Chapter III

REVIEW OF LITERATURE

Diabetes is a growing worldwide problem, characterized by considerable ethnic variation and being particularly common in modernizing populations. Modernization is accompanied by a variety of lifestyle changes that are believed to increase the risk of diabetes. Unfortunately, there is little accurate knowledge about this impact on the risk of diabetes in India. Over the past 50 years, throughout the world, anthropologists have contributed to the advancement of knowledge about this disease in such areas as genetics, metabolism, obesity, nutrition, modernization, research methods, cultural models, culturally competent care, patient/provider relations and community interventions. Since the 1975 publication by anthropologist Russell Judkins, over 195 journal articles, books and book chapters have been authored or coauthored by anthropologists. This bibliography provides access to these contributions while facilitating research that effectively builds upon the historical accumulation of anthropology research efforts. Diabetes research is multifold: evolutionary and genetic aspects; lifestyles factors, especially dietary factors; and interactions with the biomedical health-care system. Research has been spurred by the wild range of differences in the prevalence of diabities among populations, its devastating societal impact, and its rapidly increasing worldwide incidence and prevalence. Anthropologists have explored cultural
models of illness and experience of being a person with diabetes. Cultural etiological models often include dietary elements, especially sugar and processed important diets (Kuhnlein & Receveur 1996). Although many studies discuss the historical trends in type 2 diabetes as a result of modernization, Westernization, or even “cokacolization” and “McDonaldization” are creating obeseogenic and diabetogenic environments (Drewnowski & Popkin 1997; Eaton, Eaton & Konner 1997; Popkin 1998, 2001; Wickelgren 1998), only a few anthropological studies have explicitly documented these changes.

Diabetes mellitus is the name given to a heterogeneous group of disorders that have in common abnormal glucose tolerance. Literature searches were performed in PubMed and Google Scholar to identify anthropological studies on diabetes. Snowball and opportunistic sampling were used to expand the identified literature. Some anthropological studies were identified concerning the role of modernization on diabetes among Indigenous peoples. This will review the available information regarding diabetes in different populations from various anthropological perspectives.

Benyshek D. C. et al., (2001) shows Type 2 diabetes has reached epidemic proportions in many Native American communities in North America. The overwhelming majority of physicians, biomedical researchers, and medical ecologists continue to explain the astoundingly high prevalence rates of diabetes among Native
Americans and other high prevalence populations in terms of yet-to-be-identified genetic factors. Recent experimental and epidemiological research, however, have brought to light an etiological alternative to the genetic-predisposition model. This body of research suggests that type 2 diabetes may result initially from fetal malnutrition and, in subsequent generations, be propagated via perturbations in the intrauterine environment. Native American populations at greatest risk for diabetes today are the ones most likely to have endured severe nutritional stress in their recent histories, thus experiencing the conditions that are most conducive to the diabetic developmental sequence. If further substantiated, the implications of the fetal-origin model of diabetes for diabetes intervention programs are profound.

Bruce S (2001) conducted a study in Prevalence and determinants of diabetes mellitus among the Métis of western Canada and showed that Diabetes and its complications are major contributors to morbidity and mortality among Canada's Aboriginal populations. The epidemiology of diabetes among the Métis has not yet been investigated. The purpose of this study was to determine the prevalence of diabetes among the Métis, to identify diabetes risk factors, and to test hypotheses related to diabetes etiology. The source of the data for this research was the Aboriginal Peoples Survey (APS), a postcensal survey conducted by Statistics Canada in 1991. Study populations included the APS self-identified Métis and North American
Indians of western Canada. Univariate and multivariate analyses were done to estimate the prevalence of diabetes and to identify diabetes risk factors. Multiple logistic regressions were performed to test etiological hypotheses regarding the determinants of diabetes. The crude prevalence of diabetes among the Métis (6%) was slightly less than that reported by North American Indians (7%) and twice the general rate for Canada (3%). Diabetes was significantly associated with age, sex, obesity, and level of education. The APS dataset was useful in establishing diabetes as a significant problem among the Métis.

