ROLE OF HEALTH COMMUNICATION AND AWARENESS IN PREVENTION AND CONTROL OF DIABETES AND ITS COMPLICATIONS WITH REFERENCE TO EVANGELINE BOOTH HOSPITAL AND COMMUNITY HEALTH DEVELOPMENT PROGRAM OF BOOTH HOSPITAL AHMEDNAGER

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BY

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DECLARATION BY THE CANDIDATE

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It is certified that work entitled **"ROLE OF HEALTH COMMUNICATION AND AWARENESS IN PREVENTION AND CONTROL OF DIABETES AND ITS COMPLICATIONS WITH REFERENCE TO EVANGELINE BOOTH HOSPITAL AND COMMUNITY HEALTH DEVELOPMENT PROGRAM OF BOOTH HOSPITAL AHMEDNAGAR"** is an original research work done by **Smt. Shalini John Uzagare** under my supervision for the degree of Doctor of Philosophy in Social work to be awarded by Tilak Maharashtra Vidyapeeth, Pune. To best of my knowledge this thesis

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Introduction

The first chapter of the study report deals with the theoretical contents of the selected study topic. In this chapter researcher has focused on the concepts of health communication, historical background of health communication, historical incidents in public health education or communication in India, importance of health communication, problem of diabetes in India, health communication campaign in India, functions of health communication and profile of study area.

This chapter is divided in two parts mainly Part A and Part B

- Part A – Introduction
- Part B – Profile of the study area

Part – A - Introduction

1A.1) Introduction –

In health administration it is well recognized that, communication is an important factor for its effective management. In the organizational hierarchy, the communication system by its very nature is a two way flow process. Under the overall health service administration in the country, the Indian government formulates national policies on health programmes and provides technical guidance and substantial financial assistance to state government.

Much has been said and written about health communication systems in India. However, communication system which is a sub system in the health care delivery system remained what it has been in a woefully primitive stage. It has elicited considerable criticism for its inability to meet the demands of the planners at various levels and of the administrators responsible for the management of health programmes and projects. In recent years, there have been considerable discussions

and thinking as to how to vitalize the same to meet the ever increasing demands for information in health services. While it is a healthy sign, the systematic changes that have to be brought about in health communication system have to be considered carefully in their totality such that the system is able to meet its objectives.

Health communication now recognized as an important component in providing quality medical care. The quality of medical care can certainly be enriched by inclusion of an element of health communication, though its method of implementation may be subject of controversy. Health communication can be integrated with medical care or it can be organized as a separate activity. The advantages of integrating health communication with medical care are many some of the advantages of such an integration are-

i) Increase in effectiveness of health communication and health services.

ii) Receptiveness of the individual receiving the health services to new information at that moment and ready acceptance of information or education from the person delivering services.

iii) Providing of opportunities for continuous communication and evaluation. The frequent contacts between the services given and the patient provide sufficient opportunities for repetition and reinforcement of communication components.

Psychologically a ready captive audience provides a multitude of opportunities for patient health worker interaction. The fact that, several opportunities are available in hospitals has been recognized by several authorities. In spite of such an appreciation, little substantial work has been done in the direction of integrating health communication with medical care. This necessitates careful examination of the scope for integration of health communication and medical care.

It is well established that, strategic health communication is an effective approach to the design and implementation of health related programmes having an impact on behavior and social change. Public health campaigns using mass media have proven to be effective in changing knowledge, attitudes and behavior for various health related issues, such as heart disease, diabetes etc.

Communication is an important element in human relationship. Human-beings can be motivated or alienated by the communication process. The techniques medium and devices of communication have been developed to suit varying objectives, situations, interests, needs and desires. Communication is an activating force in any organization. The communication system that has been developed for the organization of health services related to diabetes constitutes the subject matter of the present study.

1A.2) Concepts and definitions of communication

i) Communication is a word of Latin origin ‘communis’ which means common, it means sharing of information or intelligence, listening speaking, reading, writing, facial expressions, body movements, actions, colors, gestures, ideas, facts, opinions, information and individuals to communicate thoughts, to other people and to themselves.

Since the ‘stone age’ man started to communicate through gestures, symbols, various voices with each other for survival. There was no a linguistic language like today, but men developed his own communication language of gestures, symbols etc. this was the very foundation of communication.

In all societies human beings are engaged in the production and exchange of information and symbolic content from the earliest form of gestures and language use

to the most recent developments in computer technology, the production, storage and circulation of information and communication have been central aspects of social life.

ii) Communication is the exchange of information between individual, friends, families, nations, regions and at the international level.

iii) Communication is two way process of shaping or exchanging ideas, information and feelings. It refers, "to the countless way that humans have to keep in touch with each another." [Kumar K.J (1982) Business communication. A modern approach, Jaico Publication, House Mumbai.]

iv) Communication has the power to inform the people and also influence the thought. Many studies have been carried out to understand the impact of communication and it was found that communication do affect the audience. Communication not only inform us but also gives us power to think on different aspects. In the communication process sender try to emphasis on keeping in mind certain object and receiver try to evaluate the message, judge it and make attitude about the person things and subjects. It depends lot on a sender, how he presents and what and how he communicates.

v) Communication is the exchange of information between, friends and families. It is the interchange or bring in of thoughts, opinions or information by writing, speech or signs. Communication can be perceived as two ways process in which there is an exchange of progression of thoughts feelings or ideas towards a mutually accepted goal or direction.

Thus,communication is a process by which we send and assign meaning and an attempt to form understandings. This process needs a vast range of skills in interpersonal processing, observing, listening, questioning, analyzing, speaking, evaluating. It is through communication that collaboration and cooperation occur.

1A.2.1) Definitions of Communication –

Communication, according to various dictionaries means any or all of the following; "the act of transmitting", a giving or exchanging of information, signals of messages by talk, gestures, writing etc. 'close sympathetic relationship', and 'a system sending and receiving messages.'

1) According to Hartman (1966) 'Communication is the control of behavior through descriptive and reinforcing stimuli'.

2) Howand describes Communication as "the force by which an individual the behavior of other individuals".

3) Loomis and Beegle define, Communication as "the process by which information, decisions and directions pass through the social system and the ways in which knowledge, opinions and attitudes as formed or modified".

4) Brooker – Communication is anything that conveys meaning that carries a message from one person to another.

5) Warren waver- Communication is the procedure by which one mind can affect another.

6) Gorge A Miller – Communication means that information is passed from one place to another.

On the basis of these definitions we can explain the concept of communication as-

Communication involves exchange of information and it is a process which is necessary to bring desired changes in human behavior, attitude and informed individual and community participation to achieve predetermined goal. Education and communication are interlaced. Strategies of communication can augment learning. Ultimate aim of all Communication is to bring about a change in the desired direction

of the person who communicates. It can be at the 'Cognitive' level in terms of changing existing pattern of attitudes and behavior; and it can be 'Psychomotor' in terms of acquiring skills, which is termed as learning objectives.

1A.3) Concept of Health communication

Communication is a process by which we convey meaning and assign. It is an effort to generate shared understandings. This process requires a skills in interpersonal processing, reading, listening, observing, writing, speaking, questioning, analyzing, reasoning and assessing. It is through communication that collaboration and cooperation occurs. These skills are much needed in health education.

Therefore, Health Communication is an important aspect of Communication. The term, 'health education' is also synonymised as "Health Communication". This suggests downward and outward communication of knowledge. "Health education" is the basis of a "preventive health care system".

Health Communication may be defined as, "the technique and art of influencing, informing, motivating individuals, institutional and public audiences about important health issues. The scope of health Communication includes disease prevention, health promotion, and health care policy, the profession of health care as well as improvement of the quality of health and life of individuals among the community. Health Communication is multifaceted and multidisciplinary approach to reach different audiences and share health related information with the goal of influencing, engaging and supporting individuals, and communities. Health professionals, special groups policy makers and public to opine, introduce, adopt or sustain a behavior, practice or policy that will ultimately improve health deliverables.

Over the last 30 years,Health Communication has developed as a important and vibrant area of study concerned with the strong roles performed by human and mediated communication in health promotion and health care outcome.

Health Communication investigation has emerged as an exciting applied behavioral science in research area. It is an applied area of research not only because it examines the pragmatic influences on human communication on the provision of health but also the work in this area is often used to enhance the quality of health care delivery and health promotion.

Health communication investigation is usually problem centric, aiming at identification, examination and solve health care issues within the health communication area. It is conceptualized as the social process in providing health care delivery and the promoting public health. The focus of the communication process is based on continuous roles. Communicates to create, collect and share 'health information'. It is the most important source of health behaviors, treatments and decisions.

Health Communication encompasses the usage of strategies of communication to communicate and influence individuals and community, decisions that improve health. It links the domain of Communication and health and is increasingly recognized as necessary elements of efforts to improve personal and public health. Health Communication can contribute to all aspects of disease prevention and health promotion relevant in a number of contexts including,

It is related to the domain of communication and health and is increasingly recognized as an essential component of efforts to improve public and personal health. Health communication can contribute to all aspects of disease prevention and health promotion, including, related in many contexts such as

a) Health professional – Patient relations.
b) Individual exposure to search for and use health information.
c) Individuals and adherence to clinical recommendations and regimes.[a course of medical treatment, diet or exercise, that a patient should follow to improve health.]
d) The construction of public health messages and campaigns.
e) The dissemination of individual and population health risk information that is risk Communication.
f) Images of health in the mass media and the culture at large.
g) The education of people about how to gain access to public health and health care systems.

For individuals, effective health communication can help to raise awareness of the health risks and skills needed to reduce risk, seek support from other people in similar situations, and influence or strengthen attitudes. Health communication can also increase the demand for appropriate health services.It can provide information available to help make complex choices, such as choosing health plans, providing care and treatment for the community, health communications can be used to influence public agendas, and bring about positive changes in policies and programs in society. Improves economic and physical environment, public health and healthcare service delivery and promotes social norms for health and quality of life.The health communication has contributed in many areas to health promotion and disease prevention. In clinical situation, the practice has contributed for improvement of group and interpersonal interaction. This is through the training of patients in health professional and effective communication skills, among health communication providers and patient and Health Communications team. For this, collaborative

relations are enhanced when all parties are able to communicate well.Dissemination of health messages through public educational campaigns is another area of dissemination of health communication to promote health behaviors, create awareness, change attitudes and motivate individuals to adopt recommended behaviors.Campaigns also use mass communication for this purpose, such as announcements, messages from printed materials such as radio, television, and print media. Although other campaigns have integrated mass media with community-based programs, social marketing techniques can sometimes be used for this purpose.

1A.4) Health Communication Historical Perception-

It is principally contemporary phenomenon the methodological study of communication and health in the social sciences. In the ancient Greece, isolated references to the relationship the vital aspects of human were experienced. A proper and systematic study of health communication, especially as an interactional process has traditionally been sporadic but has intensified in the past thirty five years. During the British rule in India, the system of medicine was known as western medicine or modern medicine. The major objective was to train apprentices to help the medical staff of army. In 1835 there was instituted comprehensive system of training in India. The evolution of public health communication in colonial India has been chronical earlier. In 1835 The 'Calcutta Medical College' was established with a view to fulfill the increasing requirement of health professionals. A two your course was extended to three years in 1846. It was commenced for the training of hospital assistants. This change enabled them to provide the medical services to the army and civil cadres in British India. After establishment of Calcutta, Madras and Bombay Universities in 1857, the medical education was taken over by these universities.

In 1895, The Indian medical service was formed. Subsequently in 1919, the transfer of public health, sanitation and important statistic to the provinces were took place. In 1912 a department for imparting health education was established by public health physicians in medical college, which was entrusted with the teaching about hygiene. Again in 1922 a school of Tropical Medicine was started in Calcutta. This school indicates a shift of medical to a public health school. The medical council of India which was established in 1933 perform the functions for the maintenance of uniform standards for health and medical education. The establishment of the All India Institute of Hygiene and Public Health, Calcutta, has developed a manpower by imparting training facilities and conduct research with a view to find out the solutions of various problems of health and various diseases in the community. Prompting an application of knowledge to a large community and training students are some of the major objectives of this institute. In the following table the incidents in Public Health Education/Communication have been indicated.

Historical Incidents in Public Health Education/Communication in India.

Sr. No.	Years	Incidents
01	1835	Establishment of Calcutta Medical College
02	1846	Two years course for training of Hospital Assistants
03	1896	Establishment of the Indian medical services
04	1912	Establishment of Education and Health Department
05	1919	Transfer of public health, sanitation and vital statistics to the provinces
06	1922	Establishment of the school of Tropical Medicine
07	1932	Establishment of the All India Institute of Hygiene and Public Health
08	1934	Establishment of the Medical council of India
09	1946	The Health Survey and development (Bhore) committee

10	1953	First World Medical Education Conference
11	1955	Medical Education Conference in India
12	1956	Establishment of Public Health Association
13	1959	Mudiar committee for strengthen public health education and health communication in India
14	1974	Establishment of Indian Association of Preventive and social medicine
15	1987	Planning of health manpower, production and management Review committee.
16	1996	Establishment of Expert committee on Public Health System
17	2006	Public Health Foundation of India
18	2008	Establishment of commencement of PG Diploma in Public Health management
19	2009	Public Health Education/Communication and Research Consortium
20	2010	Establishment of Indian Public Health Education Institution Network

Before the emergence of all these institutions, committees, modern medicine and methods of health communication was informal in nature. The folk medicine practioners were communicated the ingredients, techniques and lore surroundings the utilization of natural materials for the management of disease and injury. Intergenerational communication was critical in the passing on of the accumulated knowledge of folk medicine to subsequent generations.

1A.5) Health Communication Indian Scenario-

Communication is not merely a matter of transmitting information about how better health facilities be provided to the people and how things can be done better, how good health can be achieved, but has a broader function of helping

people to reconstruct their framework in interpreting specific events and phenomena and relating to the larger area beyond their world.

India is the second most populated country of the world and has changing socio political demographic and morbidity pattern that has been drawing global attention in recent years. Despite several growth oriented policies adopted by the government, the widening economic, regional and gender dispirited are posing challenges for the health sector. About 75% of health infrastructure, medical man power and other health resources are concentrated in urban areas where 27% of the population live contagious infectious and water born diseases such as diarrhea, amoebiosis, typhoid, infections, hepatitis, worm infections, measles, malaria, tuberculosis, respiratory infections, pneumonia and reproductive tract infection, dominate the morbidity pattern especially in rural areas.*

However non communicable diseases such as cancer, blindness, mental illness, hypertension, diabetes, HIV/ Aids, accidents and injuries are also on the rise on the health status of Indians is still cause for grave concern, especially that of the rural population.

To improve the prevailing situation the problem of health is to be addressed both at macro (national and state) and micro (district and regional levels). This is to be done in an holistic way with a genuine efforts to bring the poorest of the population to the centre of the policies. A paradigm shifts from the current 'Biomedical model' to a 'socio cultural model' which should bring the gaps to improve quality of rural life is the current need.

In the Indian constitution, communication has been recognized as a

*(**V. S. N. Madhavan, 2016, study paper presented in the seminar conducted by Public Health Foundation Mumbai. Seminar was held on the topic health awareness among the diabetes patients.)**

fundamental right. Different Health System Development Programs [HSDP] have improved different communication infrastructure, but have not helped people make better use of the services. Health communication has existed in the Indian health program for the last 60 years, and the process of interaction is essential for Gram Swasth Mitra, Gram Swasthya Rakshak and Grameen Arogya Samiti to help identify their own problems.

1A.6) Importance of Health communication

Communicating in public health systems is very important because the target groups are wide in size and diverse in nature. So much care must be taken and health communication that communicates health needs to be disseminated. External communication in the public health system is where the health system interacts with a large number of people and mainly the sick. Internal contact occurs between different levels of healthcare.

External communication in the public health system is where the health system communicates with large and mainly sick people. Internal communication takes place between different levels of health workers. Since all of these people have different backgrounds, they need to have different systems of communication.

NGOs are a major stakeholder in the public health system. The communication tool works better for people in rural areas based on health services and the participation of community members. NGOs use a variety of tools such as folk songs, posters, community radio programs and short films that are more acceptable to the health of rural people.

Lack of awareness and lack of proper communication means that doctors and hospital medicines are not used at the grassroots level and this leads to less use of services. An effective mass communication program can solve this problem. People in

the corporate industry also support that government policy has not reached a good number of people due to lack of communication. Problems in communication prevented government officials from bridging the gap.

The program of teaching health communication in India is not practical in many places. Both educators and financing agencies agree that communication is a necessity only when a problem arises, so that the role of health prevention helps to identify risk factors rather than just health problems.

1A.7) Problem of Diabetes in India-

Diabetes is an 'iceberg'. Although there has been an increase in the incidence and incidence of type 2 diabetes globally, it has been dramatic, especially in the societies in economic transition, in emerging countries and in developing countries like India.

Currently, the number of diabetics worldwide is about 1 million. This number is expected to double by 2025. In China and India it is expected to increase by 5.4%. Diabetes will be the leading cause of death in diabetes. World Health Orgnization projects that Diabetes is the 7thleading cause of death in 2030 worldwide due to poor lifestyle.

Previously a disease of the middle aged and elderly. Type 2 diabetes has recently escalated in all age groups and is now being seen in younger age groups, including adolescent specially in high-risk population. This means that in developing countries the majority of diabetic patients acquire the disease during the most productive period of their lives. This will have major implications. With respect to health care needs and casts as they will live up to an older age to develop chronic complications of diabetes.

The rising prevalence of diabetes in developing countries is closely associated with industrialization and socio economic development. The major determinants for projected increase in the number of diabetic in these countries are population growth age structure and urbanization with the rise in the urban/ rural population ratio in all regions and growing prevalence of obesity among urban dwellers, diabetes will increasingly concentrate in the urban areas.

It is estimated that 20% of the current global diabetic population resides in the south East Asia region. The number of diabetic persons in the countries of the region is likely to triple by the year 2025 increasing from the present estimated of about 30 million to 80 million. With these projected increase in the diabetic population in future, south east Asia countries will become the most challenged region in the world and the region will bear the maximum global burden of the disease in the initial decades of the 21st century.

Unfavorable modification of life style and dietary habits that are associated with urbanization are believed to be the most important factors for the development of diabetes. The prevalence of diabetes is approximately twice in urban areas than in rural population. The percentage of diabetic cases residing in urban areas is projected to increase from 54 percent in 1995 to 73 percent by the year 2025.

A bulk of evidence from studies on migrants indicates that the ethnic presumably genetic, vulnerability of Asians manifests into diabetes when subjected to unfavorable lifestyle population based surveys completed recently in Bangladesh, India and Indonesia have shown considerable increase in the prevalence rate of the disease in both urban and rural dwellers. When compared to results obtained earlier.

Diabetic patients, if undiagnosed or inadequately treated, develop multiple chronic complication leading to irreversible disability and death. Coronary heart

disease and stroke are more common in diabetes than in the general population. Miscrovascular complications like diabetic renal disease and diabetic retinopathy and neuropathy are serious health problems resulting in deterioration of the quality of the life and premature death. In fact, diabetes is listed among the five most important determinants of the cardiovascular disease epidemic in Asia Metabolic disorders in pregnant diabetic women as well as those caused by gestational diabetic(diabetes diagnosed for the first time during pregnancy) pose a high health risk to both mother and baby.

Unfortunately there is still inadequate awareness about the real dimensions of the problem among the general Indian public. There is also lack of awareness about the existing interventions for preventing diabetes and the management of complications. Inadequacies of primary health care systems, which are not designed to cope with additional challenges posed by the chronic non- communicable disease; resulting in poor detection of cases, suboptimal treatment and insufficient follow up leading to unnecessary disabilities and serve complications, often resulting in early death.

In addition to non-insulin dependent diabetes, which is rather silent, chronic, often identified killer mostly among the adult population the insulin dependent form of the disease [IDDM] makes an even more dramatic appearance in affected children. They develop symptoms of ketoacidosis and often die, since the majority do not have access to adequate medical care and since insulin is not available or too expensive.

The population in India has an increased susceptibility to diabetes mellitus. This propensity was demonstrated by multiple surveys of migrant. Indians residing Fiji, Singapore, South Africa, U.K. and U.S.A. the rates of diabetes in subcontinent have consistently shown to exceed those of the local population.

The results of prevalence studies of diabetes mellitus in India were systematically reviewed with emphasis on those utilizing the standard WHO criteria for diabetes diagnosis. The prevalence of disease in adults was found to be 2.4 percent in rural and 4.0-11.6 % in urban dwellers. High frequencies of impaired glucose tolerance shown by those studies, ranging from 3.9-9.1 %, indicated the potential for further rise in prevalence of diabetes mellitus in the coming decade.

Effective communication between patient and provider, where medical professionals address psychologically and behaviorally demanding chronic diseases. Many diabetic patients find themselves unable to follow recommended medical regime and life styles [a healthy diet, regular exercise etc] which make them more prone to diabetic complications, leading to poor quality of life. Satisfaction with the patient provider communication is one of the key elements to adherence to medical regions and diabetic outcomes.

A professional diabetes care address multidisciplinary team approach (physician, dietician, psychologist etc) patients satisfaction with communication refers to overall satisfaction with the multidisciplinary team of diabetes care. That may have a significant impact.

1A.8) Health Communication campaign in India

Public communication campaign encompasses strategies for producing effects on the knowledge, attitude and behavior of large population across a variety of domains, including political, pro-social, environmental health outcomes. Public communication campaign can be broadly defined as purpose attempt to inform, persuade or motivate behavior changes in a relatively well defined and large audiences, generally for non commercial benefits to the individuals and or society at large, typically within a given time period by means of organized communication

activities involving mass and online/ interactive media and often complemented by interpersonal support. The following sections provide selected annotated citations (books, book chapters, articles and websites) in the general order of the stages involved in developing and implementing communication campaigns general overviews (texts, review and guides) journals, theory social marketing design (messages, media and audiences) New media formative evaluation, implementation (planning and managing) campaign issues (community Media advocacy), Health (health issues) HIV/AIDS, nutrition (including obesity), Drugs (Drugs and alcohol), smoking, human rights, environment and evaluation.

Definition- "Public communication campaigns are campaigns that use the media messaging and an organized set of communication activities to generate specific outcomes in a large number of individuals and in a specified period of time.

Indian Government need to have people friendly health policies, better health insurance schemes & optimum hospitalization facilities ready to cater to such a cast senior citizen diabetic population.

"Minimum medicines and Maximum life style" is our rule in diabetes. So the patient on medicines should reduce the dose of medicines, while continuing with the advised dietary care.

Once controlled some diabetic start consuming high carbohydrate diet due to phobia of low sugar or hypoglycemia. It leads to hyperglycemia/ high blood glucose or treatment failure. Communication has an essential role in any action that aims to improve health. It is difficult to imagine how a message could be we could not communicate.Communication is a creative and dynamic continuous process, rather than a discrete or isolated exchange of information. (Wikipedia)

The communication process is a multidimensional transaction influenced by a variety of factors. In health promotion work the successful exchange of information between the practitioner and target audience is an area that has received mixed attention.

1A.9) Functions of health communication

Following are the needs catered by Health communication.

1) Information
2) Education
3) Motivation
4) Persuasion
5) Counseling
6) Raising morals
7) Health development
8) Organization.

1) Information –

The primary function of health communication is to provide scientific knowledge or information to people about health problems and how to maintain and promote health.

Information should be readily available to the public. Accurate display of health information can remove the social and psychological barriers that people have to health by eliminating ignorance, prejudice and misconceptions so that they are able to address their health needs; And it affects people to such an extent that constant needs are met and those needs become needs.

It is an important social responsibility of the government, the media and health providers to provide people with information related to truth and balanced health and

wellness and to make them aware of their interests based on decisions.Most people make important decisions about their health only after a certain period of time and after a lot of educational contact. Recognition of people's cultural values and their criteria affect the acceptance of health education.

2) Education-

Education can help to increase knowledge. It is often assumed that knowledge determines attitude and attitude determine behavior.

Health education can bring about changes in lifestyle and disease risk factors. But health education alone is insufficient to achieve optimal health. The target population must have access to proven preventive measures or procedures.

3) Motivation –

It is a force that motivates a person to act from within. One of the goals of health communication is to motivate individuals to translate health information into their own healthy lifestyle personal behaviors and lifestyles.

Motivation involves the steps of interest, evaluation and decision making. Health communication helps a person in the final stages of decision making from a state of awareness and interest and adoption of a new idea or program. Motivation does not last long; It can be reduced by missing the time.

The best channel of success includes programs directed at individuals with chronic patients who are already strongly motivated.

1A.10) Diabetes - The Sweet Killer

All that not taste sweet does not necessarily be sugar free! Sugar is what gives the body energy to perform its myriad function; it is this very agent add in spoonful in our daily beverage, sweets and many more. One common myth surrounding this sugar fad is more sugar intake higher risk of diabetes. Yes diabetes is

a condition which does occur because of excessive sugar in blood, but then having a "Sweet tooth" is only a risk factor and not the sole cause of this condition. Also not loving sweets, does not necessarily promise protection against this disorder.

Diabetes or diabetes mellitus many understand is a condition characterized by increased blood glucose levels i.e. in simple terms is a metabolic disorder. This glucose is easily obtained from the foods we consume and it is the insulin which aids the body utilizes this sugar. It is the insulin from the pancreas which acts like a key to open the cells to enable them take in glucose. This is rising to become one of the leading causes of death and disability world over.

Once regarded as single disease entity, diabetes is now seen as heterogeneous group of diseases, characterized by a state of chronic hyperglycemia, resulting from a diversity of etiologies, environmental and genetic, acting jointly. The underlying cause of diabetes is defective production or action of insulin, a hormone that control glucose, fats and amino acid metabolism characteristically diabetes is long term disease with clinical manifestations and progression. Chronic hyperglycemia from whatever cause leads to a number of complications cardiovascular, renal, neurological ocular and other such as intercurrent infections.

1A.10.1) Clinical classification of diabetes mellitus.

