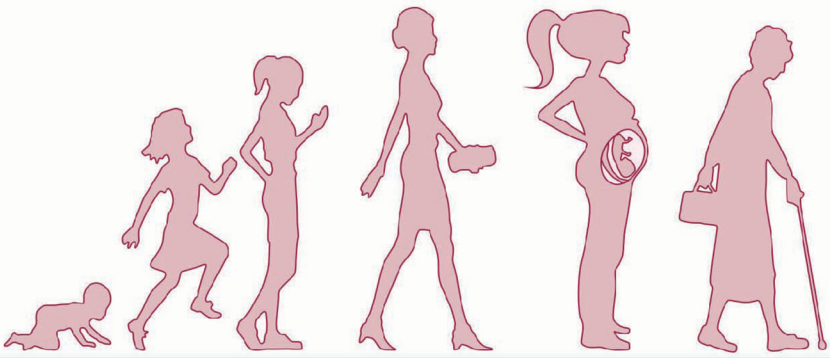
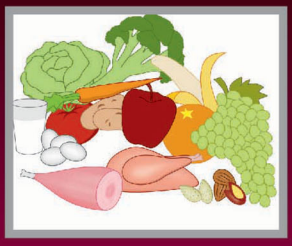
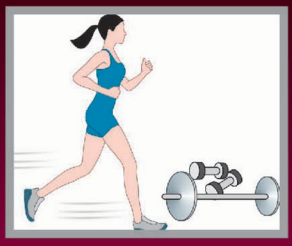
r website **www.jaypeebrothers.com,** for detailed information on endocrinology books, visit our website **www.jaypeebrothers.com**



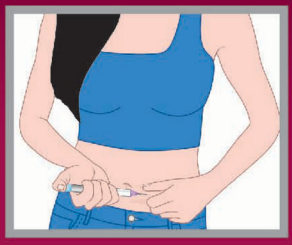
Diabetes Mellitus

Issues for the Indian Woman









Editor
Sarita Bajaj

JAYPEE

Contents

SECTION 1: INTRODUCTION

1. **The Guidelines: Noesis and Hopes** 1
Sarita Bajaj, Alankar Tiwari

2. **Women Hold Up Half the Sky and More** 9
Bharti Kalra, Sanjay Kalra

3. **Overview of Women Specific Issues in Diabetes** 12
Atul Dhingra, Kamlesh Ahuja

SECTION 2: GLYCEMIC MANAGEMENT

4. **Lifestyle Management** 19
Ranjit M Anjana, Ranjit Unnikrishnan

5. **Antidiabetic Drugs in Type 2 Diabetes Mellitus in Women** 25
Ipsita Ghosh, Sarita Bajaj, Sujoy Ghosh

6. **Medical Management of Hyperglycemia in Type 1 Diabetes Mellitus in Girls** 36
Rajeev Chawla, Shalini Jaggi, Aastha Chawla

7. **Insulin Injection Technique in Women** 44
Sanjay Kalra, Sunil Gupta

SECTION 3: METABOLIC HEALTH

8. **Obesity and Type 2 Diabetes Mellitus** 47
Anjali A Bhatt, AG Unnikrishnan

9. **Dyslipidemia and Hypertension** 57
Anuj Maheshwari, Brij M Makkar

10. **Vitamin D** 63
Gagan Priya, Rajat Gupta

SECTION 4: COMPLICATIONS

11. **Cardiovascular Disease** 71
Mala Dharmalingam, Ganavi YP

12. **Diabetic Nephropathy** 77
Vijay Viswanathan, Anitha Rani

13. **Diabetic Neuropathy** 81
Sweta Singla, Deepak Khandelwal

14. **Infections** 87
Jayanta K Panda, Madhusmita Patnaik

SECTION 5: ENDOCRINE HEALTH

15. **Polycystic Ovary Syndrome** 92
SR Aravind, Chitra Selvan

16. **Bone Health** 98
Ranabir Salam, Manash P Baruah

17. **Thyroid Health** 106
KVS Hari Kumar

18. **Eating Disorders** 115
Mudita Dhingra, Bharti Kalra

SECTION 6: GYNECOLOGIC HEALTH

19. **Contraception** 123
Beena Bansal, Parjeet Kaur

20. **Preconception Care** 129
Usha Sriram

21. **Breastfeeding and Diabetes** 138
Viveka P Jyotsna, Nishant Raizada

22. **Menopause and Diabetes Including Hormone Replacement Therapy** 143
Surya K Singh, Shweta Bhandari, Balram Gupta

