

CHAPTER-2 METHODOLOGY

OUTLINE OF THE CHAPTER		PAGE NO
1	Rational of the study	11
2	Study area	12
3	Objective of the study	12
4	Hypothesis of the study	13
5	Universe and sampling plan	14
6	Period of data collection	15
7	Sources of the data collection	15
8	Techniques of the data collection	16
9	Analysis and interpretation of data	17
10	Limitation of the study	18

METHODOLOGY

[1] RATIONAL OF THE STUDY

Gujarat is known as a capital of diabetes. Rapid urbanisation and industrialisation have produced advancement on the social and economic front in developing state such as Gujarat which has resulted in dramatic lifestyle changes leading to lifestyle related diseases.

The transition from a traditional to modern lifestyle consumption of diets rich in fat and calories combined with a high level of mental stress has compounded the problem like diabetes type 2. There are several studies from various parts of Gujarat which reveal trend in the prevalence of type 2 diabetes in urban areas. Apart from the disease burden, diabetes exerts a life-long financial burden for treatment. It is not only the cost of medicines but the recurring costs of ongoing home monitoring, laboratory investigations and hospitalizations also add to the financial burden the personal. The social and economic costs of diabetes are huge and are likely to adversely affected India's economic development over the next couple of decades. Unless urgent steps are taken to prevent this burgeoning epidemic, more and more young and middle-aged people will prone diabetes in the prime of their lives.

It is quite evident from the above observation that diabetes has become a major health problem in Gujarat in order to assess the magnitude of the problem and its impact on health and economy of the state we must have all information about the prevalence of type 2 diabetes in Gujarat. The scattered data on the prevalence of type 2 diabetes in Gujarat need to be compiled and analysed. In this study we want to establish a database of all the data which we will get during study period.

All studies reveal the fact that number of researchers have come out every aspects of diabetes mellitus type 2, included risk factors and effect of diabetes in Indian community. But research in epidemiology of diabetes mellitus type 2 in Gujarat especially north Gujarat has not been undertaken to the best of my knowledge. Hence the present research study attempts to study and review scientifically risk factor and effect of diabetes mellitus type 2 with special reference to epidemiology of diseases in Gujarat.

The researcher has a hope that this research study will enable the Gujarat government to take decision related to policy to make the NCD cell's activities and diabetes management programme rather more influential moreover this would be very much helpful to those who are researching in this field and are working in this field as budding researchers and academicians.

[2] STUDY AREA

We selected north Gujarat as a study area. The north part of Gujarat is called north Gujarat. It includes Gandhinagar, Banaskantha, Sabarkantha, Mehsana and Patan district.

[3] OBJECTIVES OF THE STUDY

The major objectives of the present study where as under:-

To study and compare risk factors of diabetes mellitus type 2 with regards to various-age group, BMI, diabetes duration, family history, stress, dietary habit, physical activity, addiction, thyroid disorders, cholesterol level, heart trouble, complications like-retinopathy, nephropathy, neuropathy, foot ulcer, itching skin problem.

1. Among patients of diabetes mellitus type 2 of various districts.
2. Between male and female patients of diabetes mellitus type 2.
3. Between urban and rural area's diabetes mellitus type 2 patients.
4. Among patients of diabetes mellitus type 2 with different diabetic duration periods.
5. Among patients of diabetes mellitus type 2 suffering from various diabetic complications.
6. Between patients of diabetes mellitus type 2 suffering from coronary heart diseases and without coronary heart disease.
7. Among patients of diabetes mellitus type 2 with addiction or without addiction.
8. Among patients of diabetes mellitus type 2 with high blood pressure and without high blood pressure.
9. Among patients of diabetes mellitus type 2 with stress and without stress.

10. Among patients of diabetes mellitus type 2 with physical activity and without physical activity.
11. Among patients of diabetes mellitus type 2, taking high calorie diet and normal diet.
12. Among patients of diabetes mellitus type 2 with various BMI.
13. Among patients of diabetes mellitus type 2 with various age groups.