Greenhalgh T et al., (2006) Story-based scales: development and validation of questionnaires to measure subjective health status and cultural adherence in British Bangladesh with diabetes, Questionnaires that measure subjective health status are increasingly used in clinical trials. But scales based on the quantification of subjective traits and initially developed in western population samples may not be valid for use in minority ethnic groups, even if accurately translated. The measurement of cultural adaptation and assimilation in immigrant groups is important for health research but has well documented methodological challenges. The aim of this study was to develop valid and reliable questionnaires to measure subjective health status and cultural adherence in a minority ethnic group, using the story as the unit of inquiry. The design was a multi-phase study involving (a) narrative interview, (b) vignette construction,
(c) questionnaire development, and (d) questionnaire validation in relation to two scales (well-being and cultural adherence) in British is with diabetes. Using data from in-depth narrative interviews (i.e., a non-directive research technique in which the participant is invited to "tell me the story about your diabetes, starting with when you first noticed anything wrong", and the only prompts used are "tell me more about that" or "what happened next?"; Greenhalgh, Helman, & Chowdhury, 1998; Muller, 1999), we constructed culturally congruent vignettes to depict different subjective health states and behaviours. We refined these items in focus group interviews and validated the instruments on 98 Bangladeshi participants, randomly sampled from GP diabetes registers in inner London and interviewed by a Bangladeshi anthropologist. We used factor analysis to explore the underlying structure in the responses to questionnaire items, plus Cronbach alpha tests to measure internal consistency of scales. The questionnaires were acceptable and credible to Bangladeshi participants with diabetes. Ninety of 98 participants were able and willing to complete them with interviewer assistance. Following factor analysis, we produced two definitive instruments. The well-being scale was a single-factor model with four story-based items (measuring depression, anxiety, physical energy, and social activities), with a Cronbach's alpha of .92. The cultural adherence scale was a single-factor model with five items (measuring religious restrictions, ethnic practices, and social ties), with a Cronbach's alpha of .83. In
conclusion, this study has produced two important outputs: (a) easy-to-administer, story-based questionnaires that measure well-being and cultural adherence, which are specific to British Bangladeshis with diabetes; (b) a general method for developing story-based instruments to quantify the subjective experience of illness and adherence to cultural norms, which potentially have applications beyond the study population.

Cortes LM, et al., (2001) conducted Formative research in the Republic of the Marshall Islands to help develop a diabetes prevention intervention. Methods included in-depth interviews, semistructured interviews, and direct observation of household behaviors in urban and remote settings. Foods were classified into two main conceptual spheres: foods from the islands/Marshallese foods and imported/American foods. Diabetes (nanimij in tonal) is a highly salient illness and is believed to be caused by foods high in fat and sugar, consumption of imported/American foods and family background, and the atomic bomb testing. Physical activity and eating a traditional diet were viewed as important for preventing diabetes. The traditional belief system links a large body with health, and a thin body with illness; however, perceptions are changing with increased acculturation and education about the health risks of obesity. These findings were
used to develop a diabetes prevention home visit intervention currently being implemented and evaluated in Marshallese households.