23. **Malignancies** 151
Sudha Vidyasagar, Banshi Saboo, Anshul Singh

SECTION 7: PSYCHOSOCIAL HEALTH

24. **Sexual Health** 158
Rakesh K Sahay, P Venu Madhavi

25. **Anxiety and Depression** 167
Yatan PS Balhara, Arghya Pal, Sanjay Kalra

26. **Impact on Women: Having a Family Member with Diabetes** 174
Sanjay Agarwal, Shruti V Sheth

27. **Fasts in Women with Diabetes** 182
Sameer Aggarwal, Deep Dutta

Index *189*

1
CHAPTER

The Guidelines: Noesis and Hopes

Sarita Bajaj, Alankar Tiwari

INTRODUCTION

Diabetes has emerged as a global health problem and is rapidly gaining the status of a pandemic with over 425 million people affected across the globe. Women make up almost half of this figure in India as well as in the world. Figure 1 shows the prevalence of diabetes in South East Asia in different age groups in males and females. Recent data show that prediabetes is more prevalent in women and more women die of diabetes and its complications than men. Figure 2, highlights the disturbing mortality rates in women due to diabetes.

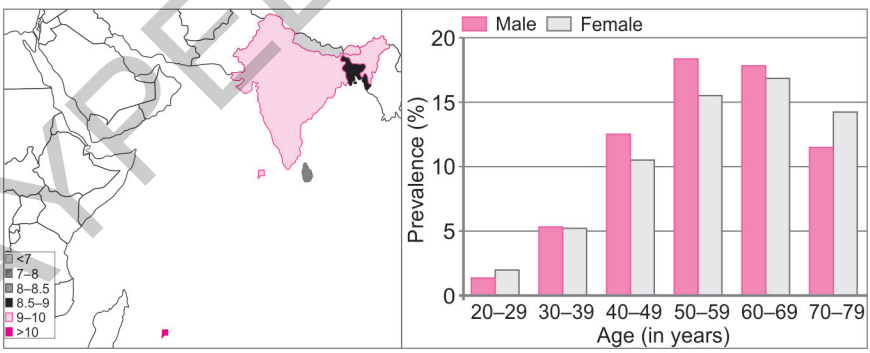


FIG. 1: Prevalence of diabetes in South East Asia (International Diabetes Federation Atlas 2015)

JAYPEE BROTHERS

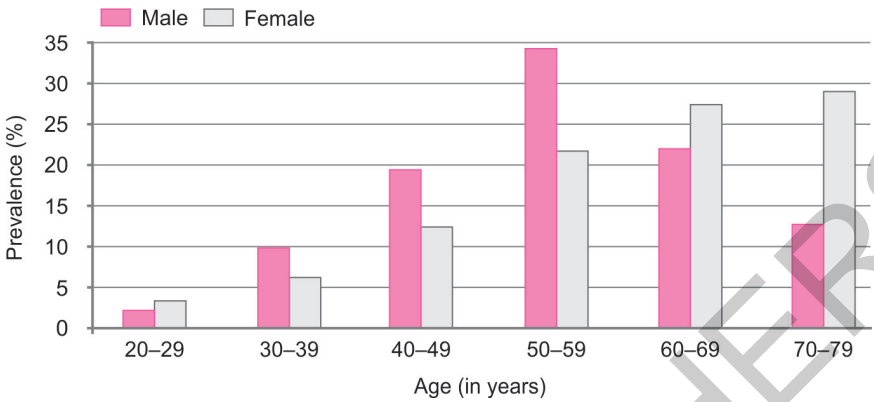


FIG. 2: Mortality due to diabetes, South East Asia region, 2015 (International Diabetes Federation Atlas)

INDIAN SCENARIO

India stands second in the world as far as the number of people living with diabetes is concerned and women make up almost half of this figure. This fact is strongly supported by the results of the Indian Council of Medical Research India Diabetes (ICMR INDIAB) study conducted all over the country to study the prevalence of diabetes in India. Figure 3 shows the age- and gender-specific prevalence of diabetes in four representative regions of India.

