

A STUDY ABOUT ASPECTS OF DIABETES DISEASE MANAGEMENT

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Abstract

As per WHO (2014) 347 million people worldwide suffer from diabetes. The prevalence of disease is increasing at an alarming rate. 8% of Maharashtra's population is presently suffering from Diabetes with rapidly increasing rate of nearing to 20% by 2020. It is although more important to be aware of the disease and not be in the world of myths. Diabetes is mainly due to stress and the hereditary which cannot be changed at this time, whereas stress related can be overcome through lifestyle management. The paper addresses the awareness level and ongoing myths about the disease along with the study of present lifestyle of Mumbai residents. The respondents were suffering from diabetes had come to OPD of a tertiary care hospital of Mumbai hence the data is valid. The results of the study revealed that respondents had lot of myths regarding diabetes with respect to eating habits and wrong notion of exercise which is a component of poor lifestyle. The Factor Analysis helped in extracting the factors of awareness level of diabetic patients with respect to eating habits and followed their doctor's advice whereas when it comes to behavior pertaining to exercise followed was very low. Another interesting result which came out was respondents who were non diabetic were fully aware about the symptoms as one of their family members was diabetic. Also it was revealed that although respondents were aware about the disease management but their behavior towards managing the same was very poor in terms of regular exercise.

Keywords:

1. Behavioral Economics
2. Disease Management
3. Diabetes care
4. Decision making

1. INTRODUCTION

Choices and decisions are the main pillars in today's health care environment. With the increasing healthcare costs, healthcare is witnessing a lot of change in the demand pattern of consumers, availability of healthcare resources; reimbursement policies and also effectiveness of healthcare treatments. Many of these choices are difficult to embrace. Cost of Illness (COI) estimates are often cited as an important element in the choices made regarding diabetes care and management.

The changing behavior of the individuals forms the heart of healthcare. The old model of reactive system where the treatment was done post the diagnosis is now evolving and is more centered towards prevention and management of the disease. This evolution is essential across the globe especially for the diseases for which the diagnosis occurs in the later stages. A fundamental shift in the healthcare risk is taking place which is driven by an aging population and an increased incidence of behaviorally induced chronic conditions. Healthcare systems are introducing an innovative model with multi-disciplinary approach. In this model, the emphasis on primary care along with integrated care model and pay for value reimbursement is taken into consideration.

Behavior of people towards disease and its management plays an important role during the treatment of the same. Behavioral economics explores why people sometime make irrational decisions and why their behavior does not follow the predicted path. People suffering from disease despite knowing the future implications, sometimes behave irrationally and take impulsive decisions.

Diabetes is one such disease, where the financial burden of treatment is a major source of stress for patients and their families. The out-of-pocket costs incurred because of the illness can consume a substantial part of the income and family budget (Lansky, 1983).

Diabetes can be categorized in two forms: Type I, when the body cannot produce insulin and Type II, when the body cannot use the insulin it produces. Type II diabetes can remain undetected for many years and the diagnosis is often made from associated complications or incidentally through an abnormal blood or urine glucose test. Insulin is vital for the survival of people with Type 1 diabetes and often ultimately required by people with type 2 diabetes. Even though insulin's indispensable nature is recognized by its inclusion in the WHO's Essential Medicines List, it is still not available on an uninterrupted basis in many parts of the developing world

Diabetes in India has long passed the stage of an epidemic and numbers have given the country the dubious distinction of DIABETES CAPITAL of the world. To put it simply, it has crossed the stage of a problem associated with individuals to become an astronomically growing large public health problem. Diabetes India aims to do its bit by mounting a collective response in setting up of a complete infrastructure which not only makes diabetes care “Available, Accessible and Affordable” to all persons with diabetes but also involves attention to prevention of diabetes. Diabetes care should be “available”, not only in terms of equipment, but, more importantly in terms of expertise. It should be “accessible” to the

people without their having to travel long distances to avail of it. Importantly, such services must take into consideration the economic realities and be “affordable”.

Recently in march 2012 WHO predicts that developing countries will bear the brunt of this epidemic in the 21st century. Currently, more than 70% of people with diabetes live in low- and middle income countries.

