Cancer Education in Low- and Middle-Income Countries: Challenges and Opportunities

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International Conference on Cancer Education
October 23, 2014

Acknowledgement

• Conference Joint (AACE/CPEN) Program Committee
• AACE Executive Council
• The National Cancer Institute (R25 CA112383 and U54 CA190155)
• Colleagues, Collaborators, and Students in LMICs
Outline

• Global Profile of Cancer
• Cancer Profile in LMICs (rates and presentations)
• Cancer Prevention and Control in LMICs
• Current Status and Needs for Cancer Education (Professional, patient, and public education)

The Status of Cancer in LMI Countries Incidence
**All Cancer by Region of the World (GloboCan, 2012)**

**Stages at initial diagnosis of breast cancer patients**

Incidence ASR
Female

Mortality ASR
Female
Most Common Cancers in Males and Females by Country

Based on Parkin et al., Lancet Oncology 9: 683 (July 2008); GLOBOCAN 2012

Cancer Cases are Rising Globally
Especially in Less developed Settings

New Cases 1000’s per year

> 20 Million by 2020

Cancer kills more people globally than AIDS + TB+ Malaria

Globocan 2012 + WHO (2013)
Cancer Care and Accessibility in Developing Countries

Ugandan Population Pyramids & Projections re. Breast Cancer

2000
Projected Population of Uganda: 10.9M (100%)
Projected Breast Cancer Cases Per Year: 947 (100%)
Projected Breast Cancer Deaths Per Year: 423 (100%)

2025
Projected Population of Uganda: 22.2M (203%)
Projected Breast Cancer Cases Per Year: 2264 (239%)
Projected Breast Cancer Deaths Per Year: 1014 (240%)

2050
Projected Population of Uganda: 32.5M (297%)
Projected Breast Cancer Cases Per Year: 5687 (601%)
Projected Breast Cancer Deaths Per Year: 2578 (609%)

How will Uganda handle this increase?

Source: IARC's Globocan 2012
Cancer registries cover the majority of populations in developed countries— but almost none in emerging countries.

Source: IBC/IARC 2014

Reasons for Studying Cancer in Other Countries (President’s Cancer Panel, NCI-2010)

- Does the clinical encounter differ across ethnic groups?
- Are there biologically-based differences between ethnic groups in clinical presentation?
- Are the differences in carcinogenesis as a result of different genetic, lifestyle, or environmental factors?
Markers of Exposure
• Environmental toxins
• Pesticides
• Heavy metals

Markers of Susceptibility
• Population differences
• Higher/lower cancer risk

Risk Factors
• Age
• Sex
• Occupation
• Residence

Etiology
Treatment
Prevention
Tumor Markers
• Relationship between tumor markers and exposures
New Prevention Paradigm: Intervention Strategies by Risk Profile

Chemoprevention & Cytotoxic Agents
Chemoprevention
Screening
Lifestyle changes
RISK
Average Moderate High Very High

Cancer Prevention and Control

National Cancer Control Program
Early Detection
Primary Prevention
Curative Treatment
Palliative Care

Courtesy of Joe Harford, NCI
Levels of Cancer Education

Professional Education

- Physicians:
  - Provide treatment or refer to cancer specialists, if available.
  - Develop local guidelines for treatment and prevention (e.g. breast cancer & receptor status)
- Nurses and other health professional
- Students
Finding from Ashley burson's paper: nearly 50% of tumors were ER-/PR-
Lynne Le, 10/13/2014
Predictors of Incomplete Treatment of Breast Cancer in Kumasi, Ghana (OR, 95% CI)

Knowledge of Insurance: 11.859
Use of Traditional Healing: 10.732
Religion: 6.557

Predictors of Late-Stage Presentation in Egypt

Pain: 2.68
Previous CBE: 1
Knowledge of BSE: 0.24
Site of Treatment: 5.05


Rendered from Stapleton et al., 2010; Psycho-Oncology
Late Stage Presentation and Survival

Breast Cancer Survival by Stage (U.S. Data):

Pattern of Seeking Medical Care and Late-Stage in Egypt (Moussa et al., The Breast, 2011)

Source: SEER FastStats
Distribution of the Proportion of Breast Cancer Cases by AJCC stage in Gharbiah, Egypt from 1999 to 2006
Breast Cancer Early Detection Options and Decision Making

Patient Education

- Continuation and completion of treatment
- Resources for treatment
- Explore and act on system and patient barriers
  - Cost
  - Physical barriers
- Resources for prevention
Sam Scherber: physical conditions are a significant barrier, including transportation
Lynne Le, 10/13/2014
Cultural Beliefs

• Stigma
• Traditional healers
  — Significant source of health service
  — How they view cancer (masses, lesions, ulcers, etc)
• Always die (survivorship)
• Don’t talk about it
• Fatalism

Knowledge and Social Support

• Gender issues
• Authority
• Financial issues
• Education of women
Public Education

- Poverty and its effect on cancer prevention
- Lifestyle and epidemiologic and nutritional transitions in LMICs
- Advocacy by breast cancer survivors
Internet use in developing ("South") versus developed ("North") countries

The exponential rise in Internet use in the South has been most notable over the past decade.


Changing Rapidly than in the U.S.

Fes, Morocco

Source: http://sconzani.blogspot.com/2014/07/morocco-day-5-fes.html
Possible Future Directions for Cancer Education in LMICs and Underserved U.S. Populations

• Elucidate cancer risk factors and cultural and behavioral barriers to seeking medical care and down-staging.
• Utilize local resources for developing tailored cancer education
• Low-tech prevention interventions
• Inter-professional education