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Social Determinants of Diabetes

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Abstract

In the 21st century, the glamour of economic and technological development is not free from miseries particularly in the health domain. The quality of life of the people with increasing trend of non-communicable diseases is at great stake. Diabetes is one of the most dangerous killing diseases, which not only affect the individuals but the entire family and ultimately causing burden to the state. So far medical innovations have helped to diagnose the disease and maintain it throughout the life. Diabetes management is becoming market centric and it looks to suffer with deficits of cost effective and patient friendly perspective. The process involved in maintaining the disease is not friendly to human nature. The restrictions, cautions and precautions are much medicine centric; it does not suites completely to the human nature. The doctor treating the diabetic person may consider the fault on the part of patient but it is a natural for the patient to go beyond the prescriptions of Doctor. The medical approach of managing the diabetes carries unbearable cost on individual, family, society and even on the state itself.

Unless underling etiology of the disease is completely understood scientifically, using samples from variety of sections, regions and social groups, ethnic groups, we cannot get the profile of determinants which are rooted into diabetes. It is believed to be a disease of modern times, which is broadly embedded with host of stressors; and it is generally recognized that the environment in which people live is highly stress prone due to paradigm shift in the life style of people, e.g., eating, working, living, communicating etc. In order to get some insight about the disease, it is important to understand the causative factors embedded into the social system in which people are living. It is quite possible that host of incident shocking in nature to a particular individuals may play significant role in causing the diabetes. Keeping this into background retrospective narrative technique was used for in-depth interview with 20 diabetic persons with qualification ranging from primary school to Ph.D. having status of economically middle class. The salient findings are: 1) The in-depth case studies revealed micro level determinants in the changing dynamics of the relationship in the family, which play a critical role in facilitating non-communicable disease. 2) The drastic changes in the —expectation's profile‖ of the family members, unexpected changes in the behavior of the family members, unresolved conflicts among the family members, unexpected treatment on small matters like food, clothing, outing, property, etc. play a vital role in causing diabetes as reported in almost all the case studies. From the findings it looks that people need to be prepared from the early stages of life about upcoming situations emerging in the family of contemporary period. The coping skills and communication education about the dynamic changes in the expectations and behavior profile in the family and society should be taken up as preventive and promotive approach with complete intuitional design.

Keywords: Diabetes; Globalization; Hormone

Introduction

Globalization

Globalization is reshaping the social geography within which we might strive to create health or prevent disease [1]. The determinants of health – be they a SARS virus or a predilection for fatty foods – have joined us in our global mobility. Driven by economic liberalization and changing technologies, the phenomenon of 'access' is likely to dominate to an increasing extent the unfolding experience of human disease and wellbeing. Understanding globalization as a subject matter itself needs certain benchmarks and barometers of its successes and failings. Health is one such parameter. It is a marker of social infrastructure and social welfare and as such can be used to either sound an alarm or give a victory cheer as our interconnectedness hurts and heals the populations we serve. In as much as globalization can have an effect on health, it is also true that health and disease has an effect on globalization as exemplified by the existence of quarantine laws and the devastating economic effects of the AIDS pandemic

A balanced view would propose that the effects of globalization on health are neither universally good nor bad, but rather context specific [2]. The extent to which individual states are able to engage the process of globalization on their own terms differs widely from one country to the next. Child mortality, for example, changes quickly in response to subtle changes in purchasing power in impoverished communities. In rich communities however, a small change in income has little effect on utility in either direction. As we consider the effects of globalization on wellbeing, it becomes apparent that we need to consider both the long term scenarios for populations as a whole, and the immediate effects for the more vulnerable within those populations who are dependent on fragile local economies.

We are here trying to develop a concept by identifying the social determinants of health at individual level and the main features of the globalization process. The resulting conceptual model explicitly visualizes that globalization affects the institutional, economic, social –cultural and ecological determinants of population health operates at the contextual level, while influencing health through long-term and

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short-term determinants. It provides valuable insight in how to organize the complexity involved in studying the health effects resulting from globalization [3]. It could, therefore, give a meaningful contribution to further research by serving as a road map and provides a basis for the development of future scenarios on health [4,5].

Good health is accepted as an international goal and we can state that there have been broad gains in life expectancy over the past century due to medical innovations and decrease in the communicable diseases. But health inequalities between rich and poor persist and the non-communicable diseases have increased, while the prospects for future health depend increasingly on the relative new processes of globalization. In the past globalization has often been seen as a more or less economic process. Nowadays it is increasingly perceived as a more comprehensive phenomenon, which is shaped by a multitude of factors and events that are reshaping our society rapidly. Two recent and comprehensive frameworks concerning globalization and health are the ones developed by Woodward et al. and by Labonte and Togerson. The effects that are identified by Woodward et al. as most critical for health are mainly mediated by economic factors. Labonte and Torgerson primarily focus on the effects of economic globalization and international governance. In our view, however, the pathways from globalization to health are more complex [6]. Therefore, the health effects of the globalization process require a more holistic approach and should be rooted in a broad conception of both population health and globalization.