1) Diabetes Mellitus [DM]
    a) Insulin dependent diabetes mellitus IDDM, Type 1.
    b) Non-Insulin dependent diabetes mellitus NIDDM, Type 2
    c) Malnutrition related diabetes mellitus MRDM.
    d) Other types (secondary to pancreatic, hormonal, drug induced, genetic and other abnormalities)
2) Impaired glucose tolerance IGT

3) Gestational diabetes mellitus – GDM.

IDDM is the most severe form of the disease. Its onset is typically abrupt and is usually seen in individual less than 30 years of age. It is lethal unless promptly diagnosed and treated. This form of diabetes is immune mediated in over 90% of cases and idiopathic in less than 10% cases and idiopathic in less than 10% cases. The rate of destruction of pancreatic B cell is quite variable. Rapid in some individuals and slow in others. Type 1 diabetes is usually associated with ketosis in its untreated state. It occurs mostly in children, the incidence is highest among 10-14 years old group, but occasionally occurs in adults. It is catabolic disorder in which circulating insulin is virtually absent plasma the pancreatic B cells fail to respond to all insulinogenic stimuli. Exogenous insulin is therefore required to reverse the catabolic state, prevent ketosis, reduce the hyperglycemia and reduce blood glucose.

NIDDM is much more common than IDDM. It is often discovered by chance. It is typically gradual in onset and occurs mainly in the middle aged and elderly, frequently mild, slow to ketosis and is compatible with long survival if given adequate treatment. Its clinical picture is usually complicated by the presence of other disease process.

Impaired glucose tolerance (IGT) describes a state intermediate – "at risk" group – between diabetes mellitus and normality. It can only be defined by the oral glucose tolerance test.

Insulin resistance syndrome (syndrome X)

In obese patients with type 2 diabetes, the association of hyperglycemia, hyperinsulinaemia, dyslioidaemia and hypertension, which leads to coronary artery disease and stroke, may result from a genetic defect producing insulin resistance with the latter being exaggerated by obesity. It has been proposed that insulin resistance

predisposes to hyperglycemia which results hyperinsulaemia and this excessive insulin level then contributes to high levels of triglycerides and increased sodium retention by renal tubules, thus inducing hyper tension, high levels of insulin can stimulate endothelial proliferation to initiate the atherosclerosis.

Epidemiological determinants

1) Agent –
    a) Pancreatic disorder
    b) Defects in the formation of insulin
    c) Destruction of beta cells.
    d) Decreased insulin sensitivity
    e) Genetic defects
    f) Auto immunity
2) Host factors –
    a) Age
    b) Sex
    c) Genetic factors
    d) Genetic markers
    e) Immune mechanisms
    f) Obesity
    g) Maternal diabetes
3) Environmental risk factors –
    a) Sedentary life style
    b) Diet
    c) Dietary fiber
    d) Malnutrition

e) Alcohol

f) Chemical agents

g) Viral infections

h) Stress

i) Other factors.

Screening for diabetes –

1) Urine examination
2) Blood sugar testing / Oral Glucose Tolerance Test (OGTT)
3) Target population

Prevention and care –

1) Primary prevention –

a) Population strategy

b) High risk strategy

2) Secondary prevention
3) Tertiary prevention

Complication of diabetes –

1) Acute complication of diabetes is –

a) Hypoglycemia

b) Diabetic ketoacidosis

2) Long term complication of diabetes

a) Diabetic retinopathy.

b) The diabetic nephropathy

c) Infections in diabetes

d) Diabetic foot infection

Complication of diabetes in childhood (CMC, Vellore)

a) Growth retardation

b) Nephropathy

c) Hypertension

d) Dyslipidemia

e) Retinopathy

f) Foot care

g) Psychological aspects

h) Associated autoimmune condition

i) Cardiovascular disease

j) Kidney disease

k) Amputation

l) Depression

m) Sexual dysfunction

Complication in pregnancy

- Life expectancy and mortality
- Financial costs
- Diabetes also has a significant impact on health and social service.

Chapter – I

Part - B

Profile of Study Area - Ahmednagar District.

1.B.1) Introduction –

Ahmednagar district having a rich historical heritage dating back to the 15th Century. Ahmednagar was the capital of Nizam Shahs. It was founded in 1494 Nizam Shah. It was his seat of government for the kingdom.

Location of Ahmednagar District – The Ahmednagar district lying between 18°.2′ and 19°.9′ North latitude and 73°.9′ and 75°,5′ east longitude. This district is situated partly in the upper Godavari basin and partly in Bhima basin. The Ahmednagar district is bounded on the North by Nashik district, on the North East by Aurangabad district, on the East by Beed and Usmanabad districts, on the south by Solapur district and in the south west by Thane district.

With a total geographical area of 17048 sq.kms the Ahmednagar district ranks second in the state when area is considered while in terms of population it stands 5th in the Maharashtra.

1.B.2) Administrative setup –

Until recently, the district was in Pune Revenue Division, however now it is included in Nasik Revenue Division. For administrative purposes the district is divided into four sub-divisions, which cover 13 tahasils in the district. The following table indicates the subdivision and Tahasils of the Ahmednagar district.

Sr. No.	Sub-Division	Tahsils
01	Ahmednagar	Ahmednagar
02	Parner	Parner, Karjat, Shrigonda, Jamkhed
03	Rahuri	Rahuri, Shevgao, Newasa, Pathardi
04	Sangamner	Sangamner, Kopargaon, Akola, Shrirampur

Source: Socio-economic Review and district statistical Abstract: Ahmednagar (2011).

The main Sahyadri range touches Akola Tahasil in the western areas of Ahmednagar district. The Godawari and bhima are the major rivers of the district. The Pravara is the tributary of the Godavari. The Mula, Andhala and the Mahalungi are the important tributaries of the Prawara. Ahmednagar district gets rain mainly from the southwest monsoon, but the distribution of rainfall is mostly uneven. There is a than that of the state up to the year 2011. The prosperous sugarcane growing tahasils that is Shrirampur and Kopargaon have a very high density of population according to the 2011 census; while the scarcity areas like Karjat and Parner tahsils have low density of population.

This district is one of the famine affected district. In order to reduce the severity of the drought and to stabilize the income of the people particularly of the weaker section of society, drought prone area programme has been launched in the district with the assistance of government of India. Ahmednagar district is on the forefront in implementation of this prestigious scheme of the state.

1B.3) Industrial Profile of the District –

There are many distilleries in Ahmednagar district; these distilleries are in the public sector, co-operative sector and also in private sector. Industrial alcohol and country liquor is produced in these

distilleries. An area of 275 hectares near village Nagapur, on Nagar-Manmad road, 8kms from Ahmednagar is developed by MIDC. Rapid industrial development in MIDC has helped in reducing unemployment problem by promoting the standard of people around the villages of MIDC and Ahmednagar city. At present industrial estates at Ahmednagar, Shrirampur, and Kopargaon are functioning Co-operative movement has made rapid and noteworthy progress in the district. Co-operative sugar factories are pre-dominant in the agricultural economy of the district.

1B.4) Profile of the Evangeline Booth Hospital, Ahmednagar-

The Evangeline Booth Hospital was established in 1904 by Dr. Ruth Hume. This hospital is providing useful and successful medical and health care service from a long period. It became a general hospital in 1932 under the guidance of Dr. D. O. Sendel. It was closed down on 31 Dec. 1934 due to retrenchments. The suggestion was made by the Salvation Army to re-open it, even before it was closed down and negotiations were begum in 1934-35 by the former Territorial Commander, Lt. Commissioner, A. H. Barnelt. The Hospital was re-opened in 1936 under the present Territorial leader, when General Evangeline Booth visited India in that year. She had a personal interest in reopening of the hospital. But there was a unavoidable delay in opening of the hospital due to non-availability of staff. But in 1939 the medical officers were appointed to the hospital. The officers had arrived in Ahmednagar and the Hospital was started again on June 26th 1939 under the guidance of W. G. Hulland. Today, this hospital owes much to the established reputation under the doctors and nursing staff of the American Marathi mission.

In 1939, the Evangeline Booth Hospital started with 50 beds and expanded up to 170 beds in 1976. Today, this hospital have a 134 beds capacity, in 1943, the

hospital has also started Evangeline Booth Hospital's nurses training school to overcome the problem of lack of adequate trained nurses. The nurse's training school has got approval in 1944 by the Bombay Nursing Council (Now Maharashtra Nursing Council). Building for nurse's school and hostel was completed in 1949. This achievement was made possible due to the interest and support of Lady Colville. In 1953 there was a establishment of TB and leprosy wing in the hospital by the health Minister. Rjkumari Amrit Kaur. The goal of the hospital then was to check expansion of the disease in the area and then to limit it. The hospital has extended its services through the opening of dispensaries in Pathardi, Ghodnadi, Hanga, and Parner. In the late 1950's a outpatient waiting room and research laboratory and men's ward were established.

In 1958 the Nursery ward was established for the healthy children under the age of 2 years. Majority of them were orphans. The children were admitted in this ward until proper arrangements for them were made. To meet the growing demand, a X-Ray department was established in 1960. The grant of Rs.200000 for accosting the on-going tuberculosis work, purchase of X-Ray unit, had provided by the Norwegian Scheme of 1965. With the help of this grant the hospital has constructed doctors and staff quarters. In 1967, Oxfam donated equipment's for the physiotherapy unit of the hospital. During this time extension work was going on at the dispensary at Rahuri Village.

In 1978 the outpatient department was again expanded due to growing need of space for the treatment of outpatients. In collaboration of christoffelBlinden Mission, an ophthalmic project was started in 1979. Through this project various services were provided at district level. In the same year the private ward and Intensive Coronary care unit was started by Municipal Commissioner. In 1988 there were some

improvements made in the TB section ward. It can utilize as an auditorium which is the one of the most important requirement set by the Indian Nursing Council.

i. Community Health Development Project Conducted for HIV.AIDS –

The Community Health Development projects related to HIV/AIDS was begun in 1998, with the objective to serve the medical treatment to the patients and to prevent and control HIV/AIDS. Through this project efforts have been made to change behavioral patterns among the people. Through this project the services like, HIV/AIDS Testing, counselling Health education, medical monitoring, home visits, training and workshop etc. were provided to the society. Further, this project was expanded in six divisions in Salvation Army and non-Salvation Army. Seminars and YCD programmes for Salvation Army officers, cadets, local church, pastors and also social workers were conducted. Through this project hospital has maintained good network with local NGOs and government organizations with a view to control and prevent HIV/AIDS in Ahmednagar district, and also surrounding districts. Due to this project many HIV/AIDS patients are started to live better quality of life. It has increased the capacity of the society to cope with this disease. Hospital has achieved the goal of individuals and community's behavior change positively and increased capacity to cope and be a stronger catalyst agent.

ii. Community Health Development Project Conducted for Diabetic and Hypertension testing project –

From 2014, hospital has started to work for diabetes and hypertension patients. Today, many diabetes patients have been increased because of changed lifestyle, heavy work load, fast or junk food consumption etc. According to the World Health Organization (WHO) guideline, out of every 10 persons two persons are detected as diabetes patients in the world. Through this project hospital is providing

health care services, counselling etc. to the diabetes patients. The hospital has also conducted various research projects pertaining to diabetes mellitus and Hypertension patients.

Apart from this, the hospital has also conducting diabetes and hypertension testing camps in six divisions. Through these camps the hospital is conducting health educational programmes and awareness programmes on diabetes, food consumption, diet etc. These programmes are helpful for the diabetes patients to modify their lifestyle. The awareness programmes help the patients to prevent from complications such as hyperglycemia, hypoglycemia and hypertension and visual problem. To the services provided by the hospital the society has responded positively because there are no any health services providers for diabetes and hypertension in the nearby area. The people of six divisions of the Salvation Army and the local people who do not have proper access of health facilities are the beneficiaries. The major aim of the project is, creating awareness prevention and de-stigmatization, along with medical care and support.

Many diabetes patients come together for the diabetic support group meeting once in every month Test facility is provided through these meeting. Hospital has maintained records pertaining to sugar level, hypertension and weight etc. Apart from this hospital have also arranging medical camps. Through these medical camps testing and awareness programmes are arranged and after testing hospital is conducting posttest counselling and invite the patients for diabetic support group meeting conducted by the hospital and in six divisions also. Through this project hospital is providing the services like health care service, home visit, medical monitoring etc.

Chapter – 2

Review of Literature

2.1) Introduction –

Review of literature is broad, Comprehensive, in depth systematic and critical review of scholarly articles, research papers published in various national and international journals, and magazines. Review of literature is also refers to an extensive, and systematic examination of books relevant to the topic selected for the study purpose. Every research study is built on past knowledge. It is an outcome of constant human efforts. No research study can progress in isolation of other studies done in similar field's review of literature which addresses the important need to inform the researcher as to the main findings, trends areas of the debate and controversial areas of neglected and suggestions for additional research. Review of literature helps in organizing thoughts, giving shape to ideas and achieving new insights. It is not enough to test one's own ideas researcher is thus given a chance to access the ideas in the context of others and replicate external or modify them in terms of establishing thinking.

Literature review is an important element in the research study.an exhaustive literature search was conducted from various information resources such as-journals, books, report, conference proceedings, and thesis etc., related to the selected study topic. From these resources various information on different facets was collected, assessed and analysed for the study purpose, and related literature review was grouped into following main headings –

i) Health communication.

ii) Health communication about diabetes, awareness and complications.

iii) Risk factors associated with pre-diabetes Body mass Index.

iv) Influence of addictness on the diabetes.

v) Influence of Education and occupation on the diabetes.

Apart from this some other published literature pertaining to hypertension, Family history/background, physical activity, waist circumference, stress, Lipid Profile, serum Uric Acid, Serum creatinine, Red blood cell count and White blood cell count etc. which are effecting on diabetes patient.

In the subsequent paragraphs an attempt is made to review the literature pertaining to role of health communication and awareness in prevention and control of diabetes.

2.2) Review of Literature Pertaining to Health Communication.

1) R. Chauhan, (2016), has assessed the status of primary health centers and community health centers in Shimla District of Himachal Pradesh. In the opinion of author these centers are supposed to have health man power, infrastructure and service delivery as per the Indian Public Health Standers (IPHS). In this context author has conducted cross sectional study in 7 community health centers and 12 primary health centers in Shimla. Through the study author has observed that the selected health centers were not running as per the standards of public health. Author has observed that, there were outpatient department services and referral services provided in all the centers. There were no specialist doctor, trained nurse staffs, laboratory technician etc. appointed in the selected PHC's and CHC's. Therefore author has concluded that the guidelines of IPHS are not being followed at PHCs and CHCs. Shortage of health manpower is the major obstacle in the service providing.

2) National Coordination Committee Report, (2006), has pointed out the long standing weakness of the public health system and health communication in India. This report also focused on the government expenditure on health expenditure on

healthcare from personal resources, deterioration of the public health system linked with expansion of the private medical sector, medical tourism and outsourcing etc. This report also focused on the communicable disease control programmes, indigenous systems of medicine and homeopathy. Report has concluded that, there is a need of movement of powerful people on health issues which enable people to more actively claim their health rights and push for changes in the health sector. This report also recommend to do work for reorganization of the health system and health communication system as a part of a larger movement for reorganization of society.

3) K. V. Ramani and D. Mavlankar, (2005), have described the condition of health system and health communication system in India. Authors have also discussed on the critical areas of management concerns and suggested some reform measures for health sector. Through the study authors discussed on the maternal death and disability diabetes, infant and child mortality, HIV/AIDS non-communicable diseases, urban health, environmental health, health care insurance and supportive healthcare services. Authors have concluded by identifying the roles and responsibilities of various stakeholders for building health communication system proper health system in India that are responsive to the community requirements, especially, for the Indian poor. On the basis of study authors have recommended that, government should improve availability, equity, quality of health care services and health communication system.

4) S. Lakshminaraynan, (2006), has reviewed the existing literature related to government machinery for public health needs, health communication in India. Author has also discussed on the limitations of Indian health system and health communication system and its future scope. In the opinion of author, health communication system strengthening human resource development and capacity

building and regulation in public health. These are the important areas of health sector. Through the study author has focused on the various challenges confronting public health communication system, and the role of government within the health sector and health communication, public health issues and strategies to overcome these issues. Author has suggested that government published health profiles should be used to help society priorize their health problems and to inform local decision making. Through the study author has also discussed on the health promotion examples such as, stopping the spread of STD and HIV/AIDS, healping young people to recognize the adverse effects of chewing tobacco, smoking drinking alcohol etc. author has stated that these health promotional methods, encourage people to make healthy choices.

5) S. L. Tirukoti and H. S. Raut, (2018), have studied the health communication system in the Andhra Pradesh State. In the opinion of author, building of effective health communication and promotion system that are responsive to community needs particularly for the poor is necessary. Through the study authors have attempted to analyze the performance of health communication and health promotion system at district level in Andhra Pradesh, by focusing on technical efficiency. Through the study authors have observed that, the efficiency of the public health delivery system health communication and promotion system remains very low. Authors have stated that, the higher the performance of health communication and promotional systems, the higher its chances are in overcoming the danger of various diseases, which is one of the critical sustainable development goals. Authors have further suggested that, state should take steps to reduce the wastage of resources for better performance of health communication and promotion system.

6) B. C. Purohit, (2008), has made an attempt to evaluate the performance of health care and health communication system of West Bengal at the sub state level, using secondary data for 19 districts. The major objective of the study was to find out which is the most efficient district in health communication and promotion process. Through the study author has found that, health outcome is positively related to health communication promotion and health care facilities. The study calculated expected and the actual life expectancy at birth in all regions. Author has also found that existence of inter district disparities in the state due to insufficient availability of major health inputs and due to lack of proper health communication and promotional activities in the districts of West Bengal.

7) B. V. Babu and R. K. Hazard, (2001), have assessed the outreach of health communication and health care system and its delivery by the network of primary health centers in Khurda District of Orissa as viewed by the community. Quantitative and qualitative data collection methods were followed for the study purpose. Through the study authors have observed that, regularity of visits by the health workers were very low. Authors have also found that majority of the respondents felt that though the services of health workers and health promotion programmes implemented by them were relevant to their needs, they were not satisfied with the methods of health communication system and health services provided by them. No gender bias was noticed by the authors, with respect to these issues. The perception of scheduled caste and scheduled tribe households and focus group shows that, these disadvantaged section desire greater attention towards their health needs. The overall perception of the people revealed that there was a need to strengthen and reorient the health communication and promotion system and health care system. Authors have opined that, there is a need to make more responsive to the felt needs of the community.

8) Arjun Murti and N. Shrivastav, (2013), have studied the health communication and promotion activates implemented by hospitals. Through the study authors have analyzed the suitability of service quality, effectiveness of health communication and promotion system to improve the patient's satisfaction and in the process positively impacting behavioral intentions in the health care setting. Authors have also reviewed the literature on measuring service quality, patient satisfaction and behavioral intentions and the mediating role of customer satisfaction on influencing behavioral intentions. Through the study authors have focused on the scenario of health care and health communication systems in India, and growing consciousness about health service quality in India and application and adaptation of service quality dimensions across different sectors. Authors have stated that it is required to go deeper into the subject matter therapy, identifying the dimensions and relationship that exists among health communication and promotion, quality of service patient's satisfaction and behavioral intentions with health care services in the developing countries.

9) Saswata Ghosh and M. Saha, (2013), have examined the impact of behavior change communication intervention of knowledge, reporting of illnesses and treatment seeking of symptoms of general and gynecological morbidity. Through the study authors have found that, the net effect of exposure to the intervention had a positive and significant impact on most of the indicators reflecting an increased level of awareness about signs and symptoms of general and reproductive complications. Authors have also observed that the net effect of exposure was mixed for the indicators of reporting of illnesses, pattern and sources of seeking treatment. Authors have opined that, the health communication campaign in West Bengal was designed to increase awareness, knowledge and behaviors associated with positive health outcomes.

10) M. C. Kapilashrami, (2000), has reviewed the current status of health and health communication system in India. Author has focused on the emerging health problems and challenges in effective health communication system. Through this study author has highlighted the strategic issues for meeting the future challenges of health communication system of India. Author has also focused on the health and health system of the country. Author has pointed out that now the government is mobilizing additional financial resources for health and health communication system and today, the private and corporate sectors are also being encouraged through many incentives and concessions so as to involve. Author has suggested that, sincere efforts should be made by the government and the professional organizations like IAPSM, IAP etc. for the improvement of the health communication system with a view to improve the quality of life of the people.

11) KPMG, (2015), report reflects on the current scenario of the Indian health care system and health communication system. This report assesses gaps and explores recommendations to enable the National Health Policy to achieve the aspiration of health for all. This report is to not only capture the current state of Indian health care and health communication system. This report focused on the challenges faced by the health communication system. In this report it is stated that on the demand side the growth in the non-communicable diseases, that pose as main threat to health and economy and security of the country are likely to alter country's treatment needs. through the study it was observed that on the supply side, the rising delivery costs in private sector due to modern technologies and medicine with higher cost of infrastructure and higher cost of surgery and operations which have resulted in widening the gap in accessibility and affordability to poor people of the society and it is one of the major hurdles in the effective health communication.

12) S. A. Miraj, (2015), has discussed on some aspects of public and private health care and health communication systems in developing countries. Author has discussed on these aspects with reference to the existing problems and issues related to the health communication system. Through the study author has pointed out that, inequities in the provision of health care and health communication system are one of the greatest challenges that we currently face as global citizens and these demands are only amplified in the developing countries. Author has recommended some measures to improve the conditions of health care system and health communication system. Author has also pointed out that information regarding health care is not properly reaching to the people, and all the medical facilities are plagued with severe shortages of those who can heal. In the opinion of author, there is a need of sweeping reforms in insurance financial programmes at the national, regional, and health facility levels, with government sponsored health programmes and proper implementation of health communication system.

13) S. Ali aand M. Miraj, (2010), have focused on the scenario of vital reflector of development about public health in India. Authors have discussed on the various challenges in the process of health communication programmes. Authors have also explained the background of public health and public health communication role of public health communication, in public health education and practice. Author have stated that, public health service and health communications, which reduces a population's exposure to disease through such measures as sanitation and vector control are essential part of country's development infrastructure. In the opinion of authors, the effective functioning of any health communication system requires an effective public health service. Author have concluded that now a days majority of developing country's governments are aware about the importance of public health

communication, public health programmes etc. and therefore public health professionals in reducing the incidence of diseases, effects of aging although public health generally receives significantly low government funding compared to medicine

14) O. A. Oyama, (2017), has highlighted the significance of health communication and emphasizes the role of the media in health communication, which must to play in promoting health messages in Nigeria. Through the study author has examined the secondary data and evaluates research works and some academic research papers pertaining to the importance of health communication in individual and public health, while emphasizing the need for media professionals to discharge their social duties, responsibilities as a member of the society in ensuring that health communication is promoted and developed. In this study paper author has explained the concept of health communication elements of effective health communication campaign, the role of the media in promoting health communication, responsibility of the media, ethical issues in health communication etc. author has concluded that health communication is an integral element of social communication, but, media has done very little in this concern.

15) C. C. Nkanunye and G. O. Onechina, (2017), have focused on the health communication strategies as gateway to effective health promotion and wellbeing. In the opinion of authors, health promotion supports personal and community development by rendering knowledge which develops health and enhance wellbeing. Authors have further stated that communication creates meaning to any information given. Through the study authors have highlighted some of the strategies followed by the health educator to influence people and bring about behavioral change. Through the study authors have pointed out that, health communication increasing knowledge and awareness about health related issues and its advocacy for health issue. Authors

have concluded that, health communication contribute to all aspects of disease prevention and health promotion. In the opinion of authors, health communication should be included in all levels of health's curriculum to enable health workers acquire better skill to promote health of people.

2.3) Review of Literature Pertaining to Health Communication Diabetes Awareness and its Complications.

16) S. S. T. Konduru and A. Rajan, (2018), have assessed the awareness and knowledge pertaining to diabetes mellitus among diabetic and non-diabetic elements. Through the study authors have found that, nearly 46% patients had poor knowledge about diabetes, 45% patients had little bit of knowledge and 09% patients had a proper knowledge and awareness regarding diabetes, mellitus. On the country 64% non-diabetes had poor knowledge, 34% had very little knowledge and only 02% of non-diabetics had very good knowledge and awareness pertaining to diabetes mellitus. Through the study authors have provided a snapshot of the current status of knowledge and awareness of diabetes mellitus. Authors have emphasized on the need for development in knowledge and awareness on diabetes mellitus among the diabetic as well as non-diabetic subjects with a view to prevention and control of diabetes risk elements, complication and its management.

17) K. Dussa and S. Parimalakrishnan, (2015), have also assessed the diabetes knowledge and awareness regarding diabetes and management of diabetes by using the diabetes knowledge questionnaire among Type 2 diabetes subject and its relationship with HbA1c levels and duration of diabetes. Through the study authors have found that, there is no relationship between metabolic control and knowledge of diabetes among people having diabetes. Authors have also noticed that there is no association between HbA1c levels and patient diabetes knowledge. Authors have

pointed out the various obstacles in achieving glycemic control. Inadequate knowledge and inadequate understanding regarding diabetes among the people with diabetes is the major barrier in achieving glycemic control. In this study paper disease duration significantly correlated with diabetes knowledge questionnaire score and it is similar to findings of other studies.

18) K. K. Al-Sarihin, M. H. Bani and I. I. Athwabia, (2012), have conducted a study at king Hussein Hospital, Amman, Jordan, with a view to assess the knowledge about diabetes among patients with diabetes mellitus. Through the study authors have found that, diabetic patients had a knowledge deficit regarding their disease which in turn will limit their involvement in the management of diabetes. In the opinion of author health facility provider should focus on the developing patients knowledge regarding diabetes through education of diabetes by doctor, nutrition clinic for outpatient and dietary counseling for inpatient and through nursing specialized in diabetes to impart knowledge to patients self-monitoring blood glucose and self-insulin injection.

19) A. Ramchandran, (2002), has conducted a population based study in Chennai city among the people aged 20 years and above with an emphasis on identifying the risk factors responsible for diabetes in three urban diabetes surveys conducted in 1989, 1995, and 2000. Through the surveys author has observed that, during the period between 1989 and 1995, there was a 40% increase in the prevalence of diabetes and a further increase of 16.4% in the next 5 years. Author has also observed impaired glucose tolerance (IGT) in the year 2000, especially in the people aged less than 40 years.

