, the colorectal cancer incidence decreased for men and stabilized for women in 2012 [3]. Since projection used for GLOBOCAN 2012 applied trends until 2009, which was an annual percent change of 6.2% for both sexes [4], the GLOBOCAN estimates overestimated the incidence for the Korean population.

We retrieved published incidence data of selected countries from 2008 to 2012 (or nearest year to 2012) (Table 2). In comparison of age-standardized incidence rates, Czech (2011), Slovakia (2008), and Slovenia (2011) showed higher incidence than Korea (2011 or 2012) in men. In women, most countries with recent data showed higher incidence compared to Korea. When both sexes were combined, incidence of Japan (2010), Netherlands (2012), Australia (2012), and New Zealand (2012) was higher than that of Korea.

In conclusion, the aim of GLOBOCAN 2012 is to provide worldwide estimates for cancer burden, and there are substantial differences between GLOBOCAN estimates and observed statistics due to methodology applied. Korea has experienced rapid transition in colorectal cancer epidemiology, therefore predicted estimates using past trends may not appropriately reflect the observed statistics. Although GLOBOCAN is useful for overviewing cancer burden, caution should be used in direct comparison or referring of the estimated incidence or mortality.

Conflicts of Interest

Conflict of interest relevant to this article was not reported.

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Table 1. Estimated incidence of colorectal cancer, GLOBOCAN 2012 [1]

Rank	Male				Female				Both sexes			
	Population	Cases	Crude rate (/100,000)	ASR (/100,000)	Population	Cases	Crude rate (/100,000)	ASR (/100,000)	Population	Cases	Crude rate (/100,000)	ASR (/100,000)
1	Slovakia	2,347	88.1	61.6	Norway	1,947	78.7	35.8	Korea	33,773	69.5	45.0
2	Hungary	4,751	100.5	58.9	Denmark	2,297	81.5	35.7	Slovakia	3,963	72.3	42.7
3	Korea	20,036	82.7	58.7	Netherlands	6,321	75.1	33.9	Hungary	8,442	84.8	42.3
4	Czech	4,978	95.9	54.0	New Zealand	1,463	64.5	33.5	Denmark	4,832	86.4	40.5
5	Slovenia	932	93.3	49.7	Korea	13,737	56.4	33.3	Netherlands	13,918	83.3	40.2
6	Netherlands	7,597	91.5	47.5	Australia	7,079	61.6	32.0	Czech	8,336	78.9	38.9
7	Denmark	2,535	91.4	45.9	Hungary	3,691	70.7	30.5	Norway	3,913	78.9	38.9
8	Australia	8,790	76.9	45.5	Israel	1,881	48.3	30.3	Australia	15,869	69.2	38.4
9	Belgium	4,797	90.7	45.2	Belgium	3,886	70.7	29.5	New Zealand	3,018	67.6	37.3
10	Croatia	1,803	85.4	44.2	Slovakia	1,616	57.4	29.3	Slovenia	1,621	79.5	37.0

ASR, age-standardized incidence rate using the World Standard Population (Segi, 1960).

Table 2. Observed age-standardized incidence rates[a] of colorectal cancer from selected cancer registries

Registry	Coverage	ICD-10 code	Male					Female					Both sexes				
			2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Asia																	
Korea [5]	National	C18-20	45.9	49.0	48.6	51.4	50.0	24.7	25.9	25.3	26.4	26.8	34.1	36.2	35.9	37.8	37.3
Japan [6]	Regional[b]	C18-20	43.8	48.3	50.1	-	-	27.0	28.6	28.4	-	-	34.7	37.6	38.4	-	-
Singapore [7]	National	153-154[c]	38.2 (2010-2014)					26.7 (2010-2014)					-				
America																	
Canada [8]	National	C18-20	42.3	41.4	39.1	39.5	38.8	28.0	27.8	27.4	27.4	27.5	34.8	34.2	32.9	33.1	32.8
USA [9]	Regional[d]		30.9 (2008-2012)					23.1 (2008-2012)					26.7 (2008-2012)				
Europe																	
Belgium [10]	National	C18-20	44.8	-	-	-	-	28.8	-	-	-	-	-	-	-	-	-
Croatia [11]	National	C18-20	-	-	-	41.2	42.4	-	-	-	21.0	23.0	-	-	-	29.6	31.2
Czech [12]	National	C18-21	56.5	55.5	55.5	51.8	-	28.9	28.7	28.2	28.5	-	-	-	-	-	-
Denmark [13]	National	C18-21	43.3	44.4	43.2	41.9	42.0	33.7	32.9	32.8	34.6	33.9	-	-	-	-	-
Israel[e] [14]	National	C18-20	44.1	38.8	36.2	35.1	33.6	32.9	28.5	29.2	27.2	25.1	-	-	-	-	-
Ireland [15]	National	C18-20	43.1	45.2	42.7	41.3	44.1	26.3	26.7	27.1	26.3	26.7	34.1	35.5	34.4	33.5	34.7
Italy [16]	Regional[f]	C18-21	42.8	40.7	-	-	-	27.5	25.5	-	-	-	-	-	-	-	-
Netherlands [17]	National	C18-20	45.1	44.9	45.9	46.1	45.4	31.6	31.9	31.4	32.9	32.4	38.3	38.4	38.6	39.5	38.9
Norway [13]	National	C18-21	43.8	43.1	46.1	42.6	43.6	34.6	35.9	33.9	36.5	36.1	-	-	-	-	-
Slovakia [18]	National	C18-20	61.3	-	-	-	-	30.5	-	-	-	-	-	-	-	-	-
Slovenia [7]	National	C18-20	47.9	53.1	57.2	54.6	-	27.0	26.8	30.0	28.2	-	-	-	-	-	-
Spain [19]	Regional[g]	C18-20	-	-	40.2	-	-	-	-	23.5	-	-	-	-	31.2	-	-
Oceania																	
Australia [20]	National	C18-20	52.6	50.9	52.4	50.9	-	36.9	35.5	36.2	36.2	-	44.4	42.8	43.9	43.2	-
New Zealand [21]	National	C18-21	50.0	49.9	49.8	52.4	49.1	39.8	39.6	41.3	37.5	38.6	44.5	44.5	45.3	44.6	43.5

ICD-10, International Classification of Diseases, 10th edition. [a]World Standard Population was used as a standard population, [b]Yamagata, Fukui, and Nagasaki, [c]ICD-9, [d]SEER 18 areas, [e]Jews, [f]AIRRUM (38 Registries pool), [g]Valencia.

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