

## PREFACE

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Diabetes is rising like an epidemic in India. According to an estimate of International Diabetes Federation (IDF) 82 million people in India are living with diabetes. Despite this surge, infrastructure and the management of diabetes in practice remains less than satisfactory in the country. In India, the health system has traditionally been designed to cater to acute illness and mother & child health problems. There is a need for long-term care for a non-communicable disease like diabetes in India and a health system is yet to be ready to face this challenge. The major challenges for diabetes management in India can be categorized into four categories: (1) insufficient funding specific to diabetes care (2) limited capacity of the health system (3) poor managed public health supply chains (4) people attitude towards the seriousness of the disease.

The barrier to effective diabetes management includes both providers as well as patient-related issues. Provider issue includes lack of expertise, the constraint of time & facilities and attitudinal issues. The patient's financial condition and lack of knowledge about diabetes care impede their ability to manage the disease effectively. In India, the awareness about the diabetes is below acceptable level among patients, which leads to delayed recognition of the complications. The delayed treatment in diabetes results in comorbidities and hence higher cost of the treatment. This rising cost of the treatment is one of the main reported reasons behind non-adherence of the treatment regimen. To make the situation even worse more than two-thirds of the medical expense in India is out-of-pocket (OOP) and in most of the cases, it drives patients into poverty.

The diabetes care services should be designed in such a manner that it is accessible, affordable with accepted quality level. In addition to this, there should be an effort to cover

the majority of the population with alternate health care financing mechanism like medical insurance.

There is lack of any research about strategic planning, facility planning, logistic planning, service-design and quality assessment in case of chronic care like diabetes. The aim of this research is fourfold, firstly develop a method for the planning of the diabetes care services, secondly design a logistics strategy in diabetes care, thirdly identifying the utility of patients towards various attributes of the diabetes care and finally design a quality assessment framework for diabetes care. The research uses the example of an Indian city Varanasi but the findings of this research can be generalized to other Indian cities as well. The research is divided into five research objectives as listed below:

**Objectives:**

1. Developing a System Dynamics model for prevention and control of diabetes in Varanasi
2. Developing decentralization, facility planning, and logistics strategy for diabetes care in Varanasi
3. Implementing leagile strategy in diabetes care
4. Assessing patient's utility for various service attributes in diabetes care
5. Developing a quality assessment and implementation framework for diabetes care