20) T. K. Chetan and k. J. Shashank, (2016), have conducted a study to identify the obstacles and various challenges in health care delivery and utilization service for the prevention and control of diabetes mellitus. Authors have opined that, obstacles and

challenges in the provision of essential services for diabetes mellitus often result in high rates of complications. Authors have further opined that early diagnosis of diabetes has various clinical advantages, like, early and prompt initiation of treatment and thus avoiding occurance of vascular complications in people. Through the study authors have observed that there are several obstades or barriers such as lack of training, lack of motivation lack of consultation time due to number of patients, etc. Author have also pointed out the patients related barriers or obstacles such as lack of knowledge, lack of awareness, socio-economic constraints, cultural constraints difficulty in diet restriction, lack of skills in self-care etc. Authors have concluded that lack of knowledge and awareness inadequate staff leads to high rate of diabetic patient rate in India.

21) C. Ramegowda and L. Hulugappa, (2016), have conducted a study to assess the effectiveness of health education, health communication on knowledge and attitude pertaining to diabetes in type II diabetes mellitus. Through the study authors have observed that, there is a significant development in knowledge in post intervention regarding symptoms, risk factors complications and maintenance of sugar levels in blood. Authors have also found a positive attitude of people about periodic eye and cardiac examination. People were motivated to exercise frequently. Authors have concluded that, there was significant development in knowledge awareness and attitude following health education regarding diabetes. Authors have stated that, if diabetes patients are not strictly monitored there may be occurrence of multiple chronic complications leading to irreversible disability and death.

22) S. M. Saleh and M. H. Azahari, (2013), have explored the public opinions through observation and interview in three regions of Malaysia with a view to explores the opinions of people regarding current diabetic posters. Authors have pointed out that,

the utilization of posters by the government is for trigger the public on the hazardous alarm of diabetes. Through the study authors have observed that, dispite of various efforts made by government, diabetes statistic of Malaysian people is still growing drastically. Authors have found that, in Malaysia health care poster becomes one of the most important communication method from the government to the public. Authors have also come to know that, there have been several diabetic campaigns all over the country with the aid of pastors. Authors have concluded that Malaysian diabetic society and Malaysian people go towards a better understanding on the role of diabetic poste a a health communication in diabetic health care awareness.

23) T. Swetha and Vijay Kumar G., (2012), have conducted a study on diabetic patients in Warangal region. The required primary information have been collected through a thirty item questionnaire including the basic data pertaining to awareness, knowledge, misconceptions, diabetic case and complications etc. was used for evaluating the knowledge of people. Through the study authors have observed that, majority of the patients were in the age group of 51 to 60 years. Rural diabetes patients were more than urban patients. Authors have also found that, family history was negative for 74.12% diabetic patients. Authors have pointed out that there is an increased occurrence of diabetic patients in the total population with less socio-economic background among males. Majority of the patients were having normal weight and there was a slight growth in the patients having over weightage. In the opinion of authors, there is a need to develop a knowledge pertaining to diabetic among the patients.

24) A. Durgad, R. B. Parikh and K. N. Ramesh, (2016), have conducted a study to explore the awareness of diabetes and its complications among the patients in tertiary care hospital. All the primary information have been collected through the

questionnaire. Authors have stated that, screening of diabetes is significant as it not only detects new cases but identification of several impaired glucose tolerance and impaired fasting glucose prediabetes states. Authors have opined that, clinical practioners should aim at regular health campaign in the society to find out the hidden diabetes cases. Authors have concluded that, efforts should be taken by the government to improve the awareness pertaining to diabetes burden and its complications related to it can be reduced. Authors have further opined that, the potential benefits of early detection are improved quality of life and reduced the hospitalizations.

25) Angela Leung and Mike Ting Cheung, (2015), have provided the evidence of the relations among health literary, knowledge about diabetes, perceived capability of communication and diabetes self-care especially, taking into account the role of health literacy and perceived communication capacity in diabetes self-care. Through the study authors have tested the relation using structural equation modeling with a sample of Chinese patients of 65 years of age and more than 65 years of age with type II diabetes. Through the study authors have observed that, health literacy knowledge communication capacity and diabetes self-care formed complex relations. Authors have also found that after adjusting for age, education and cultural impact health literacy affected diabetes self-care indirectly through perceived capacity for communication, but not diabetes knowledge. Authors have opined that, there should be proper training to patents to enhance their communication abilities.

26) U. Ranjit, R. M. Anjana and V. Mohan, (2016), have stated that, rapid socio-economic and demographic changes have led to the growth in the prevalence of diabetes mellitus in India. Through the present study authors have discussed the epidemiology of the diabetes mellitus and its complications. Authors have also

focused on the efforts and advances made by the government to ensure adequate health care. Authors have pointed out that, management of diabetes, faces several challenges like lack of awareness among people, lack of trained medical staff and paramedical staff and unaffordability of medications and services. Through the study authors have found that, innovative interventions using readily available resources and technology promise to revohitionise the care of patients with diabetes mellitus. Authors have concluded that, the knowledge and awareness possess by the people, if utilized properly with community empowerment has the potential to slow the epidemic of diabetes mellitus.

27) Ramesh Verma and P. Khanna, (2012), have discussed on the objectives of the diabetes prevention programme. In the opinion of authors, to prevent diabetes through healthier diets, the dietary guidelines should be revised to reflect principles of chronic disease prevention and health promotion and affordability should reflect these guidelines through agricultural policies. In the opinion of authors NGO's have a role in prevention and treatment of diabetes. Through the study authors have pointed out that, although there is a 15% of the worlds diabetes in India, its spending on health care related to diabetes is only 6.4% of worldwide spending. Through the study authors have discussed on the various intentions which are planned in the diabetes prevention programme of Indian government. Authors have also focused on the various components which are envisaged in the diabetes prevention programme.

28) S. Mohan, J. Prashant and M. Bhaskar Rao, (2008), have discussed on a comprehensive diabetes and hypertension prevention and management programme in India, namely UDAY. It has a pre-post evaluation design with representative cross sectional surveys before and after intervention. Baseline and post intervention assessment was conducted deploying five surveys among general population, patients,

healthcare providers (physicians and pharmacists, health facilities etc. which will determine the knowledge levels about diabetes and hypertension the proportion treated and controlled the patient's knowledge and management skills the level of access and barriers to obtaining care. The results obtained from the study will inform policy makers on the most appropriate community and health system based approaches that are effective in stemming the rising burden of diabetes and hypertension in India and countries with similar challenges.

29) B. S. Deepali, M, Subramanian and M. Ankitha, (2017), have conducted a study to assess the knowledge of patients regarding diabetes and its complication with type II diabetes mellitus. Through the study authors have also focused on the treatment adherence of the diabetes (Type II) patients. On the basis of study authors have determined the correlation between knowledge and treatment adherence. This is the cross sectional study, conducted in Bengalore, with the help of questionnaire. Through the study authors have found that, 56% patients had more than 80% knowledge pertaining to diabetes mellitus and its complications 45% patients had 60% ti 89% knowledge and only 7% patients had less than 60% knowledge. Authors have concluded that, patients having more knowledge better adhered to the treatment. This highlights the significance of empowering patients with knowledge pertaining to diabetes to achieve maximum benefit from the treatment.

30) R. Agrawal and Monika Phogawat, (2016), have tried to determine the prevalence of nephropathy in type-2 diabetes, and its correlation with various risk factors. Through the study authors have observed that, nephropathy was present in 30% patients, and the duration of diabetes and serum triglyceride were strongly associated with regression coefficient 3.916 and 2.428 respectively. Authors have highlighted the highest prevalence of nephropathy in type 2 diabetes in India. Authors have stated

that, controlling the risk factors we can prevent or delay the complications and progression of diabetic nephropathy. Through the study authors have defined more clearly the risk factors influencing vascular complications in diabetic patients. Authors have concluded that, due to hypertension and diabetic dyslipidemia and duration of diabetic there is a high prevalence of nephropathy in type-2 diabetes patients. Authors have pointed out that, controlling these risk factors can prevent or delay the complications and progression of diabetic nephropathy.

31) V. Bowyer, P. Sutcliffe and J. Dale, (2014), have investigated the oral health awareness, oral hygine and attitudes towards general dental practitioner's involvement in diabetes screening in adults with diabetes. Through the study authors have observed that, awareness of oral health risks was limited to 69% and had never received any oral health advice related to their diabetes. Majority of the patients supported the idea of dentist's offering screening for diabetes. Authors have concluded that many adult diabetes patients have poor awareness of oral care and health complications related to the diabetes and are receiving limited health advice from healthcare advisors. In the opinion of authors there should be training and advice for health care advisors and patients having diabetes. Authors have further opined that, the role of dentists in diabetes screening and support needs further study and investigation.

32) S. R. Joshi, A. K. Das and V. Mohan, (2014), have pointed out that nearly 40 million people suffering from the problem of diabetes. This problem has become a major health care problem in Indian today. Through the study authors have discussed the diabetes problem with the medical social and economic approach. In this study authors have provided statistical information pertaining to prevalence of the diabetes in urban and rural parts of India. Authors have also discussed on the awareness of

diabetes among people. This study also focused on the population and clinical based studies on prevalence of diabetes complications and its current status of diabetes control in India. In the opinion of authors there should be organization of result oriented programmes which must involve education of patients, updating medical fraternity on various improvements in the management of diabetes and providing them the opportunity to use and analyze the treatment options in the form of observational stuches is necessary to overcome the problem of diabetes.

33) M. Kosti and M. Kankari, (2012), have reviewed the literature pertaining the education and awareness in diabetes mellitus management. The method of this study contented research of the literature from reviews and study researches, which referred to education and awareness in diabetes mellitus, self-management, education. Through the study authors have found that education should not be a mere transmission of information, but a dynamic, holistic, planned care based on personal needs (approach of patient center). According to the authors education pertaining to diabetes should be reinforced after it's; completion and enhance in depth understanding of the importance of regular check-up and follow up. Authors have further opined that, effective education requires good communication among diabetic people and health advisors. Authors have concluded that, the goal of diabetes education is to help patients and their families achieve the required information, life skills, resources and support required to obtain good health.

34) N. Chaurasia, B. Thapa and S. S. Karikatti, (2017), have conducted a survey study to assess the level of knowledge pertaining to diabetes among diabetic patients of urban poor in Belgao, Karnataka. Through the study authors have assessed the level of knowledge regarding diabetes signs and symptoms and complications faced by diabetic patients. A predesigned questionnaire was used as a study tool. The

knowledge about the effects of diabetes on other organs and complications of diabetes was also assessed among the patients. It was found that majority of the people (73%) know about the effects of diabetes on other organs. Authors have pointed out that though overall knowledge of diabetes was good; many patients were unaware about the symptoms and complications related to the diabetes. In the opinion of authors there is a requirement of improvement in the level of knowledge of patients regarding symptoms and complications of diabetes.

35) V. Aljin and R. Umadevi, (2018), have assessed the awareness and knowledge about diabetes among the people facing type 2 diabetes mellitus attending rural health care Centre. This survey study was conducted in rural area of Kanchipuram district of Tamil Nadu. Through the study authors have found that nearly 63% people (patients) had adequate knowledge and awareness pertaining to type 2 diabetes mellitus and family history of type 2 diabetes mellitus was one of the significant determinants of having adequate knowledge about type 2 diabetes mellitus. In the opinion of author's awareness and knowledge pertaining to diabetes is good but, still their practice related to control of glycemic levels requires to be improved. Authors have opined that, there is a requirement of health education programmes for the patients with a view to overcome the problems of diabetes and its complications. The findings of the present study were similar to the observations or findings of study conducted on knowledge on risk factors of diabetes in a different population.

2.4) Review of Literature pertaining to risk factors associated with pre-diabetes Body Mass Index.

36) Ramachandran A, (2003), has done a prevalence study of impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) in urban Indians and their demographic and anthropometric characteristics in 10, 025 subjects aged > or 20

years. Age standardized prevalence's of IFG, IGT and newly detected diabetes were 8.7%, 8.1% and 13.9%, respectively. IFG was more prevalent in women (9.8%) than in men (7.4%) (chi^2=13.62, P=0.0002), while the gender differences in IGT (men 8.4%, women 7.9%) and diabetes (men 13.3%, women 14.3%) were not significant. Body mass index and waist circumference were higher in glucose intolerant groups than in normal glucose tolerance (NGT).

37) Snehalatha C., (2003), has conducted a national survey of diabetes and impaired glucose tolerance (IGT) conducted in 2000 AD in six major cities of India showed a high prevalence of diabetes (12.1%) and IGT (14%). Prevalence of IGT was higher than that of diabetes in subjects with less than 40 years when compared with older subjects. This analysis was done to look for differences in the risk factors associated with IGT in the younger and older subjects

38) Gupta, (2004), has conducted an ethnic group sample survey in Punjabi Bhatia community to determine the prevalence of cardiovascular risk factors. A total of 458 subjects (men 226, women 232) were evaluated and prevalence of diabetes was found to be 16.8%.

39) Prabhakaranet, (2005), has conducted a cross-sectional survey among all employees aged 20-59 years to evaluate the prevalence of CVD and its risk factors among a large industrial population of northern India. A total of 2122 subjects with a mean age of 42 years were screened and the prevalence of diabetes was found to be 15.0%.

40) Reddy, (2006), has conducted a baseline cross-sectional survey as a part of CVD surveillance programme and estimated the risk factor burden using standardized tools in Indian industrial populations. A total of 10442 subjects were screened and diabetes prevalence was found to be 10.1%.

41) P. Ravikumar, (2010), has conducted a cross-sectional survey to assess the prevalence and risk factors associated with diabetes in the north Indian city of Chandigarh. A total of 2227 subjects aged ≥ 20 years representing urban population using 1999 WHO criteria. The age standardized prevalence of diabetes and prediabetes was found to be 11.1% (95% CI: 9.7-12.4) and 13.2% (95% CI: 11.8-14.6).

42) N. K. Vikram, (2003), has evaluated body mass index (BMI) and body fat profiles of obese and non-obese subjects and correlated those values with cardiovascular risk factors. This cross sectional study involved 639 subjects from low socioeconomic stratum residing in urban slums of New Delhi. Non obese subjects were categorised into quartiles of percentage of body fat and waist circumference (WC). They concluded that Asian Indians have excess cardiovascular risk at BMI and waist circumference values considered "normal" and suggested that definition of "normal" ranges of BMI and WC need to be revised for Asian Indians.

43) Snehalatha C, (2003), has conducted a study in Chennai, India, with an assumption that Asian Indians have a high risk of developing glucose intolerance even with small increments in their BMI. Therefore, this analysis was performed to find out the normal cut off values for BMI and upper body adiposity (waist circumference) computing their risk association with diabetes. They observed that a normal cut off value for BMI was 23 kg/m^2 for both genders. Cut off values for WC was 85 and 80 cm for men and women, respectively. They also observed that cut off value for WC was lower in women than in men.

2.5) Review of Literature pertaining to influence of Addictness on diabetes patient.

44) Lisa Rafalsonet, (2009), has conducted a study during the years 2003 and 2004 to determine whether cigarette smoking is associated with the conversion from

normoglycemia to impaired fasting glucose (IFG) in 1455 participants from the Western New York Health Study who were free of type 2 diabetes and known cardiovascular disease at baseline (1996–2001) were reexamined (68% response rate). Baseline smoking status was categorized as never, former, or current. Of the 1,455 participants, 924 were norm glycemic at baseline: 101/924 converted to IFG over 6 years. Compared with those who remained normoglycemic, converters to IFG were at baseline older, had a larger body mass index, more likely to be hypertensive, currently smoke, and have a family history of type 2 diabetes mellitus. They concluded that smoking was positively associated with incident IFG after accounting for several putative risk factors.

45) Bernd Kowallet, (2010), has conducted a 7 year study in 1223 subjects aged 55-74 years at baseline in 1999-2001 to evaluate the effect of passive and active smoking. They found that among never smokers, subjects exposed to ETS (Environmental Tobacco Smoke) had an increased diabetes risk in the total sample and in a subgroup of subjects having prediabetes at baseline. Active smoking also had a statistically significant effect on diabetes incidence and in pre diabetic subjects. This study provides us evidence that both passive and active smoking is associated with T2DM.

46) Lu W., (2003), has conducted a longitudinal study in Washington to explore the relationship between alcohol intake and glycaemia and type 2 diabetes among American Indians aged 45-74 years and involving thirteen American Indian communities in three geographic areas in the United States. Alcohol consumption was determined by self-reported alcohol intake history. They observed that fasting and 2 hour plasma glucose concentration showed an inverse j-shaped curve across categories of alcohol intake. Using never drinkers as reference group in cross

sectional analysis, light drinkers had a significantly lower risk of having diabetes among drinkers; heavy drinkers had a higher, although not significant, prevalence of diabetes. Longitudinal analysis showed no significant worsening of glucose tolerance across levels of alcohol intake. They concluded that although plasma glucose concentration showed a shallow inverse j shaped association across levels of increasing alcohol intake in American Indians aged 45-74 years, alcohol intake did not appear to significantly increase the risk for worsening glucose tolerance. Thus alcohol intake does not appear to be a determinant of diabetes in this population.

47) M. Cullmannet, (2012), has done a study to investigate the influence of alcohol consumption and specific alcoholic beverages on the risk of developing pre diabetes and type 2 diabetes. Subjects, who at baseline had normal glucose tolerance (2070 men and 3058 women) or pre diabetes (70 men and 41 women), aged 35–56 years, were evaluated in this cohort study. Total alcohol consumption and binge drinking increased the risk of pre diabetes and Type 2 diabetes in men, while low consumption decreased diabetes risk in women. Men showed higher risk of pre diabetes with high beer consumption and of type 2 diabetes with high consumption of spirits. Women showed a reduced risk of pre diabetes with high wine intake and of type 2 diabetes with medium intake of both wine and spirits whereas high consumption of spirits increased the pre diabetes risk. They concluded that high alcohol consumption increases the risk of abnormal glucose regulation in men. In women the associations are more complex: decreased risk with low or medium intake and increased risk with high alcohol intake.

2.6) Review of Literature pertaining to influence of education and occupation on diabetes.

48) Mohan V., (2004), has designed a study to assess the influence of socioeconomic status on the prevalence of the metabolic syndrome in all individuals above 19 years of age involving two residential colonies in Chennai representing the middle and lower income groups, an urban south Indian population. They observed that there were significant differences in the socioeconomic status and lifestyle of the two areas. The dietary profile of the middle income group showed higher intake of calories, fat and sugar compared to low income group ($P<0.001$). The age standardized prevalence rates of the various components of the metabolic syndrome were significantly higher in the middle compared to the low income group diabetes (12.4 vs. 6.5%). They concluded that significant differences exist in the prevalence of various components of the metabolic syndrome even within the urban environment and this appears to be influenced by socio-economic status.

49) Mehrotra R., (2000), has conducted a population based study in Allahabad (UP) to assess the importance of education and occupation in relation to knowledge about good control of diabetes. In a total of 793 diabetic patients, 46.7% of the subjects were aware of the importance of blood glucose testing. A positive impact of education on overall knowledge levels was observed. However no definite relationship was found between knowledge and occupation. They have given impression of knowledge regarding self care of diabetes in all educational and occupational categories. This study serves as a guideline for developing an educational package for different subsections of the community.

50) Maty, (2005), hasexamined associations between several life-course socioeconomic position (SEP) measures (childhood SEP, education, income, and

occupation) and diabetes incidence from 1965 to 1999 in a sample of 5422 diabetes-free Black and White participants in the Alameda County Study. Race specific Cox proportional hazard models estimated diabetes risk associated with each SEP measure. They concluded the important role of life course SEP measures in determining risk of diabetes, regardless of race and after adjustment for factors that may confound or mediate these associations

2.7) Literature review pertaining to nutritional factors and diabetes.

51) Ferreira S. R., (2002), has conducted a study with an objective of analyzing the association between nutritional factors and body fat deposition in a representative sample of 530 subjects aged 40-79 years. They observed that groups of subjects and those with central adiposity consumed higher proportions of energy as fat as and lower as carbohydrate than those without obesity and central adiposity ($P < 0.05$). They concluded that a deleterious dietary pattern may contribute to weight gain and same was associated with abdominal fat deposition in particular a protein rich diet, and reflected by their waist circumference.

52) LM Goff, (2005), has conducted a Case–control study to test the hypothesis that dietary factors in the vegan diet lead to improved insulin sensitivity and lower intramyo cellular lipid (IMCL) storage in London. A total of 24 vegans and 25 omnivores participated in this study. There was no difference between the groups in sex, age, BMI, waist measurement, percentage body fat, activity levels and energy intake. Vegans had a significantly lower systolic blood pressure and higher dietary intake of carbohydrate, non-starch polysaccharides and polyunsaturated fat, with a significantly lower glycogenic index. Also, vegans had lower fasting plasma triacylglycerol and glucose concentrations. There was no significant difference in HOMA %S but there was with HOMA %B), while IMCL levels were significantly

low in the soleus muscle They concluded that vegans have a food intake and a biochemical profile that will be expected to be cardio protective, with lower IMCL accumulation and beta-cell protective.

2.8) Some other important literature review pertaining to diabetes.

53) Foucan L., (2002), has revealed that hypertension, dyslipidemia and type 2 diabetes are strongly linked to obesity. Body mass index (BMI) and waist circumference (WC) are measures of obesity that can be useful in identifying individuals with these risk factors. The study population included 5149 consecutive women aged 18 to 74 recruited in a health center of Guadeloupe in 1999. They concluded that waist circumference, a practical tool that had higher discriminated ability than BMI in identifying presence or absence of risk factors and it appears as the best screening tool in this population.

54) Massimo Motta, (2009), has conducted a study in 2603 elderly subjects of 65–84 years of age to identify the subjects of risk of future diabetes on the basis of a combined measurement of glycemia, the glycosylated hemoglobin (HbA1c) and the waist circumference(WC). They concluded subjects who displayed at the baseline an impaired fasting glucose (IFG) accompanied by HbA1c and WC values above the normal cut-points proved to be diabetic after a 3-year follow up in 18.96%, while the subjects with normal fasting glucose (NFG) accompanied by normal HbA1c and WC values were found to be diabetic only in 1.34%.

55) Soojin Lee (2010), has conducted a study to determine whether abdominal obesity is a risk factor for impaired fasting glucose (IFG) and hypertriglyceridemia and to verify whether moderate effect of abdominal obesity on the relationship between IFG and hypertriglyceridemia in 5938 subjects aged 20 year old drawn from non-diabetic participants in a health examination survey in Korea. Abdominal obesity

was found to be positively moderated in the interaction between waist circumference and fasting blood sugar. They concluded that moderate effect between abdominal obesity and IFG contributes to the development of hypertriglyceridemia.

56) Ramachandran A., (2000), has carried out a population based study in Chennai to analyse co-segregation of obesity with familial aggregation of type 2 diabetes mellitus. This study involved a total of 2463 subjects (M:F 1196:1267) with normal glucose tolerance (NGT). They observed that a positive family history of diabetes was present in 24.7% of the study subjects. Mean BMI and percentage of obesity were significantly higher in families with a positive family history (group 2) vs. families with no family history (group 1). They concluded that general and central obesity are associated with a family history of diabetes.

57) Rodolfo Valdez, (2007), has conducted a study to test the association between stratified levels of familial risk of diabetes and the prevalence of the disease in 16,388 adult U.S. population. Familial risk of diabetes was classified as average, moderate, or high. Overall, 69.8% of the U.S. adults were in the average, 22.7% in the moderate, and 7.5% in the high familial risk for diabetes. The crude prevalence of diabetes for each risk class was 5.9, 14.8, and 30%, respectively. They concluded that in the U.S. population, family history of diabetes has a significant, independent, and graded association with the prevalence of diabetes.

58) Mithun Das, (2012), has conducted a study to find the association between familial risk of type 2 diabetes mellitus (T2DM) and the prevalence of metabolic syndrome (MS) in 448 (>30 years) (257 males and 191 females) adult Asian Indians. Familial risk of T2DM was classified into three groups viz., 1=both parents affected; 2=parent and/or siblings affected and 3=none or no family history for T2DM. Family history of T2DM had significant effect on individuals with MS as compared to their

Counterparts (individuals having no family history of T2DM). It therefore seems reasonable to argue that family history of T2DM could be useful as a predictive tool for early diagnosis and prevention of MS in Asian Indian population.

59) Sheritha Hill Golden, (2003), has conducted a prospective cohort study in 1152 white male medical students to evaluate elevated Blood Pressure as a long term predictor of type 2diabetes with a median follow up period of 38 years. After adjustment for BMI and other risk factors for diabetes, SBP and DBP at age 30 years remained significantly higher in individuals who developed diabetes than in their no diabetic counterparts; however, the difference in the rate of increase in SBP was no longer significant following multivariate adjustment. They concluded that BP elevations precede the development of type 2 diabetes in middle age by 20–25 years. Higher BP in the prediabetic state might contribute to the presence of vascular disease at the time of diagnosis of type 2 diabetes.

60) Delia B. Carbaet, (2012), has conducted a study in 1871 women aged 35-68 years to examine waist circumference as a risk factor for having hypertension only, impaired fasting glucose only, or both, and assess whether the associations vary according to overweight status. Each cm increase in waist circumference increased the odds of hypertension by 5% for non-overweight women and 3% for overweight women; impaired fasting glucose by 9 and 3% for non-overweight and overweight women, respectively; and hypertension and impaired fasting glucose by 17% among non-overweight versus 9% for overweight women. They concluded waist circumference was significantly associated with impaired fasting glucose and both hypertension and impaired fasting glucose, and the associations vary by overweight status.

61) Perry I. J., (2002), has observed the glucose intolerance representing a spectrum of abnormalities including impaired fasting glucose, impaired glucose tolerance and type 2 diabetes. This global epidemic of diabetes is largely driven by the globalization of western culture and lifestyles. It is estimated that more than 90% cases of type 2 diabetes could be prevented with the adoption of a prudent diet (high in cereal fiber and polyunsaturated fatty acids and low in trans fatty acids and glycemic load), avoidance of overweight and obesity (BMI<25 kg/m^2), engagement in moderate to vigorous physical activity for at least 0.5 hour per day, nonsmoking and moderate alcohol consumption.