- An estimated 285 million people, corresponding to 6.4% of the world's adult population, will live with diabetes in 2010. The number is expected to grow to 438 million by 2030, corresponding to 7.8% of the adult population
- While the global prevalence of diabetes is 6.4%, the prevalence varies from 10.2% in the Western Pacific to 3.8% in the African region. However, the African region is expected to experience the highest increase
- 70% of the current cases of diabetes occur in low- and middle income countries. With an estimated 50.8 million people living with diabetes, India has the world's largest diabetes population, followed by China with 43.2 million
- The largest age group currently affected by diabetes is between 40-59 years. By 2030 this “record” is expected to move to the 60-79 age group with some 196 million cases
- Diabetes is one of the major causes of premature illness and death worldwide. Non-communicable diseases including diabetes account for 60% of all deaths worldwide
- In Maharashtra around 44 lakh people suffer from the disease which constitutes to 8% of the population of the state in 2011.
- The burden of disease is going to increase as the pre-diabetes case in the state is around 69 lakh people.

2. LITERATURE REVIEW

2.1 Diabetes as a Disease:

Study conducted in 2011 by K.M.Venkat Narayan, Justin B. Echouffo- Tcheugui, Vishwanathan Mohan and K.Ali, there are 25.8 million people with diabetes in U.S and estimated 285-366 million globally, 95 percent of whom have type 2 diabetes. They contended that successfully addressing diabetes burden will require acceptance of four hitherto under- appreciated paradigms. Firstly, as per them the primary and secondary prevention of type 2 diabetes should be integrated within continual continuum. Secondly, the importance of early detection of pre diabetes and undiagnosed diabetes should be recognized as a means of catalyzing effective interventions for diabetes and associated vascular risk factor. Thirdly, community and clinical expertise and resources should be integrated within

the organized and affordable systems to deliver proven preventive and treatment services for the disease. Lastly, type 2 diabetes should be understood as a product of globalization that requires both global cooperation and the adoption of evidence – based policies at the broadest level.

In another study conducted by Robbins, Jessica M, Webb and David A in 2006, it was found that people suffering from diabetes experience a substantial burden of serious morbidity requiring hospitalization, with an average of 0.35 hospital admissions per person – year. Gender differences in hospitalization rates and changes were age-dependent, reflected in a significant interaction between gender and age. It was observed that male population more than 35 years were more prone to the condition and on the other hand for female population the statistics was just the opposite.

The study conducted in U.S. by Dall, Timothy M; Zhang, Yiduo; Chen, Yaozhu, William W; Yang, Wenya G; Fogli, Jeanene in February 2010 revealed that prevalence rates for pre-diabetes, undiagnosed diabetes, type 2 diabetes and gestation diabetes rise rapidly with age. Diabetes and pre-diabetes are associated with higher use of health care services, medications and other health care products. Care- rate ratios for diabetes tend to be higher for hospital settings (particularly inpatient services), as hospitalizations for these conditions are relatively infrequent among the non- diabetic population. The gestational diabetes significantly increases rates of inpatient hospital days for various conditions related to pregnancy as well. The national cost associated with diabetes in 2007 exceeded \$218 billion which included the cost for diagnosed diabetes, undiagnosed, pre- diagnosed and gestational diabetes cost. Higher medical costs estimated at \$153 billion accounted for approximately 7% of the \$2.24 trillion national health expenditure of 2007.