Harris SB, et al., (2002) studies on the impact of diabetes on cardiovascular risk factors and outcomes in a native Canadian population and measured cardiovascular disease (CVD) risk factors and their relationship to glucose intolerance in a Native Canadian population with very high rates of Type 2 diabetes mellitus. Five hundred and twenty five study-eligible Ojibwa-Cree individuals age 18 and over in the community of Sandy Lake, Canada who had participated in a population-based survey were studied. Diabetes status, plasma concentrations of total cholesterol (TC), triglycerides (TG), high density lipoprotein cholesterol (HDL-C), calculated low density lipoprotein-cholesterol (LDL-C), waist/hip ratio (WHR), BMI, systolic and diastolic BP, and history of smoking were compared to a standard national population. Extremely high rates of obesity (BMI and WHR) were identified in the study population and were associated with increasing glucose intolerance for both males and females. Rates of smoking exceeded 70 and 80% in females and males, respectively. Interestingly, despite obesity individuals who had normal glucose tolerance had significantly lower rates of high risk TC, TG, LDL-C, and HDL-C levels compared to a national Canadian population survey. However, with worsening glucose intolerance, TC, TG, LDL-C and HDL-C dramatically deteriorated in comparison to nationally published
levels. These changes in cardiovascular risk factors, as a consequence of diabetes, appear to result in increased clinical outcomes. Admission to hospital for Ischemic Heart Disease (IHD) for Sandy Lake residents increased from a rate of 34.8/10,000 to 109.1/10,000 in 15 years. Although this and similar populations have historically reported low rates of CVD, the impact of diabetes on lipid risk factor is having devastating consequences on cardiovascular outcomes. This trend is expected to continue unless the high rates of diabetes can be modified.

Larme AC et al., (2001) studied that qualitative research design was used. Open-ended semistructured interviews lasting 1-2 h were conducted with 32 key informants (physicians, certified diabetes educators, researchers, and agency personnel) selected for their knowledge of diabetes care in South Texas, an area with a high diabetes prevalence and a large proportion of minority and low-income patients. It resulted that Health professionals stress that contextual factors are more important barriers to optimal diabetes care than physician knowledge and attitudes. Barriers exist at multiple levels and are interrelated in a complex manner. Examples include the following: time constraints and practice economics in the private practice setting; the need to maintain referral relationships and maldistribution of professionals in the practice community; low awareness and low socioeconomic status among patients; and lack of access for low-income patients, low
reimbursement, and insufficient focus on prevention in the U.S. health care system and conclude that Contextual barriers must be addressed in order for diabetes practice guidelines to be implemented in real-world clinical practice. Suggested changes include an increased focus on prevention, improvements in health care delivery for chronic diseases, and increased attention to the special needs of minority and low-income populations.

Martin JF et al., (2000) conducted Nutritional origins of insulin resistance: a rat model for diabetes-prone human populations. While there has been little success identifying the genetic bases of noninsulin-dependent (type-2) diabetes, current epidemiological data and animal models implicate fetal undernutrition in the development of type-2 diabetes. We examined the effects of fetal undernutrition on insulin responses and glucose tolerance in adulthood in genetically normal rats. Control rats were adequately nourished in utero and consumed nutritionally adequate (N) diets throughout life. Experimental rats (F1 generation) were undernourished in utero and consumed either N or high-energy, high-fat (HF) diets postweaning. The offspring of the experimental rats (F2 generation) received the respective diets of their parent. Body weights of experimental F1 rats at d 4 were 40% less than that of control pups, and they remained significantly smaller than controls throughout adulthood. The experimental F1 rats consuming N diets postweaning had a
reduced insulin response (-30%) at 30-min postglucose challenge in adulthood (P > 0.05). However, their offspring (F2 generation) displayed a markedly elevated insulin response [+80% at 30 min (P < 0.05) and +230% at 120 min (P < 0.001) postglucose challenge]. The insulin response of the F2 generation rats fed the high-energy, HF diet was even more pronounced [+130% at 30 min (P < 0.003) and +250% at 120 min (P < 0.001) postglucose challenge]. Thus, undernourishment in utero produces striking insulin resistance in genetically normal, well-nourished second-generation rats.

Schoenberg NE and Drungle SC. (2001) worked on Barriers to non-insulin dependent diabetes mellitus (NIDDM) self-care practices among older women. Noninsulin dependent diabetes mellitus (NIDDM) constitutes a significant threat to the health and well-being of older women. Appropriate self-care, the cornerstone of glycemic control, is reported to be modest. We aimed to investigate barriers to recommended self-care for NIDDM: A total of 51 African American and White women age 65 and older completed the Diabetes Self-Care Barriers Assessment Scale for Older Adults, ethnomedical protocol, and other instruments during in-depth interviews. African American women were more likely than their White counterparts to indicate financial, pain, and visual barriers to self-care. Both African American and White women expressed a reluctance to check blood sugar and to exercise; however, most indicated that they regularly
followed medication recommendations and visited their physician. This study extends our knowledge of the existence of self-care barriers by providing a qualitative, in-depth perspective detailing how these barriers often prevent optimal self-care behaviors and, conceivably, successful glycemic control.