62) Quinn L., (2003), has stated that type 2 diabetes mellitus, characterized by insulin resistance and beta cell defect, and appears to result from a number of gene and environmental interactions. There are marked differences in phenotypic expression of type 2 diabetes mellitus with individuals exhibiting varying levels of insulin resistance and impairment in insulin secretion. Study results indicate that a number of healthy lifestyle behaviours such as increased physical activity and reduced intake of dietary fat are associated with decreased development of type 2 diabetes mellitus.

63) M. Bacardi Gasconaet, (2005), has conducted a study to document physical activity (PA) of migrant Mexican women with type 2 diabetes who have participated in diabetes intervention programs at a primary care level. One hundred out of 133 women of seven diabetes education groups from different Mexican institutions located in the city of Tijuana were invited to participate in the study. A PA history questionnaire was completed weekly. Metabolic Equivalents (METs) were used to calculate physical activity level (PAL). Forty percent were classified as overweight and thirty one percent as obese. Six percent of the women performed more

than 150 min of moderate/vigorous weekly PA, while more than 80 min of weekly PA was reported by seventy three percent of the population. The majority of these migrant women who participated in the diabetes intervention program seem to engage in the minimum recommended levels of PA.

64) M. Norberget, (2006), has conducted a case-referent study nested within a population-based health survey investigated the associations between psychosocial stress, and future development of type 2 diabetes among occupationally working middle aged men and women during 1989–2000 (n=33,336) in Umea in northern Sweden. Multivariate logistic regression analyses and interaction effects between variables showed in women, passive or tense working situations were associated with future type 2 diabetes with odds ratios 3.6 (95% confidence interval 1.1–11.7) and 3.6 (1.0–13.3), respectively, and also low emotional support 3.0 (1.3–7.0). These associations were not seen in men. They concluded, work stress and low emotional support may increase the risk of type 2 diabetes in women, but not in men.

65) Emily Mendenhall, (2012), has conducted in-depth qualitative interviews and administered the Hopkins Symptoms Check List (HSCL-25) to evaluate depression among 59 people with diabetes in northeast Delhi between December 2011 and February 2012. Depression was most common among the poorest income group (55%) but was also reported among middle (38%) and high income (29%) participants. One quarter of respondents reported diabetes distress, but only those from the low income community reported co-occurring depression and these respondents often revealed poor access to diabetes care. These data suggest that lower income populations not only have higher rates of depression but also may be more likely to delay health care and therefore develop diabetes complications.

67) Anandet, (2008), has carried out a study in urban population of Ballabgarh town in Faridabad district of Haryana to analyses risk factors in non-communicable diseases. A total of 1263 male and 1326 female respondents were selected using multistage systematic random sampling, in 5 age groups of 10 years (15-24, 25-34, 35-44, 45-54 and 55-64). The prevalence of current daily use of smoked tobacco was 22.2 % for males and 1.4 % for females. In males the prevalence of current alcohol consumption was 28.9%. Physical inactivity was reported by 23.2% of males and 52.4% of female respondents. Only 8.6% of males and 4.4% of females were consuming adequate portions of the fruits and vegetables. 23.1% males and 15.7% females were either in stage 1 or 2 of hypertension (JNC VII) or were taking antihypertensive drugs. The prevalence of tobacco and alcohol use among males and physical inactivity among females was high. Low consumption of fruits and vegetables, hypertension and overweight was equally common among both the sexes. In the population studied. They concluded that there is an urgent need for initiating measures at the risk factor level to counter this modern day epidemic.

68) Shin J. Y., (2006), has performed a prospective study for 2 years (2002-2004) in a total of 4711 men to know whether serum GGT is a reliable predictor of the incident impaired fasting glucose, including diabetes. A total of 738 cases (15.7%) of incident IFG and 13 cases (0.3%) of diabetes occurred. The mean serum GGT concentration were quite different between the normal (38.0 IU) and incident IFG groups (50.3 IU) and the incident diabetes group (66.0 IU) ($p<0.001$). The risks significantly increased with increasing levels of GGT for 2 years when comparing the increased groups (< 10%, 10-20%, > 20%) versus the decreased over 20% group of GGT, the risks for IFG or diabetes were 1.334 (1.002–1.776), 1.613 (1.183–2.199) and 1.399 (1.092–1.794). They concluded that serum GGT concentration within its

normal range may be an early predictor of the development of IFG and diabetes. As serum GGT is a relatively inexpensive and a reliable marker, it might have important implications in public health promotion.

69) GaoFeiet, (2012), has investigated the relationship of liver enzymes with hyperglycemia in 3756 participants in Shanghai to find out the association between liver enzymes and insulin resistance. Liver enzyme concentrations were independently associated with i- IGT, IFG+IGT, and diabetes. With the increase of ALT and GGT concentrations, ORs for i- IGT, IFG+IGT, and diabetes increased gradually. By comparing patients in the highest quartile of GGT concentrations or ALT concentrations with those in the lowest quartile (Q1), ORs for i- IGT, IFG+IGT, or diabetes was significant after adjustment. Both ALT and GGT concentrations were linearly correlated with HOMA- IR and independently associated with HOMA- IR [ALT OR (95% CI): 2.56 (1.51- 4.34) P=0.00; GGT OR (95% CI): 2.66 (1.53- 4.65) P=0.00]. They concluded that serum ALT and GGT concentrations were closely related to prediabetes and diabetes in the Shanghai population and positively associated with insulin resistance.

70) KivityShayeet, (2012), has conducted a study in 10,913 men and women to assess whether norm glycemic fasting plasma glucose (FPG) is associated with increased risk of CVD outcomes in healthy patients. A total of 1119 incident cases of CVD occurred during a mean follow-up of 4.3 years. Subjects with fasting glucose levels in the high normal range (95-99 mg/dL) had an increased CVD risk when compared with levels <80 mg/dL. A multivariate model, adjusted for age, serum triglycerides, and high-density lipoprotein and low-density lipoprotein cholesterol levels, revealed an independent increased risk of CVD with rising FPG levels in the normal range. They concluded that elevated CVD risk is strongly and independently

associated with glucose levels within the norm glycemic range. Fasting plasma glucose may help in identifying apparently healthy persons with early metabolic abnormalities who are at increased risk for CVD before progression to pre diabetes and overt diabetes mellitus.

71) SteffanoGianniniet, (2012), has conducted a study to evaluate the relationship of visceral adiposity and lipid profile with fasting (FPG) and post load glucose (2hPG) in subjects without known diabetes (DM2). A total of 3030 subjects were divided in three groups: obese subjects (OB; n=490), no obese subjects with an increased waist circumference (NOB/W1; n=500), and no obese subjects without an increased waist circumference (NOB/W2; n=2040). This study suggests that triglycerides and HDL-C, together with non-HDL cholesterol, are associated with impaired fasting and 2hPG and that high total cholesterol levels are associated with abnormalities of fasting glucose metabolism only in patients with elevated waist circumference.

72) Hairong Nan, (2008), has conducted a study to investigate the predictive value of serum uric acid (UA) for the development of diabetes in Asian Indians and Creoles living in Mauritius. A total of 1941 men aged 25–74 years and free of diabetes, cardiovascular disease and gout at baseline examinations in 1987 or 1992, were re-examined in 1992 and/or 1998. The relationship between baseline UA and the development of diabetes during the follow up was estimated using interval censored survival analysis. In this cohort 337 (17.4%) men and 379 (16.4%) women developed diabetes during the follow up. Individuals who developed diabetes during the follow up had a lower serum UA levels at follow up compared with their baseline UA levels, but this is not observed for postmenopausal women. Multivariate adjusted hazard ratios (HRs) (95% CIs) for the development of diabetes corresponding to one S.D.

increase in UA concentration at baseline were 1.14 (1.01, 1.30) in Indian men and 1.37 (1.11, 1.68) in Creole men. They were 1.07 (0.95, 1.22) and 1.01 (0.84, 1.22) respectively, in Indians and Creole women. They concluded that elevated serum UA is an independent risk marker for future diabetes in Mauritian men, whereas the prediction is weak in women.

73) VidulaBholeet, (2010), has conducted a prospective study using Framingham Heart Study original (n=4883) and offspring (n=4292) to evaluate the impact of serum uric acid levels on the future risk of developing type 2 diabetes independent of other factors. They identified 641 incident cases of diabetes in the original cohort and 497 cases in the offspring cohort. The incidence rates of diabetes per 1000 person years for serum uric acid levels <5.0, 5.0-5.9, 6.0-6.9, 7.0-7.9 and ≥8.0 mg/dL were 3.3, 6.1,

8.7, 11.5, and 15.9, respectively, in the original cohort; and 2.9, 5.0, 6.6, 8.7, and 10.9, respectively, in the offspring cohort (P-values for trends < 001). The prospective data from 2 generations of the Framingham Heart Study provide evidence that individuals with higher serum uric acid; including younger adults, are at a higher future risk of type 2 diabetes independent of other known risk factors. These data expand on cross sectional associations between hyperuricemia and the metabolic syndrome, and extend the link to the future risk of type 2 diabetes.

74) B. ShivanandaNayaket, (2011), has conducted a study to know the association of low serum creatinine level, abnormal lipid profile and demographic variables with type 2 diabetic Trinidad subjects. Data was obtained from a cohort of 1122 diabetic and non-diabetic patients from clinics in Trinidad. They concluded that abnormal lipid profile, gender, age and serum creatinine are associated with type 2 diabetes. While age and gender are non-modifiable risk factors, steps should be taken

to monitor and control the serum creatinine and lipid profile values of diabetics and no diabetics.

75) Nwose E.U., (2011), has conducted a study to identify whether low serum creatinine levels as a risk factor of diabetes mellitus. A 1017 glucose tolerance tests performed and were sorted into normal (control), pre diabetes and diabetes based on decisive interpretation. All cases with cretonne results in the control (n=48), diabetes (n=18) and pre diabetes (n=36) groups were selected. Mean levels of serum creatinine levels in the controls (80+/-32 micromoles/L), diabetes (82+/-26 micromoles/L) and pre diabetes (82+/-23 micromoles/L) were not statistically significantly different. The prevalence of low levels of serum cretonne is less in pre diabetes (11%) than in the control (23%). They concluded that further studies using a larger number and adjusting for confounding factors is needed to ascertain the role of low serum cretonne level as a risk factor of diabetes.

76) RaneeChatterjeeet, (2010), has conducted a study to know the association of Serum and Dietary Potassium and Risk of Incident Type 2 Diabetes, they analyzed data from 12209 participants from the Atherosclerosis Risk in Communities (ARIC) Study, an ongoing prospective cohort study beginning in 1986, with 9 years of in-person follow-up and 17 years of telephone follow-up. Using multivariate Cox proportional hazard models, they estimated the relative hazard (RH) of incident diabetes associated with baseline serum potassium levels. During 9 years of in-person follow up, 1475 participants developed incident diabetes. They concluded that dietary potassium intake was significantly associated with risk of incident diabetes in unadjusted models but not in multivariate models. Serum potassium is an independent predictor of incident diabetes in this cohort. Further study is needed to determine if modification of serum potassium could reduce the subsequent risk of diabetes.

77) Ganda O.P., (2010), has provide a current overview of the worldwide prevalence and pattern of cardiovascular disease and discuss the role of sodium intake and salt sensitivity, with a focus on the Asian Indian population. They found evidence for a strong link between increased salt sensitivity and insulin resistance leading to metabolic syndrome and cardiovascular disease. This relationship may be particularly relevant to the escalating epidemic of cardiovascular disease in the southern Asian Indian population. A broad based community action to achieve at least a modest restriction of salt intake can yield important health benefits and is urgently needed.

78) D. Simmons, (2010), has carried out a ‘‘Crossroads study’’ between June 2001 and March 2003 across seven Australian towns, The aim of this study was to test whether an increased red blood cell count (RBC) is present in pre diabetes, obesity and the metabolic syndrome. The results demonstrate that these diabetes precursor states are associated with an increased RBC. This relationship can be explained, in part, by an increased HbA1c.

79) Jing-Yan Tianet, (2008), has examined WBC count, a marker of inflammation among Chinese population aged 40 years and more. Based on the 75g OGTT, 1016 subjects aged from 40 to 88 years were classified into four groups: norm glycemic (n = 299), isolated IFG (n = 213), IGT (n = 213) and type 2 diabetes (n = 291). The IGT and type 2 diabetes groups had a significantly higher WBC count than the norm glycemic and isolated IFG groups. By stepwise regression analyses, they found that waist circumference, DBP, total cholesterol, HDL cholesterol and 2 h post glucose showed an independent association with the WBC counts. In the analysis stratified by sex and smoking status, WBC count was independently associated with age and triglycerides in males, whereas it was associated with BMI, SBP, triglycerides and 2 hr post glucose in females. BMI, SBP, triglycerides and 2 h post

glucose showed an independent association with WBC counts in subjects who never smoked. From the cursory look of past literature it was found that the prevalence of type 2 diabetes mellitus is growing in epidemic proportions all over the world, particularly in India. It is now known that India has the highest number of diabetic subjects even higher than China and USA. India has the highest prevalence rates of diabetes i.e. about 20% of the total diabetic population in the world.

The diabetes epidemic is accelerating in the developing world, with an increasing proportion of affected people in younger age groups. Recent reports describe type 2 diabetes is being diagnosed in children and adolescents. This is likely to increase further the burden of chronic diabetic complications worldwide, there is increasing interest in identifying people without diabetes and who are at increased risk of the future development of the condition.

Even though many studies were done in urban areas and few in the rural areas to assess the diabetes prevalence and to study different factors influencing it, none of these studies had done a complete evaluation of pre diabetes prevalence.

2.9) Research Gap –

After association with Diabetic patients; researcher released that only medicine is not enough for diabetic patients for control and preventing complications. They need systematic health education and counselling so that patient himself will adopt the healthy behaviour / lifestyle and control his disease.

After literature review researcher found that research has been done in various areas related Diabetes. Majority were done with health science and medical perspective.

Some research are based on health communication and public health care system, condition of health system and communication system in India etc.

Hence very few articles and papers are published about impact of health communication on diabetes in medical journals.

As mentioned above medicine is not enough for prevention and control of diabetes. Social worker looks a person as the person-in-environment, including all the factors that affect the total health care experience. This understanding made researcher to do research on this topic.

2.10) In Conclusion-

In order to present the understanding of theoretical and methodical rational of the present study, this chapter looks at the literature related to the role of Health communication and awareness in prevention and control of diabetes and its complications. In the first part of the literature review researcher has reviewed the published literature pertaining to the health communication and its role. In the second part of the literature review researcher has reviewed the published literature pertaining to the health communication about diabetes, awareness and complications. Researcher has also focused on the literature pertaining to the risk factors associated with pre-diabetes, Body Mass Index, influence of addictness (Alcohol, Smoking) on the diabetes, and literature pertaining to education and occupation on the diabetes; researcher has gone through the literature available regarding above mentioned facets. There are several research study papers, books available in the context of health communication, but generally full in the domain of general awareness. It is observed that, as literature concerning the role of communication in health care and health promotion began to increase, there was a growing need for academic legitimization for communication scholars studying the role communication in health. The present chapter of the study endeavors to review briefly the related literature only to substantiate the views experts health communication related to diabetes. Researcher

does not claim to review all the related literature in the context of the selected topic. It is just an attempt to take a glance at some important studies done in the context of health communication about diabetes.

Chapter – 3

Research Methodology

3.1) Introduction –

Research in common parlance refers to a search for knowledge. The advanced learner's dictionary of current English lays down the meaning of social science research as a "careful investigation or inquiry especially through the search for new facts in any branch of knowledge"

Redman and Mory define research as a "systematic efforts to gain new knowledge." Some people consider knowledge as a movement from unknown to known. It is actually a voyage of discovery. We all possess the vital instinct of inquisitiveness that makes us props and attain full and fuller understanding of unknown Facts and Phenomenon.

Research design and methodology can be defined as the plan and structure of enquiry formulated in order to obtain answers to research questions related to various social issues. The research plan or design constitutes the overall programme of the research process. It includes the frame work of the entire research process, starting from formulating objectives of the study, developing the hypothesis to the final evaluation of collected primary data.

Research design and methodology is essential for any research study, because it facilitates the smooth flow of various research processes. A good research design means that good research result can be obtained with minimum utilization of time, money and efforts. Therefore, it can be said that, research design is highly essential for planning of research activities. An ideal research design can be developed, if available resources like time, manpower and money are considered before beginning the research design. Considering this fact, in the present chapter researcher has

explained the research design and overall plan of the present research study. It is concerned with the setting of study, sampling, techniques of data collection, chapter arrangement of the study report etc.

3.2) Scope of the study –

To give justice to the study and to get reliable information in the desired timeframe, the researcher has decided to focus the attention to the diabetes patients and health communication practice followed by the doctors, health care providers, and diabetes mellitus awareness programme arranged by the Evangeline Booth Hospital, Ahmednagar and community health development programmes, conducted by this hospital.

A study of diabetes its awareness and level of knowledge among the general public and diabetes patients is very vast and to study its various aspects is also very comprehensive and can be studied from various angles. Therefore the scope of the present study is limited to explore the level of awareness, knowledge about diabetes among general public and diabetes patients and explore the impact of counselling, health communication practices on the health and social-economic conditions of the diabetes patients. At the Ph.D. level study and in short period of time it was very difficult for researcher to study the various aspects of the health communication/education pertaining to diabetes and its impact on the health and socio-economic conditions of diabetes patients spread all over the state and therefore, the present study has restricted only to the diabetes patients in Ahmednagar.

3.3) Importance of the study –

Today, all over the world number of people are affected by the diabetes. In India, with more than 7 cores diabetic individuals are suffering from diabetes. Number of diabetes patients expected to 10.1 crores by 2030.

Diabetes has been directly responsible for death. The prevalence of the diabetes in Maharashtra is also very high. In India, Maharashtra and Tamil Nadu states have highest prevalence of diabetes. Now a day, diabetes disease is one of the major fast increasing non-communicable disease and causes threat to public health. Prior to initiating programme or interventions for diabetes patients, it is necessary to access the level of knowledge, attitude and practices of the diabetes patients. The main objective of the present study is thus to determine current diabetes related knowledge, attitude and practices of diabetes patients. The assessment of these aspects is important due to increasing morbidity rate of diabetes in India. It is most likely due to trend of urbanization and changes in lifestyle. The people who have better knowledge pertaining to diabetes are more likely to involve in their treatment. Health communication plays an important role in addressing development issues as it involves bringing transformation in knowledge, attitudes and practices through information/education dissemination. Health is an important development issue and health issues which are preventive in nature, require support of communication with patients.

Several studies indicated that, awareness, level of knowledge of the diabetes in the general population seems to be low. There are only a few data on the level of awareness, knowledge and attitude of the general people about the diabetes in the developing country like India. Hence, the present study is very important to assess the significance of the health communication and counselling and its impacts on the generalized health, life style and existing complications of the diabetes people. There is always a need to study the role that has been played by the communication in the process of health awareness. It is also important to study the role of social workers in the process to increase health awareness to imparting education regarding diabetes.

Health communication or education is the foundation of preventive health care system. This type of study is important because health communication or education not only empower people but also enables them to make informed decisions on personal and delicate questions. Many diabetic patients find themselves unable to follow recommended medical regime and lifestyle. A healthy diet, regular exercise etc. which makes more prone to diabetic complication, leading to poor quality of life. Communication is one of the key elements adherences to medical regime and diabetes outcomes. This study is important with a view to analyze the sugar levels in pre and post counselling periods. It is also important to observe that, is there any improvement in the sugar level of patients in the post counselling period or not? And has health communication or health education helped to restore and promote general health and reduce complications of diabetes? In this situation, the feedback taken from diabetes patients could be helpful to the health care takers, doctors, social workers in the treatment process.

In the opinion of researchers, there are very few systematic and comprehensive studies have been done which collaborates the issues of diabetes the role of health communication or education and social work intervention in the diabetes preventive programs.

The present study could be useful addition to the literature on the selected study topic which is particularly scares in the Indian context. Such type of study could help to social workers, professional health care takers and also to the diabetes patients.

3.4) Ethical concerns in research

Any research study required to be carried out with ethically. Ethics are very significant in any social study research for researcher and for the society. In the

simple words research ethics are provides guideline to the researcher in the process of research. There are many research principles explained by various research scholars depending on the research faculties. Honesty, harmless approach with individual, acknowledging the sources of information, maintain confidentiality are some of the basic principles in every types of study research. Some principles are varying according to the research faculties such as ethics in medical, ethics in science and technology, ethics in social science research etc.

Research ethics are very important because it helps to creates team work such as help from people, government and NGOs and support from other sectors. While doing this researcher should respect the people and organizations and acknowledge their help and acknowledge their help in providing information required for study research.

Considering this act, for the present study purpose researcher has also followed the research ethics, and not mislead the people and convey work messages. Confidentiality is one of the important element of any study research that researcher has keep in mind when there is a involvement of people is more. When researcher are collecting information or discussing with people regarding some social issues, then it is the responsibility of the researcher to keep the confidentiality of the collected information.

The present study is a part of social science research which cover some variables of health communication with the diabetes patients. Here the study research topic is fully society oriented and therefore, all the principles of research ethics have been followed while taking interviews of diabetes patients. In the present study, the role of health communication in educating and counselling diabetes patients is a main

focus. Information pertaining to the diabetes patients in the Evangeline Booth Hospital, Ahmadnagar have been collected.

1) A letter has been submitted to the hospital administrative doctor with a view to get permission for collection information about previous diabetes cases.
2) Permission has been got for testing of sugar level, Hemogram etc. in various medical camps of the selected hospital.
3) Permission has been got to provide medical treatment, to provide information about diet to the diabetes patients and to provide them counseling.
4) The moral responsibility is also followed by the researcher during the talking informally with the diabetes patients.
5) All the information have been collected form the diabetes patients by taking them in to confidence and by providing assurance that their personal information will be use for academic purpose only and will not expose anywhere or published through media.
6) Assurance is also given that they can check the study report at any time whenever they wants. Assurance is also given to the Hospital administrative staff about the confidentiality of the information.
7) Researcher has also properly acknowledged the collected and referred articles, study papers, etc. Apart from this, proper references of definitions, quotes etc. are also mentioned in the bibliography. The primary information has been analysed without any fabrication and without harming any of the response. After that, interpretation of the collected qualitative secondary information observations and quantitative information where no misinterpretation is incorporated. Whatever the output indicated in the form of graphs are honest and authentic.

3.5) Objectives of the study –

The objectives of the research study enables researchers to avoid collecting unnecessary and irrelevant data and concentrate only on information that is directly connected with the objectives of the study. Researcher has observed that in the past there are various studies pertaining to the diabetes mellitus, impacts of diabetes attitude, awareness about diabetes etc. by different researchers and experts. They have studied the several other aspects regarding diabetes; however very few attempts have been made in the past to study the role of health communication and social work intervention in the prevention of diabetes, patients knowledge about diabetes, their attitude towards diabetes and preventive practices etc. there was no any study which related to the assessment of impact of counselling on the lifestyle of the diabetes patients and complications arised due to diabetes and therefore the present study was carried out with the following objectives.

i) To assess the level of knowledge, attitude and practices of the diabetes patients.

ii) To analyze the sugar levels in pre and post counselling periods/sessions.

iii) To study the impact of counselling on the general health, lifestyle of the diabetes patients and study the existing complications due to diabetes.

iv) To develop a effective health communication model for diabetes patients.

3.6) Variables in the study

A) Dependent Variables –

1) Health communication/education module
2) Complication of diabetes
3) Life style

B) Independent Variables –

1) Types of diabetes mellitus and sugar level
2) Personality Types

3.7) Hypothesis of the study –

For fulfilling the formulated objectives, the researcher has reached to the stage of formulating of hypothesis which guiding the direction of study. The present study aims and testing the following hypothesis.

H1 - The diabetes patients are significantly aware of the illness but not serious about the consequences of the diabetes.

H2 - Given a systematic health counselling and education can reduce the mortality and morbidity of diabetes.

H3 – Proper health communication procedure followed by medical professional leads to prevention and control of risk of complication of diabetes.

H4 – There is significant association between satisfaction level of counselling and the level of sugar.

H5 – There is significant association between health communication/education process and the change of positive lifestyle of diabetes patients.

3.8) Research questions

- What is the level of knowledge of patients about diabetes?
- What is the attitude of patients toward diabetes?
- What are practices followed by people regarding their lifestyle and glycemic control?
- Is there any improvement in the sugar level in the post counselling session among the cohort, compared to pre- counselling session?
- How does diabetes affect socio-economic life of patients?

- Has health education helped to restore and promote general health and reduce complications raised due to diabetes?

3.9) Operational definitions of the concepts

1) Health Communication – Health communication is a process through which people are educated about the specific health problems or issues and influence audiences to accept healthy behaviours. It is a activity pertaining to utilization of communication strategies to inform people that enhance health.
2) Diabetes – Diabetes is the situation which caused to not properly process food for use as energy. It is a chronic disease that exists when the pancrease is no longer able to make insulin.
3) Community Health Development Program – Community health development program is a activity which concern with a developing and changing process that related with the social and health context. Community health development program related with the primary care health promotion and community development.

3.10) Research design –

Single group pretest posttest quasi experimental design has been used in pretest investigation. In the following table the details are provided in this regard.

Pretest	Treatment	Post-Test
Measurement		Measurement
Assessment of – i) Personal data sheet ii) Personality inventory iii) Feedback sheet iv) Sugar level	i) Health communication ii) Counselling	Assessment of – i) Inventory ii) Feedback sheet iii) Sugar level
N = 215		N = 215

The methodology adopted for the study purpose is exploratory study. The general intent of the present study is the investigation, and therefore a systematical and organized methodology has been obtained for the study purpose. The population for the study comprised of medical professionals, medical health team and the diabetic mellitus patients.