Medscape®		www.medscape.com								
First author	Year of publication	Location	Age-group	Diagnostic criteria	Male	Sample size (n) Female	Total	Male	Female	Prevalence rate (%) Total (Age-adjusted)
Urban populations										
Verma NP ⁶	1988	Delhi	20+	K	3,643	3,235	6,878	3.8	2.3	3.1
Ahuja MMS ⁵	1991	Delhi	20+	K+PG	2,572	-	2,572	4.1	-	4.1
Ramachandran A ⁷	1992	Chennai	20+	K+F+PG	457	443	900	8.3	7.6	8.3 (8.3)
Ramachandran A ⁸	1997	Chennai	20+	K+F+PG	1,081	1,102	2,183	10.4	12.7	11.6 (11.6)
Shah SK ⁹	1998	Guwahati	20+	K+PG	595	421	1,016	8.7	7.8	8.2 (8.2)
Asha Bai PV ¹⁰	1999	Chennai	20+	K+F+PG	743	455	1,198	8.7	5.7	7.6
Zargar AH ¹¹	2000	Srinagar	40+	K+F+PG	1,038	500	538	5.4	5.0	5.2
Kutty VR ¹²	2000	Kerala	20+	K+PG	225	293	518	16.4	9.2	12.4
Joseph A ¹³	2000	Thiruvandrum	20+	K+F	76	130	206	16.3	16.3	16.3
Asha Bai PV ¹⁴	2001	Chennai	20+	K	13,366	12,700	26,066	2.9	3.1	2.9 (4.9)
Iyer SR ¹⁵	2001	Mumbai	20+	K+F+PG	-	-	520	-	-	7.5
Misra A ¹⁶	2001	Delhi	18+	K+F	170	362	532	11.2	9.9	10.3
Mohan V ¹⁷	2001	Chennai	20+	K+F+PG	518	657	1,175	-	-	12.3
Ramachandran A ¹⁸	2001	National	20+	K+F+PG	5,288	5,928	11,216	13.8	14.0	13.9 (12.1)
Gupta A ¹⁹	2003	Jaipur	20+	K+F	532	559	1,091	13.2	11.5	12.3 (8.6)
Sadikot SMP ²⁰	2004	National	20+	K+F+PG	10,865	10,651	21,516	4.7	4.8	4.8 (4.6)
Gupta R ²¹	2004	Jaipur	20+	K+F	226	232	458	17.7	14.2	16.8 (12.1)
Mohan V ²²	2005	Chennai	20+	K+F+PG	-	-	2,350	18.0	13.4	15.5
Prabhakaran D ²³	2005	Delhi	20-59	K+F+PG	2,122	-	2,122	15.0	-	15.0
Reddy KS ²⁴	2006	National	20-69	K+F	6,536	3,890	10,442	11.2	8.2	10.1 (8.3/9.0)
Semi-urban and mixed populations										
Ramachandran A ²⁵	1988	Karnataka	20+	K+F+PG	346	332	678	5.8	4.2	5.0 (5.0)
Kutty VR ¹²	2000	Kerala	20+	K+F+PG	2,388	2,600	4,988	7.2	6.2	6.7 (8.2)
Singh TP ²⁶	2001	Manipur	15+	K+F+PG	884	780	1,664	5.1	2.8	4.0
Rural populations										
Ahuja MMS ⁵	1991	Bengal	20+	K+PG	-	-	2,375	-	-	0.8
Ahuja MMS ⁵	1991	Delhi	20+	K+PG	-	-	992	-	-	1.5
Ahuja MMS ⁵	1991	Kerala	20+	K+PG	-	-	1,488	-	-	1.3
Ahuja MMS ⁵	1991	Gujarat	20+	K+PG	-	-	1,294	-	-	3.9
Ahuja MMS ⁵	1991	Himachal	20+	K+PG	-	-	999	-	-	0.4
Ramachandran A ⁷	1992	Tamilnadu	20+	K+PG	520	518	1,038	2.6	1.6	2.4
Wander GS ²⁷	1994	Punjab	20+	K+PG	-	-	809	-	-	4.6
Patadin S ²⁸	1994	Tamilnadu	40+	K+PG	-	-	467	-	-	4.9
Zargar AH ¹¹	2000	Kashmir	40+	K+F+PG	1,996	2,049	4,045	3.5	4.5	4.0
Agrawal RP ²⁹	2004	Rajasthan	20+	K+F+PG	-	-	882	-	-	1.8
Sadikot SMP ²⁰	2004	National	20+	K+F+PG	9,669	10,085	19,754	1.8	1.9	1.9 (1.9)
Deo ³⁰	2006	Maharashtra	20+	K+F+PG	449	553	1,022	9.2	9.9	9.3
Chow ³¹	2006	Andhra	30+	K+F	-	-	4,535	14.3	12.0	13.2

Key: K = known; F = fasting; PG = post glucose load

Source: Br J Diabetes Vasc Dis © 2007 Sherbourne Gibbs, L

Key: K = known; F = fasting; PG = post glucose load

Source: Br J Diabetes Vasc Dis © 2007 Sherburne Gibbs, Ltd.

Table 1: Recent Diabetes Prevalence Studies in India

Sources: Br J Diabetes Vasc Dis@2007 Sherburne Gibbs, Ltd

In a study conducted in 2007 by Rajeev Gupta; Anoop Mishra on Type 2 Diabetes in India: Regional Disparities, it is shown that how the urban population is exposed to the Diabetes and the numbers are alarming in each different part of the countries. **Table 1** show that various studies conducted in different years with a sample population (male & female) in different states of India revealing the diabetes prevalence in India. In large cities in India, large metropolises and industrial populations, diabetes prevalence among adults (> 20 years) ranges from 8-15%. In smaller cities the prevalence was much low as compared to the larger cities where the stress levels are high and hectic lifestyle impacts the health of an individual.