Skelly AH et al., (2002) studied Sociospatial on knowledge networks: appraising community as place and introduces a new theory of geographical analysis, sociospatial knowledge networks, for examining and understanding the spatial aspects of health knowledge (i.e., exactly where health beliefs and knowledge coincide with other support in the community). We present an overview of the theory of sociospatial knowledge networks and an example of how it is being used to guide an ongoing ethnographic study of health beliefs, knowledge, and knowledge networks in a rural community of African Americans, Latinos, and European Americans at high risk for, but not diagnosed with, type 2 diabetes mellitus. We believe that the geographical approach to understanding health beliefs and knowledge and how people acquire health information presented here is one that could serve other communities and community health practitioners working to improve chronic disease outcomes in diverse local environments.

Although the predominant paradigm of epidemiological investigation continues to focus narrowly on the individual and on individual risk factors, there is a growing body of work that calls for a rethinking of the current epidemiological models. In this paper we illustrate the need for a more comprehensive epidemiological approach towards understanding the risks for diabetes, by exploring the lived experiences of diabetes and lay meanings of risk among Aborigines living in Melbourne, Australia. Ethnographic fieldwork was conducted within the Melbourne Aboriginal community in the state of Victoria over a 22-month period (1994-1996). Melbourne Aborigines see non-insulin dependent diabetes mellitus (NIDDM) as the result of living a life out of balance, a life of lost or severed connections with land and kin and a life with little control over past, present or future. The lay model regarding diabetes that is derived from the narratives of Melbourne Aborigines consists of three levels of connectedness important in determining an individual’s susceptibility not only to diabetes but to all disease--(1) family, (2) community and (3) society. This structure of interactive systems at successive levels from the individual to the population fits within the framework of an ecological paradigm. The strength of ethnography as applied to epidemiology is that it has the capacity to discover previously unknown components of a system at several different levels, and to build models to explain how these components interact. This framework, developed using an ethno-epidemiological approach, has application in other indigenous
populations who have been dispossessed of their land, their pasts and their future. There is great potential to apply this approach to the major public health challenges presented by rapid global socio-cultural and environmental change that are impacting negatively on population health.

Williams RC, et al., (2000) Individual estimates of European genetic admixture associated with lower body-mass index, plasma glucose, and prevalence of type 2 diabetes in Pima Indians. Individual genetic admixture estimates (IA) from European Americans (EAs) were computed in 7,996 members of the Gila River Indian Community (Arizona). Parental populations for the analysis were European Americans and full-heritage Pima Indians. A logistic regression was performed on 7,796 persons, to assess association of IA with type 2 diabetes. The odds ratio, comparing diabetes risk in full-heritage EAs with full-heritage Pima Indians, was 0.329 (95% confidence interval [CI] 0.225-0.482). Proportional-hazards analysis was performed on 5,482 persons who were nondiabetic at their first examination and 1,215 subjects who developed diabetes during the study. The hazard risk ratio for IA was 0.455 (95% CI 0.301-0.688). Nondiabetic persons had significantly more European IA. In nondiabetic Pimans, multivariate linear regressions of quantitative predictors of type 2 diabetes mellitus, including fasting plasma glucose, 2-h post-load plasma glucose, and body-mass index, showed significant
inverse relations with IA when controlled for sex and age. These results illustrate the ongoing evolution of populations by the mechanism of gene flow and its effect on disease risk in the groups with admixture. When the two parental populations differ in disease prevalence, higher or lower risk is associated with admixture, depending on the origin of the admixed alleles and the relative magnitude of the disease prevalence in the parental populations. These data also illustrate the strong genetic components in type 2 Diabetes and are consistent with one susceptibility locus common to obesity and diabetes.