There is more and more agreement on the fact that globalization is an extremely complex phenomenon; it is the interactive co-evolution of multiple technological, cultural, economic, institutional, social and environmental trends at all conceivable scales. Hence, Rennen and Martens [6] define contemporary globalization as an intensification of cross-national cultural, economic, political, social and technological interactions that lead to the establishment of transnational structures and the global integration of cultural, economic, environmental, political and social processes on global, supranational, national, regional and local levels. Although somewhat complex, this definition is in line with the view on globalization in terms of deterritorialisation and explicitly acknowledges the multiple dimensions involved. However, the identification of all possible health effects of the globalization process goes far beyond the current capacity of our mental ability to capture the dynamics of our global system; due to our ignorance and interdeterminacy of the global system that may be out of reach forever [7].

Health is a multifaceted concept

As the world around us is becoming progressively interconnected and complex, human health is increasingly perceived as the integrated outcome of its ecological, social, cultural, economic and institutional determinants. Therefore, it can be seen as an important high-level integrating index that reflects the state- and, in the long term, the sustainability-of our natural and socio-economic environments [8]. Our identification of the most important factors influencing health is primarily based on social dimension of existing health problem, i.e., diabetes. In order to differentiate between health determinants of different nature, we need to explore the traditional distinction between social, cultural, economic, environmental and internal and external factors. These factors operate at different hierarchical levels of causality, because they have different positions in the causal chain. The chain of events leading to a certain health outcome includes both proximal and distal causes; proximal factors act directly to cause disease and distal or long term determinants are further back in the causal chain and act via intermediary causes [9]. These can be seen as the macro- level conditions shaping the distal and proximal health determinants; they form the context in which the distal and proximal factors operate and develop. Additionally, health in itself can also influence its multi-level, multi-nature determinants; for example, ill health can have a negative impact on economic development.

The lifestyle plays a significant role in the course of good health due to the widespread flow of people, information and ideas; it also spread throughout the world [10]. It is already widely acknowledged and demonstrated that several modern behavioral factors such as an unhealthy diet, physical inactivity, smoking, alcohol misuse and the use of illicit drugs are having a profound impact on human health [11]. Individuals respond to the range of healthy as well as unhealthy lifestyle options and choices available in a community, which are in turn determined by global trade, economic development and social interactions [12]. Globalization is causing profound and complex changes in the very nature of our society, bringing new opportunities as well as risks. In addition, the effects of globalization are causing a growing concern for our health, and the intergenerational equity implied by 'sustainable development' forces us to think about the right of future generations to a healthy environment and a healthy life. It clearly demonstrates that an interdisciplinary approach towards globalization and health is required, which draws upon the knowledge from relevant fields such as, for example, medicine, epidemiology, sociology, political sciences, health education, environmental sciences and economics [13,14].

In addition, the exploration of possible future health impacts of different globalization pathways by means of scenarios analysis could provide a useful contribution to the ongoing discussions on globalization and health (The world health report 2002). Scenarios can be described as 'plausible but simplified descriptions of how the future may develop, according to a coherent and internally consistent set of assumptions about key driving forces and relationships. Recent research showed that the health dimension is largely missing in existing global scenarios. It is therefore important that a holistic approach towards globalization; so we perceive globalization as a process in which simultaneously many different processes take place in many societal domains and at individual level.

Transition in the lifestyle

The results of market-driven society made people feel insecure about their prospects for receiving society when they need it. It destroys the trust that people once had in the management whose role is often to block access to society. By making society a commodity to be bought and sold like any other, it expands the growing economic inequality leading drastic ill effect on health. It pits people against each other in competing society. Even before the rise of market-driven society, corporations relied on the insecurity of society to control workers. For decades, large employers have preferred to link health benefits to employment, knowing it gave them more control over their employees. According to a New York Times/CBS poll in 1991, 32 percent of workers did not quit jobs they disliked because they were afraid of losing their health benefits [15]. In June, 1998 General Motors threatened to deny medical benefits to striking workers in Flint, Michigan in order to pressure them back to work [16]. Raytheon actually did cancel health insurance for striking workers in Massachusetts in August 2000, to force them back to work [17].

The Value Crisis is a unique perspective on the inevitable conflict between commercial/scientific values which are entirely number-driven and human values which evolved without numbers. This is not

a blame of one system or the other; rather it is a discovery of how their often-difficult incompatibilities affect everything from our personal everyday choices to the global challenges facing our planet. We are forced to think in terms of numbers, but that is clearly not how our brains are wired. Humans have a unique ability to dramatically change their environment through conscious decisions. Decisions are based on value systems - we make choices based on what we think is best. The Value Crisis presents the case for the existence of two conflicting value systems that rule our decision-making - one based on our innate human values, and one based on market forces. It is that conflict, largely unacknowledged, that gets us into trouble.

Conflict is defined as a difference of wants, needs, or expectations. The workplace is filled with people who have differences of wants, needs, and expectations so, conflicts occurs. Conflicts may be opportunities for creativity, collaboration, and improvement. But, unresolved conflict is very costly to the entire society. The trouble isn't necessarily the fact that conflict exists. It's how we deal with those conflicts or what happens when they aren't resolved. The impact of conflict in the workplace or at home can be devastating - to the family members, parties involved, to colleagues and teams, to clients, and to the business as a whole. Some of the results of unresolved conflict in the workplace are Stress, frustration and anxiety, loss of sleep, strained relationships, Grievances and litigation, Loss of productivity, increased client complaints, Absenteeism, Sabotage, Injury and accidents, Disability claims. Other consequences of increased conflict-related stresses include greater incidence of substance abuse, heart problems, back problems, cancers, mental health problems, greater incidence of workplace injury and much higher incidence of interpersonal conflict. [18].

