Cancer in Low- and Medium-Income Countries

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This issue of the *Annals of Global Health* addresses multiple facets of the growing epidemic of cancer in low- and middle-income countries (LMICs). The increasing number of cancer cases diagnosed in LMICs, and of cancer patients dying of the disease, is one of the main features of the global burden of disease. More than two-thirds of cancer cases and deaths now occur in LMICs.[1] The trend results from a combination of increased population size, population aging, and increased incidence rates. Compared with the pattern in high-income countries (HICs), cancer in LMICs presents specific features[2]:

- High incidence of fatal cancers, including cancers of the liver, esophagus, and stomach, resulting in a poor incidence/mortality ratio.
- High incidence of preventable cancers, including those caused by infection (e.g., liver, stomach, and cervix cancers) and tobacco (e.g., lung and head and neck cancers).
- Growing incidence of cancers linked to nutrition and other metabolic and hormonal factors (e.g., breast and colon cancers).
- Limited availability of resources for treatment, including surgery, chemotherapy, and radiotherapy.
- Limited local expertise in cancer prevention and treatment.

Table 1 shows the trends for key cancer risk factors worldwide.[2] Among the main causes of cancer, tobacco has the largest effect in both LMICs and HICs; however, while the trend is decreasing in HICs it is increasing in LMICs. Infection has a large effect in LMICs but only a modest impact in HICs; the trend is decreasing in both populations. Nutrition has a modest effect in LMICs and a moderate impact in HICs, with an increasing trend in both. The effect of alcohol use is modest in both types of countries, but the trend is downward in HICs and upward in LMICs. The effects of endogenous and exogenous hormones are modest in LMICs and moderate in HICs, but the trend is upward in both. The effect of occupational exposures is modest in both LMICs and HICs but the trend is downward in HICs and upward in LMICs.

Three articles in this issue will address in detail the descriptive epidemiology of cancer in Latin America and the Caribbean (Curado and de Souza). East Asia and the Pacific Region (Varghese et al.), and West Asia (Roshandel et al.).

These contributions illustrate the complexity of the problem, as well as the opportunities for research on etiology, control, and treatment of important cancers. Four additional articles address some of the most important causes of cancer in LMICs: tobacco and alcohol (Lee and Hashibe), infectious agents (Oh and Weiderpass), and occupational and environmental agents (Hashim): these papers emphasize the key role of primary prevention in cancer control in LMICs. The review on cancer screening (Sankaranarayanan) illustrates some of the successful approaches developed in the past two decades to reduce cancer mortality through low-technology early detection. A final manuscript (Malhotra) provides a framework to interpret the genetic and molecular features of cancer in LMICs.

Table 1. Importance of Cancer Risk Factors in LMICs, and HICs, and Temporal Trends (derived from Sankaranarayanan and Boffetta)

Risk Factor	HICs	LMICs
Tobacco	↓[‡]	↑[‡]
Infection	↓[§]	↓[‡]
Nutrition*	↑[‡]	↑[§]
Alcohol	↓[§]	↑[§]
Hormones	↑[§]	↑[§]
Occupation†	↓[§]	↑[§]

HICs, high-income countries; LMICs, low- and medium income countries; ↑, increasing importance; ↓, decreasing importance.
*Includes obesity and physical activity.
†Includes environmental factors.
‡Major impact.
§Relatively minor impact.

Although not exhaustive, the set of articles in this issue provides the reader with an in-depth introduction to the field, and hopefully will stimulate further initiatives aimed at cancer control in LMICs. Cancer represents a global challenge to health and requires global solutions: Research projects in economically more developed as well as less developed regions of the world are complementary efforts toward the control of cancer through primary prevention, early diagnosis and downstaging, and improved treatment.

References

1. Thun MJ, DeLancey JO, Center MM, Jemal A, Ward EM. The global burden of cancer: priorities for prevention. Carcinogenesis 2010;31:100–10.
2. Sankaranarayanan R, Boffetta P. Research on cancer prevention, detection and management in low- and medium-income countries. Ann Oncol 2010;21:1935–43.