Cancer in North Africa

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Presentation Outlines

1- Global Cancer Statistics
2- Cancer in North African Countries
3- Situation in Eastern Mediterranean and Arab Countries
4- Cancer in Egypt
Global Cancer Statistics:
Cancer is the leading cause of death in economically developed countries and the second leading cause of death in developing countries.

The burden of cancer is increasing in economically developing countries as a result of population aging and growth as well as, increasingly, an adoption of cancer-associated lifestyle choices including smoking, physical inactivity, and “westernized” diets.

About 12.7 million cancer cases and 7.6 million cancer deaths are estimated to have occurred in 2008 worldwide, with 56% of the cases and 64% of the deaths in the economically developing world, (GLOBOCAN, 2008)
Estimated New Cases

**Male**
- Lung & bronchus: 1,095,200
- Prostate: 903,500
- Colon & rectum: 663,600
- Stomach: 640,600
- Liver: 522,400
- Esophagus: 326,600
- Urinary bladder: 297,300
- Non-Hodgkin lymphoma: 199,600
- Leukemia: 195,900
- Oral Cavity: 170,900
- All sites but skin: 6,629,100

**Female**
- Breast: 1,383,500
- Colon & rectum: 570,100
- Cervix Uteri: 529,800
- Lung & bronchus: 513,600
- Stomach: 349,000
- Corpus uteri: 287,100
- Liver: 225,900
- Ovary: 225,500
- Thyroid: 163,000
- Non-Hodgkin lymphoma: 156,300
- All sites but skin: 6,038,400

**Worldwide**
Developing Countries

Male
- Lung & bronchus: 612,500
- Stomach: 466,900
- Liver: 440,700
- Colon & rectum: 274,000
- Esophagus: 262,600
- Prostate: 255,000
- Urinary bladder: 119,500
- Leukemia: 116,500
- Oral Cavity: 107,700
- Non-Hodgkin lymphoma: 103,800
- All sites but skin: 3,654,000

Female
- Breast: 691,300
- Cervix uteri: 453,300
- Lung & bronchus: 272,000
- Stomach: 247,000
- Colon & rectum: 232,400
- Liver: 186,000
- Corpus uteri: 144,900
- Esophagus: 137,900
- Ovary: 125,200
- Leukemia: 93,400
- All sites but skin: 3,453,600

Source: GLOBOCAN 2008
TABLE 2. Estimated Age-Standardized Incidence and Mortality Rates Per 100,000 by World Area, 2008*

<table>
<thead>
<tr>
<th>Region</th>
<th>INCIDENCE</th>
<th></th>
<th></th>
<th>MORTALITY</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MALE</td>
<td>FEMALE</td>
<td>OVERALL</td>
<td>MALE</td>
<td>FEMALE</td>
<td>OVERALL</td>
</tr>
<tr>
<td>Eastern Africa</td>
<td>121.2</td>
<td>125.3</td>
<td>122.8</td>
<td>105.4</td>
<td>95.9</td>
<td>99.9</td>
</tr>
<tr>
<td>Middle Africa</td>
<td>88.1</td>
<td>96.7</td>
<td>91.8</td>
<td>78.5</td>
<td>75.6</td>
<td>76.4</td>
</tr>
<tr>
<td>Northern Africa</td>
<td>109.2</td>
<td>98.9</td>
<td>103.2</td>
<td>89.5</td>
<td>68.2</td>
<td>78.0</td>
</tr>
</tbody>
</table>

*Excludes nonmelanoma skin cancer.
Source: GLOBOCAN 2008.
Breast cancer in females and lung cancer in males are the most frequently diagnosed cancers and the leading cause of cancer death for each sex in both economically developed and developing countries, these cancers were followed, without specific rank order, by stomach and liver cancers in males and cervix and lung cancers in females in economically developing countries.
Human Development Index of Countries (HDI) in North Africa

- The United Nations Development Program's Human Development Statistical Update released in 2008, divided the populations according to the Human Development Index (HDI).