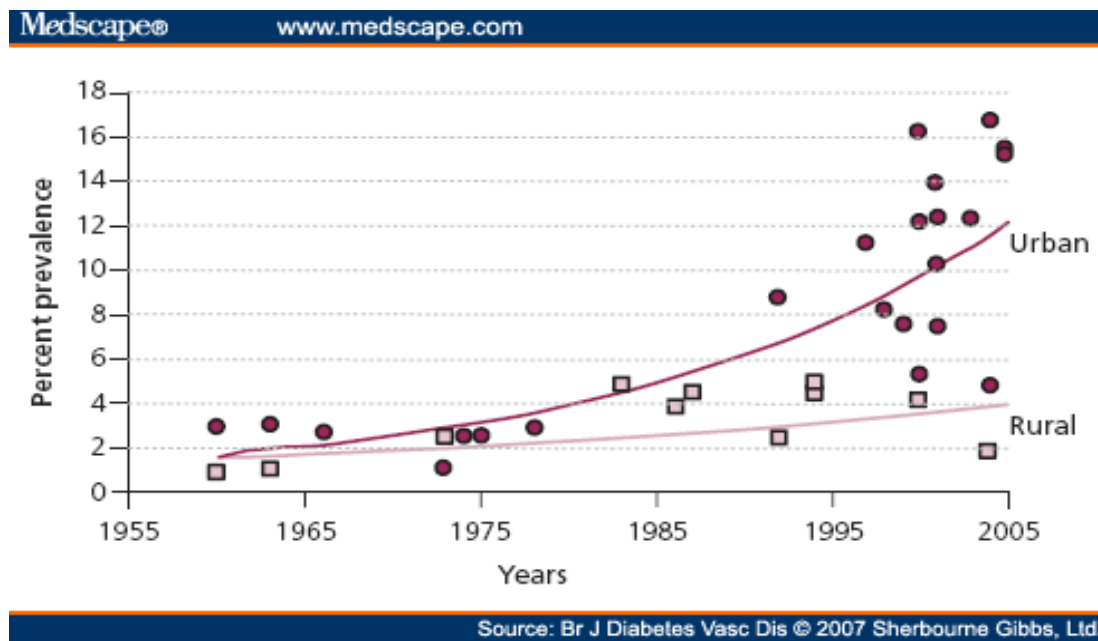


Figure 1: Trends in prevalence of diabetes in Indian urban & rural population

Sources: Br J Diabetes Vasc Dis@2007 Sherburne Gibbs, Ltd

Figure 1 indicates the cross-sectional epidemiological study on diabetes to demonstrate secular changes that have been rare in India. Analysis reveals that a very steep increase in urban populations while among the rural populations the prevalence is increasing at a slower rate.

In a study conducted in 2006 by Maddigan, et.al on understanding the determinants of Health for people with Type 2 diabetes inferred that there are various factors which result in chronic condition in diabetes like Age, physical activity, Geographical conditions, social economic conditions, life style and stress. The study also revealed that poor life style and lack of exercise have a huge impact on the health of persons suffering from diabetes.

Another study conducted in Serbia in 2006 by Vesna Bjegovic, et.al on the burden of type 2 diabetes in Serbia and the cost –effectiveness of its management revealed that the overall direct medical cost for the management of diabetes in the Country exceeded 4.6 billion dinar per year indicated for health insurance funds, if the fund would covered all ambulatory diagnostic and therapeutic costs. This would correspond to roughly 6% of the total health expenditure or up-to 11% of the annual health insurance fund budget. The study also revealed if the entire management of diabetes was organized only in private sectors in Serbia the cost would be higher than those of the funds. This is due to the facts that the more costly

diagnostic procedure make up a significant portion as compare to drug cost which would be same in both public & private sector.

Another study conducted in 2003 by A Bhansali, A Chattopadhyay and R J Dash on Mortality in diabetes: a retrospective analysis from a tertiary care hospital in North India revealed that causes of death in patients admitted in the hospital varied from infections being the major cause to cardiovascular events and also due to hypoglycemia being the reason of mortality where only 1 % of the patients who dies with the same reason. Another study in the year 2003 was conducted by M R Maldonado, et al on Economic impact of diabetic ketoacidosis in a multiethnic indigent population: analysis of costs based on the precipitating cause showed that diabetic ketoacidosis is the common complication of diabetes and the cost of treatment varies with the same. It is an expensive complication which increases the burden of the disease in terms of cost and treatment of the disease.

Another study conducted in 1993 by G W Gibbons, Edward J, et al on Improved Quality of Diabetic Foot Care, 1984 vs. 1990 Reduced Length of Stay and Costs, Insufficient Reimbursement showed that Ischemic foot ulcers in diabetic patients impact both the physical and mental strength of the patients and also burden the patient financially. During the study the researchers tried a method of change team management by emphasizing aggressive surgical revascularization of threatened limbs have improved the condition and reduced the length of stay resulting in the reduced cost burden.