Young TK et al., (2002) studies on Type 2 diabetes mellitus in children: prenatal and early infancy risk factors among native Canadians. A case-control study was conducted; 46 patients younger than 18 years were recruited from the only clinical center for the treatment of diabetes serving the province of Manitoba, and 92 age- and sex-matched controls were recruited from a pediatric ambulatory clinic serving a large Native population in Winnipeg, Manitoba. Information on exposure to prenatal and early infancy risk factors was obtained through questionnaires administered by a Native nurse-interviewer. Multiple logistic regression modeling identified preexisting diabetes (odds ratio [OR], 14.4; 95% confidence interval [CI], 2.86-72.5), gestational diabetes (OR, 4.40; 95% CI, 1.38-14.1), and breastfeeding longer than 12 months (OR, 0.24; 95% CI, 0.13-0.99) as significant
independent predictors of diabetic status. Other factors, such as low (<2500 g) and high (>4000 g) birth weight and maternal obesity, were also associated with diabetes in our population, but the elevated risks were not statistically significant. Breastfeeding reduces the risk of type 2 diabetes among Native Canadian children and should be promoted as a potential intervention to control the disease

Young TK and Mustard CA. (2001) studies on topic undiagnosed diabetes: does it matter? The 1998 Canadian clinical practice guidelines for the management of diabetes lowered the cut off point for diagnosing diabetes mellitus from fasting plasma glucose (FPG) level of 7.8 to 7.0 mmol/L. We studied the prevalence and clinical outcomes of undiagnosed and diagnosed diabetes within specific ranges of FPG among a cohort of subjects recruited in 1990. In 1990 a representative sample of 2792 adult residents of Manitoba participated in the Manitoba Heart Health Survey, which included measurement of FPG and a question about each participant's past history of diabetes. Individuals who are classified as having undiagnosed diabetes under the new criteria were not considered as such in 1990. Through data linkage with the provincial health care utilization database, the use of health care by these individuals was tracked and compared with that of individuals whose diabetes had been diagnosed and with that of normoglycemic individuals over an 8-year period, subsequent to the survey. The prevalence of undiagnosed diabetes in the adult population
of Manitoba was 2.2%. Undiagnosed cases accounted for about one-third of all diabetes cases. Individuals with undiagnosed diabetes had an unfavourable lipid profile and higher blood pressure and obesity indices than normoglycemic individuals. Individuals who satisfied the new criteria for diabetes but remained undiagnosed had an additional 1.35 physician visits per year (95% confidence interval [95% CI] 0.93-1.96) and were more likely to be admitted to hospital at least once (odds ratio 1.23, 95% CI 0.40-3.79), compared with normoglycemic individuals. Undiagnosed cases represent the unseen but clinically important burden of diabetes, with significant concurrent metabolic derangements and a long-term impact on health care use.

Mohan V et al., (2007) studied on Epidemiology of type 2 diabetes: Indian scenario and assessed that India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed the “diabetes capital of the world”. According to the Diabetes Atlas 2006 published by the International Diabetes Federation, the number of people with diabetes in India currently around 40.9 million is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken. The so called “Asian Indian Phenotype” refers to certain unique clinical and biochemical abnormalities in Indians which include increased insulin resistance, greater abdominal adiposity i.e., higher waist circumference despite lower body mass index, lower adiponectin and higher high sensitive C-
reactive protein levels. This phenotype makes Asian Indians more prone to diabetes and premature coronary artery disease. At least a part of this is due to genetic factors. However, the primary driver of the epidemic of diabetes is the rapid epidemiological transition associated with changes in dietary patterns and decreased physical activity, as evident from the higher prevalence of diabetes in the urban population. Even though the prevalence of microvascular complications of diabetes like retinopathy and nephropathy are comparatively lower in Indians, the prevalence of premature coronary artery disease is much higher in Indians compared to other ethnic groups. The most disturbing trend is the shift in age of onset of diabetes to a younger age in the recent years. This could have long lasting adverse effects on nation’s health and economy. Early identification of at-risk individuals using simple screening tools like the Indian Diabetes Risk Score (IDRS) and appropriate lifestyle intervention would greatly help in preventing or postponing the onset of diabetes and thus reduce the burden on the community and the nation as a whole.

