

Health economics in India: The case of diabetes mellitus

Rakesh Sahay, Manash P Baruah¹, Sanjay Kalra²

Department of Endocrinology, Osmania Medical College, Hyderabad, Andhra Pradesh, ¹Endocrinology, Excel Centre Hospitals, Guwahati, Assam, ²Endocrinology, Bharti Hospital and B.R.I.D.E., Karnal, Haryana, India

INTERSPECIALTY EXCHANGE

As we work to tackle the growing burden of endocrinopathy, including diabetes and associated noncommunicable disease, we often find the distinctions between clinical endocrinology, and other medical and nonmedical specialties, blurring. Examples of clinical disciplines which interface endocrinology include nephrology, cardiology, geriatrics, and gynecology; many of these issues have been covered earlier in the IJEM.^[1-4] The para clinical subjects also contribute to the growth of endocrinology as a science: Public health, pharmacology, and psychology are but a few examples.^[5-7]

Yet other, classically nonmedical, ways of thinking, however, are enriching clinical science as well. These specialties bring with them the strength to expand endocrinology's impact far beyond the walls of the outdoor patient clinic, the hormone laboratory, or the indoor ward. They allow the endocrinologist to contribute toward influencing policy decisions and resource allocation, at national and regional levels. Thus, these sciences help the endocrinology raise her or his voice for the benefit of persons at risk of, or living with, endocrinopathy. In this way, the endocrinologist lives up to the promise made in the Hippocratic Oath: To work "for the benefit of the sick."^[8]

HEALTH ECONOMICS

One such specialty is health economics. Though not a component of traditional endocrine learning or teaching,

health economics is gradually making inroads as an integral part of endocrine pedagogy and praxis. Faced with an ever-growing multitude of investigations for screening, diagnosis, and follow-up; prophylactic and therapeutic drugs and devices, the endocrinologist needs to know which is most cost-effective. This information is necessary at the individual, as well as community and national level. Respected as a source of updated knowledge by peers in the medical profession, the endocrinologist's words (and actions) have an impact beyond her or his own practice. The endocrinologist, therefore, needs to be conversant with all laterally related fields of science.

The specialty of health economics is a relatively young one. Its growth in developing countries, including India, is hindered by a lack of trained manpower, and by suboptimal collaboration between endocrinologists and economists. The ever-increasing epidemics of endocrinopathy and their impact on individual as well as national economy, however, are adequate stimulus to drive change. The most common cause of endocrine illness, viz; diabetes, happens to have a major impact on economy, as well. It stands to reason that the majority of "endocrine economic" data relates to this condition.

DIABETO-ECONOMICS

Western data are available to support the cost-effectiveness of specific strategies such as cardiovascular risk reduction, and screening for albuminuria, in diabetes. Data also support the use of specific dietary interventions, lipid-lowering drugs, oral hypoglycemic agents, injectable antidiabetic therapy, and blood pressure lowering drugs. However, India-specific data on these aspects of health economics are lacking.

Cost-effectiveness analysis of various strategies to manage diabetes and prevent its complications has been carried

Access this article online	
Quick Response Code:	Website: www.ijem.in
	DOI: 10.4103/2230-8210.129101

Corresponding Author: Dr. Sanjay Kalra, Bharti Hospital and B.R.I.D.E., Karnal-132 001, Haryana, India. E-mail: brideknl@gmail.com

out for the South East Asian Region (SEAR) of the World Health Organization (WHO),^[9] which includes India. The analysis utilized demographic and epidemiological data from WHO databases. Results from various clinical trials, observational studies, and treatment guidelines were used to inform methodology. Unit costs of interventions were procured from the WHO-Choosing Interventions that are Cost-Effective (CHOICE) price database. Costs were compared across countries and regions, using concerned intervention world be. WHO-CHOICE describes an intervention as “cost-effective” if it produces a healthy year of life for less than three times the gross domestic product (GDP) per capita, and as “very cost-effective” if it achieves the same for less than the GDP per capita.^[10] Impact of interventions was assessed by the cost per disability adjusted life year (DALY) averted, as measured in international dollars (\$ Int).

The diabetes-related interventions studied included intensive glycemic control (goal of HbA1c <7%), retinopathy screening and photocoagulation, neuropathy screening and preventive foot care, and combination of the above.