2.2 Behavioral Economics and Management of Diabetes:

The alarming increase in numbers of diabetes patient and India becoming the leader in the prevalence of the disease brings an important aspect of behavioral economics and application of it in managing disease, its role in making the country healthier. In order to manage the problem it is important to engage and motivate communities to support management of the disease. It's important to break the barriers of management and care from the historical clinic setting to social and environmental component of the disease. Behavioral economics integrates economics, psychology and behavioral science to study and influence the ways in which people makes choices. This branch of economics is divided into two branches, namely: concepts from cognitive psychology and other branch emerge from behavioral science using aspects of economic theory to enhance the understanding of choices and resources.

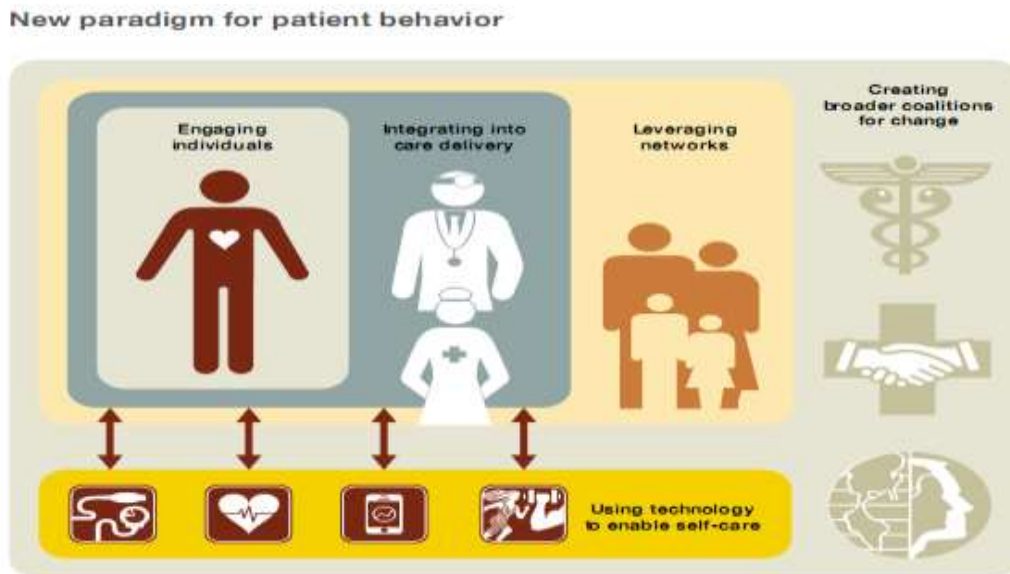


Exhibit 1

Source: Health International 2012

It's been observed that during low times or recession people are more open to the diseases and the management of the same becomes poor. In a paper published by McKinsey's Healthcare System and Services in 2012 states that changing behavior of individuals impacts the management of the disease. Exhibit 1 clearly mentions the elements of paradigm shift in the patient's behavior and the five components of it:

- To engage patients more effectively by using behavioral economics
- Integrating behavior change as a core component of new care delivery model
- Using the available network to influence the behavior
- Utilizing remote & self care oriented technologies to support and empower patients so that they can connect to medical professionals
- Using the stakeholders in order to increase the impact of the delivery.

3. RESEARCH GAP:

Various studies have been conducted in the application of behavioral economics in the healthcare system and management of disease. But no specific study has been conducted for the Indian scenario, understanding the mindset and approach of management of diabetes as a disease. This paper aims at filling that gap and understanding the level of awareness of individuals about the management of disease and myths related to it.

4. OBJECTIVES OF RESEARCH:

The purpose of the research is to explore and understand the behavior of individuals toward the management of disease (diabetes) and the myths related to the disease.

The objective of the study is:

1. To explore the awareness of diabetes among the respondents and myths related to it in diabetic patients in Mumbai city
2. To identify the disease management techniques in diabetic patients in Mumbai city
3. To understand the behavior of individuals towards diabetes management

5. RESEARCH METHODOLOGY:

The researcher conducted the exploratory research for the study. The area of study was taken as one of the OPD (outpatient department) of a tertiary care hospital in Mumbai located in the heart of the city. The research is predominantly quantitative in nature with some qualitative aspects included in the research. The researcher used Interview as the primary means of collecting data with focused group discussion. The sampling technique used was non-probability convenience sampling and snowball sampling considering that many people suffering from the disease were not ready to share the data and there is no standard database available for the same. The questions asked were measured on the five point likert scale. A total of 128 respondents who are diabetic or have one family member who is diabetic were interviewed for the research. The following formula was used for estimation of sample size:

$$n = z^2 * p (1-p) / m^2,$$

Where p is the average proportion of diabetic patients = 8%

z is 1.96 tabled values for 5% level of significance

m is standard value 0.05

Therefore, $n = 1.96^2 * 0.08 (0.92) / 0.025 = 114$ respondents.