Unresolved conflicts

The presence of conflict does not determine the quality of a marriage; rather, how the couple handles conflict situations determines the quality of the relationship [19]. Even beliefs about conflict are more important to marital, happiness than whether or not the two partners actually agree with one another [20]. How you handle conflict spreads to other members of your family. For example, it has been noted that adult children who are taking care of their parents usually have high levels of conflict with siblings [21].

Immediate impact of unresolved conflict

Unresolved conflict has tremendous negative impact. People cannot carry out their normal job duties. In relationships, unresolved conflict leads to drifting away from one another and sometimes throws out the relationship entirely. One study even found that the relapse of compulsive gamblers was related to erupting interpersonal conflicts [22]. Family research is quite clear about the system wide effects of destructive marital conflict. First, negative conflict between the parents reduces the family's network of friends and creates more loneliness [23]. Second, conflict between the parents tends to both change the mood of household interactions and also to shift the parents' attention to the negative behaviors of their children [24]. For example, inter-parental conflict leads to fathers issuing confusing and threatening commands to their sons [24]. Families with delinquent teenagers are found to be more defensive and less supportive than families without delinquents [25]. Finally, the effects of destructive conflict patterns suggest that "ongoing conflict at home has a greater impact on adolescent distress and symptoms than does parental divorce" [26].

Long-term impact of unresolved conflict

It isn't just the people who call one another names who have relationship difficulties deriving from conflict. It has been clearly demonstrated that "couples who never engage in conflict are at long-term risk" [27].There is evidence that parents who either avoid conflict or engage in negative cycles of mutual damage directly influence the children's subsequent lives. For instance, if your parents avoided conflict, you may be at risk in romantic relationships [28]. A modest relationship exists between mothers who avoid conflict and their daughters' marital satisfaction [29]. On the other end of the continuum, children who are exposed to harsh discipline practices at home are more at risk for aggression, hyperactivity, and internalizing by withdrawing, having somatic complaints, and experiencing depressive symptoms [30]. The family effects also reach beyond the immediate environment. One study demonstrated that children from high-conflict homes had much stronger negative reactions while watching a video of angry adults than children from low-conflict homes [31]. In addition, it is evident in the Indian context that unresolved conflicts plays a significant role in making people stressed.

Diabetes is a consequent of an extreme stress in life. The word diabetes derives from the Greek for siphon, a reference to the copious urine excretion that characterizes this affliction. Diabetes is a lifelong (chronic) disease in which there are high levels of sugar in the blood. In common usage, the term diabetes is synonymous with diabetes mellitus. The term diabetes mellitus describes a metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. A condition in which excessive amounts of some substances are excreted from the body. The term may refer to either of two unrelated diseases, diabetes mellitus and diabetes insipidus [32].

Some studies revealing different aspects of diabetes are referred here. Stress blocks the body from releasing insulin in people with Type 2 diabetes. The diagnosis of diabetes usually comes as a shock and is certainly a stressful time [33]. Changes in lifestyle including stoppage of smoking, diet and learning to manage injections may all contribute in addition to the worry regarding chronic illness [34]. In people who have diabetes, stress can alter blood sugar levels. It does this in two ways. First, people under stress may not take good care of themselves. People who are anxious are under pressures and may lose appetite and skimp on eating, or reach for not-so healthy quick fixes like candy or chips and sometimes seek refuge in food and drink. The intake of alcohol may be increased. Many people who are under stress turn to food as a source of comfort. This pattern of comfort eating can often play havoc with blood sugar level. Further anxiety leads to less exercise. The results can be disastrous for people with diabetes. They may forget, or not have time, to check their sugar levels or plan good meals. Second, stress hormones may also alter blood sugar levels directly as it antagonizes the action of insulin. While in most people glucose levels go up with mental stress, while in others can go down. Diabetic mice under physical or mental stress have elevated glucose levels. The effects in people with Type1 diabetes are more mixed. People with Type 1 diabetes may develop elevated blood glucose levels and ketoacidosis.

Those with Type 2 diabetes usually gain weight and develop obesity and often blood sugar levels are raised [35] Inflammatory signaling pathways can also become activated by metabolic stresses originating from inside the cell as well as by extra-cellular signaling molecules. Something else that affects peoples responses to stress coping style. Coping style is how a person deals with stress. People who use them tend to have less blood sugar elevation in response to mental stress [36]. Hyperglycemia induces the overproduction of

oxygen free radicals and consequently increases the protein oxidation and lipid oxidation [36].