Increased Prevalence of Diabetes in Women

This alarming rise in the prevalence of diabetes and prediabetes in women can be attributed to many factors; the most important being obesity. Obesity is no more a disease of the rich. The major factors contributing to the increased rates of obesity in women are:

- Sedentary lifestyle
- Increased consumption of fast foods and processed calorie dense foods
- Jobs requiring prolonged sitting
- Watching television
- Decreased manual labor due to availability of household gadgets
- Vehicular transportation
- Stress
- Polycystic ovary syndrome
- Use of oral contraceptive pills
- Gestational diabetes mellitus
- Genetic predisposition.

JAYPEE BROTHERS

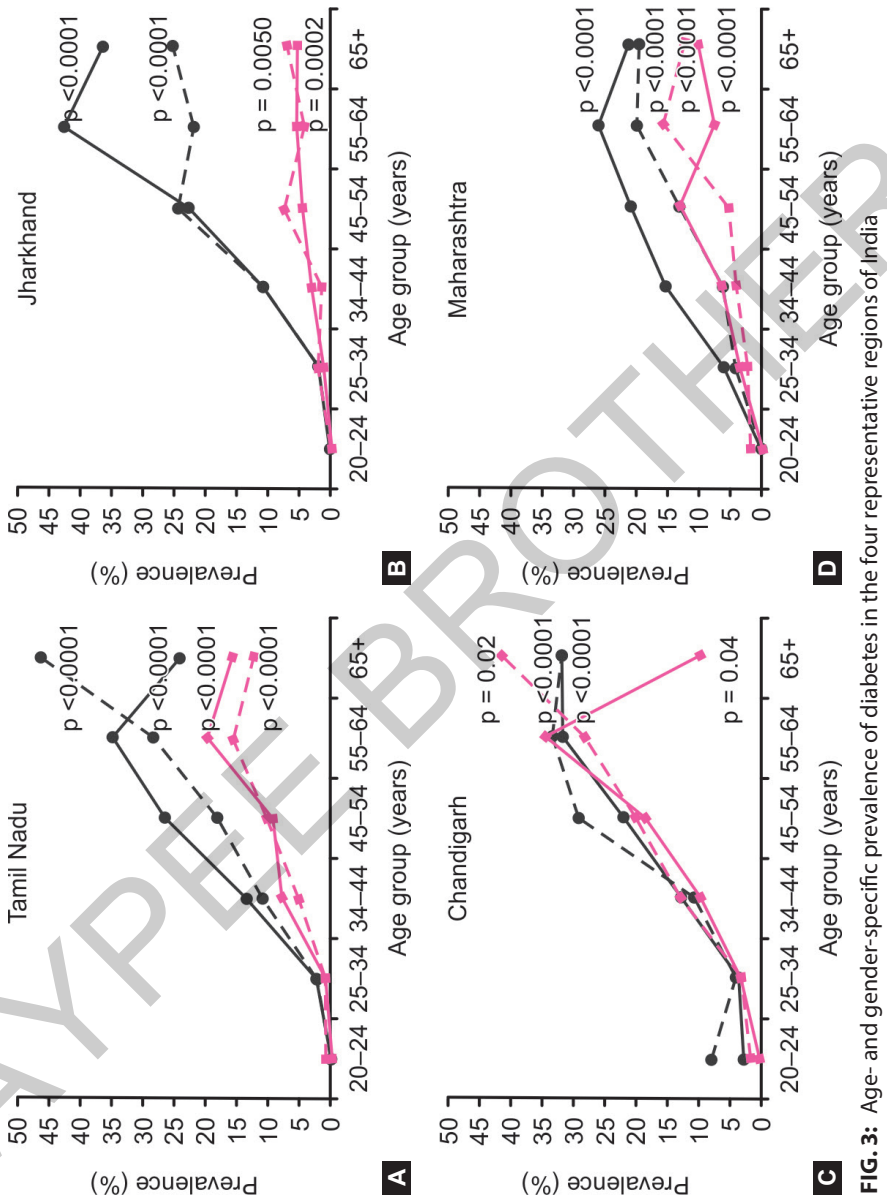


FIG. 3: Age- and gender-specific prevalence of diabetes in the four representative regions of India

