

## A Thought Leadership

# A Convergent and Multidisciplinary Integration for Research in Menopause

For over two decades, the Indian Menopause Society (IMS) has started and pioneered the structure and approach of menopausal health care by multiple medical specialists. These efforts have led to the MAITREYI module and the establishment of menopause health clinics.<sup>[1]</sup> In addition, national and international specialty training programs and the society's official journal, the Journal of Mid-Life Health, have added momentum to trans-specialty management of menopause and after that.<sup>[2]</sup>

However, globally and in India, there is a growing interest in addressing problems with convergence science, trans-system translational research, and closer interaction with new developments in basic research in reproductive biology and aging.<sup>[3-5]</sup> The convergence research has been described by National Research Foundation (USA), research-driven by a specific and compelling problem. Convergence research is generally inspired by a need to address a specific challenge or opportunity, whether it arises from deep scientific questions or pressing societal needs. The foundation further stated about deep integration across disciplines, "As experts from different disciplines pursue common research challenges, their knowledge, theories, methods, data, research communities, and languages increasingly intermingled or integrated. New frameworks, paradigms, or disciplines can form sustained interactions across multiple communities."<sup>[6]</sup> In India, with our pluralistic health care, the challenges of trans-system research may be daunting. We have recently organized several national and international intersystem dialogues of Ayurveda, Yoga, and Naturopathy, Unani, Siddha, and Homeopathy and modern biomedical scientists to diagnose and manage polycystic ovary syndrome (PCOS), cancer, and drug research.<sup>[7]</sup> That experience led to a conviction that even for menopause research, the convergent and trans-system approach may open up new avenues.

Menopause and its consequences have an impact on multiple systems in the body. Sometimes, it becomes difficult to distinguish the effects of menopause from biological aging. Recent data suggest that aging can be reversed, particularly with a calorie-restricted balanced diet, pineal cross-transplantation, and parabiotic animals.<sup>[8-10]</sup> It has been debated whether menopause can be postponed or appropriate interventions can restore regular cycle and ovulation (ovarian transplantation).<sup>[11]</sup> There have been reports of

maintenance of estrous cycles in aging female rats with L-3,4-dihydroxyphenylalanine treatment, as early as 1980.<sup>[12]</sup> The difference between the chronological and biological age on the hypothalamic-ovarian axis, particularly, deserves a convergent integrative research approach. In recent years, there has been a growing realization that most chronic inflammatory diseases are connected to the complex mechanisms of biological aging processes.<sup>[13]</sup> The geosciences are proposing approaches to increase the reproductive longevity in humans by preserving the ovarian function for fertility for a long duration.<sup>[14]</sup>

The progression from monodisciplinary to multidisciplinary to transdisciplinary research and management of menopause has been a gradual and challenging process. The present gulf between the basic scientists and clinicians will have to be bridged by determined vision, mission, objectives, and action programs. The dialogues and interactions among the multisystem experts may also provide a fast potential for new ideas, hypotheses, and out-of-the-interventional box measures. Recently, we had an opportunity to conduct a trans-system trial of *Dalbergia sissoo* in menopausal women. Industry-supported research involved three institutes – Council of Scientific and Industrial Research-Central Drug Research Institute (Lucknow), Medical Research Center-Kasturba Health Society (Mumbai), and at Tanvir Hospital (Hyderabad). The experts from the institutes worked very closely across the two systems, Ayurveda and modern biomedicine. The finding of the reduction in tumor necrosis factor-alpha (TNF- $\alpha$ ) and stabilization in bone density with minimal side effects opened up the need for Trans-system Research and Development.<sup>[15]</sup> Recent research has demonstrated the influence of mechanobiological factors on bone architecture and suggested a mechanism for physiological bone loss due to mechanical disuse.<sup>[16]</sup>