But the researcher has considered 128 sample sizes in order to cover sampling errors.

The secondary data collected was through literature review including journals, national and international scholarly papers, peer-reviewed published articles, conference proceedings, Emerald & EBESCO journals, magazines, internet and newspaper, market reports, books, etc. The research instrument was well designed questionnaire which was designed keeping in mind the objective of the study. Data collection was done through interview method using structured interview schedule.

5.1 Tools used for Research:

- Data Coding /Editing Microsoft Excel, SPSS Version 20
- Data Analysis: Data will be analyzed using Advanced Multivariate Statistical techniques

- Statistical techniques: Descriptive statistics of frequency distribution & percentages cross tabulation, correlation and multivariate technique of factor analysis.
- Limitation: Time and area of study limited to Mumbai.

6. ANALYSIS OF DATA:

Reliability Test of Data:

Reliability Statistics

Cronbach's Alpha	N of Items
.748	17

Table 1

Researcher Conducted the reliability test for the awareness related variables and was successful in regard to reliability as cronbach alpha was is more than 0.7 which states that the data is reliable for the analysis.

The researcher took various parameters to analyze the data and study the level of awareness of individuals related to the disease and management of disease.

Vital Statistics of Age , Gender of the respondents

		N
Age	Below 18 years	17
	18-25 years	6
	26-35 years	16
	36-45 years	14
	46-55 years	22
	Above 55 years	53
Gender	1 (Male)	85
	2 (Female)	43

Table 2

In Table 1 vital statistics of the sample population is depicted. The sample size consists of different age bracket and maximum responded belong to age bracket above 55 years followed by respondents in 46-55 years of age bracket. From the total respondents interviewed 66% respondents were male and 34% female.

Study Objective 1: To explore the awareness of diabetes among the respondents and myths (misconception about diabetes) related to it in diabetic patients in Mumbai city

The first objective is split into two parts

1A) To study the awareness level prevalent among the respondents

The Researcher conducted factor analysis to understand the prominent factors among respondents who themselves or anyone in their family were diagnosed as diabetes and also among respondents who themselves and anyone in their family was never diagnosed with the disease.

Component Matrix^{a,b} of awareness level among non-diabetic respondents

	Component			
	1	2	3	4
Eatinghealthy_Awareness	.727	-.624	-.031	-.041
Packedfood_Awareness	-.117	.846	.177	.414
Cholestrol_Awareness	.930	.094	-.168	.186
Specialdiet_Awareness	.765	.302	.235	.257
Smokedrink_Awareness	-.538	.094	-.711	.131
CKD_Awareness	-.605	.616	-.219	.341
Lifestyle Awareness	.268	-.375	.394	.718
Excercise_Awareness	-.421	.170	.612	-.151
Starcyfood_Awareness	.085	.519	.589	-.304
Sweetener Awareness	.625	.484	-.497	-.148
Symptoms Awareness	.764	.399	-.104	.259
Donateblood_Awareness	.480	.373	-.008	-.730

Table 3

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

b. Only cases for which Diagnosis_Awarreness = 5 are used in the analysis phase.

Factors extracted considering respondents who do not have diabetic history but any family member were diagnosed with the disease were:

- Awareness about consuming cholesterol, fatty items like rice, potato
- Awareness about packed food/ ready to eat food
- Awareness of consuming special diet
- Awareness of symptoms of diabetes

It was clearly identified that respondents who have never suffered from the disease have an understanding about the various parameters related to the disease and can hence manage the disease with a better understanding.

Component Matrix^{a,b} of awareness level among diabetic respondents

	Component				
	1	2	3	4	5
Eatinghealthy_Awareness	.401	.083	-.669	.325	-.272
Packedfood_Awareness	-.117	.720	.357	.249	-.017
Cholestrol_Awareness	.658	.121	.099	-.202	-.369
Specialdiet_Awareness	.490	.444	-.069	-.451	-.089
Smokedrink_Awareness	.454	.387	-.234	.546	-.028
CKD_Awareness	.146	.512	.668	.054	.210
Lifestyle_Awareness	.670	.336	-.066	-.406	.103
Excercise_Awareness	.323	-.193	.003	.341	.591
Starcyfood_Awareness	.647	-.303	.097	-.045	.382
Sweetener_Awareness	.689	-.283	.042	.276	.029
Symptoms_Awareness	.170	-.211	.546	.492	-.443
Donateblood_Awareness	-.366	.636	-.401	.236	.209

Table 4

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

b. Only cases for which Diagnosis_Awarreness = 4 are used in the analysis phase.

