Diet & Breast Cancer in the Middle East: A First Look

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Outline

- BC in Middle East: prevalence & mortality
- Risk Factors for BC
  - Convincing evidence:
    - Alcohol consumption
    - Lactation
    - Obesity
  - Limited Evidence:
    - Fats
    - Sugars
    - Dietary patterns
    - Vitamin D
    - Folate
- Diet & BC in ME
- Evidence for association between Diet & BC in ME
Figure 1: Map of the Middle East and North Africa (MENA) region. The MENA region includes countries such as Algeria, Armenia, and Turkey, that are not members of the WHO Eastern Mediterranean Region (EMR) that is referred to in the literature.
BC in ME vs. West: lower incidence rates & similar mortality rates

Estimated Age-Standardized BC Incidence and Mortality Rates per 100,000 by World region. Source: GLOBOCAN 2012 (IARC).

- Lack of early detection programs & adequate diagnosis
- Lack of access to treatment facilities
BC incidence rates: Lebanon vs. West

Age-standardized incidence rate (/100,000) for BC in Lebanese females compared to other countries

Lebanon: wide adoption of screening programs & better awareness of BC and its early signs → early diagnosis

Reference numbers are between square brackets [ ]

[*] Source: Lebanese Ministry of Public Health - Epidemiological Surveillance Program - National Cancer Registry. May 2009
<table>
<thead>
<tr>
<th>ME countries</th>
<th>USA &amp; Europe</th>
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<tbody>
<tr>
<td>Average age at diagnosis of BC was <strong>48</strong> among 7455 patients from 11 countries including Lebanon</td>
<td>median age of BC is <strong>~63</strong></td>
</tr>
<tr>
<td><strong>65.5%</strong> of patients were &lt;50 yrs old in 8 countries</td>
<td>only <strong>25-30%</strong> of patients &lt;50 yrs</td>
</tr>
<tr>
<td><strong>50%</strong> of patients &gt;63 yrs</td>
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**Average age at diagnosis of BC in ME countries is a decade earlier than western countries**

Why higher BC rates in Lebanon

Compared with region:

1. Adoption of screening programs, more complete registration, better awareness
2. High mean age at marriage
3. Decline in fertility rate
4. Younger menarche & later menopause
5. Use of HRT among Lebanese females
Lebanon: age-adjusted incidence rate of BC has increased by ~4 fold between 1965 & 2007

Time trends of age-adjusted incidence rates of BC, Lebanon, 1965-2012

Abou Daoud, 1966
Shamseddine et al 2004
National Cancer Registry, 2003
Tfayli et al 2010
Globocan 2012
Summary BC in ME

- Incidence: 1/3\textsuperscript{rd} of total cancer
  - Most frequent cancer among women in ME
  - Lower than developed countries
  - Predicted to increase more than developed countries
- Highest rates in Lebanon, Bahrain & Kuwait
- Lebanon highest rate among ME countries and among age groups 40-49 yrs worldwide
- Lowest rates in KSA & Oman
Summary Mortality ME

- Mortality: 1/4th of total cancer
  - Similar to developed countries
  - Predicted to increase more than developed countries
  - Highest rates in Bahrain & Kuwait
  - Lowest rates in KSA & UAE

- Diagnosis: a decade earlier than West

- Among top 4 most common cancers, with 12 countries out of 21 having BC first
Risk Factors for BC

Breast Cancer

Unmodifiable RF

Modifiable RF

Age

Early menarche

Late menopause

Height

Personal/Family history

Alcohol

Obesity

Diet

Physical inactivity
Nutrition Transition

- ↓ alcohol consumption (mostly underreported)

- Suboptimal breastfeeding practices

- ↑ obesity prevalence

- ↑ fat and sugar intake

- Healthy, Western & Traditional dietary patterns

- ↓ vitamin D, calcium and folate intake
Nutrition Transition in ME

- Diet is becoming increasingly energy-dense, sweeter, and high in processed foods
  - Traditional Diet → Western Diet

- Increasing adoption of western lifestyle in LMIC countries = important determinant in ↑ of BC incidence in these countries