G.R. Sridhar (2007) studied on Psychiatric co-morbidity & diabetes and stated that Diabetes mellitus as well as psychiatric disorders are common. These may occur with one another and/or one may worsen the other. Psychological stress may follow screening for diabetes, as well as when diabetes is first identified. Acting through the hypothalamo-pituitary-adrenal axis, stress may initiate or worsen
hyperglycaemia. Depression may be a risk factor for the development of diabetes; it also commonly occurs in subjects with diabetes. Identification and management are both important in preventing the disability. A variety of antipsychotic medications, especially the newer agents can induce weight gain, dyslipidaemia, insulin resistance and diabetes. Therefore in choosing a drug, one must consider the risk factors and screen for metabolic syndrome. Subjects with type 1 diabetes can have cognitive dysfunction, eating disorders and developmental disturbances. Physicians caring people with diabetes must be trained to recognize and manage co-morbid psychiatric conditions that commonly occur. A biopsychosocial disease model for both conditions can leverage the social strengths and medical knowledge in developing countries.

A. Ramachandran et al., (2002) studies the Burden of type 2 diabetes and its complications –The Indian scenario with India faces a grave health care burden due to the high prevalence of type 2 Diabetes and its sequelae. Epidemiological data from different parts of the country show a rising prevalence of diabetes in the urban areas. A national study in 2000 AD showed that the prevalence in urban adults aged ³ 20 years was 12.1%. Onset of diabetes occurs at a younger age in Indians, giving ample time for development of the chronic vascular complications. Moreover, impaired glucose tolerance (IGT), which is a forerunner of diabetes, is also increasing, especially among the younger
population. There is a wide urban–rural difference in the prevalence of diabetes indicating a major role of urbanization in the causation of the disease. Indians are also susceptible to the major complications related to diabetes like coronary artery disease, neuropathy, nephropathy and retinopathy. Prevalence of the complications is higher in low socio-economic groups due to lack of good control of glycaemia and hypertension and also due to behavioural factors. The direct and indirect costs involved in the treatment of the chronic disease especially when associated with the vascular complications are enormous. There is an urgent need to implement preventive measures to reduce the high morbidity and mortality and also to reduce the cost burden to the patients and to the society.

Morten Charles et al., (2011) studies on Prevalence of Neuropathy and Peripheral Arterial Disease and the Impact of Treatment among People With Screen-Detected Type 2 Diabetes and found found no statistically significant effect of IT on the prevalence of DPN and PAD compared with RC. The prevalence of an ankle brachial index #0.9 was 9.1% (95% CI 6.0–12.2) in the RC arm and 7.3% (5.0–9.6) in the IT arm. In participants tested for vibration detection threshold and light touch sensation, the prevalence of a least one abnormal test was 34.8% (26.7–43.0) in the RC arm and 30.1% (24.1–36.1) in the IT arm and concluded that in a population with screen-detected type 2 diabetes, we did not find that screening followed by IT led to a
statistically significant difference in the prevalence of DPN and PAD 6 years after diagnosis. However, treatment levels were high in both groups.