Prominent Factors extracted for the respondents who have diabetic history were:

- Awareness about consuming packed /ready to eat food
- Awareness about consumption of artificial sweeteners
- Awareness about leading active lifestyle
- Awareness about consuming cholesterol, fatty items like rice, potato

- Awareness of people should not consume starchy items

The respondents suffering from the disease or their family members suffering from the disease showed level of awareness about the various factors related with disease. This helped them to a healthy lifestyle. This also indicates their behavior towards management of diabetes.

1 B) To study the myths (misconceptions) related to diabetes

H01: There is no significant impact of age on the Myths perceived by the respondents related to Diabetes

H11: There is a significant impact of Age on the Myths perceived by the respondents related to Diabetes

The researcher conducted ANOVA considering the dependent variable as myth and independent variable as Age.

ANOVA for myths related to diabetes and Age

		Sum of Squares	df	Mean Square	F	Sig.
Travel Myth	Between Groups	10.741	5	2.148	1.517	.189
	Within Groups	172.728	122	1.416		
	Total	183.469	127			
NotReqd_Myth	Between Groups	12.246	5	2.449	3.573	.005
	Within Groups	83.629	122	.685		
	Total	95.875	127			
Sweets Myth	Between Groups	33.111	5	6.622	4.597	.001
	Within Groups	175.764	122	1.441		
	Total	208.875	127			
Ritual Myth	Between Groups	42.113	5	8.423	5.106	.000
	Within Groups	201.255	122	1.650		
	Total	243.367	127			
Hereditary Myth	Between Groups	1.825	5	.365	.363	.873
	Within Groups	122.644	122	1.005		
	Total	124.469	127			
Pregnancy Myth	Between Groups	14.683	5	2.937	3.528	.005
	Within Groups	101.559	122	.832		
	Total	116.242	127			
Activelifestyle_Myth	Between Groups	20.288	5	4.058	2.706	.024
	Within Groups	182.954	122	1.500		
	Total	203.242	127			

Table 5

Analysis: The study revealed that the respondents above the age of 55 years has a significant impact on myths related to religion and rituals i.e. our rituals and religion impact our health and may even cause diabetes. In ANOVA test it is also prominently showing that myth regarding diabetic patients cannot lead an active life also holds true.

H02: There is no significant impact of educational level on the Myths perceived by the respondents related to Diabetes

H12: There is a significant impact of educational level on the Myths perceived by the respondents related to Diabetes

ANOVA for myths related to diabetes and Education

		Sum of Squares	df	Mean Square	F	Sig.
Travel Myth	Between Groups	4.060	4	1.015	.696	.596
	Within Groups	179.408	123	1.459		
	Total	183.469	127			
NotReqd_Myth	Between Groups	.259	4	.065	.083	.987
	Within Groups	95.616	123	.777		
	Total	95.875	127			
Sweets Myth	Between Groups	8.680	4	2.170	1.333	.261
	Within Groups	200.195	123	1.628		
	Total	208.875	127			
Ritual Myth	Between Groups	3.924	4	.981	.504	.733
	Within Groups	239.443	123	1.947		
	Total	243.367	127			
Hereditary Myth	Between Groups	4.294	4	1.073	1.099	.360
	Within Groups	120.175	123	.977		
	Total	124.469	127			
Pregnancy Myth	Between Groups	7.932	4	1.983	2.252	.067
	Within Groups	108.310	123	.881		
	Total	116.242	127			
Activelifestyle_Myth	Between Groups	2.954	4	.738	.454	.770
	Within Groups	200.288	123	1.628		
	Total	203.242	127			

Table 6

Analysis: The researcher conducted ANOVA considering Various Myths as Dependent Variables and Educational Level as Independent Variable. We accept the null hypothesis that Education level is independent of myths. Except for the study revealed that education level made a significant impact on the Pregnancy myth related to diabetes.

Study Objective 2: To identify the disease management techniques in diabetic patients in Mumbai city

H03 There is no relationship between the awareness level of the respondents and the way they manage their disease.

H13 There is relationship between the awareness level of the respondents and the way they manage their disease

Correlations : Relationship between awareness level and management of disease						
		Diagnoses	Walking	GYM	Cardiac	yoga
diagnosis	Pearson Correlation	1	.028	.035	-.189*	.265**
	Sig. (2-tailed)		.770	.711	.043	.004
	N	115	115	115	115	115
*. Correlation is significant at the 0.05 level (2-tailed).						
**. Correlation is significant at the 0.01 level (2-tailed).						

SPSS Table 7

Analysis: The researcher conducted test of correlation for the respondents who are diagnosed and their management of Disease .The correlation however is turned out to be very low and positive with respect to yoga, gym, walking and negative correlation with cardiac. We accept the Null Hypothesis.