JAYPEE BROTHERS

In India, low literacy rates and increasing urbanization, coupled with traditions such as consanguineous marriages in certain communities, multiply the risk for diabetes. Cultural barriers additionally prevent the adoption of a healthy lifestyle.

Different Course of Diabetes in Women compared to Men

A woman's health poses unique challenges over her entire life span. Different phases of her life bring a number of physiological changes in the body, which affect the course of the disease in many ways. Puberty, pregnancy, lactation, and menopause add to the complexity of diabetes. Women are living longer and have added new roles to their traditional roles as homemakers and mothers. This has made women even more vulnerable to many lifestyle-related problems and to increased stress levels. All these factors make the course of diabetes in women somewhat more rugged as compared to men.

Cultural and Social Aspects Making Diabetes Care for Indian Women a Big Challenge

Women have been victims of gender bias in the family, community levels and at the level of healthcare delivery. The belief that girls are born to serve and boys to earn and rule, still prevails in most parts of the country. Gender discrimination begins from early childhood. In a limited income family, the boy is better fed and provided education. The girl child is poorly nourished and is made to do household chores from a very young age. A woman in the family is placed at a low social status. She has no power to take decisions. This reflects on all aspects starting from the kitchen to raising children, and even healthcare. She is dependent on the male members of the family for healthcare interventions. For example, a woman may not receive needed healthcare because community norms prevent her from travelling alone to a clinic.

Women often face discrimination at the workplace. A woman with diabetes may be denied employment and may not be able to get the job of her choice. It is also a well-known fact that women earn lower incomes than men for the same job. A woman with diabetes may face difficulties in finding a good match for marriage. Lack of sufficient knowledge about diabetes can turn away a proposal. Factors such as future family life, pregnancy, ability to perform household chores, and the cost of treatment are all cause for concern when a woman has diabetes. On the other hand, it is easier for a male to find a spouse. At times, the disorder is not even disclosed. Illiteracy among Indian women also contributes to neglect in personal health and nutrition, thus increasing the risk of developing diabetes. An illiterate woman lacks

JAYPEE BROTHERS

the confidence to take decisions, especially regarding health problems and their treatment. Alternative therapies, wrong beliefs, and poor advice cause confusion, and she can be misled to seek wrong help. Besides, lack of knowledge on selecting a healthy diet and exercise accelerates the progress of obesity in women with diabetes.

Effect of Diabetes on Women's Health at Different Stages of Life

Childhood and Puberty

Type 1 diabetes mellitus (T1DM) accounts for 5–10% of diabetes prevalence and affects boys and girls equally. However, owing to gender bias, the girl child is neglected and succumbs earlier due to acute complications like diabetic ketoacidosis (DKA), hypoglycemia, or poor nutritional support. Girls in urban areas are exposed to junk and calorie-dense foods since early childhood along with a sedentary lifestyle which leads to obesity making them prone to diabetes later. The most crucial and dramatic event in a girl's life is menarche which along with other physiological and hormonal changes also influence the metabolic status. Body image issues, apprehension, and anxiety associated with menstrual cycles may contribute to increased risk of DKA and other complications related to T1DM.