Insulin is a hormone produced by the pancreas to control blood sugar. Diabetes can be caused by too little insulin, resistance to insulin, or both. To understand diabetes, it is important to first understand the normal process by which food is broken down and used by the body for energy. Several things happen when food is digested: A sugar called glucose enters the bloodstream. Glucose is a source of fuel for the body. An organ called the pancreas makes insulin. The role of insulin is to move glucose from the bloodstream into muscle, fat, and liver cells, where it can be used as fuel. People with diabetes have high blood sugar because their body cannot move sugar into fat, liver, and muscle cells to be stored for energy. This is because either: Their pancreas does not make enough insulin, their cells do not respond to insulin normally or both. There are three major types of diabetes. The causes and risk factors are different for each type: Type 1 diabetes can occur at any age, but it is most often diagnosed in children, teens, or young adults. In this disease, the body makes little or no insulin. Daily injections of insulin are needed. The exact cause is unknown. Type 2 diabetes makes up most of diabetes cases. It most often occurs in adulthood, but teens and young adults are now being diagnosed with it because of high obesity rates. Many people with type 2 diabetes do not know they have it. Gestational diabetes is high blood sugar that develops at any time during pregnancy in a woman who does not have diabetes [37]. High blood sugar levels can cause several symptoms, includes Blurry vision, Excess thirst, Fatigue, Frequent urination, Hunger, Weight loss. Because type 2 diabetes develops slowly, some people with high blood sugar have no symptoms. Symptoms of type 1 diabetes develop over a short period of time. People may be very sick by the time they are diagnosed. Signs and tests- A urine analysis may be used to look for high blood sugar. However, a urine test alone does not diagnose diabetes. Health care provider may suspect that you have diabetes if your blood sugar level is higher than 200 mg/dL. To confirm the diagnosis, one or more of the following tests must be done.

Blood tests

Fasting blood glucose level -- diabetes is diagnosed if it is higher than 126 mg/dL twice. Levels between 100 and 126 mg/dL are called impaired fasting glucose or pre-diabetes. These levels are risk factors for type 2 diabetes. Hemoglobin A1c test -Normal: Less than 5.7% Pre-diabetes: 5.7%-6.4% Diabetes: 6.5% or higher. Oral glucose tolerance test -diabetes is diagnosed if glucose level is higher than 200 mg/dL after 2 hours. (This test is used more often for type 2 diabetes.) Screening for type 2 diabetes in people who have no symptoms is recommended for: Overweight children who have other risk factors for diabetes, starting at age 10 and repeated every 2 years, Overweight adults (BMI greater than 25) who have other risk factors, Adults over age 45, repeated every 3 years

Treatment: There is no cure for diabetes. Treatment involves medicines, diet, and exercise to control blood sugar and prevent symptoms and problems.

Expectations (prognosis): Studies have shown that better control of blood sugar, cholesterol, and blood pressure levels in persons with diabetes helps reduce the risk of kidney disease, eye disease, nervous system disease, heart attack, and stroke [38].

Complications of diabetes

Diabetes are the inability of glucose to enter the cells. The result is that the bloodstream has a high amount of glucose and cells are not able to produce energy for the body. When diabetes is not carefully managed by keeping the amount of sugar in the blood at the right level, the resulting high glucose amounts wreak havoc on nearly every organ system in the body. One of the main contributing factors in some of the complications mentioned are issues arising from problems with the smallest of blood vessels. High concentrations of glucose lead to weakness in their walls, and the combination of bursts in these vessels and the scar tissue created in the healing process can damage the organs which these vessels serve. Complications of Diabetes can range from sudden, urgent issues to those that develop slowly over the years. These complications are Heart Disease and Stroke, Vision Loss and Blindness (Diabetic Retinopathy), Kidney Failure (Diabetic Nephropathy), Amputation (Diabetic Neuropathy), Diabetic Ketoacidosis, Diabetic Coma.

Prevention as per medical world

Keeping an ideal body weight and an active lifestyle may prevent type 2 diabetes. There is no way to prevent type 1 diabetes. To prevent complications of diabetes, visit your health care provider or diabetes educator at least four times a year. Talk about any problems you are having.

Diabetes Management by medical fraternity

The management of diabetes is so important for diabetics to understand. The main items that need to be managed are glucose level monitoring, diet, weight control, exercise, regular medications and insulin injections, foot care, skincare, teeth and mouth hygiene, regular visits to dentist, regular visits to eye doctor, regular checkups with primary doctor, lab work as ordered by primary doctor this is when diabetics need to make a life time commitment to doing what is necessary to control diabetes. All of these factors are interconnected and in the case of type 2 diabetes, it can be totally controlled in some cases with diet and exercise [39-47] (Table 1). The prevalence of diabetes is rising all over the world due to population growth, aging, urbanization and an increase of obesity and physical inactivity. Unlike in the West, where older persons are most affected, diabetes in Asian countries is disproportionately high in young to middle-aged adults. This could have long-lasting adverse effects on a nation's health and economy, especially for developing countries. The International Diabetes Federation (IDF) estimates the total number of people in India with diabetes to be around 50.8 million in 2010, rising to 87.0 million by 2030. The primary goal in the management of diabetes mellitus is the attainment of near-normal glucose levels. In India, more than half of patients have poor glycemic control and have vascular complications. Therefore, there is an urgent need to understand the social dimension of diabetes [48-50].

Rank	Country/Territory	2010 (millions)	Country/Territory	2030 (millions)
1	India*	50.8	India	87.0
2	China	43.2	China	62.6
3	U.S.	26.8	U.S.	36.0
4	Russia	9.6	Pakistan	13.8
5	Brazil	7.6	Brazil	12.7
6	Germany	7.5	Indonesia	12.0
7	Pakistan	7.1	Mexico	11.9
8	Japan	7.1	Bangladesh	10.4
9	Indonesia	7.0	Russia	10.3
10	Mexico	6.8	Egypt	8.6

Table 1: Diabetes in India.