[4] HYPOTHESIS OF THE STUDY

The major hypothesis of the present study where as under:-

1. There will be no significant difference among patients of diabetes mellitus type 2 of various districts with regards to...
 - 1.1 Various risk factors such as -age group, BMI, diabetes duration, family history, stress, dietary habit, physical activity, addiction, thyroid disorders cholesterol level, heart trouble.
 - 1.2 Various complications like-retinopathy, nephropathy, neuropathy, foot ulcer, itching skin problem.
2. There will be no significant difference between male and female patients of diabetes mellitus type 2 with regards to various risk factors and complication.
3. There will be no significant difference between diabetes mellitus type 2 patients of urban and rural area with regards to various risk factors and complication.
4. There will be no significant difference among patients of diabetes mellitus type 2 with different diabetic duration periods with regards to various risk factors and complications.
5. There will be no significant difference among patients of diabetes mellitus type 2 with various family history with regards to various risk factors and complications.
6. There will be no significant difference among patients of diabetes mellitus type 2 suffering from various diabetic complications with regards to various risk factors and complications.
7. There will be no significant difference between patients of diabetes mellitus type 2 suffering from coronary heart diseases and without coronary heart diseases with regards to various risk factors and complications.

8. There will be no significant difference between patients of diabetes mellitus type 2 with addiction or without addiction with regards to various risk factors and complications.
9. There will be no significant difference between patients of diabetes mellitus type 2 with high blood pressure and without high blood pressure with regards to various risk factors and complications.
10. There will be no significant difference between patients of diabetes mellitus type 2 with stress and without stress with regards to various risk factors and complications.
11. There will be no significant difference between patients of diabetes mellitus type 2 with physical activity and without physical activity with regards to various risk factors and complications.
12. There will be no significant difference between patients of diabetes mellitus type 2, taking high calorie diet and normal diet with regards to various risk factors and complications.
13. There will be no significant difference among patients of diabetes mellitus type 2 with various BMI with regards to various risk factors and complications.
14. There will be no significant difference among patients of diabetes mellitus type 2 with various age groups with regards to various risk factors and complications.

[5] UNIVERSE AND SAMPLING PLAN

1. UNIVERSE

In this study Gandhinagar, Banaskantha, Sabarkantha, Mehsana and Patan total five districts of north Gujarat for the period 2011-12 to 2012-13 comprise the universe of the study.

2. SAMPLING PLAN

For the study of risk factor and effect of diabetes mellitus type 2 in north Gujarat community, all the population of urban as well as rural has been included. All the casts have been studied without any specific consideration. Samples from above community have been selected using stratified random sampling method numbering 1000 patient of diabetes mellitus type 2. It means 200 patient of diabetes mellitus type 2 from each district.(table 2.1)

1000 patient of diabetes mellitus type 2 have been equally distributed in 5 districts hence the details of samples derived are presented in the table 2.1.

TABLE -2.1 SAMPLING PLAN FOR DATA COLLECTION

District	Urban area(no. of patients)	Rural area(no. of patients)	total
GANDHINAGAR	100	100	200
BANASKANTHA	100	100	200
SABARKANTHA	100	100	200
PATAN	100	100	200
MEHSANA	100	100	200
TOTAL	500	500	1000

[6] PERIOD OF DATA COLLECTION

The present study covers the data for the period of 2 years from 2011-12 to 2012-13 and the year 2011-12 has been selected as the base year.

[7] SOURCES OF DATA COLLECTION

Primary data

The primary data has been collected from the patient selected while they visited a preselected unit. The patients were interviewed at the time of OPD when they came for routine consultation with doctor. All the persons of more than 20 years of age were interviewed in this study. A valid questionnaire was filled by patient after explaining all important points to them. Researcher selected patients who were early diagnostic as a diabetic patient and interviewed them when they came above places for their routine check up. The interviewed was conducted by using the pre-designed and pre-tested interview questionnaire which contained information on various study variables. All the patients were interviewed and a questionnaire was filled by patient at the time of OPD when they were come for routine consultations in private

dispensary. Interviewed persons who had not given good response were contacted on phone after some days. Personal and telephonic contact were done to increase overall response rate and to reduce error rate. Finally patients were advised to be more and more aware about diabetes, adopt healthy dietary habits and do exercise regularly. Researcher also gave information about development of the complications with the long time periods of type 2 diabetes mellitus in the future.

