

# Cancer epidemiology in Lebanon: recent trends from the National Cancer Registry

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## Abstract

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**Introduction & methods:** The National Cancer Registry (NCR) in Lebanon was officially restarted in 2002. A report on Cancer in Lebanon 2003 derives its data from a passive “capture” surveillance system and an active pathology-based “recapture” system. **Results:** In 2003, 7,888 new cases were diagnosed, of which 43% were obtained through the passive “capture” system, and the other 57% from the active “recapture” system. Of those cases, 51.3% were in women and 49% in men. Pediatric cases in patients less than 15 years of age accounted for 3.3% of the total. Mean ages of cases among men was  $59.3 \pm 18.3$  years, and among women  $55.1 \pm 16.8$  years ( $p < 0.05$ ). The five most frequently diagnosed cancer sites in males in 2003 were: prostate, lung, bladder, colorectum and lymphomas. In females these were: breast, colorectum, ovary, lymphomas and lung. Breast remains the most commonly diagnosed cancer in Lebanon. The age-adjusted incidence rate was 173.52 per 100,000. **Discussion & conclusions:** With NCR data, upward trends surmised since the early 1990s are confirmed. Cancer incidence in Lebanon was higher than in other neighboring Arab countries. Special attention should be focused on breast cancer which remains the most frequently diagnosed malignancy in Lebanon. The relative frequency of colo-rectal cancer requires the setting up of national guidelines for early detection. Two other frequently diagnosed cancers are associated with smoking: lung and bladder, and their prevention should be a strong argument for stringent tobacco control policies.

*Key-words: Incidence, Middle-East, Arab world*

## Introduction

The National Cancer Registry (NCR) in Lebanon was officially restarted in 2002, to compile and complete partial hospital-based registries which had already been in place for several years (1-2). Up to that date, one punctual effort to register all cases had been conducted in 1998 (3), more than 30 years after the last such task had been completed in 1966 by Kamal Abou-Daoud, the father of modern epidemiology in Lebanon (4). Within its first year, NCR produced a first, if incomplete report on “Cancer in Lebanon 2002” (5). NCR activity has been hampered by financial constraints, political instability, and bureaucratic difficulties. All these obstacles have already been addressed in a more or less satisfactory manner. Nevertheless, some delay occurred which meant that a Cancer 2003 report could not be published until 2006 (6). Some findings from that report are presented and commented below.

## Structure of the Lebanese NCR

NCR derives its data from a passive “capture” surveillance system and an active pathology-based “recapture” system. Passive reporting originates mainly from the MOPH Drug Dispensing Center (DDC). DCC provides cancer drugs free of charge to patients with no health coverage, estimated at 40% of the population. All eligible cancer patients who elect to use the DDC services have to bring a completed report form which is then received and entered at NCR. The passive system also includes forms emanating from the medical services of the Army and the National Security Forces. The National Social Security Fund (NSSF) which covers about 40% of the population is also

supposed to contribute forms to the capture system, although this contribution has yet to become consistent. NCR has also been receiving from UNRWA annual cumulative reports of cancer cases diagnosed among Palestinians in Lebanon.

An active, more complete pathology-based surveillance process, the “recapture system” had to be added to complete the National Registry. A decree 511/1 from the PH Minister in June 2002 was used as the legal framework to start elaborating this system. All pathology laboratories in hospitals and private practices across Lebanon have been collaborating into that system, at various degrees of completeness of case information. The “Cancer in Lebanon 2003” report consists of the reconciliation of data from the two surveillance sources.

## Results

### Description of cancer cases recorded in 2003

The 2003 report involves 7,888 cases diagnosed during 2003, of which 3400 (43%) were obtained through the passive “capture” system, and the other 57% from the active “recapture” system. Extrapolation from the 1998 LCEG (3) had put the expected number of cases in 2003 between 6800 and 8500 cases, with an approximate average of 7,555 cases. This expected figure compares favorably with the observed one and suggests a near complete accounting for all incident cancers diagnosed in Lebanon in 2003. Experts believe that nevertheless, about 10% of cases in Lebanon in 2003 may have been prevalent ones diagnosed in earlier years. Of 7,888 cases, 51.3% were in women (4047 cases) and

49% (3841 cases) in men. Pediatric cases in patients less than 15 years of age accounted for 3.3% of the total. About 1/3<sup>rd</sup> of pediatric cancers were leukemias, followed by brain and bone cancers. The average age of children with cancers was 7.6 years (SD=4.0) with a median of 8 years.