*Table: Top 10 countries for estimated numbers of adults with diabetes, 2010 and 2030
*Current Status of Diabetes in India

According to recent estimates, approximately 285 million people worldwide (6.6%) in the 20–79 year age group have diabetes in 2010 and by 2030, 438 million people (7.8%) of the adult population, is expected to have diabetes. The largest increases take place in the regions dominated by developing economies. The global increase in the prevalence of diabetes is due to population growth, aging, urbanization and an increase of obesity and physical inactivity. The primary determinants till date of the epidemic are the rapid epidemiological transition associated with changes in dietary patterns and decreased physical activity but the social determinants at their individual level are often neglected [51].

Unlike in the West, where older populations are most affected, the burden of diabetes in Asian countries is disproportionately high in young to middle-aged adults. This could have long-lasting adverse effects on a nation's health and economy, especially for developing countries. Healthcare expenditures on diabetes are expected to account for 11.6% of the total healthcare expenditure in the world in 2010. Estimated global healthcare expenditures to treat and prevent diabetes and its complications are expected to total at least 376 billion U.S. Dollars (USD) in 2010. By 2030, this number is projected to exceed some USD490 billion. Roughly 80% of people with diabetes are in developing countries, of which India and China share the larger contribution. It is estimated that the total number of people with diabetes in 2010 to be around 50.8 million in India, rising to 87.0 million by 2030. According to the World Health Organization (WHO) criteria, the prevalence of known diabetes was 5.6% and 2.7% among urban and rural areas, respectively. Ramachandran et al. reported that age-standardized prevalence of diabetes and impaired glucose tolerance (IGT) in urban India in 2000 was 12.1% and 14.0%, respectively, with no gender difference. Diabetes showed positive and independent associations with age, body mass index (BMI), waist-to-hip ratio, a family history of diabetes, monthly income and sedentary physical activity. Age, BMI and a family history of diabetes showed associations with IGT [52-60].

More recent reports from various parts of India showed further increases in diabetes prevalence in urban areas. Moreover, the prevalence of diabetes was also found to be increasing rapidly in rural areas, as a result of the recent socioeconomic transitions. India, the world's second most populous country, now has more people with type 2 diabetes (more than 50 million) than any other nation. The problem has been well documented in a battery of recent papers. These publications were fore shadowed by studies of previously Westernized Indian populations elsewhere, and they illuminate distinctive features of diabetes in India. Type 2 diabetes results from a genetic predisposition and from lifestyle factors, especially those of the so-called Western lifestyle, characterized by high calorie intake and little exercise. Also known as non-insulin-dependent or adult-onset diabetes, this form of the disease is far more common than type 1 (insulin dependent) diabetes. Until recently, type 2 diabetes — henceforth simply diabetes was viewed as a disease of overfed, sedentary people of European ancestry. But it is now exploding around the world owing to the spread of Western habits. The reasons are those behind the diabetes epidemic worldwide. One set of factors is urbanization, a rise in living standards and the spread of calorie-rich, fatty, fast foods cheaply available in cities to rich and poor alike. Another is the increased sedentariness that has resulted from the replacement of manual labor by service jobs, and from the advent of video games, television and computers that keep people seated lethargically watching screens for hours every day [61-68].

In India, the rate of individuals having diabetes is increasing at a rapid pace over the past years and is now on the top ten cause of death among people. A very serious disease needs to be addressed immediately. Stress and sedentary lifestyle are one of the most important reasons of Diabetes. In this study different diabetic patients were selected, retrospective narrative technique was used, and the answers of the respondents were analyzed in order to determine the best method of stress and lifestyle management for the diabetes patients and for educating the healthy individuals. Also this study is focused on the identification of stressor of life and stress due to sedentary lifestyle in the onset of diabetes. With India having the highest number of diabetic patients in the world, the sugar disease is posing an enormous health problem in the country. Calling India the diabetes capital of the world, the International Journal of Diabetes in Developing Countries says that there is alarming rise in prevalence of diabetes, which has gone beyond epidemic form to a pandemic one. The International Diabetes Federation estimates that the number of diabetic patients in India more than doubled from 19 million in 1995 to 40.9 million in 2007. It is projected to increase to 69.9 million by 2025. Currently, up to 11 per cent of India's urban population and 3 per cent of rural population above the age of 15 has diabetes. Diabetes affects all people in the society, not just those who live with it. The World Health Organization estimates that mortality fr om diabetes and heart disease cost India about $210 billion every year and is expected to increase to $335 billion in the next ten years. These estimates are based on lost productivity, resulting primarily from premature death [69,70].