The most cost-effective intervention of these was retinopathy screening and photocoagulation, which saved 1891 DAYs per million population, at an annual per capita cost of \$ Int 0.32, with an average cost-effectiveness ratio (CER) of 170. Adding standard glycemic control to retinopathy screening and photocoagulation increased the per capita cost to \$ Int 1.14 and the CER to 512, while helping save 2233 DALYs per million. Substituting intensive glycemic control in place of standard glycemic control maintained cost-effectiveness (cost \$ Int 2.11; CER 912) while saving a higher number of DALYs (2319/million annually).^[9]

The costs of diabetes-specific intervention were markedly lower in SEAR as compared with the WHO African sub region. This is noteworthy, especially as costs of interventions related to control of tobacco use and cardiovascular disease prevention/treatment tend to be similar in both WHO regions.^[9]

ECONOMICS IN INDIA

This difference in costs may be due, in part, to varied local clinical practices. A health economic study recently reported upon the cost of treating diabetic foot ulcers in five countries, including India.^[11] Two hypothetical cases were defined: One, an uncomplicated plantar ulcer and the other a complicated foot requiring transtibial amputation. The cost of therapy (expressed in \$ Int, to ensure purchasing parity) was 10 times higher for the uncomplicated ulcer,

and six times higher for the complicated condition, as compared with Tanzania. The Indian patient had to pay a sum equivalent to 127 days of salary for management of the simple ulcer (as compared with only 6 days’ worth of income of a patient in the United States). For the ulcer requiring amputation, 5.7 years income was required to pay for cost in India, as compared with only 146 days in Chile.^[11] The economic burden of therapy was due to differing plans of treatment, nonuniform government, and insurance support in the five countries studied, and varied cost of drugs and devices.

Medical bankruptcy is a common phenomenon in India, as in other resource-challenged countries,^[12,13] where patients have to pay from pocket. While usually linked with acute illness, catastrophic health care spending is clearly prevalent in a chronic condition such as diabetes, too. In fact, the Indian endocrinologist (and the patient) experiences diabetes as both an acute and a chronic illness, to be managed in a dynamic manner, as per requirement. The high incidence of acute complications, such as diabetic ketoacidosis, hypoglycemia, and infections, coexisting with high prevalence of chronic vascular complication, creates dual challenges for the Indian endocrinologist. An accompanying review in this issue of the journal describes results from various health economics studies carried out in India over the past 2 decades.^[12] The findings from the papers reviewed highlight the economic impact of diabetes on the person who lives with it.

CONCLUSION

Health economics, specifically diabeto-economics, should focus upon both these aspects in India. Interdisciplinary communication and cooperation between health economists and endocrinologists is necessary. This will lead to enhanced understanding of the challenges faced by each other and hopefully help develop ways to create meaningful, accurate, reliable health economic data. These results can then be used as powerful advocacy tools to convince governments to allocate more, in general and glycemic control in particular. In the long run, this will save overall costs and avoid diabetic bankruptcies.

REFERENCES

1. Sahay M, Kalra S, Bandgar T. Renal endocrinology: The new frontier. *Indian J Endocrinol Metab* 2012;16:154-5.
2. Owens D, Kalra S, Sahay R. Geriatric endocrinology. *Indian J Endocrinol Metab* 2011;15:71-2.
3. Ramprasad M, Bhattacharyya SS, Bhattacharyya A. Thyroid disorders in pregnancy. *Indian J Endocrinol Metab* 2012;16:S167-70.

4. Chopra S, Peter S. Screening for coronary artery disease in patients with type 2 diabetes mellitus: An evidence-based review. *Indian J Endocrinol Metab* 2012;16:94-101.
5. Kalra S, Unnikrishnan AG, Sahay R. Thyroidology and public health: The challenges ahead. *Indian J Endocrinol Metab* 2011;15:S73-5.
6. Kalra S, Bantwal G, John M. The exaptation of endocrine pharmacology. *Indian J Endocrinol Metab* 2012;16:329-30.
7. Kalra S, Sridhar GR, Balhara YP, Sahay RK, Bantwal G, Baruah MP, *et al.* National recommendations: Psychosocial management of diabetes in India. *Indian J Endocrinol Metab* 2013;17:376-95.
8. Kalra S. The Hippocratic oath and patient centred care. *Int J Clin Case Invest* 2012;4:1-4.
9. Ortegón M, Lim S, Chisholm D, Mendis S. Cost effectiveness of strategies to combat cardiovascular disease, diabetes, and tobacco use in sub-Saharan Africa and South East Asia: Mathematical modelling study. *BMJ* 2012;344:e607.
10. Cost-effectiveness thresholds. Available from: http://www.who.int/choice/costs/CER_thresholds/en/index.html [Last Accessed on 2013 Nov 24].
11. Cavanagh P, Attinger C, Abbas Z, Bal A, Rojas N, Xu ZR. Cost of treating diabetic foot ulcers in five different countries. *Diabetes Metab Res Rev* 2012;28:107-11.
12. Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household catastrophic health expenditure: A multicountry analysis. *Lancet* 2003;362:111-7.
13. Ramachandran A, Ramachandran S, Snehalatha C, Augustine C, Murugesan N, Viswanathan V, *et al.* Increasing expenditure on health care incurred by diabetic subjects in a developing country: A study from India. *Diabetes Care* 2007;30:252-6.

Cite this article as: Sahay R, Baruah MP, Kalra S. Health economics in India: The case of diabetes mellitus. *Indian J Endocr Metab* 2014;18:135-7.
Source of Support: Nil, **Conflict of Interest:** None declared.