3.11) Sample design –

There were 430 diabetes patients out of which 215 diabetes patients were selected by applying Simple Random sampling method. The patients were those whose sugar level or diabetes was not at sever level or at serious level; and there is an improvement in their health condition after going through the counseling or health education. The actual respondents (215) were selected by using simple random sampling method

Gender wise distribution of Respondents

Gender	Number of Respondents
Male	107
Female	108
Total	215

3.12) Universe of the study -

Universe of the study is male and female diabetes patients in Ahmednagar Tahsil

3.13) Methods sand Tools of Data Collection –

The interview schedule for diabetes patients, observation method were used for the purpose of primary data collection. Interview schedule is the main tool of primary data collection from the diabetes patients.

Being a busy schedule of doctors, health care providers, social workers and also diabetes patients it was very difficult to get all information through the interview schedule only. Therefore, the researcher has also collected data by following observation method during the field work. Observations relevant to the study were recorded by the researcher in the form of field work notes, which became useful in the drawing some meaning conclusions. Therefore, all endeavors have been taken to make the study just appropriate and genuine and so as to generalize the findings of the study.

Apart from this, the secondary data has been collected through various books articles, research papers etc. published in various journals, periodicals, magazines etc. Information available on the Internet has also been referred and considered for the purpose of the study. Researcher has found that secondary data pertaining to the present topic is in scarcity and only in the form of study papers or articles. Unfortunately, there were no adequate literatures in the context of health

communication/education related to diabetes. It is scares in the Indian context. Consequently, the study is limited, mostly to research papers, articles published in the International and National journals and information available on the Internet. The secondary data was also collected through the personal discussions held with doctor's health care providers, social workers and diabetes patients.

3.14) Data analysis and processing

The collected primary information have been analyzed with the help of simple percentile method.

For this purpose SPSS software package has been applied for tabulation of collected primary information.

3.15) Details of Interview schedule –

For the study purpose, primary information has been collected from diabetes patients through well-structured interview schedule. Through the interview schedule general information of the respondents has been asked such as name, age, gender, marital status, education, living status, occupation, income, etc. Some questions have been asked to the respondents pertaining to their knowledge about types of diabetes, compliance, normal sugar level, duration of suffering from diabetes etc. Some questions have been asked with a view to understand the attitude of the respondents towards diabetes, risk factors of diabetes, self-care, medicine etc. Some questions have been also asked to the respondents to understand about their practices regarding diabetes. In this section the questions are included about the timings of food consuming, duration of daily exercising, sleeping timings and duration of sleep, spending of leisure times etc. Some questions are included in the interview schedule which are related to the health communication, impact of health communication, adverse impact of diabetes on their

socio-economic conditions, married life, monthly expenditure for the treatment of diabetes, their satisfaction about the health communication methods adopted by doctors/health communicators etc.

3.16) Pilot study –

The pilot study is an exploratory study done in primarily to help in defining the problem, develop or redefined objectives or redefined the data collection methods. It is desirable to conduct a pilot study before administrating a interview schedule to the selected sample. Infact, the desirability of piloting such instruments are not solely to do with typing but to ensure that the research instrument is functioning well. Pilot study may be particularly crucial in relation to research based on the interview schedule science there will not be any interviewer present to clear up any confusion. Interviews have been carried out and then have been addressed. For the present study pilot study was conducted on 100 respondents for the feasibility of the study. The major objectives of the pilot study were –

i) To assess the feasibility of the interview schedule (Tool)

ii) To test the tool for content and language

iii) To assess the time taken for filling up interview schedule

iv) To identify the problems occurred during the process of primary data collection.

The important observations during the pilot study were noted and necessary corrections were made in the interview schedule.

3.17) Limitations of the study –

The results of the study are bound to be affected because of some limitations. However, these are marginal and do not substantially affect the analysis of the primary data.

i) The study is restricted to the selected diabetes patients in Ahmednagar. Therefore, the results cannot be generalized to the other cities/districts in India.

ii) Some biased responses existed whilst filling up the interview schedule. However, due care was taken to ensure the accuracy of data provided by the respondents.

iii) The present study is limited for the August 2016 to July 2019 (Three years).

iv) There are various model of health education and health promotion for eg.

- Medical model
- Motivational model
- Behavior change model
- Self empowerment model etc.

Reliance on only one method is likely to lead failure. A combination of approaches using all the methods to change the life style and appropriate use of medical core will be necessary.

Hence, for Researcher was unable to apply a specific model of health education in this study.

3.18) Chapter scheme of the study –

The present study report has divided into 5 chapters. The contents of the chapters has explained in the following paragraphs –

Chapter – 1 – Introduction –

The first chapter of the study report deals with the theoretical contents of the selected study topic. In this chapter researcher has focused on the concepts of health communication, historical background of health communication, historical incidents in public health education or communication in India, importance of health

communication, problem of diabetes in India, health communication campaign in India, functions of health communication and profile of study area.

Chapter – 2 – Review of Literature –

This chapter deals with the literature review pertaining to the selected study topic. The review of literature are grouped into five major headings such as -1) Health Communication 2) Health communication about diabetes awareness and complications, 3) Risk factors associated with pre-diabetes Body Mass Index, 4) Influence of addictness on the diabetes, 5) Influence of education and occupation on the diabetes. Apart from this some published literature pertaining to physical activities, waist circumference etc.

Chapter – 3 – Research Methodology –

In this chapter research design and methodology has been explained. This chapter deals with the importance of the study, objectives, hypothesis of the study, research questions and scope of the study, variables of the study operational definitions, Research design sources of data collection, etc.

Chapter – 4 – Data analysis and interpretation -

This chapter deals with the various approaches of health communication for diabetes patients, opinions of the respondents about health communication/education, social work Intervention in diabetes prevention etc. In this chapter researcher has also analyzed and interpreted the primary information collected from the respondents. It included general information of the respondents, their knowledge about diabetes, attitude towards diabetes, practices of diabetes patients, impact of diabetes on social and economic status etc.

Chapter – 5 Major findings and suggestions

This is the last chapter of the study report. This chapter deals with the major findings, observations and conclusions, major findings observations on the basis of information provided by the respondents about their knowledge of diabetes; testing of hypothesis and suggestions.

Chapter – 4

Analysis and Interpretation of Data

In this chapter Researcher has done analysis and interpretation of data collected from Diabetic patients through interview schedule which includes general information, knowledge, attitude, practices and Symptoms of Diabetes.

Also Researcher has done study of Impact of health communication on the health of diabetes mellitus.

For convenience and better understanding this chapter is divided in two parts.

- **Part A – Analysis and Interpretation of Data.**
- **Part B – Impact of health communication on the health of diabetes mellitus.**

Part A – Analysis and Interpretation of Data

4A.1) Introduction –

Data collection should be followed by data analysis and interpretation. Interpretation means explanation of the underlying relations within the data. Interpretation and analysis of data involves drawing inferences from the data analysed. In a sense analysis and interpretation are concomitant process. Interpretation, in essence is the search for wider implications of the research findings. It is concerned with two important and related tasks-to find linkages between the present study and the existing knowledge base, and to explain on some sound basis the findings and related concepts of the present study. The essential element in analysis and interpretation of data is the summarization of results in the form of tables. Considering this fact the researcher has analysed the collected primary data in the table form in the present chapter. With a view to understand the role of health communication and awareness in prevention

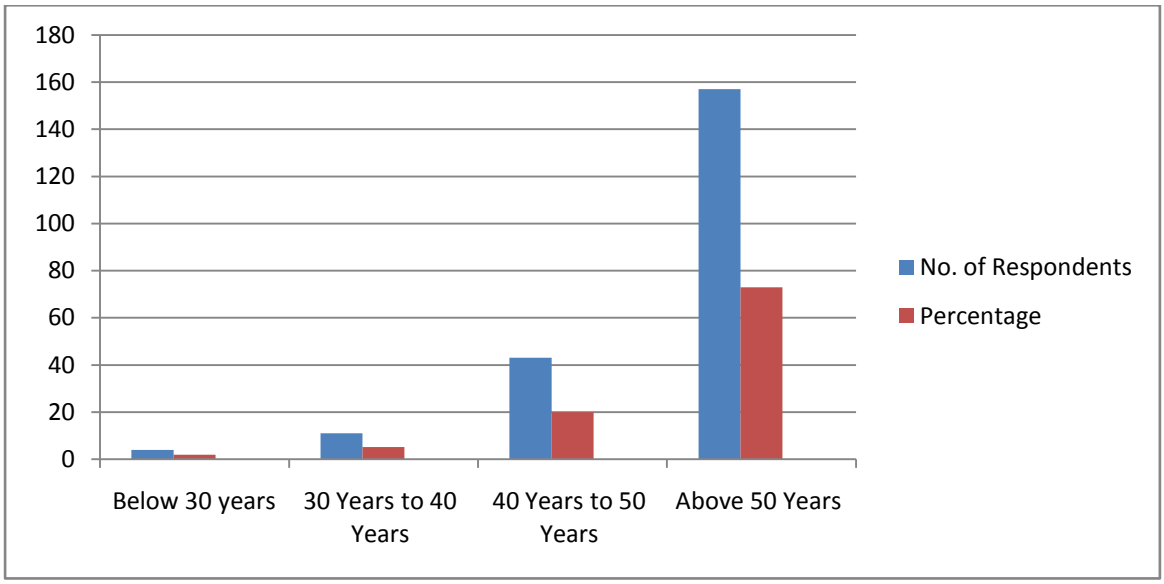
have been collected from the diabetes patients of Ahmednagar. Well-structured Interview schedule has been used as a main tool for collection of primary information. The questionnaire has been divided into five parts namely- 1) General information of the respondents 2) Knowledge about diabetes 3) Attitudes of patents towards diabetes 4) Practices of diabetes patients 5) Symptoms and problems of diabetes. The following tables indicate the general information about selected diabetes patients.

4A.2.1) General information of the respondents –

Table No. 4A.1

Table indicates the relationship between age and diabetes

Sr. No	Age group	No. of Respondents	Percentage
1	Below 30 years	4	1.9
2	30 Years to 40 Years	11	5.1
3	40 Years to 50 Years	43	20.0
4	Above 50 Years	157	73.0
	Total	215	100.0

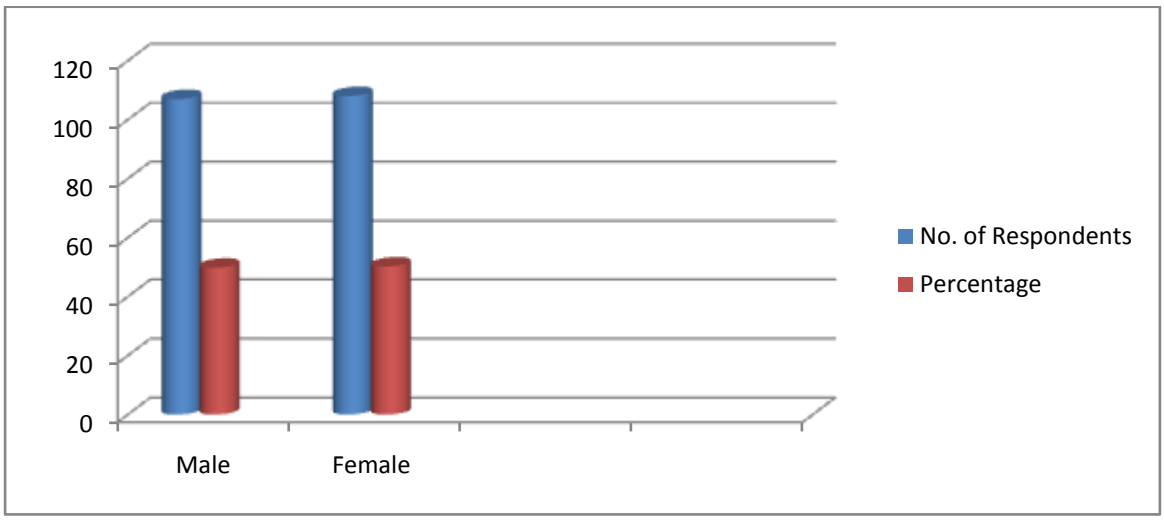


The risk of diabetes increases with the age. The disease of diabetes is affects many older persons. It is revealed that 1.9% respondents are below the age of 30 years. 5.1% respondents belonging to the age group of 30 years to 40 years. 20% of them belonging to 40 years to 50 years, and majority of them (73%) are above 50 years. It means, as age increases the danger risks of diabetes also increases.

Table No. 4A.2

Gender wise distribution of the respondents

Sr. No	Gender	No. of Respondents	Percentage
1	Male	107	49.8
2	Female	108	50.2
	Total	215	100.0

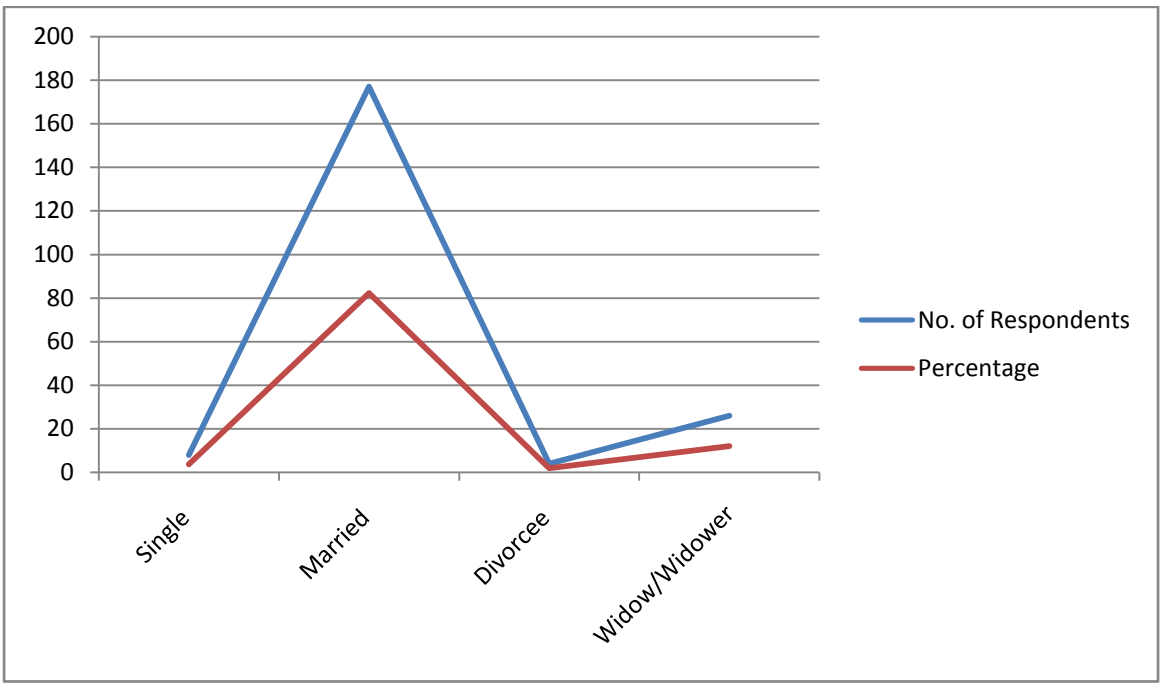


As per the collected information. 49.8% respondents are male and 50.2% respondents are female in the total sample of the diabetes patients. Diabetes among male of female in rural areas. Women approach at vey later stage of diabetes.

Table No. 4A.3

The marital status of the respondents

Sr. No	Marital Status	No. of Respondents	Percentage
1	Single	8	3.7
2	Married	177	82.3
3	Divorcee	4	1.9
4	Widow/Widower	26	12.1
	Total	215	100.0

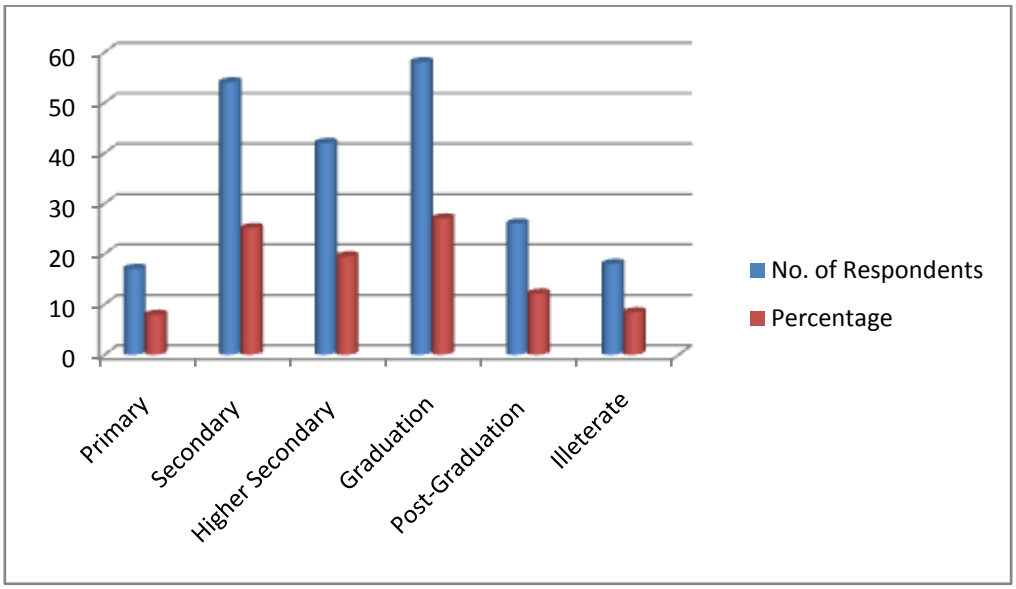


It is revealed that only 3.7% respondents are single, 1.9% are divorcee, 12.1% respondents are widow or widower. Majority of the respondents (82.3%) are married in the total sample of diabetes patient.

Table No. 4A.4

Educational qualification of the selected diabetes patients

Sr. No	Educational status	No. of Respondents	Percentage
1	Primary	17	7.9
2	Secondary	54	25.1
3	Higher Secondary	42	19.5
4	Graduation	58	27.0
5	Post-Graduation	26	12.1
6	Illiterate	18	8.4
	Total	215	100.0

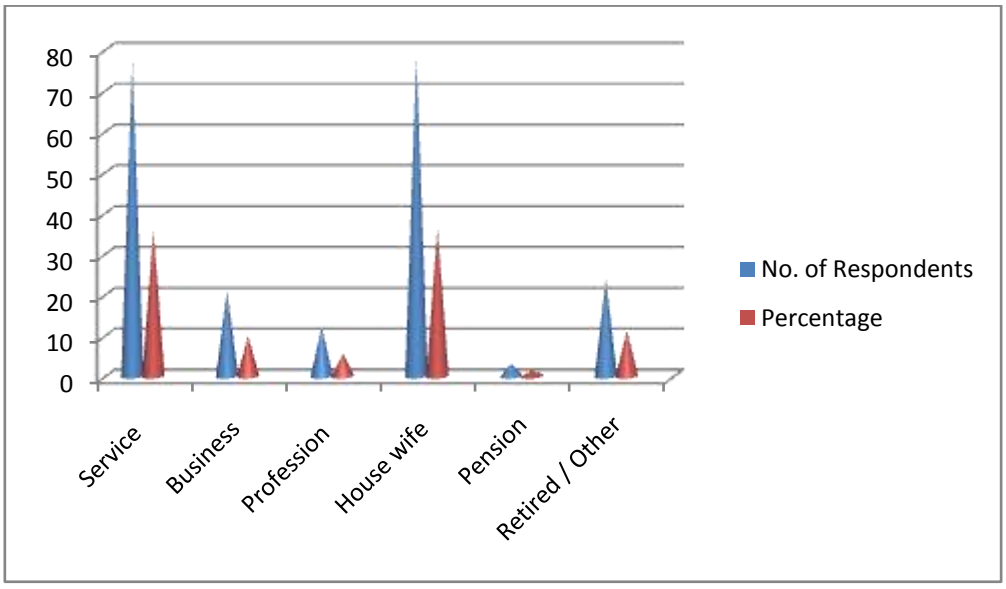


According to the collected information, 7.9% of the respondents have completed only primary education, 25.1% respondents have completed secondary education, 19.5% have completed higher secondary education, 27% of them have completed graduation, 12.1% have completed their post-graduation and 8.4% of the respondents are illiterate.

Table No. 4A.5

Occupation wise distribution of the respondents

Sr. No	Occupation	No. of Respondents	Percentage
1	Service	77	35.8
2	Business	21	9.8
3	Profession	12	5.6
4	House wife	78	36.3
5	Pension	3	1.4
6	Retired / Other	24	11.2
	Total	215	100.0

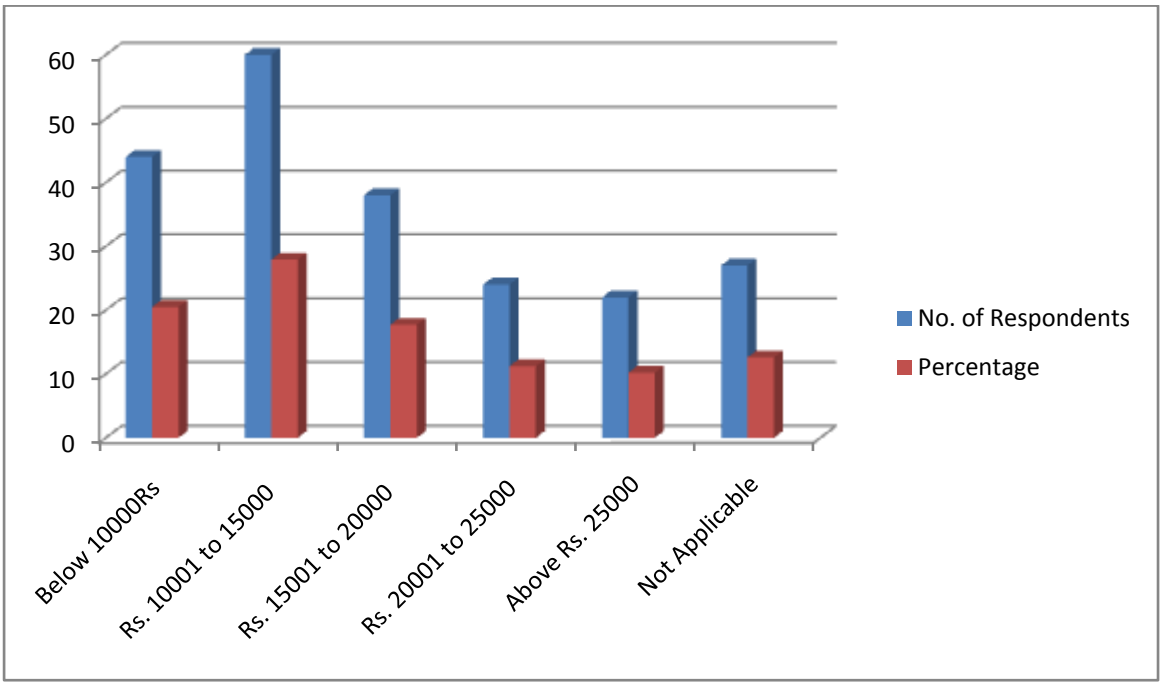


As per the collected information, 35.8% respondents are doing service/job in private or government organization. 9.8% respondents are doing business. 5.6% are in various professions. 36.3% respondents are housewife. 1.4% respondents are pensioners and 11.2% are retired persons. The selected respondents are belonging to various occupations.

Table No. 4A.6

The monthly income wise distribution of the respondents

Sr. No	Monthly Income	No. of Respondents	Percentage
1	Below 10000 Rs.	44	20.5
2	Rs. 10001 to 15000	60	27.9
3	Rs. 15001 to 20000	38	17.7
4	Rs. 20001 to 25000	24	11.2
5	Above Rs. 25000	22	10.2
6	Not Applicable	27	12.6
	Total	215	100.0



As per the information provided by the respondents, 20.5% of them are having their monthly income below 10000 Rs. 27.9% respondents are having their monthly income in between Rs. 10001 to Rs. 15000. 17.7% of them are having their monthly

income in between Rs. 15001 to Rs. 20000. 11.2% of them having Rs. 20001 to Rs. 25000 as their monthly income, and only 10.2% respondent's monthly income is above Rs. 25000.

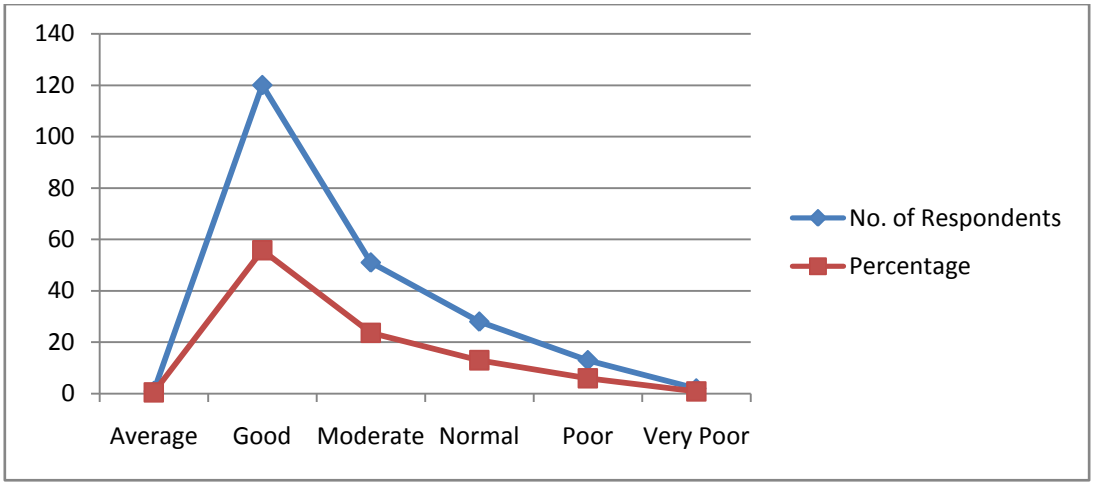
The danger of diabetes can be reduced by imparting proper education to the diabetes patients about the ill effects of diabetes and adverse effects of non-compliance. Various studies have indicated that, better glycaemic control in the diabetes can be obtained by good compliance to the treatment. Compliance to the treatment will help to get control glycaemic among diabetes patients. With a view to understand the condition of compliance to diabetes, a question has asked to the respondents.