- HDI has some drawbacks

<table>
<thead>
<tr>
<th>Population</th>
<th>HDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>0.716</td>
</tr>
<tr>
<td>Morocco</td>
<td>0.644</td>
</tr>
<tr>
<td>Libya</td>
<td>0.840</td>
</tr>
<tr>
<td>Tunisia</td>
<td>0.762</td>
</tr>
<tr>
<td>Algeria</td>
<td>0.748</td>
</tr>
</tbody>
</table>
• The Mediterranean Oncology Society, 2008 correlated between the HDI and the Age Standardized Rates in the various populations by sex.
Male Cancer Age Standardized rates in Mediterranean Countries according to HDI

MEDITERRANEAN ONCOLOGY SOCIETY, 2008
http://www.mosepi.org/hdi.pdf
Female Cancer Age Standardized rates in Mediterranean Countries according to HDI

MEDITERRANEAN ONCOLOGY SOCIETY, 2008
http://www.mosepi.org/hdi.pdf
Globocan Database Created by the International Agency for Research on Cancer (IARC) in 2002

- The age standardized incidence (ASRI) of all cancers in the Eastern Mediterranean Region is currently 3 to 4 times lower than in the industrialized countries.
- Half of the cancers in the Region occur before age 55 which is 10–20 years younger than in industrialized countries.
- But is expected to double in the next 15 years as risk factor exposure increases including population aging.
• The mortality/incidence ratio is 70%, which is high (40% in America, 55% in Europe), indicating significantly lower survival rates from diagnosed cancer.

• The top five cancers in the Region when males and females are combined are
  - breast,
  - bladder,
  - lung,
  - oral and
  - colon cancer

(IARC) in 2002
Cancers in the Eastern Mediterranean Region
World Health Organization 2009

Breast
Bladder
Lung
Oral cavity
Colon and rectum
Stomach
Oesophagus
Leukaemia
Non-Hodgkin lymphoma
Cervix uteri
Liver
Brain, nervous system
Larynx
Ovary etc.
Thyroid
Prostate
Hodgkin lymphoma
Corpus uteri
Other pharynx
Kidney etc.
Nasopharynx
Pancreas
Multiple myeloma
Melanoma of skin
Testis
Kaposi sarcoma
### Countries Rank order of incidence of Cancer in North Africa

<table>
<thead>
<tr>
<th></th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Breast</td>
<td>NHL</td>
<td>Bladder</td>
<td>Liver</td>
<td>Lung</td>
</tr>
<tr>
<td>Morocco</td>
<td>Rectum</td>
<td>Thyroid</td>
<td>Liver</td>
<td>Colon</td>
<td>Stomach</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Lung</td>
<td>Breast</td>
<td>Bladder</td>
<td>Colon</td>
<td>NHL</td>
</tr>
<tr>
<td>Libya</td>
<td>Bladder</td>
<td>Breast</td>
<td>Lung</td>
<td>Colon</td>
<td>Colon</td>
</tr>
</tbody>
</table>

Source: GLOBACAN, IARC, 2002,
a Gharbiah population-based cancer registry report 2000–2002
b National cancer registry
Frequency of Stomach Cancer in Arab World

- Other GC: 9.9
- Alegria: 6.5
- Morocco: 5.9
- Lebanon: 5.1
- Jordan: 5.0
- Tunisia: 4.6
- Yemen: 4.1
- Saudi Arabia: 4.0
- Iraq: 3.3
- Kuwait: 3.0
- Egypt, Gharbiah: 2.5
- Egypt, NCI: 2.0
Frequency of Liver Cancer in Arab World

- Egypt, Gharbiah: 13
- Egypt, NCI: 11.3
- Saudi Arabia: 8.6
- Yemen: 7.8
- Kuwait: 7
- Other GC: 5.4
- Jordan: 2.7
- Tunisia: 2.5
- Morocco: 2.2
- Algeria: 1.1
- Iraq: 0.7

Colors:
- Green: Male
- Blue: Female
Frequency of Lung Cancer in Arab World

- Tunisia: 23.3
- Morocco: 18.8
- Algeria: 16.8
- Iraq: 15.7
- Lebanon: 14.1
- Other GC: 11.4
- Jordan: 11.2
- Egypt, Gharbiah: 8.2
- Kuwait: 7.4
- Egypt, NCI: 6.1
- Saudi Arabia: 6.0
- Yemen: 2.6
Frequency of Prostate Cancer in Arab World

- Lebanon: 9.7
- Other GC: 8.6
- Kuwait: 7.7
- Tunisia: 7
- Jordan: 6.5
- Saudi Arabia: 5.9
- Morocco: 5.6
- Algeria: 5.2
- Iraq: 3.6
- Egypt, Gharbiah: 3.3
- Egypt, NCI: 2.6
- Yemen: 0.9
Frequency of Breast Cancer in Arab World (Females)

- Egypt, Gharbiah: 33.4
- Egypt, NCI: 33.4
- Lebanon: 32.4
- Jordan: 29.7
- Kuwait: 28.7
- Yemen: 28.2
- Iraq: 27
- Morocco: 23.5
- Algeria: 23.1
- Other GC: 23.1
- Saudi Arabia: 21.8
- Tunisia: 19.6
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November 17, 2011

Dear Professor Anwar,

Following what we recently discussed in Carpi, we hope you will accept our invitation to join the MTCC as one of the representatives of your country.