Reproductive Years

Compared to the West, Indians develop diabetes at a younger age leading to a greater number of women in the reproductive age group. Another reason is that women are marrying later resulting in a greater prevalence of pre-gestational and gestational diabetes. Diabetes during pregnancy has far reaching fetal and maternal implications. Off-spring of mothers with pregestational diabetes are at risk of congenital malformation. Majority of women in South Asia lack preconception care, and adequate pre and post natal care. Women receiving care from trained birth attendants are 51% in India, 44% in Nepal, 27% in Bangladesh, 100% in Maldives, and 97% in Sri Lanka. A meta-analysis of 16 studies comparing preconception care versus nonpreconception care showed decrease in the rate of congenital abnormalities [2.1% vs. 6.5% RR 0.36, CI 00.22–0.59]. Women with diabetes during pregnancy may experience unexplained fetal loss during late weeks of gestation. Psychosocial aspects of diabetes during pregnancy cannot be ignored many a times a woman with diabetes may be persuaded to conceive for the sake of a male child despite the difficulties of management of diabetes during pregnancy. Counseling and psychological support should be given to discourage such attempts. Sometimes, they may be coerced into sex identification and abortion of the female fetus. Proper family planning counseling and psychological support can help stop such practices.

JAYPEE BROTHERS

Amongst the 10.4 million new cases of tuberculosis (TB) estimated globally in 2015 India, Indonesia, China, Nigeria, Pakistan, and South Africa accounted for 60% of these cases. This immense burden is further threatened by a strong epidemiological evidence base demonstrating the coexistence of TB and DM.

This high incidence must not be overlooked in women, since pregnancy can unmask this risk due to altered maternal immunity. Pregnancy is a known risk factor for the progression of retinopathy among women with T1DM. Also, women with diabetes lose their premenopausal protection from ischemic heart disease and have a risk that is comparable to that of men. Women have worse survival and quality of life measures as well. They are also at greater risk for blindness due to diabetes than men.

In the reproductive years, diabetic nephropathy may be diagnosed somewhat earlier in women than men; nearly 25% of women with diabetic nephropathy are diagnosed during pregnancy. Women with preexisting diabetic nephropathy may have a marked increase in protein excretion because of the pregnancy-related rise in glomerular filtration from early pregnancy. This physiological phenomenon may increase the likelihood of earlier manifestation of diabetic nephropathy; although pregnancy does not seem to adversely affect the course of early diabetic renal disease. Pregnancy, however accelerates the onset of end-stage renal disease in the presence of signs of severe impairment as manifested by hypertension and decreased renal function.

Postmenopausal and Elderly

In the current scenario, when life expectancy has increased substantially, women are living well into their seventies and eighties and spending a significant part of their life in the postmenopausal period. When women with diabetes undergo menopause, several physiological changes pose a challenge for them:

- Menopause is associated with dramatic changes in lipids, body composition, weight, and increased risk for coronary artery disease. All these changes add to the metabolic and atherogenic changes that women with diabetes are already at risk for
- Menopausal women may develop vasomotor symptoms that may mimic hypoglycemic symptoms (sweating, dizziness, and hot flashes)
- In women with diabetes, already at risk for developing genitourinary infections, this risk increases many fold postmenopausally.

Elderly women with diabetes are at increased risk for bone loss and fractures. Delayed fracture healing has also been reported. Diabetes increases the risk of dementia, vascular dementia, and cognitive decline. Social and economic issues will leave many older women living with diabetes alone and neglected.

JAYPEE BROTHERS

Sexual Health in Women with Diabetes

Indian women often find their sexual health neglected due to social taboos, posing a major difficulty in the management of diabetes. Poor knowledge regarding sexual function in women has been reported. There is a strong need for sexual counseling, which needs to be initiated by the healthcare provider. Most women report that doctors rarely discuss sexual health with them. One commonly missed condition is the vestibular syndrome (vulvodynia), which presents as dyspareunia. Sexual dysfunction adversely affects marital life of women with diabetes.

Psychological Well-being of Women with Diabetes

Depression accompanies diabetes frequently and more so in elderly women. Multiple factors play a role in the difficulties women face when diagnosed with diabetes. Depression and anxiety may pose hindrance in achieving good glycemic control and thus increasing chances of developing complications. These psychological issues also affect the family and social life of a woman adversely.