Sarah Wild et al., (2004) studied and explained on Global Prevalence of Diabetes and the goal of this study was to estimate the prevalence of diabetes and the number of people of all ages with diabetes for years 2000 and 2030. Data on diabetes prevalence by age and sex from a limited number of countries were extrapolated to all 191 World Health Organization member states and applied to United Nations’ population estimates for 2000 and 2030. Urban and rural populations of developing countries were considered separately. The prevalence of diabetes among all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected to double between 2000 and 2030. The most important demographic change to diabetes prevalence across the world appears to be the increase in the proportion of people _65 years of age. And concluded that these findings indicate that the “diabetes epidemic” will continue even if levels of obesity remain constant. Given the increasing prevalence of obesity, it is likely that these figures provide an underestimate of future diabetes prevalence.
Ambady Ramachandran and Chamukuttan Snehalatha (2008) studied on Current scenario of diabetes in India and opined that India, a country experiencing rapid socioeconomic progress and urbanization, carries a considerable share of the global diabetes burden. Studies in different parts of India have demonstrated an escalating prevalence of diabetes not only in urban populations, but also in rural populations as a result of the urbanization of lifestyle parameters. The prevalence of prediabetes is also high. Recent studies have shown a rapid conversion of impaired glucose tolerance to diabetes in the southern states of India, where the prevalence of diabetes among adults has reached approximately 20% in urban populations and approximately 10% in rural populations. Because of the considerable disparity in the availability and affordability of diabetes care, as well as low awareness of the disease, the glycemic outcome in treated patients is far from ideal. Lower age at onset and a lack of good glycemic control are likely to increase the occurrence of vascular complications. The economic burden of treating diabetes and its complications are considerable. It is appropriate that the Indian Government has initiated a national program for the management and prevention of diabetes and related metabolic disorders. Lifestyle modification is an effective tool for the primary prevention of diabetes in Asian Indians. The primary prevention of diabetes is urgently needed in India to curb the rising burden of diabetes.
Riserus U and Willett WC (2009) studied on Dietary fats and prevention of type 2 diabetes and concluded that type 2 Diabetes is determined primarily by lifestyle and genes, dietary composition may affect both its development and complications. Dietary fat is of particular interest because fatty acids influence glucose metabolism by altering cell membrane function, enzyme activity, insulin signaling, and gene expression. This paper focuses on the prevention of type 2 diabetes and summarizes the epidemiologic literature on associations between types of dietary fat and diabetes risk. It also summarizes controlled feeding studies on the effects of dietary fats on metabolic mediators, such as insulin resistance. Taken together, the evidence suggests that replacing saturated fats and trans fatty acids with unsaturated (polyunsaturated and/or monounsaturated) fats has beneficial effects on insulin sensitivity and is likely to reduce risk of type 2 diabetes. Among polyunsaturated fats, linoleic acid from the n-6 series improves insulin sensitivity. On the other hand, long-chain n-3 fatty acids do not appear to improve insulin sensitivity or glucose metabolism. In dietary practice, foods rich in vegetable oils, including non-hydrogenated margarines, nuts, and seeds, should replace foods rich in saturated fats from meats and fat-rich dairy products. Consumption of partially hydrogenated fats should be minimized. Additional controlled, long-term studies are needed to improve our knowledge on the optimal proportion of different types of fats to prevent diabetes.
Mallikarjun V. Jali et al., (2009) studied on Familial early onset of type-2 diabetes mellitus and its complications and stated globally, the prevalence of chronic, non-communicable diseases is increasing at an alarming rate. Furthermore, approximately 197 million people worldwide have impaired glucose tolerance. Consequently, diabetes is rapidly emerging as a global health problem that threatens to assume a pandemic level by 2030. In Indian population, genetic predisposition to trigger diabetes at an early age as compared to western counterpart has been focused very much. Aim: To gain further insight into the positive correlation between the diabetes and family history was the objective of this study. Materials and Methods used by them were Patients attending the Diabetes Centre, K.L.E.S Dr. Prabhakar. Kore Hospital and Medical Research Centre; J. N. Medical College; KLE University Belgaum, Karnataka- India, were recruited, diagnosed and analyzed as per WHO criteria. Results: The prevalence of diabetes was higher among patients with diabetic mother (25.6%) compared to patients with diabetic father (21.2%) and there was early onset of type -2 diabetes among patients having both parents with diabetic when compared to other patients. Based on the observation, it would be appropriate to emphasize again that a strong family history for diabetes, would signal at an early age, the onset of diabetes perhaps with its complications.