

## Can Yoga Practice Minimize Cancer Risks to Indian Women?

The problems associated to genetics, biology, toxic environment, and unnatural lifestyle can play a role in promoting the growth of odd cells leading to various types of cancer. However, scientists are still puzzled by the fact why cancer affects women and men differently. The number of India's cancer-linked deaths has doubled from 1990 to 2016.<sup>[1]</sup> If the current escalating trend continues, India will encounter over 1.7 million new cancer cases and 800,000 deaths by the year 2020.<sup>[2]</sup> Although the global cancer trend generally portrays that more men suffer from cancer than women, the drift in India is alarmingly the opposite.<sup>[3]</sup>

More women are affected by cancer in India and nearly 70% of the reported cases affect organs such as the breast, cervix, ovary, uterus, and lung. Cervical cancer alone, for example, kills a woman every 8 min (cancerindia.org.in). To make things worse, the peak age of inception of the breast and ovarian cancers starts between the age group of 45 and 50 years in India, which is over a decade earlier than reported in developed nations.<sup>[3]</sup> India still maintains strong economic growth, which catalyzes the lower- and upper-middle-class people to become wealthier by the year. Consequently, women are more exposed to high-fat processed foods combined with less physical activities obviously leading to diseases such as obesity, diabetes, heart disease, high blood pressure, and cancer. Women also marry late in recent years and they prefer having fewer children. Many opt for bottle-feeding their infants, and these factors increase the chances of breast cancer.<sup>[4]</sup>

India is a land of rurality and about 833 million (68.8%) people live in rural areas where access to cancer screening is difficult ([https://en.wikipedia.org/wiki/2011\\_Census\\_of\\_India](https://en.wikipedia.org/wiki/2011_Census_of_India)). Furthermore, rural women have less literary rate (65%) compared to men (82%), which creates an educational awareness gap, obviously leading to low hygiene standards. The report shows that only 12% of women routinely use sanitary pads and the continuing unhygienic practices have the potential to trigger fungal, urinary, and reproductive tract infections.<sup>[5]</sup> In fact, the sexually-transmitted human papillomavirus is the riskiest reason for cervical cancer. Early vaccination and routine Pap smear can greatly neutralize the risks.

India spends about 1.3% of its gross domestic product (GDP) for health care, which is one of the lowest in the world. Moreover, the country has only one oncologist to treat 2000 cancer patients, which is insufficient to counter the emerging new cases.<sup>[6]</sup> Therefore, more healthcare budget allocation from the state and central government agencies is required to engage the crisis at grass-roots level. Besides, multinational corporations and NGOs may need to assist the government to fill the existing healthcare spending gap.

Rural women are not accustomed to voluntary cancer screening that could heighten the early detection of breast and cervical cancers. Besides, discussing the subject of the menstrual cycle, including sanitary pads is still considered a societal taboo. Hence, social workers must form an alliance with healthcare agencies and village-level self-help groups to promote hygiene. Routine medical check-ups in villages and towns are absolutely important. To enable this agenda, the government has declared an ambitious health insurance scheme to benefit 500 million underprivileged people with yearly coverage of USD 6900 ([www.reuters.com/healthcare/indias-modi-launches-health-insurance](http://www.reuters.com/healthcare/indias-modi-launches-health-insurance)), which will spearhead women's healthcare prospects. Above all, major healthcare stakeholders such as the government, corporations, and NGOs must partner to reinforce cancer awareness while augmenting effective screening, counseling, and monitoring programs aimed at rural women.

Several diseases can be treated, cured, and managed by the regular practice of yoga. However, can the existing yoga modules cure cancer? Despite the fact that promising studies are increasingly emerging to address this thorny query, they lack convincing scientific evidence. Nonetheless, numerous studies have confirmed that yoga helps cancer victims to recover from serious side effects associated to the aftermath of painful treatments such as surgery, chemotherapy, and radiotherapy.<sup>[7,8]</sup> However, how the yoga coerces molecular-level modifications through precise mechanisms and pathways are yet to be fully studied and understood.

I recently read a remarkable review article titled, "What is the molecular signature of mind-body interventions (MBIs)? A systematic review of gene expression changes induced by meditation and related practices" appeared in the *Frontiers in Immunology*.<sup>[9]</sup> The MBIs include practices such as yoga, meditation, Tai Chi, and Qigong and they apparently accelerate the mind to influence bodily functional changes. The authors hypothesize that the MBIs somehow reverse the expression of genes associated with inflammatory reactions induced by stress. They conclude by stating that the MBIs reduce the risk of inflammation-induced diseases. Unfortunately, the review relied on small sample size, and hence, the authors could not compare the effects with other normal interventions such as exercise and diet.<sup>[9]</sup>

The research community needs to reinforce fundamental research on yoga supported by interdisciplinary science, which is critical for scientific growth integrating yoga. Therefore, new studies must meticulously investigate the specifics on how the yoga practices alter molecular-level changes in the human body. It is equally critical to document thorough

scientific evidence on how yoga can trigger spontaneous regression of malignant tumor and hence that the women at large can be protected from the horror of cancer in future.

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### Conflicts of interest

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### Govindasamy Agoramoorthy

College of Pharmacy and Health Care, Tajen University,  
Pingtung, Taiwan  
E-mail: agoram@tajen.edu.tw

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