4A.2.2) Knowledge of Diabetes –

Table No. 4A.7

Table showing the compliance level to diabetes treatment

Sr. No	Compliance	No. of Respondents	Percentage
1	Average	1	0.5
2	Good	120	55.8
3	Moderate	51	23.7
4	Normal	28	13.0
5	Poor	13	6.0
6	Very Poor	2	0.9
	Total	215	100.0



From the above table it is revealed that only 0.5% of them average compiling to diabetes treatment. 23.7% respondents compliance is moderate 13% respondents compliance is normal and 6.0% respondents compliance is poor and 0.9% respondents compliance is very poor. But majority of them (55.8%) have stated that, their compliance to the treatment is good. It indicates that, majority of the respondents are having good awareness about the ill effects of the diabetes, and importance of the compliance to the treatment.

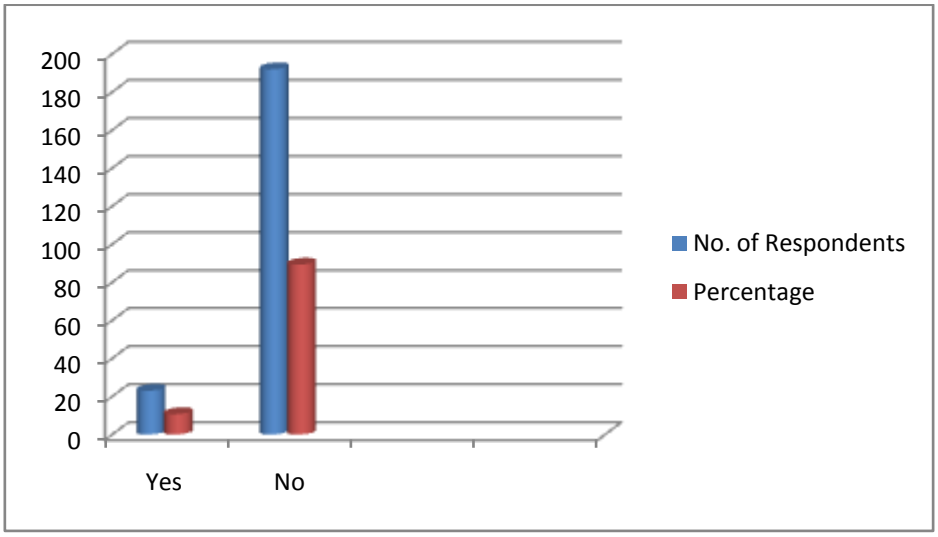
Proper health education provides information of physical health. It motivates diabetes patients to improve and maintain their health with a view to prevent the danger of diabetes. Diabetes patients must know about their disease and should avoid unhealthy diets, smoking, and alcohol consumption. A proper health education and health promotion activities and health care activities are very important for any individual with diabetes mellitus.

Table No. 4A.8

Status of prior Health Education

Sr. No	Prior Health Education	No. of Respondents	Percentage
1	Yes	23	10.7
2	No	192	89.3
	Total	215	100.0

The above table indicates the information about whether the selected diabetes patients (respondents) have received health education previously or not.



According to the information provided by the respondents, only 10.7% of them have received health education previous. Majority of the respondents (89.3%) have not received prior health education.

Various studies have shown that, presently, majority of the diabetes patients are having good awareness pertaining to the diabetes disease. Having proper and good awareness caused to good compliance to the diabetes treatment and reduction in health complications.

Table No. 4A.9

Awareness (Knowledge) about diabetes

Sr. No	Awareness about Diabetes	No. of Respondents	Percentage
1	Yes	178	82.8
2	No	37	17.2
	Total	215	100.0

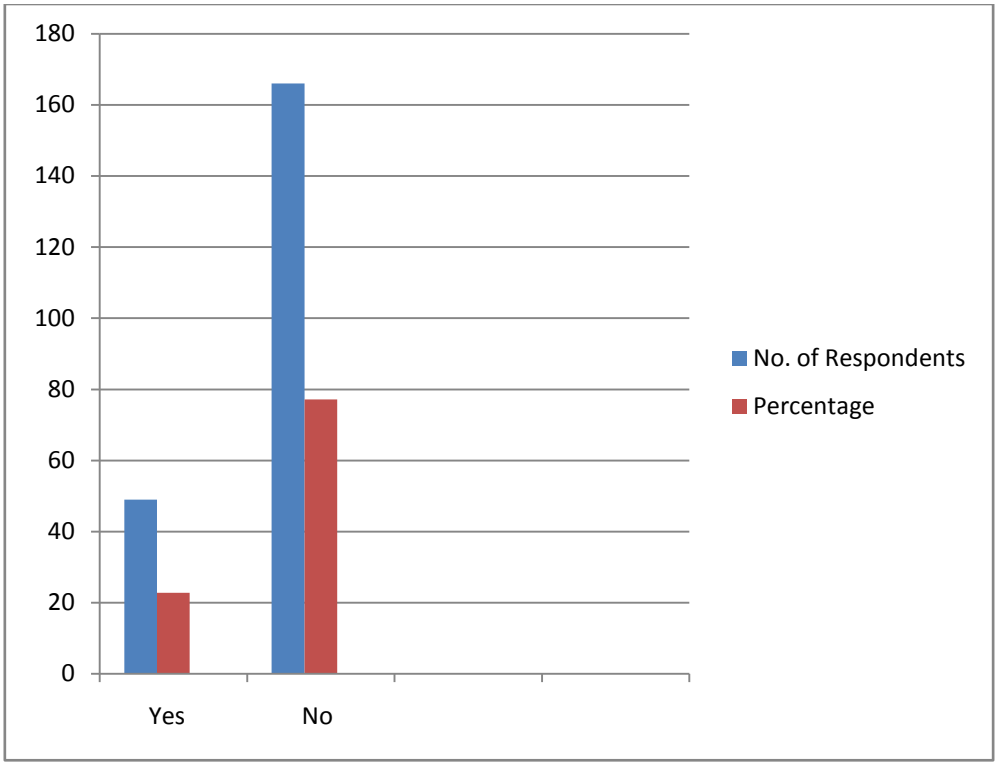
The above table shows the fact that whether the respondents are having awareness about diabetes or not. It is observed that majority of the respondents, (82.8%) are having good awareness about diabetes. Only 17.2% of the respondents have stated that, they are not aware about the diabetes.

Table No. 4A.10

Knowledge of Respondents about types of diabetes

Sr. No	Knowledge of Types of Diabetes	No. of Respondents	Percentage
1	Yes	49	22.8
2	No	166	77.2
	Total	215	100.0

The above table shows the knowledge of respondents about the various types of diabetes.



Only 22.8% respondents are having knowledge about the various types of diabetes. Majority of them (77.2%) are not having knowledge about types of diabetes.

If blood sugar level is below 140 mg/dl (7.8mmol/L) is considered as normal; and if blood sugar level is more than 200mg/dl (11.1mmol/L) indicates diabetes. Every diabetes patients must know about the normal sugar level. With a view to understand whether the respondents are having knowledge about normal sugar level in blood, or not.

Table No. 4A.11

Knowledge about Normal sugar levels

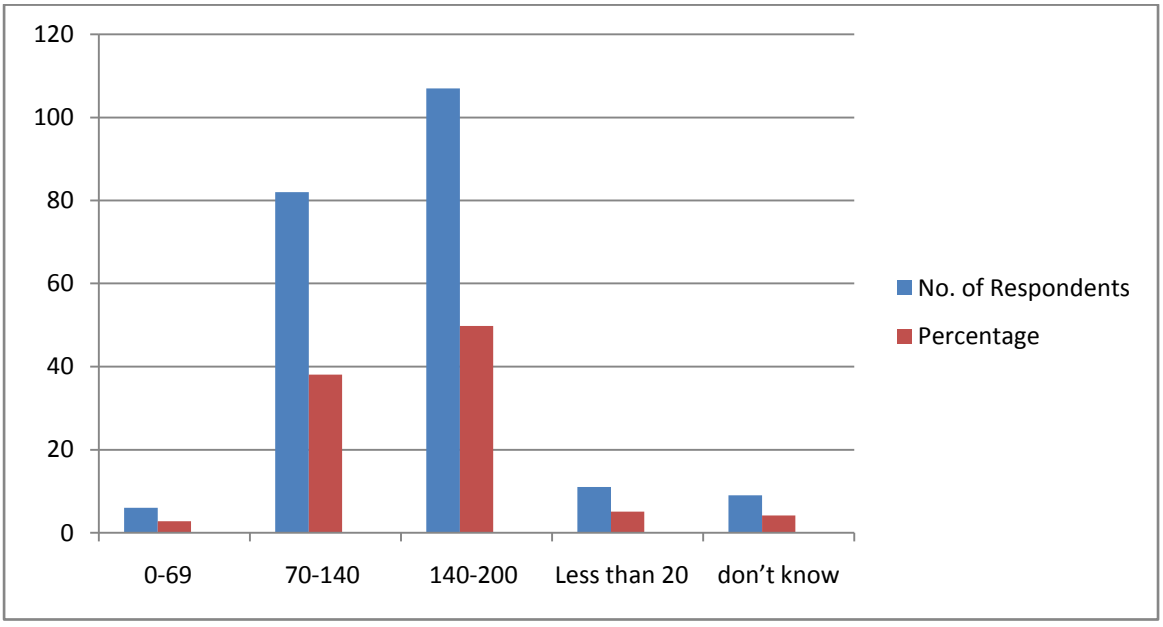
Sr. No	Normal Sugar Level	No. of Respondents	Percentage
1	Yes	167	77.7
2	No	48	22.3
	Total	215	100.0

As per the collected information majority of the respondents are having knowledge about the normal sugar level in blood. Only of them are not having knowledge of normal blood sugar level.

Table No. 4A.12

Status of Normal sugar level of Respondents

Sr. No	Normal Sugar Level	No. of Respondents	Percentage
1	0-69	6	2.8
2	70-140	82	38.1
3	140-200	107	49.8
4	Less than 200	11	5.1
5	don't know	9	4.2
	Total	215	100.0



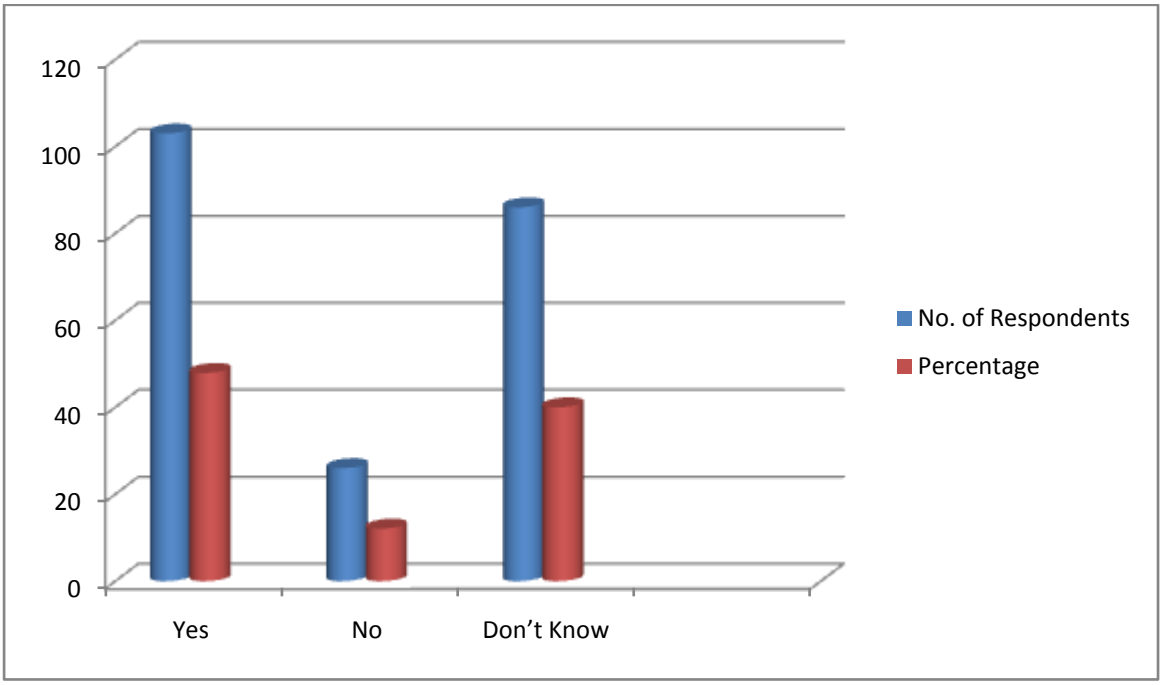
From the above table it is revealed that the 2.8% respondents' sugar level is between 0 to 69 mg/dl, 38.1% respondents' sugar level is between 70 to 140 mg/dl (Which is normal), and Majority of the respondents' (49.8%) sugar level is between 140 mg/dl to 200 mg/dl. 4.2% respondents have stated that they don't know about their blood sugar level.

On the basis of various survey studies, only type-2 diabetes can be hereditary; and on the basis of some studies, it is observed that, unlike some traits, diabetes does not seem to be inherited in a simple pattern. With a view to understand the opinions of the respondents on the hereditary of diabetes; a question has been asked to them in this context.

Table No. 4A.13

Table showing opinion about heritablility of diabetes

Sr. No	Heritability of Diabetes	No. of Respondents	Percentage
1	Yes	103	47.9
2	No	26	12.1
3	Don't Know	86	40.0
	Total	215	100.0

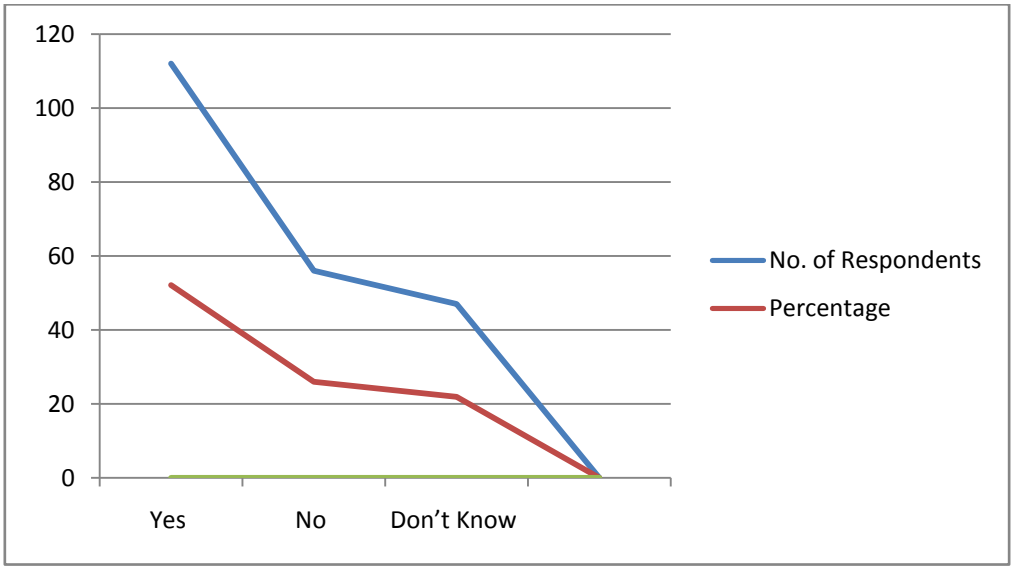


In the opinion of 47.9% respondent's diabetes is heritable; According to 12.1% respondents, diabetes is not heritable; and 40% of the respondents are not having knowledge about whether diabetes is heritable or not.

Table No. 4A.14

Opinion of Respondents about consumes

Sr. No	Consuming Excess Sweet Causes Diabetes	No. of Respondents	Percentage
1	Yes	112	52.1
2	No	56	26.0
3	Don't Know	47	21.9
	Total	215	100.0



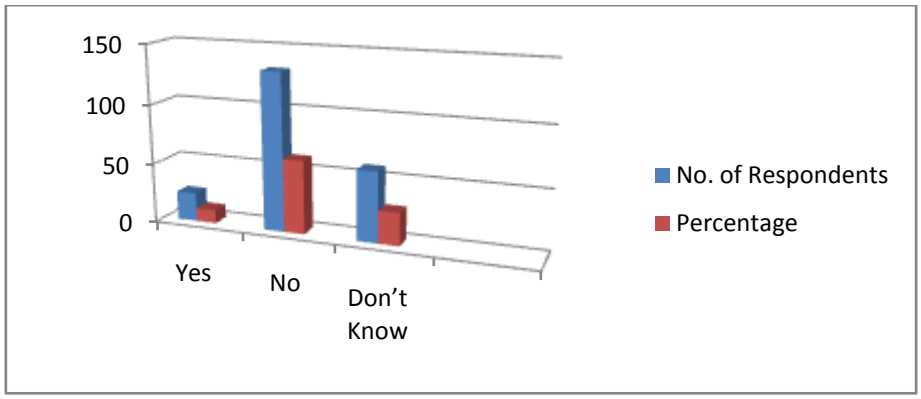
In the opinion of 52.1%rspondents, consuming excess sweet causes diabetes. 26% respondents have stated that consuming excess sweet cause's diabetes and 21.9% respondents don't know whether excess sweet causes diabetes or not.

Actually, there is no any chance to cure diabetes. But if diabetes patients try to control blood glucose level and beings it at normal level, then there may be reduce in danger or diabetes. With a view to understand the opinions of the respondents in this context a question has asked them.

Table No. 4A.15

Opinion of Respondents about complete cure of Diabetes.

Sr. No		No. of Respondents	Percentage
1	Yes	24	11.2
2	No	132	61.4
3	Don't Know	59	27.4
	Total	215	100.0



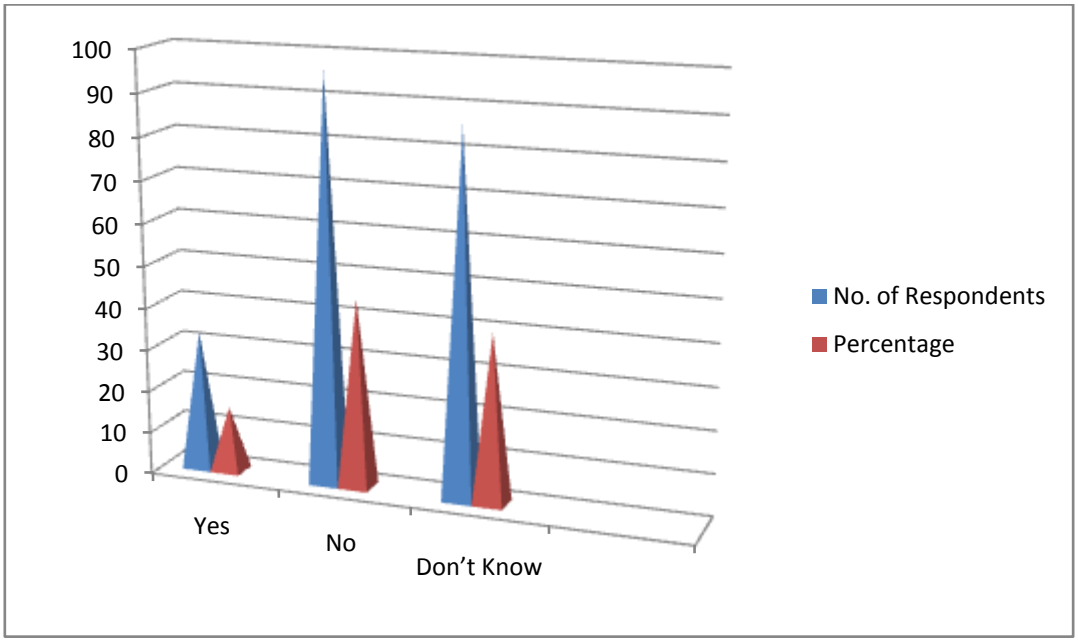
In the opinion of 11.2% respondents, diabetes can be cured completely. Majority of the respondents (61.4%) have opined that, diabetes cannot cured completely; and 27.4% respondents have stated that, they don't know whether the disease like diabetes cure completely or not.

In India, diabetes disease considered as a disease of rich people. Diabetes is now known as world problem. This problem now disproportionately affects poor people also. India's economic development has brought higher income and also brought diabetes. Easy availability of fast and cheap quality food has also meant that poor diets are now found in poor people. A question has been asked with view to understand do they think diabetes is more among rich people or not.

Table No. 4A.16

Views of Respondents between Diabetes and economically rich people.

Sr. No		No. of Respondents	Percentage
1	Yes	33	15.3
2	No	96	44.7
3	Don't Know	86	40.0
	Total	215	100.0



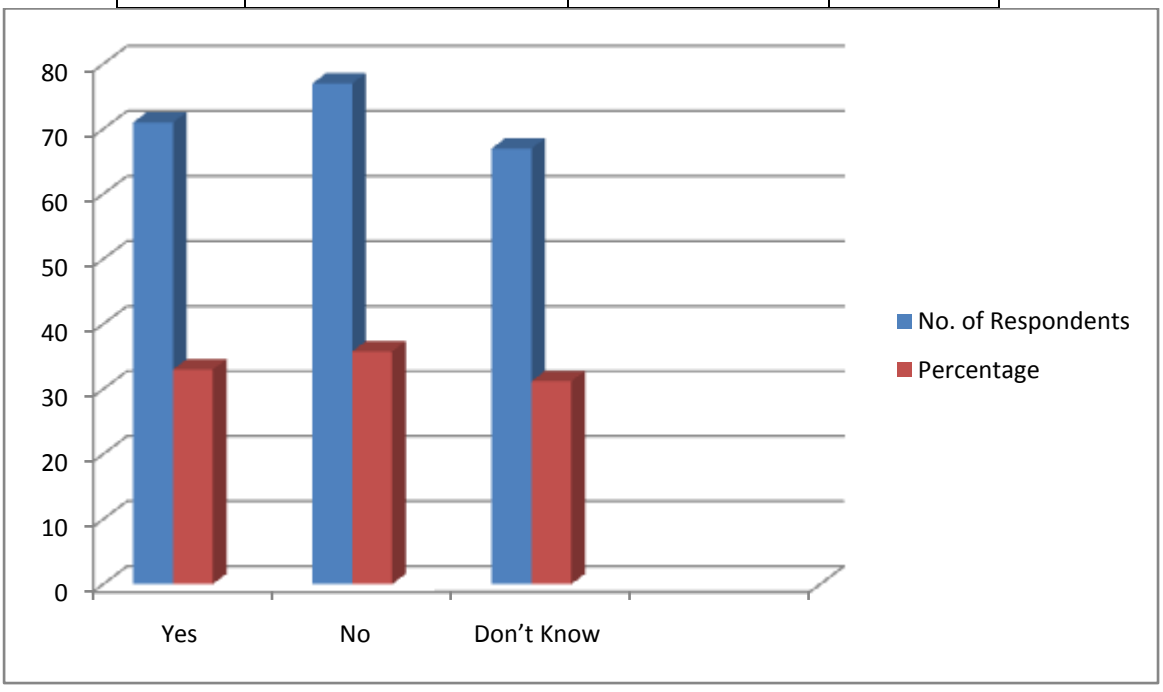
In the opinion of 15.3% respondents, diabetes is more among rich people, according to 44.7% respondents, diabetes is not found mere among rich people but it also found is poor people also. 40% of the respondents are not able to opine in this regard.

Through some studies, it was observed that, eating bitterroots or bitter melon there may be reduction in the level of blood sugar, and lower the HbA1c in the type two diabetes patients. The bitter gourd is a unique fruit which help to reduce blood glucose concentrations by acting on peripheral tissues and suppressing appetite-similar to the effects of insulin in the brain. On this background it is very important to understand the opinions of the respondents whether diabetes can be cured by eating bitterroots or not.

Table No. 4A.17

Opinion of respondents about diabetes can be cured by eating bitterroots.

Sr. No		No. of Respondents	Percentage
1	Yes	71	33.0
2	No	77	35.8
3	Don't Know	67	31.2
	Total	215	100.0



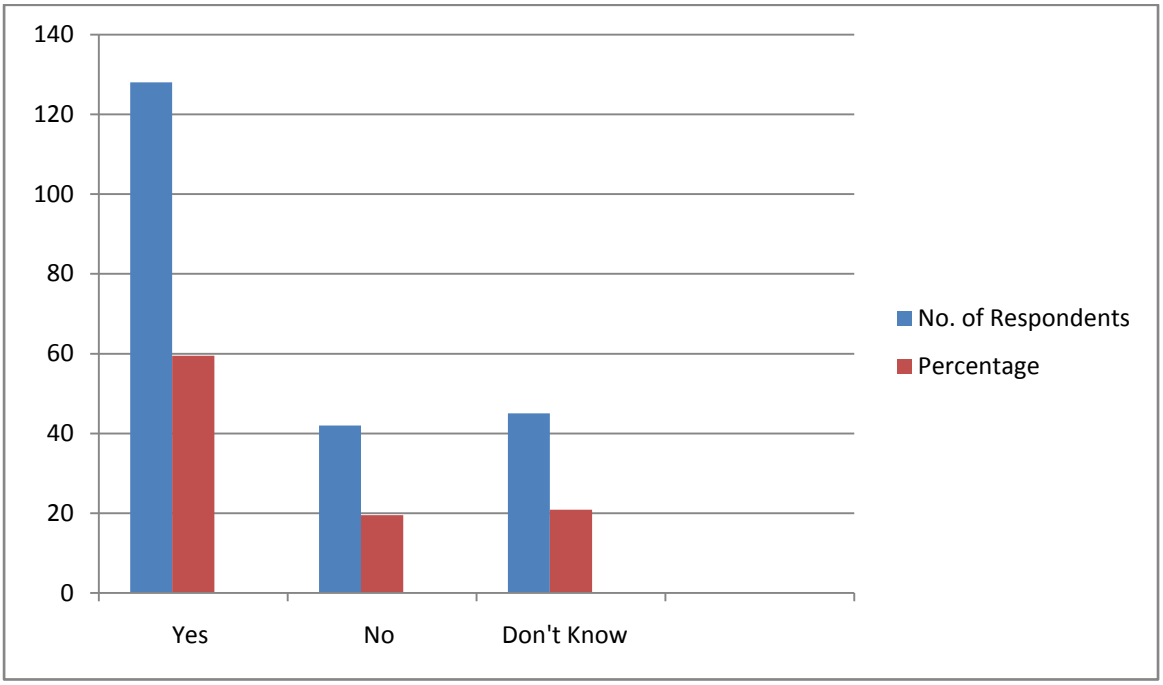
33% respondents have opined that, diabetes can be cured by eating bitterroots. On the contrary 35.8% respondents have opined that, mere eating bitterroot daily, cannot cured diabetes, and 31.2% of the respondents have stated that they don't know anything in this regard.