The results show that respondents who are diagnosed as diabetic managed their disease by practicing Yoga, going to gym and doing strength exercises, walking and do not practice cardiac exercise. There was no prominent relation was found within the group who are aware about the disease and managing the same.

Study Objective 3: The study the prominent factors influencing the behavior towards diabetes Management.

Component Matrix^{a,b} of prominent factors influencing behavior toward disease management

	Component						
	1	2	3	4	5	6	7
Walking_Mgmtofdisease	-.506	-.553	-.244	-.153	.094	-.113	.220
Strength_Mgmtofdisease	-.087	-.465	.310	-.070	.073	-.109	.685
Cardio_Mgmtofdisease	.337	-.020	.296	-.365	.049	-.568	-.166
Yoga_Mgmtofdisease	-.442	.082	.482	-.117	.330	.076	-.313
Eatinghealthy_Awareness	.251	.639	-.186	-.027	-.178	.521	.149
Packedfood_Awareness	-.434	.525	.480	.076	.200	-.102	.167
Specialdiet_Awareness	.463	.364	.386	.420	.072	-.198	.122
Cholestrol_Awareness	.615	.454	-.015	-.379	.234	-.138	.212
Smokedrink_Awareness	.121	.710	-.317	.104	-.060	-.225	.311
RegulaExercise_Awareness	.532	-.256	-.415	.388	-.147	-.097	-.327
Lifestyle Awareness	.559	-.140	.420	.126	-.024	.476	-.022
Lifestylestress_Awareness	.244	-.251	.656	.174	.145	.307	-.028
HomemadeRemedies_Awareness	-.465	.077	-.033	.586	-.113	.012	.226
Excercise_Awareness	.116	-.288	-.409	.073	.518	.294	.314
Starchyfood_Awareness	.691	-.223	-.209	.110	.523	-.081	-.014
IncomeRelated_Myth	-.099	.098	-.064	.617	.498	-.249	-.139
Symptoms Awareness	-.261	.329	-.247	-.395	.519	.249	-.173

Donateblood_Awareness	-.679	.219	-.106	.177	.130	.051	-.164
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SPSS Table 8

Extraction Method: Principal Component Analysis.

a. 7 components extracted.

b. Only cases for which Education = 4 are used in the analysis phase.

The Researcher conducted factor analysis to understand the various factors which influence the behavior of the individuals in managing the disease. The top seven components which were derived from the analysis were management of disease with the help of gym and exercise, awareness regarding healthy food, eating diet with less cholesterol and fatty items, smoking and drinking is harmful for diabetic patients, homemade remedies sometimes helps in managing the disease, intake of starchy food will not affect the health of a patient if one does regular exercise and if maintained well a diabetic patient can maintain a healthy lifestyle.

Management of Disease:

Mode of treatment	Values of R
Allopathic	0.02
Ayurveda	0.06
Naturopathy	0.03

Table 9

The researcher took out the correlation value in which mode of treatment versus future complication of disease was calculated. It was observed that respondents taking Naturopathy as mode of treatment are slightly higher aware followed by ayurveda and allopathic about the future implications of the treatment.

7. CONCLUSION & RECOMMENDATIONS:

The researcher has attempted to find out the awareness level about the diabetes and factors which may help in managing the disease and it has been found that out of the total sample size 66% were males and 34% were females. In the analysis it was found that the respondents had an awareness level about the various diabetic related issues but still were not practicing a healthy lifestyle. Though walking and going to gym came out as a major correlation between the diabetic respondents and their habits but still the same was not included in their health regime on regular basis. It was also found that there were various myths which are related to the disease which held true and not major impact was found with the education level of respondents. The mode of treatment awareness was clearly found and it was observed that the people were more aware about the naturopathy followed by ayurveda and allopathic. The

study can be used to explore the usage and role of Naturopathy in the management of the diabetes and how same can be used widely by the people suffering from the disease.

It was found in the research though the respondents suffering from diabetes were aware about management of disease but was not practicing the same due to various reasons like lack of time, hectic work schedule etc. Hence the researcher feels if the offices have some activities related to managing the disease like gym or healthy diet food counter then it becomes easy for the people suffering from disease to manage the same. It was also found that people not suffering from the disease had awareness regarding symptoms of the disease and they should be educated more on the diet and exercising habits to maintain a healthy lifestyle. There were many myths which are related to the disease and because of no information people still believe in them despite of being educated. Hence, more awareness to be spread across the community regarding the myths related to diabetes to avoid any misconception. Also this will help individuals to change their behavior and mindset toward the disease and help them to lead a healthy lifestyle.

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