Studies have shown that the high incidence of diabetes in India is mainly because of lifestyle, lack of physical activity, obesity and consumption of diets rich in fat, sugar and calories, but very few studies are conducted on diabetes and stress and stress due to sedentary lifestyle. The most prevalent is the Type 2 diabetes, which constitutes 95 per cent of the diabetic population in the country. In this, patients are non-insulin dependent and they can control the glucose in their blood by eating measured diet, taking regular exercise and oral medication. Worldwide, millions of people have Type 2 diabetes without even knowing it and if not diagnosed and treated, it can develop serious complications. Type 1 diabetes (insulin dependent), however, is not preventable. In India, the Chennai-based Diabetes Research Centre says that over 50 per cent cases of diabetes in rural India and about 30 per cent in urban areas go undiagnosed. Globally, diabetes affects 246 million people, which is about 6 per cent of the total adult population. It is the fourth leading cause of death by disease and every 10 seconds a person dies from diabetes-related causes in the world. Each year, over three million deaths worldwide are tied directly to diabetes and even greater number die from cardiovascular disease. Modification in lifestyle and proper medication can delay and prevent diabetes in high-risk groups. Avoiding excessive weight gain could eliminate over 80 per cent of Type-2 diabetes. Sandeep and colleagues of the Madras Diabetes Research Foundation summarize the situation as follows: diabetes [in India] is no longer a disease of the affluent or a rich man's disease. It is becoming a problem even among the middle income and poorer sections of the society. Studies have shown that poor diabetic subjects are more prone to complications as they have less access to quality health care. This presents an alarming picture.‖ Therefore is somewhere shows that the present diabetes management strategy in diabetic patients and diabetes prevention strategy in non-diabetic individual has failed to a large extent, therefore it gives us a signal to explore the social dimension of this disease more specifically at the individual levels [71-80].

Research questions

Diabetes is related to the different types of stress on a individual before and after its onset. Different stressors and stressful lifestyle affect

the quality of life of the diabetic patients. How conflicts, stress and sedentary lifestyle are involved in increasing the sugar level in diabetic patients? What are the stressors involved and type of lifestyle at pre and post diabetic stage? How unresolved conflicts, stress and sedentary lifestyle are involved in making a healthy person diabetic? Wither particular shocking experiences making immediate contribution to the diabetes? What are the circumstances under which individuals become diabetic? Wither negative family circumstances in terms of behavior, conflicting relations, barrier in immediate communications and negative attitude on the part of the family member contribute so diabetes? There could be many unwanted circumstances in and around the family which can play detrimental role and which are social in nature. To find out the answers of some of these questions, in the short study it was decided to have a detailed in - depth information from the person suffering from the diabetes with the following objectives.

Objectives of the study

(1) To address the impacts of diabetes on individuals and families. (2) To know diabetes related to stress and lifestyle. (3) To find out the nature of stress, immediate shock experience, unbearable stress related to family, treatment of family members, work related stress and death incidents among diabetes patients. (4) To find out relation between the stress and diabetes for people living in metropolitan cities. (5) The focus of the study is identification of stressors of life. (6) To develop some research hypothesis with a specific focus to establish the relationship diabetes with social determinants.

Research tools and technique

Questions having retrospective experiences of the subject for in-depth interviews were developed after review of literature related to diabetes. Case study method was used. Through Retrospective Narrative Approach we tried to identify stressors since childhood, analyzed the diabetic lifestyle management plan, evaluated the working, family, academic, survival, diabetes management stress, explored the basic nature and behavior of the patients, investigated the role of doctors, family, friends, got an insight of the lifestyle and stress factors involved the pre and post Diabetes stage. The focus of in-depth interview was to capture the stressful experiences from the childhood aiming to illustrate the life perspective adopted by the person to address the stressors. And to find out different forms of stress/pressures on diabetic patient, as well as contributing factors, unresolved conflicts, impacts and responses at individual levels.

Respondent

Prior to data collection, appointment was sort with the subjects and their consent was taken for the in-depth interview. All subjects participating in interviews were requested to give oral consent after the explanation of the research project‘s objectives, procedures, confidentiality, as well as the benefits. The subjects could withdraw from the study any time or refuse to answer any questions. Their information was kept confidential and discussed only among the researchers, research assistants, and research consultants.

Data collection

Individual interviews were conducted to obtain the data. Data was collected through interview. In order to get some insight about the disease, it is important to understand the causative factors embedded into the social system in which people are living. It is quite possible that host of incident shocking in nature to a particular individuals may play significant role in causing the diabetes. Keeping this into background retrospective narrative technique was used for in-depth interview with 20 diabetic persons with qualification ranging from primary school to Ph.D. having status of economically middle class. The method used in this study is the Retrospective narrative techniques. The participants were the diabetic patients in the different setting home, office, etc. The participants were interviewed regarding the level of their understanding about the illness. The use of the interview allows the study to analyze the present situation, the past conditions, the experiences, incidents occurred in life of the patient, etc. Retrospective analysis was done on the following parameters –childhood and adulthood experiences, circumstances, lifestyle, behavior of doctor, family, friends, co-workers, stressful situations, other health problems and identification of the stressors .

The research area in this study is the Delhi NCR region. In Delhi NCR region, there are wide varieties of patients, with different types of stress and the data from the target patients was obtained through personal interview. The time spent in each interview varied from 1 to 2 hours. Interview was stopped when the obtained data became redundant. The data was obtained through formal and informal individual interview. The study covered the urban areas, which comprises of patients from both government and non-government sectors. The subjects were the working ladies, housewives, small scale shopkeeper, working professionals in MNC‘s, government employees, students, retirees, etc. and their number varies from 1 to 2 subjects in each category. Data was collected between September and October 2011. Qualitative data collected through retrospective narrative technique and in-depth interviews, with written answers if the patient grants permission. Field-notes were also taken as well. The purpose of the research as well as the techniques and procedure was explained to the patient and after that, patient was interviewed.