Today, many diabetes patients are taking insulin to stay healthy and reduce the danger of diabetes. However, insulin can make side effects like low blood sugar, weight gain, etc. Taking insulin is often part of reading diabetes. From the study point of view it is very important to understand the opinions of the respondents in this regard.

Table No. 4A.18

Opinion of respondents about Harmfulness of Insulin.

Sr. No	Opinion	No. of Respondents	Percentage
1	Yes	128	59.5
2	No	42	19.5
3	Don't Know	45	20.9
	Total	215	100.0

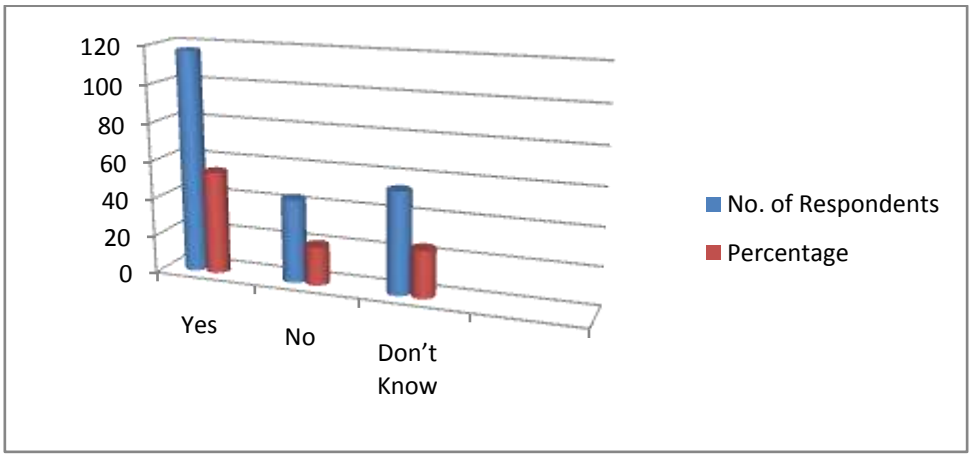


Majority of the respondents (59.5%) have opined that sometimes taking insulin is very harmful for the diabetes patients. In the opinion of 19.5% respondents, taking insulin is not very harmful for diabetes patients. 20.9% respondent has stated that, they don't know anything in this regard.

Table No. 4A.19

Opinion of respondents about Habit formation of Insulin in diabetes patients

Sr. No		No. of Respondents	Percentage
1	Yes	117	54.4
2	No	44	20.5
3	Don't Know	54	25.1
	Total	215	100.0



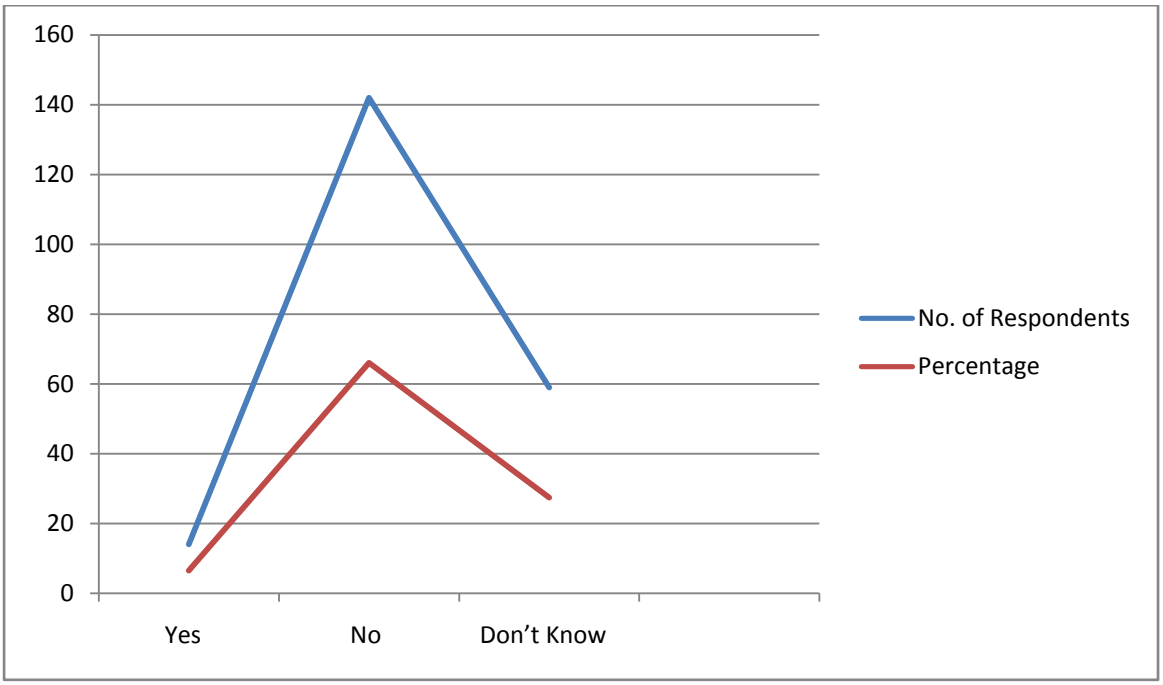
54.4% respondents have opined that, insulin is habit forming, and in the opinion of 20.5% respondents it is not habit forming and 25.1% respondents have stated that they don't know anything in this context. The patients who require insulin therapy have to learn various skills such as measurement of blood sugar.

Actually, diabetes is a disorder and not a disease. The problem of diabetes doesn't have a parasite, bacteria, virus or fungus at its core. Therefore, diabetes cannot be transmitted to the spouse. With a view to understand the opinions of the respondents in this context, a question has asked them.

Table No. 4A.20

Opinion of respondents about Transmission of diabetes to spouse.

Sr. No		No. of Respondents	Percentage
1	Yes	14	6.5
2	No	142	66.0
3	Don't Know	59	27.4
	Total	215	100.0



In the opinion of the 66% respondents, diabetes cannot transmit to the spouse and in the opinion of 6.5% respondents it can be transmitted to the spouse. 27.4%

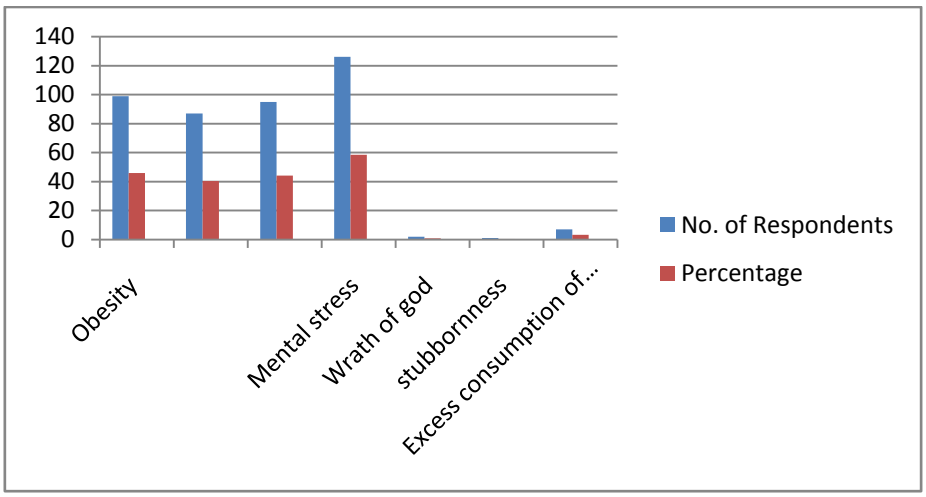
respondents stated that they don’t know anything about it. It shows that majority of the respondents are known that diabetes is only a body disorder problem and not diseases; and therefore it cannot be transmitted to the spouse.

Table No.4A.21

Table showing factors contributing to diabetes.

Sr. No	Factors	No. of Respondents	Percentage
1	Obesity	99	46.0
2	Decreased or less physical activities	87	40.5
3	family history of diabetes	95	44.2
4	Mental stress	124	58.6
5	Wrath of god	2	0.9
6	stubbornness	1	0.5
7	Excess consumption of sweets	7	3.3
	Total	417	100

There are various factors which are contributing to diabetes; the following table shows the opinion of the respondents about the major factors that contributes to diabetes.



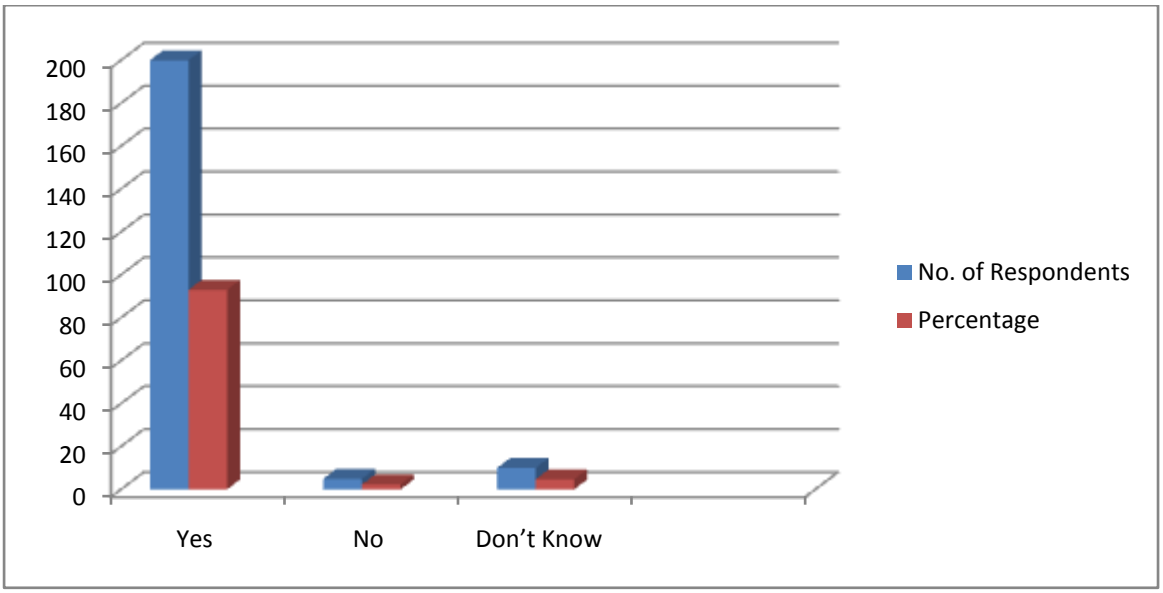
Majority of the respondents (58.6%) have opined that, mental stress is a potential which contribute to chromic hyperglycaemia in diabetes. According to them, mental stress has a long adverse effect on the metabolic activity of the diabetes patients. In the opinion of 44.2% respondents a family history of diabetes is concerned with the range of metabolic abnormalities and is a strong risk factor for the development of diabetes. In the opinion of 46% respondents, obesity is a major that contributes to diabetes. In the opinion of 40.5% respondents, less physical activities contributes to the diabetes. According to 0.9% respondents, diabetes is nothing but wrath of god and 0.5% respondents have stated that, stubbornness may also cause to diabetes. According to these respondents old age people stubborn about exercises, eating habits etc. Which caused to diabetes among them. According to 3.3% respondents; excess consumption of sweets also caused for diabetes.

Several studies have shown that, higher blood sugar levels can damage the human body organs. There may be severe complications and damage of large and small blood vessels etc. This may cause to heart attack, and complications related to kidneys, eyes, gums feet and nerves.

Table No. 4A.22

View of respondents about complication of diabetes in other organs.

Sr. No		No. of Respondents	Percentage
1	Yes	200	93.0
2	No	5	2.3
3	Don't Know	10	4.7
	Total	215	100.0

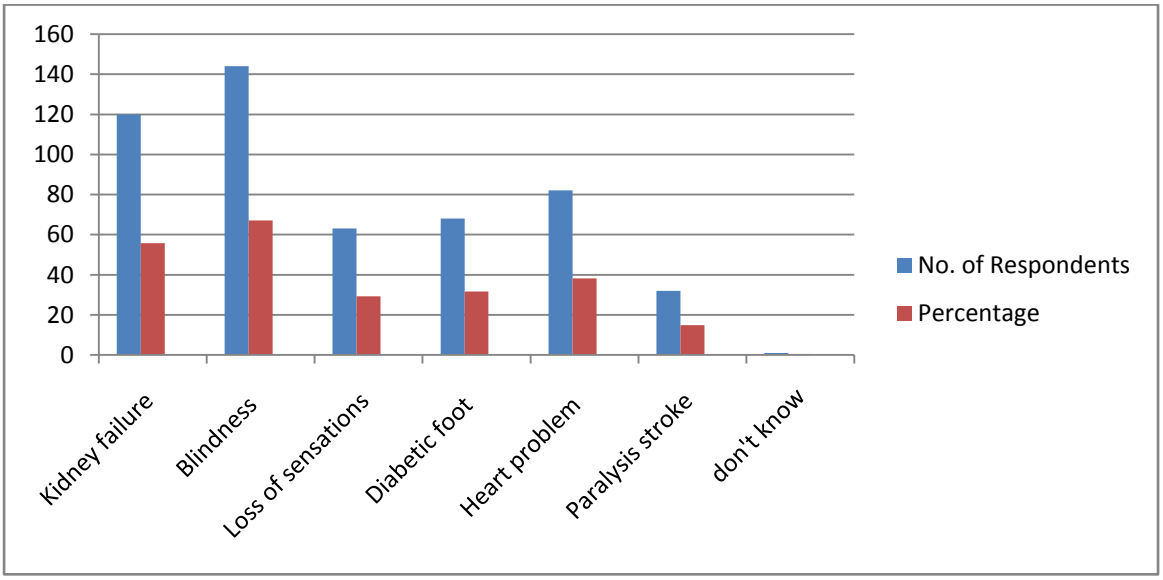


In the opinion of 93% respondents, diabetes may cause many complications in other organs, and in the opinion of 2.3% respondents, diabetes may not cause any complications in any other organs. 4.7% respondents have stated that they don't know anything in this regard.

Table No. 4A.23

Complications of Diabetes according to respondents.

Sr. No		No. of Respondents	Percentage
1	Kidney failure	120	55.8
2	Blindness	144	67.0
3	Loss of sensations	63	29.3
4	Diabetic foot	68	31.6
5	Heart problem	82	38.1
6	Paralysis stroke	32	14.9
7	don't know	1	0.5
	Total	510	100



55.8 of the respondent have stated that, diabetes caused to kidney failure, 67% of the respondents have stated that diabetes caused to blindness, according to 29.3% respondent there may be a loss of sensations, 31.6% of them have stated that, due to diabetes there may be a problems related foot. 38.1% respondents have stated that,

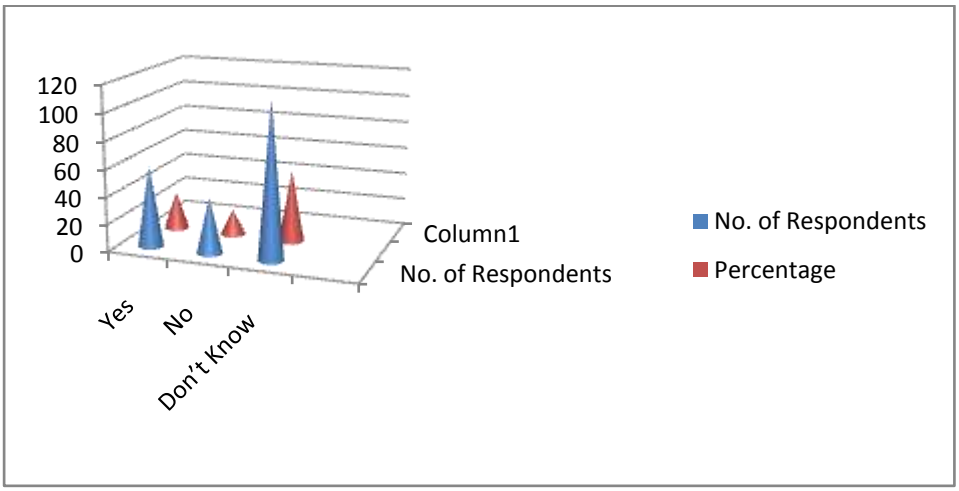
due to diabetes there may be the heart related problems and in the opinion of 14.9% respondents there may be a danger of paralysis strake. It shows that, the majority of the selected respondents know that, diabetes affects every organ system of human body. They are aware about that diabetes has a potential to devastate the entire human body.

In the opinion of many doctors, prevention of diabetes is easy if you are physically active and losing extra weight. According to the doctors, if you make some simple changes in your life style, eating habits etc. you may easily prevent serious health complications raised due to diabetes in the future. Prevention of diabetes and treatment on diabetes includes healthy diet food consuming, frequent physical check-up, regular exercise, control on weight, control on blood pressure, proper foot care and eye care etc. A question has been asked to the respondents with a view to know their opinion about whether diabetes can be prevented or not.

Table No.4A.24

Prevention of diabetes – (Opinion of respondents)

Sr. No		No. of Respondents	Percentage
1	Yes	60	27.9
2	No	41	19.1
3	Don't Know	114	53.0
	Total	215	100.0

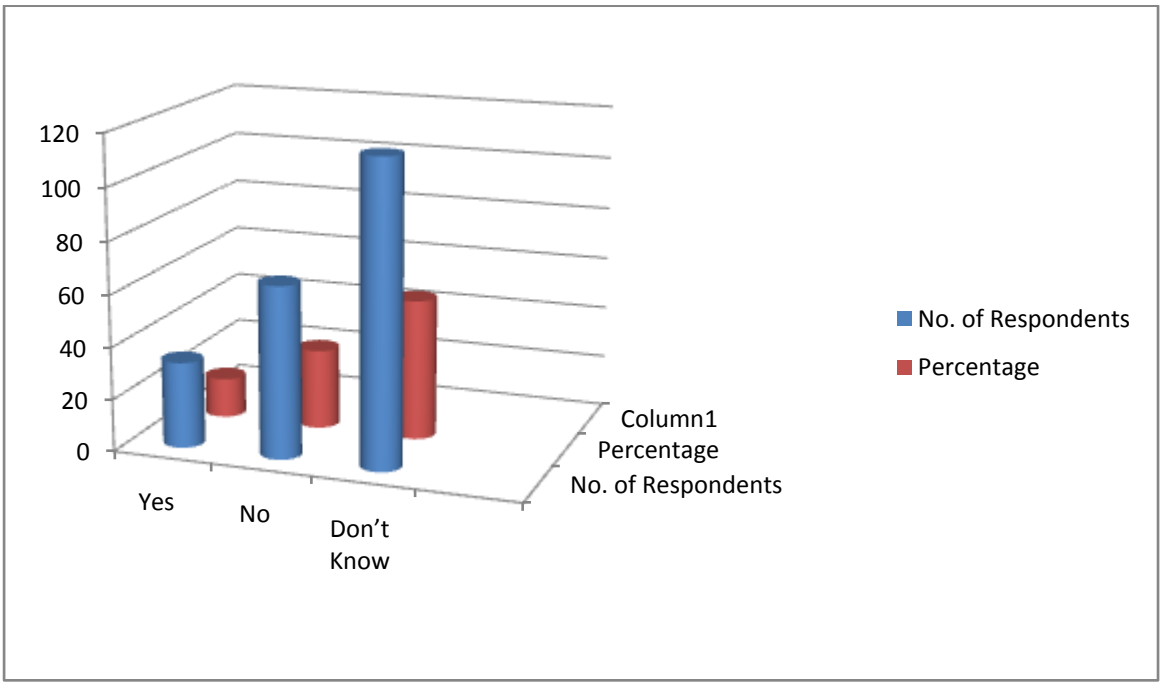


According to collected information, 27.9% respondents have stated that, diabetes can be prevented if we take care of our health. In the opinion of 19.1% respondent's diabetes can not be prevented entirely. Majority of them (53%) have stated that, they don't have any knowledge about whether diabetes can be prevented or not.

Table No.4A.25

The best way to check diabetes is to check urine

Sr. No		No. of Respondents	Percentage
1	Yes	33	15.3
2	No	66	30.7
3	Don't Know	116	54.0
	Total	215	100.0

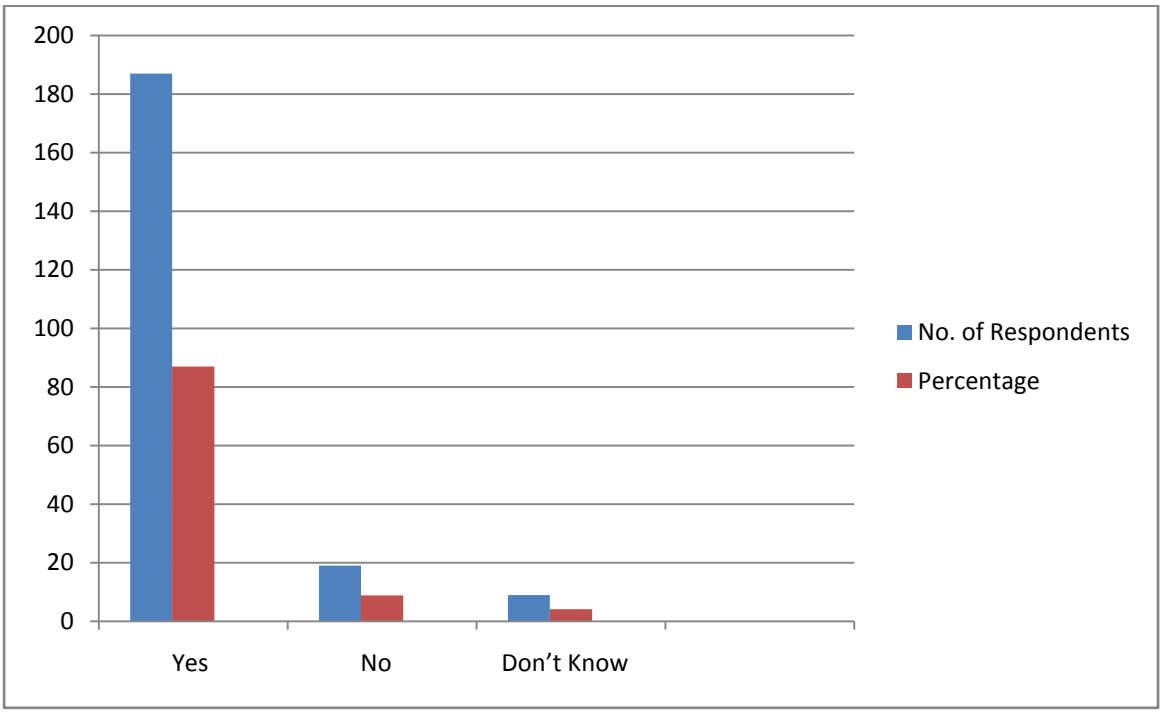


15.3% respondents have opined that, to check urine is the best way to check diabetes. In the opinion of 30.7% respondents, mere check urine is not a best way to check diabetes; there are some other best ways also. 54% respondents have stated that, they don't know anything about the best way check diabetes is to check urine.

Table No. 4A.26

Healing of wounds due to diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	187	87.0
2	No	19	8.8
3	Don't Know	9	4.2
	Total	215	100.0



As per the collected information, 87% respondents opined that, wounds heal more slowly in diabetes. 8.8% respondents negatively respondents in this context. 4.2% respondents have stated that they don't have any idea about whether wounds heal more slowly in diabetes or not.

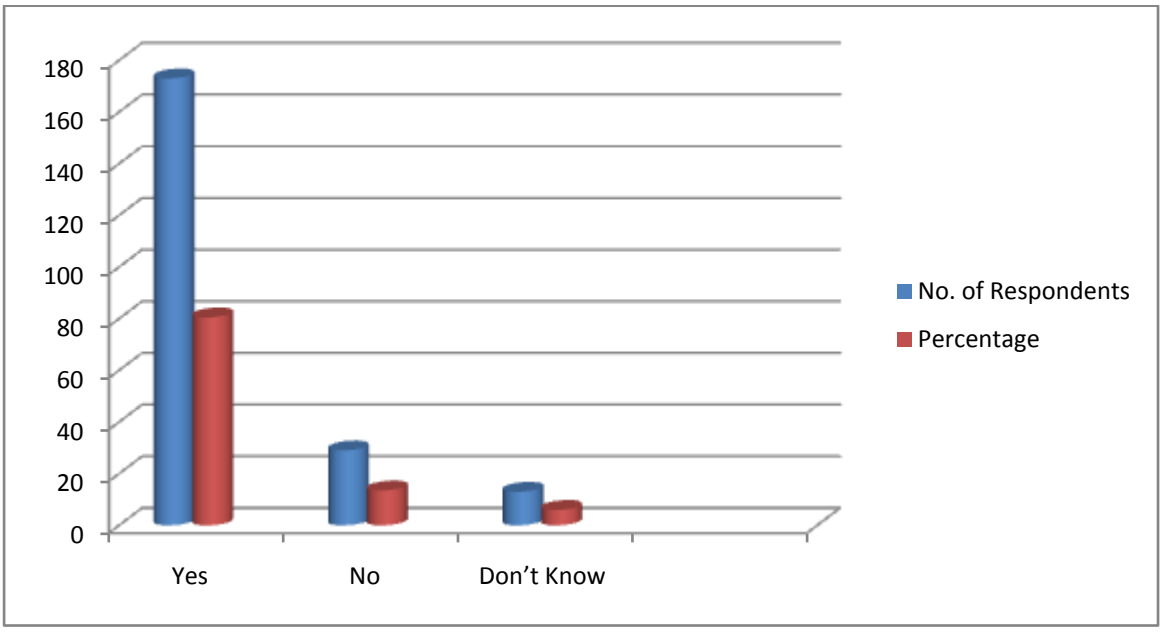
Through the various studies it was found that in many diabetes patients, developed wounds are slowly cure or heal. Or do not heal well. Wounds among the

diabetes patients can increase the risk of infections and other health complications. The diabetes patients who take care of their food, diet exercises or manage diabetes properly can improve the rate at which wounds heal and reduce the chances of developing a infection. It is necessary that every diabetes patients must control their blood sugar levels with a view to remove the risk of slow healing wounds and other physical health complications, which includes foot ulcers. A question has been asked to the respondents to know whether they think wounds heal more slowly in diabetes or not. The above table indicates the opinions of the respondents in this regard.