The Hope Lies Ahead

Though there are many hurdles in the way of an Indian woman with diabetes in getting optimum care and treatment, many governmental and nongovernmental schemes are being implemented for upliftment and empowerment of girls and women which may be expected to go a long way toward raising the standards of healthcare for Indian women. One such scheme started recently by the Government of India is "Beti Bachao Beti Padhao" which aims to generate awareness and improve the efficiency of welfare services meant for girls. Other such schemes are "Janani Suraksha Yojana, Ujjawala, Women Helpline scheme, Indira Gandhi Matritva Sahyog Yojana," etc. Women are now better informed about the importance of education and healthcare. Societal norms are gradually changing towards gender equality which will definitely enable Indian women to get the respect and rights that they are entitled to.

CONCLUSION

In addition to the problems faced by women with chronic noncommunicable diseases all over the world, women in India face certain unique challenges, on account of various socioeconomic, demographic, and cultural factors. They need to be encouraged to take charge of their diabetes and be empowered to make informed decisions, which will go a long way in better management of diabetes in this neglected population.

JAYPEE BROTHERS

SUGGESTED READINGS

1. Bajaj S. ESI Manual of Clinical Endocrinology, 2nd edition. UK: JP Medical Ltd; 2015.
2. Bajaj S, Jawad F, Islam N, et al. South Asian women with diabetes: psychosocial challenges and management: Consensus statement. Indian J Endocrinol Metab. 2013;17:548-62.
3. International Diabetes Federation, Diabetes Atlas, 7th edition. 2015.
4. Kalra B, Balhara YS, Kalra S. Psychosocial aspects of diabetes in pregnancy. J Soc Health Diabetes. 2014;2:25-9.
5. Klein BE, Moss SE, Klein R. Effect of pregnancy on progression of diabetic nephropathy. Diabetes Care. 1990;13:34-40.
6. Misra A, Khurana I. Obesity and the metabolic syndrome in developing countries. J Clin Endocrinol Metab. 2008;93(11 Suppl 1):S9-30.
7. Mohan V, Kaur T, Anjana RM, et al. ICMR India Diabetes (INDIAB) Study Phase 1. 2016.
8. Ray JG, O'Brien TE, Chan WS. Preconception care and the risk of congenital anomalies in the offspring of women with diabetes mellitus: a meta-analysis. QJM. 2001;94:435-44.
9. Razee H, van der Ploeg HP, Blignault I, et al. Beliefs, barriers, social support, and environmental influences related to diabetes risk behaviours among women with a history of gestational diabetes. Health Promot J Austr. 2010;21:130-7.
10. WHO Country Profile. [online] Available from www.who.int/countrieswww.who.int/countries [Accessed July 2017].

JAYPEE BROTHERS

r detailed information on endocrinology books, visit our website **www.jaypeebrothers.com,** for detailed information on endocrinolo

Diabetes Mellitus
Issues for the Indian Woman

Key Features

- Provides clinicians and other health professionals with an easily readable and clinically applicable text devoted to diabetes related issues for the Indian woman
- Integrates the most current knowledge and concentrates on fundamentals and evidence-based clinical approaches; a range of treatment options is provided reflecting the need for customized treatment strategies
- The text relies on multiple short chapters arranging closely related subjects into clusters that have been designed to make the information accessible and comprehensive
- Seven sections focusing on metabolic, endocrine, psychosocial, obstetric and gynecologic health, comorbidities, and management
- Chapter begins with the guidelines followed by an overview of women specific issues, lifestyle management, antidiabetic drugs, management of hyperglycemia in type 1 diabetes in girls, obesity, complications, polycystic ovary syndrome, preconception care, menopause, and hormone replacement therapy
- Several novel chapters, viz., Insulin injection technique in women, bone and thyroid health, eating disorders, contraception, breastfeeding, sexual and mental health, malignancies, and fasts in women with diabetes
- An easy-to-follow and valuable book which makes for good reading for all, from postgraduates to practicing physicians

Sarita Bajaj MD DM (Endo, AIIMS)
FRCP (Glasgow, Edinburgh, London)
Consultant Endocrinologist
Director-Professor and Head
Department of Medicine
Moti Lal Nehru Medical College
Allahabad, Uttar Pradesh, India



Available at all medical bookstores
or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
ENDOCRINOLOGY

ISBN 978-93-5270-259-6