The overall age-distribution showed the usual ascending trend after 40 (Figure 1). Mean age of cases was 57.1 years (SD=17.7; median 60 years), with a significant difference on average ( $p<0.05$ ) between men (59.3

**Table 1: Demographic characteristics of incident cancer cases in Lebanon 2003 (N = 7888)**

Variable	N	%
Gender	3841	48.7
Men	4047	51.3
Women		
Age-groups		
< 15	237	3.3
15-19	90	1.3
20-24	87	1.2
25-29	126	1.8
30-34	185	2.6
35-39	340	4.7
40-44	455	6.4
45-49	604	8.4
50-54	636	8.6
55-59	712	9.9
60-64	821	11.5
65-69	928	13.0
70-74	864	12.1
≥ 75	1077	15.0
Total*	7163	100
Mean age in years by sex (SD,median) **		
Men	59.3	(18.7; 64)
Women	55.1	(16.8; 56)
All	57.1	(17.7; 60)

\* Some data are missing

\*\* \* $p < 0.01$

± 18.3 years) and women (55.1 ± 16.8 years). The median age at diagnosis for women was 56 years versus 64 for men. Details are shown in Table 1.

The younger age of diagnosis in women compared to men has been a consistent finding in the past decade. It can be largely attributed to the predominance of breast cancer, a cancer located in an external organ, therefore likely to be detected relatively earlier than cancers of inner organs which predominate in men. The median age for breast cancer diagnosis in women was 53 years, compared to 60 in the 28 recorded breast cancer cases in males (1.6% of all breast cases) ( $p=0.02$ ). In almost all other cancers, diagnosis occurred predominantly after 60 years. Apart from breast cancers in women, exceptions included non-Hodgkin's lymphomas (NHL) at a median age of 59, Hodgkin's lymphomas (HL) at a median age of 31.5 years, and leukemia of all types at 41 years. No significant differences in

median age at diagnosis were found in any of those cancer types. Details regarding age at diagnosis by gender for most frequently diagnosed cancer types are presented in table 2.

**Table 2 : Differences in ages by gender for selected cancer types in Lebanon 2003 (N=7888)**

Types	Age (mean in years, SD)	Median	P-value
Breast (n=1587)			0.02
Males	60.0 (13.0)	61.5	
Females	54.0 (13.0)	53	
All	54.1 (13.0)	53	
Lung (n=810)			0.56
Males	62.8 (12.5)	64	
Females	62.2 (12.8)	64	
All	62.6 (12.6)	64	
Bladder (n =723)			0.68
Males	65.2 (11.8)	66	
Females	64.8 (11.8)	65	
All	65.2 (11.8)	66	
Prostate (n=676)			---
Males	69.9 (8.8)	71	
Colorectal (n=513)			0.28
Males	61.5 (15.2)	64	
Females	62.9 (14.8)	62	
All	62.2 (15.0)	65	
Non-Hodgkin's lymphoma (n=336)			0.90
Males	54.9 (19.3)	60	
Females	55.1 (19.1)	59	
All	55.0 (19.2)	59	
Hodgkin's lymphoma (n=122)			0.39
Males	38.3 (20.3)	31.5	
Females	35.3 (15.7)	32	
All	37.2 (18.8)	31.5	
Leukemia all types (n=319)			0.99
Males	39.1 (25.8)	40.5	
Females	39.1 (25.8)	40.5	
All	39.1 (25.7)	41	

### Anatomical cancer sites in adults

Most common anatomical cancer sites are presented by gender in table 3. The five most frequently diagnosed cancer sites in males in 2003 were: prostate (18%), lung (16%), bladder (15%), colo-rectum (8%) and lymphomas (7%). In females these were: breast (42%), colo-rectum (7%), ovary (5%), lymphomas (5%) and lung (4.5%). Bladder cancer was still relatively important in women (3.5%) though at a lower level than in men. Breast remains the most commonly diagnosed cancer in Lebanon, albeit at higher rates than hitherto described. About 4 in 10 of all cancers diagnosed in women is now a breast cancer, 1 in 5 (22%) for the entire cancer case-load. It is followed by bladder (9%), prostate (8.5%), colo-rectum (8%) and lymphomas of all types (6%). Cancers with unspecified or ill-defined sites constituted 1.3% of the total case-load in 2003 (n=115).

**Table 3 : Most common cancer sites by gender, Lebanon 2003 (N=7888)**

Primary sites (ICD-10) (n, %)	Males	Females	All
Breast (C50)	28 (0.7)	1710 (42.3)	1738 (22.0)
Trachea – Lung & bronchus (C33-34)	614 (16.0)	261 (4.5)	875 (11.1)
Bladder (C67)	583 (15.2)	140 (3.5)	723 (9.1)
Prostate (C61)	676 (17.6)	-- --	676 (8.5)
Colon (C18)	225 (5.8)	228 (5.6)	453 (5.7)
Non Hodgkin's lymphoma (C82-85)	192 (5.0)	166 (4.1)	358 (4.5)
Stomach (C16)	121 (3.2)	104 (2.6)	225 (2.8)
Lymphoid leukemia (C91)	124 (3.2)	79 (2.0)	203 (2.5)
Ovary (C55)	-- --	190 (4.7)	190 (2.4)
Multiple myeloma & related types (C90)	93 (2.4)	70 (1.6)	163 (2.0)
Junction – Rectum (C19-C20)	88 (2.2)	73 (1.8)	161 (2.0)
Meninges & brain (C70-71)	103 (2.7)	57 (1.4)	160 (2.0)
TOTAL*	3841 (100)	4047 (100)	7888 (100)

\* All skin cancers except melanomas, and in-situ cancers are not included in the registry.