Data analysis

Data was analyzed through individual case studies which were prepared from the personal interview. Descriptive statistics was used to find out the demographic characteristics of the subjects under study. Qualitative data was analyzed by content analysis.

Results are presented and discussed in the following tables

(Table 1-6) A very simple analysis has provided revealing information regarding treatment seeking behavior, 20% felt for treatment over the time ranging from 1 year to 5 years. 55% diabetic patients started treatment after the diagnosis varying from the range of 1 month to 8 months. Only 25 % of diabetes person stated treatment in the time range from 7 days to 20 days. (Table 7 and 8) The study has revealed important information that most of the diabetic patient have unresolved conflicts, which constitute 80% of the total, sample size, the financial stress contributes up to 35%, emotional stress 65%, family disputes 20%. (Table 9 and 10) There are multiple factors which leads to diabetes at individual level are complex and were analyzed through study as one factor 20%, two factors 60%, three factor 20%.

Results and Discussion

The salient findings are: (1) The in-depth case studies revealed micro level determinants in the changing dynamics of the relationship in the family, which play a critical role in facilitating non-communicable disease. (2) The drastic changes in the ―expectation‘s profile‖ of the family members, unexpected changes in the behavior of the family members, unresolved conflicts among the family members, unexpected treatment on small matters like food, clothing, outing, property, etc. play a vital role in causing diabetes as reported in almost all the case

S. No.	Patient	Age (Years)	Gender	Family Members	Living Status	Present Status	Occupation	Qualification	Social Class
1	Mr. A	55	Male	3	Alone	Working	Shopkeeper	High School	Middle Class
2	Mrs. B	39	Female	3	With Family	Working	Teacher	B.Ed., M.A.	Middle Class
3	Mr. C	53	Male	4	With Family	Working	Clerk	M.A.	Middle Class
4	Mr. D	50	Male	2	Alone	Working	Professor	PhD	Middle Class
5	Mr. E	62	Male	2	With Family	Retired	BSF Inspector	High School	Middle Class
6	Mr. F	65	Male	3	With Family	Working	Engineer	B.E	Middle Class
7	Mr. G	20	Male	3	With Family	Working	C.A Student	C.A	Middle Class
8	Mr. H	51	Male	3	With Family	Working	Accountant	B.Com.	Middle Class
9	Mr. I	61	Male	2	With Family	Retired	D.I.G (I.B)	M.Sc.	Middle Class
10	Mrs. J	49	Female	4	With Family	Working	Housewife	B.A.	Middle Class
11	Mrs. K	60	Female	3	With Family	Retired	Housewife	High School	Middle Class
12	Mr. L	37	Male	2	With Family	Working	Engineer	M.Tech.	Middle Class
13	Mrs. M	55	Female	2	With Family	Working	Housewife	Sr. Secondary School	Middle Class
14	Mr. N	40	Male	3	With Family	Working	Shopkeeper	Diploma (M.E)	Lower-Middle Class
15	Mr. O	64	Male	4	With Family	Working	Contractor	Diploma (M.E)	Middle Class
16	Mrs. P	60	Female	4	With Family	Retired	Housewife	Primary School	Middle Class
17	Mrs. Q	40	Female	3	With Family	Working	Housewife	Middle School	Middle Class
18	Mr. R	70	Male	4	With Family	Working	Tailor	Middle School	Lower-Middle Class
19	Mr. S	45	Male	4	With Family	Working	Shopkeeper	High School	Middle Class
20	Mrs. T	71	Female	3	Alone	Working	Honorary	High School	Middle Class

Table 2: The background of the 20 cases of diabetes.
Out of the total subjects 65% were male and 35% were female. Out of the 20 diabetic patients, 80% are working and 20% are retired. The percentage of patients above 52 years is 55% and the percentage of patients below mean age is 45%.

S. No.	Gender	Frequency	Percentage
1	Male	13	65%
2	Female	7	35%

Table 3: Gender demography.
Out of the total sample, the 65% were male and 35% were female.

S. No.	Present Status	Frequency	Percentage
1	Retired	4	20%
2	Working	16	80%

Table 4: Occupation distribution.
Out of the 20 diabetic patients, 80% are working and 20% are retired.

S. No.	Age	Frequency	Percentage
1	Above Mean Age	11	55%
2	At Mean (52.35)	0	0%
3	Below Mean Age	9	45%

Table 5: Age distribution.
The percentage of patients above 52 is 55% and the percentage of patients below mean age is 45%.

studies.

As evident from the in-depth case studies there are some cases those have reported an extreme pressure of work as a major cause of their diabetes. It looks that the nature of work in which people is involved is an important factor. Particularly those who don't relish their work, contrary they are given unproportionate pressure to complete the work, are more vulnerable to the disease. There are some cases of diabetic persons both male and female who perceived family stress as a major causative factor for their disease. It looks that changing profile of relationship among family members and continued quarrel on family related issues, sudden stop of communication among family members, negativity towards each other perhaps play detrimental role in causing diabetes. Few diabetic patients included in the studies are living the life of paradox and unresolved conflicts. From the in-depth discussion in case of few diabetic patients inter generation gap appears to play significant role in the stress; particularly in case of those person having high expectation from the marriage and children and finding the reality contradicting after the marriage. It is quite possible that in Indian culture older generation possess a strong web of expectations from the children, particularly in terms of obedience, respect, good behavior, morality and —freedom within limitation and contrary to the reality with which they are living. Such situation of unresolved conflict may play a significant role in making them diabetic.