Enclosed you find our Membership list and the By-laws of the Association. Please consider more in detail the Article 2: aims, etc;

Art. 3b, up to 5 Active Members for every country: we ask you to involve, if you wish, other colleagues from your country of your choice, possibly representing different fields of Oncology and Epidemiology.

In our website www.mtcc.cinbo.org you can find more details about our Association.

I send you my best regards, also on behalf of our President Ziad Sharaiha. We look forward in hearing from you.

Yours sincerely
Prof. Massimo Crespi, MD
MTCC Secretary General

Cc: Prof. Ziad Sharaiha, MD
MTCC President
Egypt
The National Cancer Registry Program of Egypt

The Supreme Committee of the Program decided
• to start by population-based registration of incident cancer cases in 2008 and
• to explore the possibility of establishing a national cancer database through hospital based registries.
National Population-based Cancer Registry (NPGR)

Phases of the Program

Population-based cancer registry
Aswan, Menia, Sinai and Matrouh
Linkage with Gharbiah data
NCI central registry
Establishment of National estimates; SEER’s model
Gharbíah Registry, Egypt

- Governorate of Gharbíah already has a registry that was established 10 years ago and will be included in the national registry program in a subsequent phase.
- By the end of the current phase, Egypt will be covered by a network of population based registries that fairly represents the entire country.
- In Beheira, Damietta, Menia, Assiut, Sohag and Aswan Governorates
The National Cancer Registry of Egypt: (NCRPE)
Overview & Objectives

• It aims to develop a reliable source of information on cancer incidence in Egypt.
• It collects cancer incidence data from population-based cancer registries covering approximately 22 percent of Egypt population on
  ➢ patient demographics,
  ➢ primary tumor site,
  ➢ tumor morphology and
  ➢ stage at diagnosis, and
  ➢ follow-up for vital status.
Egyptian Population Pyramid / Distribution of Cancer among Population

Age of Distribution of Population

Age of Distribution of Cancer Patients

Amal Samy Ibrahim, Prof of Epidemiology National Cancer Institute Cairo Univ
Projection of Magnitude of Breast Cancer in Egypt: 2025, 2050

<table>
<thead>
<tr>
<th>Year</th>
<th>Population size</th>
<th>Incidence rate</th>
<th>Incident cases</th>
<th>Prevalent cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>35 M</td>
<td>39.6</td>
<td>14.000</td>
<td>42.000</td>
</tr>
<tr>
<td>2025</td>
<td>51 M</td>
<td>55.1</td>
<td>28.000</td>
<td>84.000</td>
</tr>
<tr>
<td>2050</td>
<td>64 M</td>
<td>68.8</td>
<td>44.000</td>
<td>132.000</td>
</tr>
</tbody>
</table>

Amal Samy Ibrahim, Prof of Epidemiology National Cancer Institute Cairo Univ
The Gharbiah Population-based Cancer Registry **GPCR**

**Cancer Age Specific Incidence Rate**
Per 100,000 Population for all sites of Cancer by Gender, GPCR

- **Crude incidence rate:** 97.1/100,000  
  99.1/100,000
- **Age-standardized Incidence rate:** 154.3
- **Incidence rate:** 136.8

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Amal Samy Ibrahim, Prof of Epidemiology National Cancer Institute Cairo Univ
Does Gharbiah represent Egypt?

Human Development Index in Egypt

HDI Egypt
0.687

Median 0.685
Fayoum 0.603

Dakahlia

0.703
Gharbia

Port Said
0.780

Amal Samy Ibrahim, Prof of Epidemiology National Cancer Institute Cairo Univ
Years of Life Lost due to Cancer in Gharbiah

(6260 years of life/calendar year/million population ~ 21200 years of life/calendar year/Total Governorate) C

- **Lung**: 17/death, 721/M
- **Breast**: 22/death, 645/M
- **Liver**: 22/death, 814/M
- **Colon**: 18/death, 313/M
- **Bladder**: 23/death, 415/M

- **Lung**: 15/death, 210/M
- **Breast**: 22/death, 312/M
- **Liver**: 22/death, 304/M
- **Colon**: 20/death, 332/M
- **Bladder**: 21/death, 5906/M

**All Cancers**: 20/death, 6611/M

**All Cancers**: 21/death, 5906/M

Amal Samy Ibrahim, Prof of Epidemiology National Cancer Institute Cairo Univ