Secondary data

The necessary secondary data and information for the present research study has been obtained from district civil hospitals, private hospital and clinic. The most helpful source for secondary data was district NCD cell.

National Programs for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS) Pilot Phase launched on 4th Jan 2008 by central government of India. All the States and at least one Districts from each state covered for this pilot Phase. For this Non -Communicable Diseases cell clinic establish in 10 district of Gujarat. North Gujarat has three NCD cell in Gandhinagar, Himmatnagar and Mehsana.

[8] TECHNIQUES OF DATA COLLECTION

The techniques used for data collection are multiple choice questionnaire and personal interview. Multiple-choice questionnaire has been divided into two parts as per strata of diabetes patient as below.

Questionnaire part A- contains questions which are related to the diabetic risk factors.

Questionnaire part B-contains questions which are related to the diabetic complications.

The questionnaire, in which DMT2 patients have given opinion- natural i.e. neither yes nor no or not clear about their risk factor and complications has been asked one more time, in order to obtain concrete opinion.

The researcher visited 5 district preselected units (district govt. civil hospital, private clinic, and private hospital, medical store and door to door in rural area to fill up the

questionnaire. where personal contact was not possible at the first time, the researcher has went there second or more time.

To supplementary the secondary data and to fill up the gap, the researcher conducted interviews of many doctors, lab technicians of various medical places.

Only type 2 diabetic mellitus population selected because the aim of the study is -

[1] To find out different risk factors of the type 2 diabetes mellitus in the north Gujarat community and study the correlation of various risk factors and diabetes mellitus type 2.

[2] To study the effect of diabetes mellitus type 2 in the north Gujarat community.

[9] ANALYSIS AND INTERPRETATION OF DATA

Age ,family history of patient about diabetic relative, life style food habit etc noted by asking simple question to the patient in questionnaire form.

There was three categorized in physical activity.

- (1) Sedentary which involve sitting, standing, driving, cooking, light cleaning etc.
- (2) Moderate which involve an occupation that includes lifting, lots of walking, or other activities
- (3) heavy which involve heavy manual labour, dancer, or very active sports played for several hours almost daily, an elite athlete in training, or an extremely active lifestyle

Moderate and heavy physical activity tabulated as a patients with physical activity and sedentary physical activity tabulated as a patients without physical activity.

Blood pressure was noted from patient's file after they came out from routine check up. If the blood pressure was $>130/80$ mmHg then this tabulated as patients with high blood pressure and if the blood pressure was $<130/80$ mmHg then it's tabulated as a patients without high blood pressure.

Patient's heights in meter and patient's weight in kilograms were measured.

Body-mass index (BMI), calculated as weight in kilograms divided by height in metres squared (kg/m^2). A patients was considered to be underweight if BMI was $<$

18.5 kg/m², normal if BMI was between 18.5 and 25, overweight when BMI was 26-30 kg/m² and obese when BMI was > 30.

Cholesterol level abnormality was noted from patients file.

The information of Family history was collected by simple question which was divided in two main quartiles. Patients with no family history of diabetes type 2 and patients with positive family history. Positive family history was defined as the presence of family members with type 2 diabetes in any two generations. In this study positive family history was consider as single parent, both parent, single parent with sibling, Both parent with sibling and sibling only.

The information collected through questionnaire has been classified and tabulated. Different tables have been preparing with the help of computer. The data in the table has been analyzed and interpreted by using statistical methods –index number, average, percentile method and standard deviation. Various hypotheses have been tested by applying t-test and χ^2 test with help of SPSS. Hypotheses have been tested at 0.01 level and 0.05 level of significant.

Formula of chi square test $((f_o - f_e) * (f_o - f_e)) / f_e$ (χ^2) =

Note : f_o = frequency observe, f_e = frequency expected, χ^2 = chi-square

[10] LIMITATION OF THE STUDY

The present research study is base on the following limitations.

1. The present study depends upon the data obtained from questionnaire form and secondary data. So the study is limited to availability of data.
2. Diabetes mellitus type 2 is very broad area. Hence the present study focuses risk factor and effect of diabetes mellitus type 2 only.
3. The study covers risk factor and effect of diabetes mellitus type 2 in north Gujarat community only.
4. Inherent limitation of the patients selected as sample is subject to consideration.