India faces a double burden of communicable and noncommunicable diseases. India faces a huge burden of age-related dementia, senile, and Alzheimer's disease (AD). Although the exact prevalence of this neurodegenerative disease is unknown, it has been estimated as per the Dementia in India 2020 report that 5.3 million Indians over 60 years of age had dementia, and the projected figure of 14 million by 2050 also may be an underestimate.<sup>[17,18]</sup> Women are particularly

at a higher risk of AD because of the acceleration of biological age at menopause that contributes by its very association with the triad of obesity, sarcopenia, and osteoporosis.<sup>[19-21]</sup> Surgical menopause with bilateral oophorectomy imposes an even higher risk of cognitive decline.<sup>[22]</sup> IMS currently has the potential to undertake large epidemiological studies of age at surgical menopause and cognitive decline if the society was to collaborate with the Indian Council of Medical Research's National Institute of Epidemiology.

Globally, cardiovascular diseases (CVD), including stroke, have been a significant cause of morbidity and mortality in men and women.<sup>[23]</sup> Indian women as compared to Indian men had a more significant increase in ischemic heart disease between 2000 and 2017.<sup>[24]</sup> This CVD-related mortality is much higher than even that related to all cancer-related mortality. It has been noticed elsewhere and in India that women with CVD are less well attended and inadequately managed despite the preponderance of CVD. This realization of the gender disparity in cardiac care has led to specialized Women's Heart Centers (WHCs). The need for improved cardiac care was particularly noticed when the associated morbidity and mortality in women had escalated when there was already a decline in the CVD-associated mortality in men.<sup>[25]</sup> The need for WHC has been well conceived, elaborated and its team's training standards were outlined.<sup>[26]</sup> An umbrella review reports that from menarche to menopause reproductive profile of an individual woman contributes to her cardiac health, and thus in clinical reality, there is a need to focus on the following factors while assessing her for being at risk for CVD.<sup>[27]</sup> The risk factor to be assessed are if she has suffered from PCOS, pregnancy-induced hypertension, gestational diabetes, use of hormonal contraceptives, and besides known factors such as family history.<sup>[27]</sup> In addition, premature cardiac events and associated risk factors for Indians, in general, have been detailed.<sup>[28]</sup> Thus, these same conditions can be attenuated by preventive mode in early life. This brings us to the IMS fraternity's visionary role nationally and internationally by creating 35+ clubs. Now, the time to collate the data collected therein for detailed follow-up and analysis has come.

Nutritionists and physical therapists have unique roles in the prevention and management of metabolic syndrome, prediabetes and risk factors for CVD, the pre- and posttreatment of breast cancer patients, and the quality of life care for cancer survivors.<sup>[29-32]</sup> Understanding the need for comprehensive multidisciplinary care of breast

cancer patients European Society of Breast Cancer Specialists, with the endorsement of Endocrine Cancer Cognition, has outlined the requirement, composition and accreditation, certification, and audit of a Specialist Breast Cancer Clinic.<sup>[33]</sup> Such specialist breast clinics may not be possible in IMS-run menopause specialty clinics. However, a medical and pediatric oncologist of great repute has been a founder member and the past president of IMS and has run MAHEK – The Hinduja Hospital Breast Cancer Support Group.<sup>[34]</sup> Currently also, some life members of IMS are gynaec-onco-surgeons.

## CONCLUSION

IMS has taken long strides since its inception in the year 1995. Besides that, having its journal indexed in PubMed, other worthwhile initiatives such as multidisciplinary clinics in private and public clinical practices are commendable. There have been significant steps taken for education modules for menopausal health care and research. The national and international conferences, seminars, and webinars have added significant momentum to the domain. However, it is always felt that sitting on the past laurels is equivalent to wearing them in the wrong place.

There is a global evolution trend of convergent and integrative approaches to address critical and complex problems by multidisciplinary, transdisciplinary, and trans-system leadership and teamwork. In the present thought leadership article, advocacy for such a futuristic approach has been briefly reviewed. We have emphasized only certain domains of convergence of trans-system and trans-specialty endeavors in India and globally. A plea is made to the IMS Executive Council to organize a brainstorming session on the challenges and opportunities of convergent science in menopausal health care, education, and research.

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## Conflicts of interest

There are no conflicts of interest.

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