Diet in the Middle East

- ↑ in protein, fat and sugar (Iraq, Lebanon, Jordan, Kuwait, KSA)
- ↓ in cereals, fruits & vegetables → ↓ fiber (Bahrain, Syria, Lebanon)
- ↑ in processed foods

Sibai et al. 2010
Lactation protects against BC

Pooled analysis from 47 epidemiological studies (>50,000 controls and ~97,000 BC cases):

→ statistically significant ↓ risk of BC by 4.3% for every 12 months of breastfeeding

At 6 months of age, the % of infants who are exclusively BF declined by half in the last 6 years

- Never BF remains very low

Batal et al, 2006; Nasreddine et al, 2012 (unpublished data)
% of infants receiving early introduction of solid foods (<4 months) more than doubled in the last 6 years

Batal et al, 2006; Nasreddine et al, 2012 (unpublished data)
BF Cessation 2006/2012 - compared

- Insufficient milk: 26% in 2006, 20% in 2012
- Child was old enough: 21% in 2006, 17.5% in 2012
- Doctor's advice: 4% in 2006, 6% in 2012
- Influence of family members: 20% in 2006, 4.3% in 2012

2012
Accustom child to solid foods

Percentage (%)

28%
Probable increase in risk of postmenop BC with increased adult weight gain

Meta-analyses:

- cohort studies: 3% ↑ risk per 5kg gained
- case-control studies: 5% ↑ risk per 5kg gain

Obesity (BMI≥30) among adults (≥20 years) in MENA

Obesity %

Iran 14.9
Tunisia 27.7
Lebanon 28.2
Jordan 34.8
UAE 37.3
Syria 38.2
Kuwait 39.8
KSA 43.8
USA 33.8
France 11.3

Obesity Prevalence (%) highest in KSA and Kuwait

Nasreddine et al, 2012; Sibai et at 2010
Increased Fat Intake in the Region

- Contribution of total fat intake is ranging between 22% to 45% among most MENA countries (> DRI = 25-35%)

- The ↑ trend in the incidence of NCDs shown among MENA countries is in parallel with ↑ SFA intake

Sibai et al, 2010
Western Pattern associated with high odds of obesity

Only the western pattern associated with high BMI and WC

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<tr>
<th></th>
<th>BMI (kg/m²)</th>
<th>Waist circumference (cm)</th>
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<tbody>
<tr>
<td></td>
<td>β</td>
<td>95% CI</td>
</tr>
<tr>
<td>Western pattern</td>
<td>0.49</td>
<td>0.21,0.76</td>
</tr>
<tr>
<td>Lebanese Traditional pattern</td>
<td>0.14</td>
<td>-0.12,0.40</td>
</tr>
<tr>
<td>Prudent pattern</td>
<td>0.23</td>
<td>-0.02,0.48</td>
</tr>
<tr>
<td>Fish and Alcohol</td>
<td>0.24</td>
<td>-0.02,0.50</td>
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Naja F et al, 2011
Summary BC epidemiology in ME:

- 1/3\textsuperscript{rd} of total cancer cases; incidence highest in Lebanon, Bahrain & Kuwait and lowest in KSA & Oman

- 1/4\textsuperscript{th} of total cancer deaths; mortality highest in Bahrain & Kuwait and lowest in KSA & UAE

- Predicted to increase more than developed countries

- Diagnosis: a decade earlier than West

- Among top 4 most common cancers

- Evidence for the association between Diet & BC in ME:

  - **Lebanon**: western pattern associated with ↑ BMI and WC
Future Research in ME

- Need for large cohort studies and multidisciplinary approach – consortium
- Need for research relating food habits and dietary patterns to BC risk
- Implementation of research on determinants of behaviors
- Better understanding of early determinants of cancer
- Improvement of dietary assessment through biomarkers of exposure and metabolomics
- Formulation of adequate database for BC registry
Lebanon & Qatar: partner countries of IBCN

IBCN

- USA
- Canada
- France
- Uruguay
- Ghana
- UK
- Netherlands
- Switzerland
- Lebanon
- Qatar
FAFS co-founders of IBCN

Dr. Nahla Hwalla member of IBCN Advisory Board

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Thank You