S. No.	Patient	Detection Age	Gap in Treatment	Treatment Seeking Behavior Desi Dawa/Homeopathic medicine/Others
1	Mr. A	39	5 years	Desi Dawa
2	Mrs. B	39	6 months	Diet
3	Mr. C	45	15 Days	Diet and Exercise
4	Mr. D	30	8 months	Others
5	Mr. E	62	1 month	Diet
6	Mr. F	41	2 months	Desi Dawa and Diet
7	Mr. G	13	10 days	Others
8	Mr. H	44	3 months	Meditation
9	Mr. I	45	1.5 months	Exercise
10	Mrs. J	43	5 months	Diet and Walk
11	Mrs. K	48	1 month	Diet and Exercise
12	Mr. L	33	7 days	None
13	Mrs.	31	3 months	Diet and Walk
14	Mr. N	40	Till Date	Diet and Exercise
15	Mr. O	58	20 days	None
16	Mrs. P	30	4 months	Diet and Exercise
17	Mrs. Q	35	20 days	Desi Dawa
18	Mr. R	64	1 year	Desi Dawa and Walk
19	Mr. S	25	3 years	Desi Dawa
20	Mrs. T	60	1 year	Desi Dawa and Walk

Table 6: Treatment seeking behavior.

S. No.	Gap in Treatment	Frequency	Percentage
1	Years	4	20%
2	Months	11	55%
3	Days	5	25%

Table 7: Gap in treatment distribution.

S. No.	Patient	Stress Factors			
		Financial	Emotional	Family Dispute	Unresolved Conflicts
1	Mr. A	X		X	X
2	Mrs. B	X			X
3	Mr. C				X
4	Mr. D			X	X
5	Mr. E		X		X
6	Mr. F		X		X
7	Mr. G		X		
8	Mr. H	X	X		
9	Mr. I	X			X
10	Mrs. J		X	X	
11	Mrs. K		X		X
12	Mr. L		X		
13	Mrs. M			X	X
14	Mr. N		X		X
15	Mr. O				X
16	Mrs. P		X		X
17	Mrs. Q		X		X
18	Mr. R	X	X		X
19	Mr. S	X	X		X
20	Mrs. T	X	X		X

Table 8: Stress factors contributing towards diabetes.

S. No.	Stress Factor	Frequency	Percentage
1	Financial	7	35%
2	Emotional	13	65%
3	Family Dispute	4	20%
4	Unresolved Conflicts	16	80%

Table 9: Stress factor prevalence distribution.

S. No.	Multiple Response	Frequency	Percentage
1	One Set of Factor	4	20%
2	Two Set of Factors	12	60%
3	Three Set of Factors	4	20%
4	Four Set of Factors	0	0%

Table 10: Multiple response contributing to diabetes.

A conflict between expectations (what person thinks) and reality (what is given in the family) contributes a lot to stress. A continuous stressful life since childhood leads to accumulation of pain and sorrow within an individual. Development of diabetes after marriage due to various reasons such as conflicting relation between spouse, conflicts due to children behavior, lack or no communication within family members proved and reported to be more devastating by most of the patients. Unexpected behavior and attitude of son, son in law, daughter and daughter in law leads to chronic stress. Loss of respect and dignity and more abundant reaction from family members leads to long lasting pain and sorrow. Feeling of being exploited, high stressful situation in marital affairs perhaps causes permanent stress among people [81-115].

Conclusion

The results of this study are based on qualitative data analysis are presented simultaneously as follows: magnitude, characteristics, scope of stress in diabetic patients., influencing factors in the context of stress in diabetes patients., effects and impact of unresolved conflicts and stressful lifestyle in diabetes patients., individual, institutional, and systematic responses towards stressors, conflicts and stressful lifestyle management strategies can be formulated., events leading to diabetes, individual reaction towards diabetes, family's behavior towards patient. The unresolved conflicts and stress within self of a person when get accumulated over the years may cause diabetes amongst the people. The causative factors could be family disputes, poor communication among spouse, the generation gap between the children, widening gap in the expectations of people in the role of parents and un-fulfillment of those expectations, value crisis at work place or any other reason which may be causing a situation of unresolved conflicts. When the threshold of pressure or stress crossed due some shocking incident or unbearable pressure, it leads to the onset of diabetes. From the findings it looks that people need to be prepared from the early stages of life about upcoming situations emerging in the family of contemporary period. The coping skills and communication education about the dynamic changes in the expectations and behavior profile in the family and society should be taken up as preventive and promotive approach with complete institutional design. The trend must be reversed in order to reduce Diabetes by motivating the non-diabetic group to manage conflicts and prevent stressful lifestyles which leads to future complications. Work with diabetic group to reduce chronic condition. Diabetic cases can be significantly reduced or eliminated by stress management and incorporating physical activity into people lives. Government organization/Corporate can better control their healthcare costs through programs of health and fitness with the concept of body, mind and soul.

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