#### Age-specific and age-adjusted incidence rates for in 2003

As expected, the age-specific incidence rates (ASIR) increased with age in both sexes. While incidences at older age are higher in men, the rise is steeper in women. The overall crude incidence rate for all ages and sexes in 2003 was estimated at 177.3 new cases per 100,000, and after age-adjustment at 173.52 per 100,000 (Table 4).

**Table 4 : Age-specific cancer incidence rates (per 100,000) in the Lebanese population in 2003**

Age-groups*	Males		Females		Total	
	n	ASIR	n	ASIR	n	ASIR
0-14	133	19.8	104	16.5	237	18.21
15-24	100	22.2	77	17.9	177	20.09
25-34	138	39.3	173	43.7	311	41.65
35-44	239	97.6	556	198.5	795	151.46
45-54	429	239.7	809	427.7	1238	336.29
55-64	756	491.1	771	477.7	1527	483.0
65-74	1023	946.0	767	684.6	1790	812.97
≥75	644	1462.0	432	961.3	1076	1209.12
TOTAL	3841	174.3	4047	180.1	7888	177.3
ASR	---	169.34	---	176.81	--	173.52

ASIR: Age-specific incidence rate per 100,000

ASR: Age-standardized rate per 100,000

\*Only cases with known age were included in each ASIR, while all cases were included in the total

#### 4. Discussion and comments

The comparison of incidence rates with 1998 (3) is not immediately feasible since the ways used to estimate the denominators has changed. Those used in 2003 are those used by the MOPH Epidemiological Surveillance Program to calculate the incidence of

infectious diseases and selected rates in the National Cardio-Vascular Registry (6). Those denominators are therefore now the norm to be used in future years, taking in account the annual growth rate of the population. These are all estimates however, and cannot replace the valid population description which can only be obtained from a general census of the Lebanese population. With NCR providing consistent annual reports, upward trends surmised since the early 1990s will be asserted with more accuracy. Findings in 1998 showed that cancer incidence in Lebanon was higher than in other neighboring Arab countries. This is still confirmed with these data. For example, in 2002, Jordan reported 4187 for a population of 5,300,000 (compared to the estimated 4,500,000 in Lebanon) (7). Reasons for these discrepancies should be addressed separately through inter-Arab studies.

The general distribution of cancer sites, and ages at diagnosis for men and women in 2003 have been consistent with previous reports in 1998 and 2002 (5). There are no gender differences in cancer occurrence, and half of the 2003 cases were diagnosed at 60 or younger. Special attention should be focused on breast cancer which remains the most frequently diagnosed malignancy in Lebanon. Also to be debated is the relative frequency of colo-rectal cancer which requires the setting up of national guidelines for early detection. Two other frequently diagnosed cancers are associated with smoking: lung and bladder, and their prevention as well as that of other cancers such as those of the larynx and oral cavity should be a strong argument for stringent tobacco control policies. Finally, more attention should be devoted to the increasing detection of prostate cancer and the decreasing ages of lymphomas in Lebanon.

#### Acknowledgment

The National Cancer Registry (NCR) in Lebanon is an institution of the Ministry of Public Health (MOPH). A decree 230/1 issued by the Public Health Minister, Dr. Mohammad Jawad Khalifeh in May 2005 re-established an NCR Committee to oversee its activities. The committee is formed essentially of representatives of cancer-related scientific societies (ex-officio) and some invited experts. Activities of NCR have been directed from the office of MOPH Director-General Dr. Walid Ammar and have been made possible through successive grants from the Italian Cooperation program in Lebanon.

Members of the NCR Committee with oversight on the latest report published in 2006 were: Assaad Khoury (MOPH Department of Preventive Medicine), Ali Shamseddine (Lebanese Society of Medical Oncologists), Salim Adib (Lebanese Epidemiological Association), Antoine Checrallah (Lebanese Society of Pathology), Azzam Dandashi (Parliament Committee on Health), Jawad Mahjour (WHO Representative in Beirut), Georges Saadé (Non-Communicable Disease Program), Michel Daher (Lebanese Cancer Society), Miguel Abboud (Children's Cancer Center), Muhieddine Seoud (Society of Obstetrics-Gynecology), Oussama Jradi (Lebanese Society of Hematology), Peggy Hannah (MOPH Health Education Unit), Marwan Ghosn (NCR Advisor), Howeyda Amin (NCR nosologist).

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