Table No. 4A.27

Nature of extra care should be taken while cutting nails

Sr. No		No. of Respondents	Percentage
1	Yes	173	80.5
2	No	29	13.5
3	Don't Know	13	6.0
	Total	215	100.0



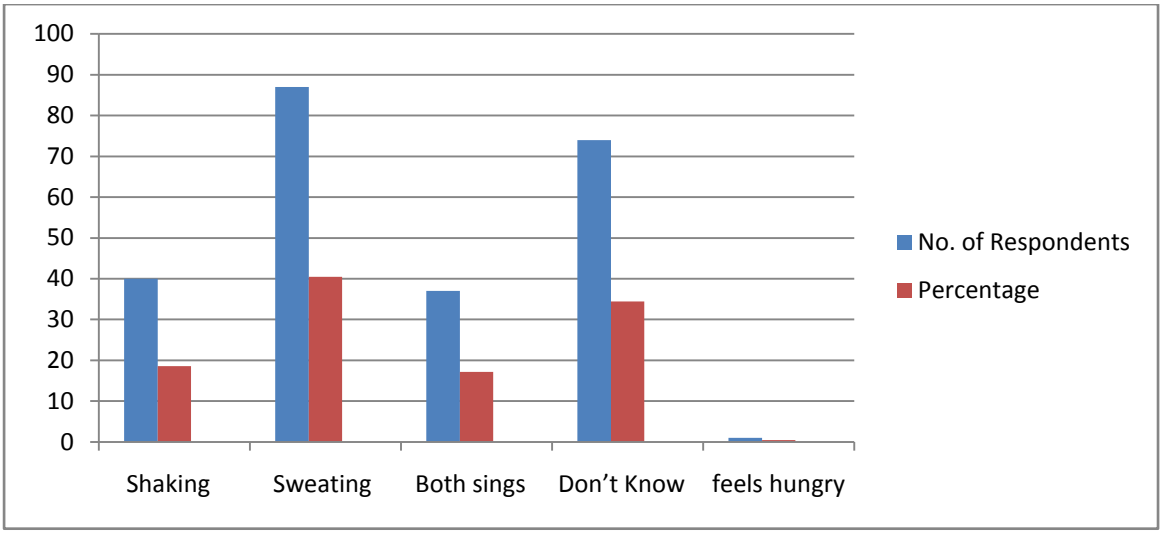
It shows that majority of diabetes patients are having knowledge about the risk of wound in diabetes even they are properly take care while cutting their nails (80.5%) but it is also observed that, 13.5% respondent did not take care while cutting nails.

Low blood sugar is also known as ‘Hypoglycaemia’. It can make dangerous condition of diabetes patients. It is happening commonly among diabetes patients even if they are taking care of their diet, food consumption and managing the every treatment properly and well. The danger of hypoglycaemia exists when the blood sugar level comes to a very lower level; and adversely affecting on the functioning of the human body. In some cases diabetes patients may not be able to understand the symptoms of hypoglycaemia; that is why it is important for the diabetes patients to know about the major signs or symptoms of hypoglycaemia. In this context question has been asked to the respondents to know whether they are aware about the major signs of hypoglycaemia or not.

Table No. 4A.28

Major signs of low blood sugar (Hypoglycaemia) (Multiple Response)

Sr. No		No. of Respondents	Percentage
1	Shaking	40	18.6
2	Sweating	87	40.5
3	Both sings	37	17.2
4	Don’t Know	74	34.4
5	feels hungry	1	0.5
	Total	239	100



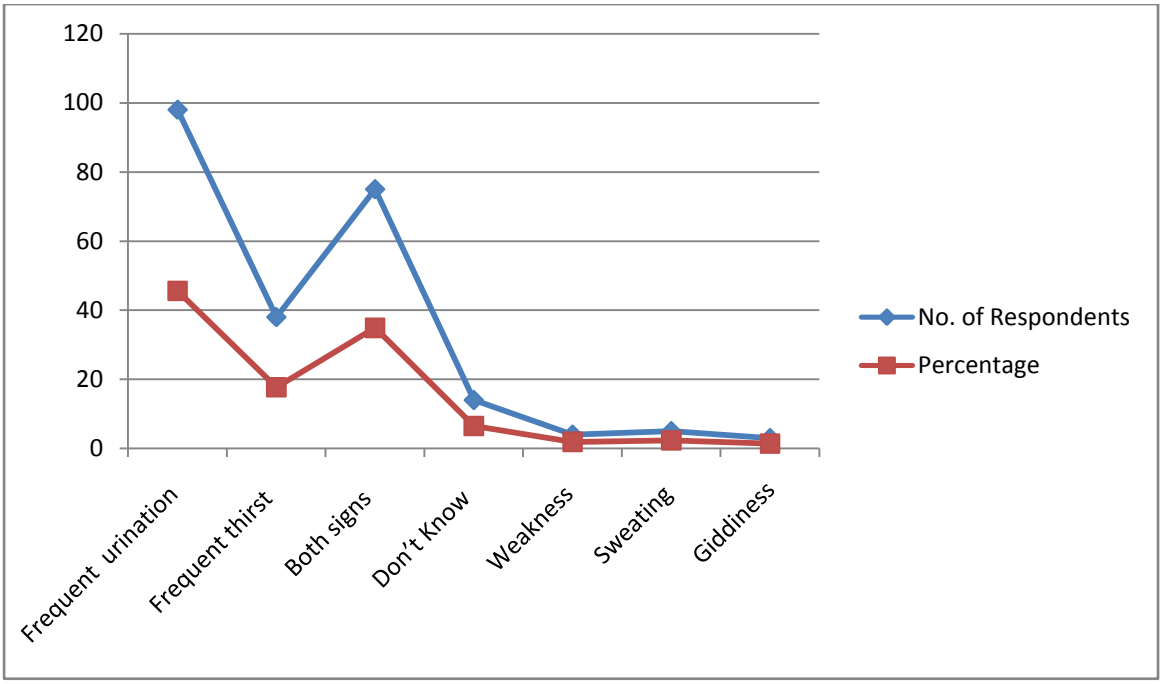
According to the information provided by the respondents, 18.6% of them have stated that shaking is the major sign of hypoglycaemia; 40.5% of respondents have stated that, server sweating is a major sign of hypoglycaemia. In the opinion of 17.2% respondents the both these signs are the major in case of hypoglycaemia. 34.4% respondents have stated that they don't have any knowledge about the major signs of hypoglycaemia. Only 0.5% respondents have stated that, feels hungry is a major sign of hypoglycaemia.

High blood sugar is also known as “Hyperglycaemia”. When the level of blood sugar becomes very high because the body is not properly using or doesn’t make the hormone insulin. Consuming processed edible items may cause high blood sugar or hyperglycaemia. In this context question has been asked to the respondents to know whether they are aware about the major signs of hyperglycaemia or not.

Table No. 4A.29

Opinion about the major signs of high blood sugar

Sr. No		No. of Respondents	Percentage
1	Frequent urination	98	45.6
2	Frequent thirst	38	17.7
3	Both signs	75	34.9
4	Don’t Know	14	6.5
5	Weakness	4	1.9
6	Sweating	5	2.3
7	Giddiness	3	1.4
	Total	237	100



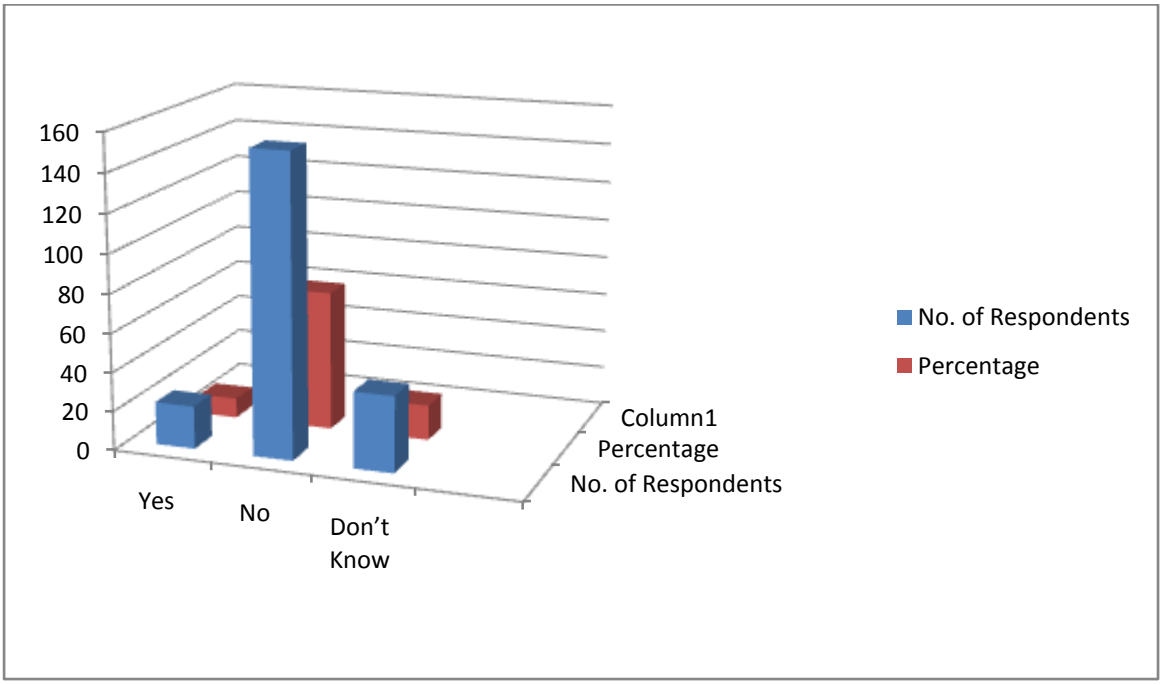
As per the information provided by the respondents, 45.6% of them have stated that, frequent urination, and 17.7% respondents have stated that frequent thirst are some of the major signs of hyperglycaemia. In the opinion of 34.9% respondents both these signs are the major in case of hyperglycaemia. In the opinion of 1.9% respondents weakness is the major sign, 2.3% respondents opined that, sweating is the major sign and 1.4% respondents have stated, giddiness is the major sign of hyperglycaemia. 6.5% respondents have stated that, they don't have any knowledge about the major signs of hyperglycaemia.

The danger of diabetes in Indian people is increasing due to unhealthy food consumption and lack of physical activeness. Professional health care consultants and nutrition's plays an important role in bringing about behavioural changes, food habit changes in the diabetes patients. A question has been asked to the respondents to know whether they are having knowledge about diabetic diet and special foods.

Table No. 4A.30

View of respondents about diabetic diet consists mostly special food.

Sr. No		No. of Respondents	Percentage
1	Yes	22	10.2
2	No	154	71.6
3	Don't Know	39	18.1
	Total	215	100.0

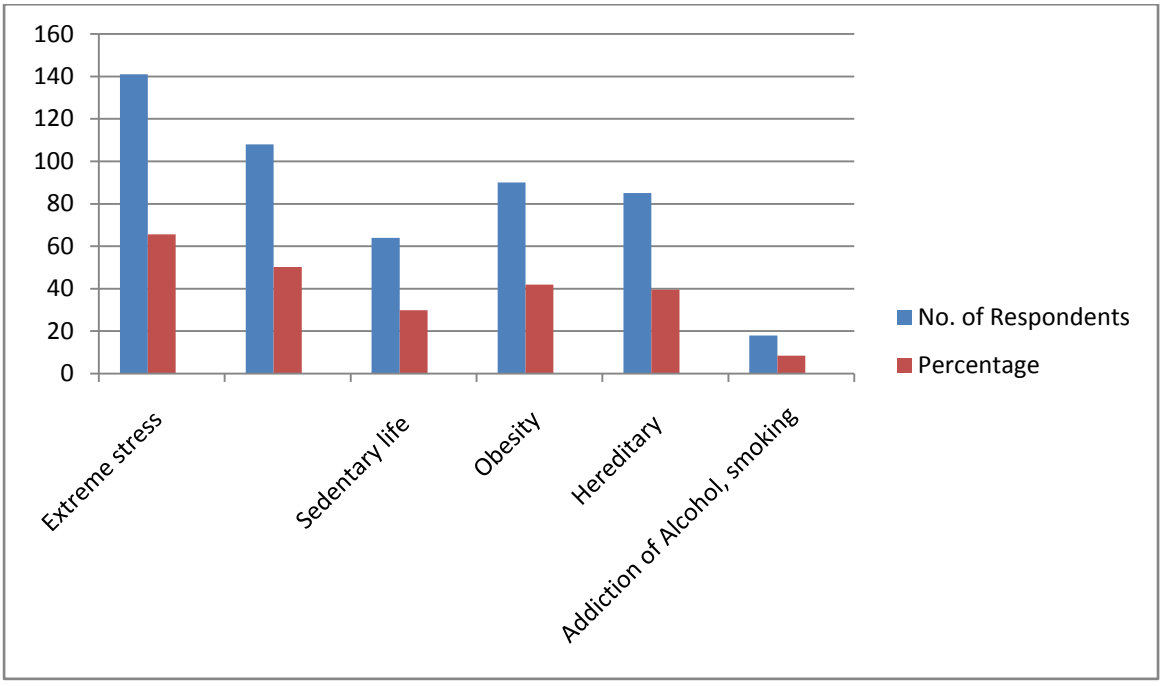


It is observed that only 10.2% of them stated that there is a special food in diabetic diet. Majority of the respondents, (71.6%) are stated that diabetic diet not consists of special foods. 18.1% respondents have stated that they don't know about the diabetic diet and special food. It shows that, there is a lack of education about diabetic diet and food among the diabetic patient.

Table No. 4A.31

Opinion of respondents about risk factors of diabetes.

Sr. No		No. of Respondents	Percentage
1	Extreme stress	141	65.6
2	Consumption of saturated fast food items	108	50.2
3	Sedentary life	64	29.8
4	Obesity	90	41.9
5	Hereditary	85	39.5
6	Addiction of Alcohol, smoking	18	8.4



In the opinion of 65.6% respondents, extreme stress is the major risk factor of diabetes. According to the 50.2% respondents, consumption of saturated fast food items is also one of the major risk factor. In the opinion of sedentary life also caused

for diabetes. In the opinion of 41.9% obesity is also risk factor of diabetes; and in the opinion of 39.5% respondents, hereditary and according to 8.4% respondents addiction of alcohol, Smoking etc. are the major risk factors of diabetes. It means majority of the diabetes patients are aware about the various risk factors of diabetes.

Over dose of insulin cause various side effects. These effects are – hypoglycaemia, headaches, rashes, dizziness, anxiety, cough and dryness in mouth. Apart from this over dose of insulin can lead to kidney disease or kidney failure. There may be swelling in arms and legs gain in weight etc. Therefore, over intake of insulin should be avoided by the diabetes patients.

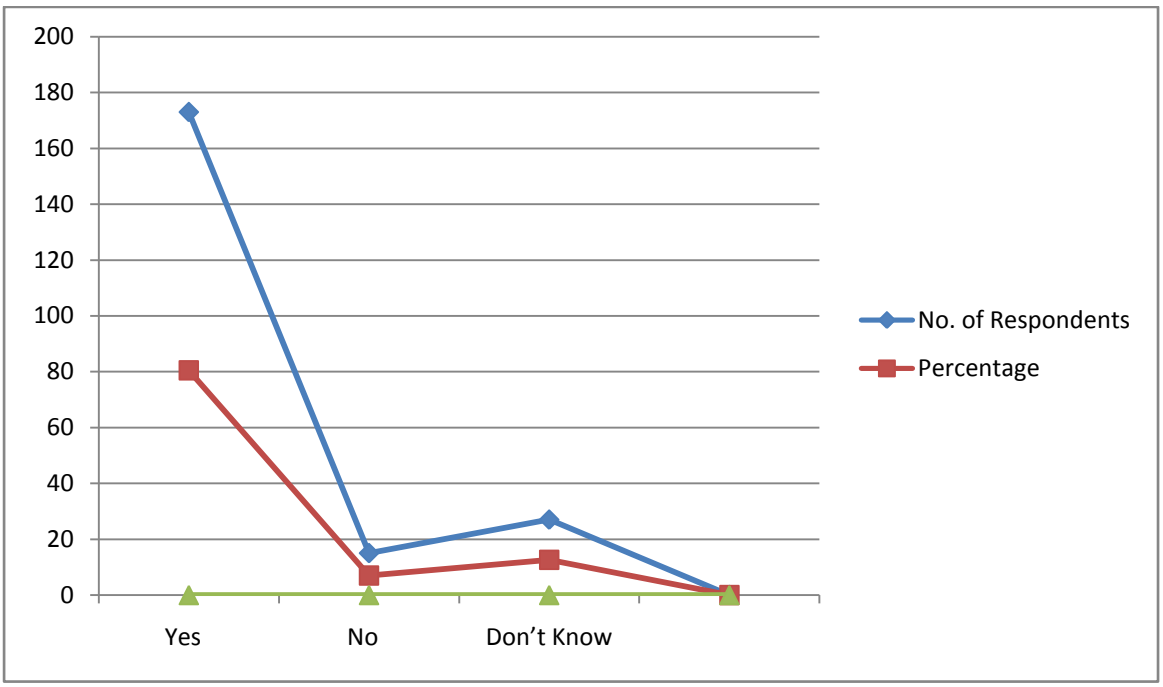
4A.2.3) Attitude towards Diabetes-

Table No. 4A.32

The following table indicates the opinions of the respondents in this context.

Insulin should be avoided as much as possible; do you agree with this statement?

Sr. No		No. of Respondents	Percentage
1	Yes	173	80.5
2	No	15	7.0
3	Don't Know	27	12.6
	Total	215	100.0

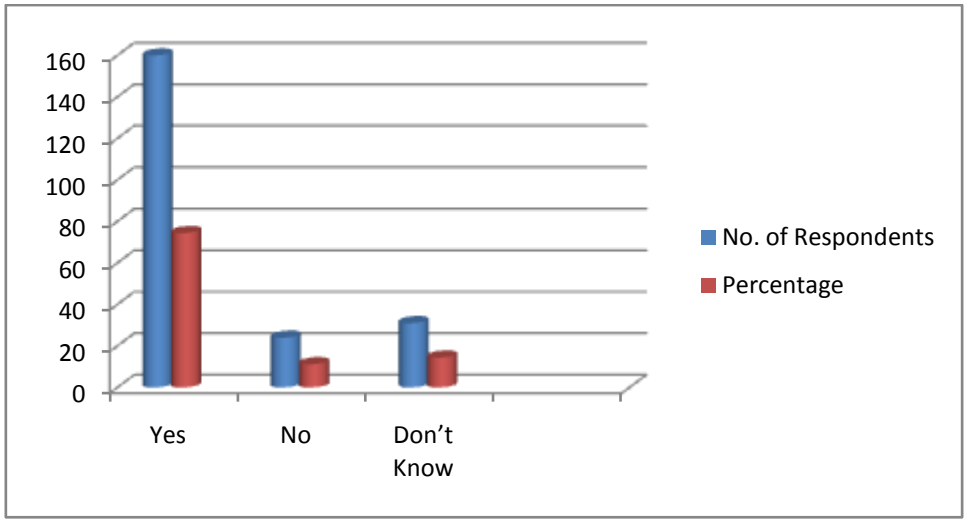


In the opinion of 80.5% respondent's insulin should be avoided as far as possible due its adverse effects. According to 7% respondents, there is no need to avoid insulin intake if it is necessary for diabetes control. 12.6% respondents have stated that they don't have any knowledge in this regard.

Table No. 4A.33

View of respondents about switching to insulin means complications in diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	160	74.4
2	No	24	11.2
3	Don't Know	31	14.4
	Total	215	100.0

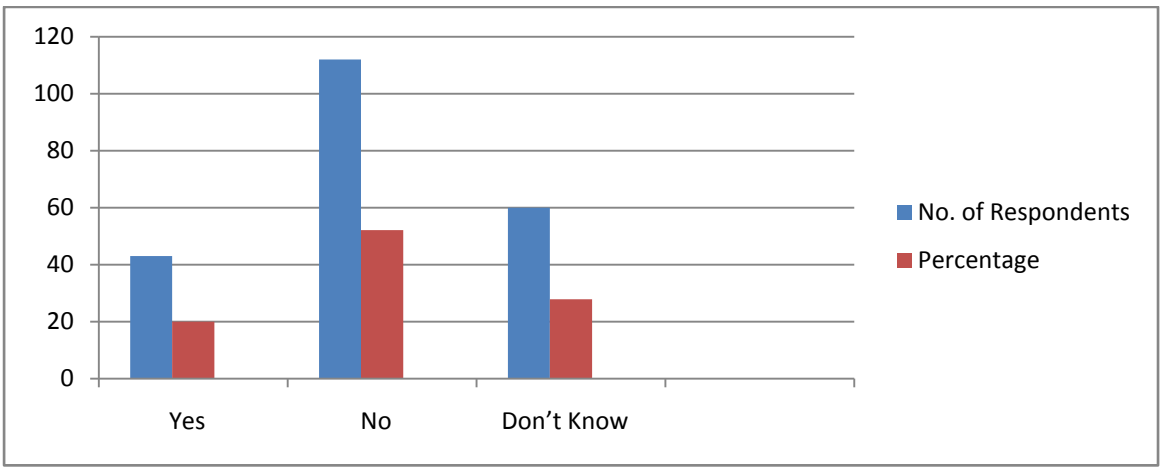


As per the collected information, it is observed that majority of the respondents are well aware about side effects of insulin. But in the opinion of 74.4% respondents, completely switching to insulin caused to various complications in diabetes. In the opinion of 11.2% respondents, there is no any affects in diabetes if there is switching to insulin; and 1/4.4% respondents have stated that, they don't have any knowledge about the complications due to switching to insulin.

Table No. 4A.34

Opinion of respondents about complications can occur even with good sugar control.

Sr. No		No. of Respondents	Percentage
1	Yes	43	20.0
2	No	112	52.1
3	Don't Know	60	27.9
	Total	215	100.0



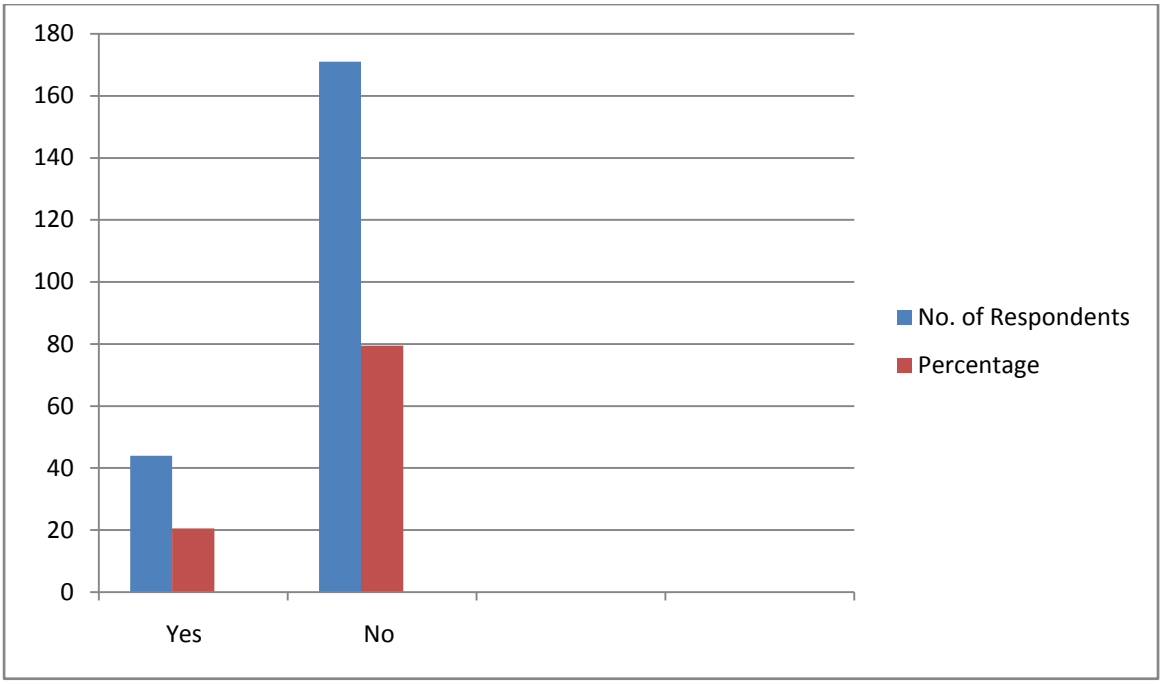
The above table indicates the opinions of the respondents about complications due to good sugar control. 20% respondents have stated that, over sugar control may cause to various complications. In the opinion of 52.1% respondents, control on sugar does not create any adverse effect on the health; especially in the case of diabetes 27.9% respondents have stated that, they don't have any knowledge in this regard.

Diet is nothing but simply a healthy eating plan which can be helpful to the diabetes patients for controlling blood sugar. Diet plan for diabetes patients is naturally rich in nutrients and low fat and calories. The diet food includes fruits, leafy vegetables and whole grains. In fact, a diet plan for diabetes patients is the best eating plan for them. Good diet plan for diabetes is based on consuming three meals a day at regular times. Good diet plan helps diabetes patients to use the insulin that body produces or gets through a medication. With a view to understand the opinion of the respondents in this regard. A question has been asked them.

Table No. 4A.35

Opinion of respondents about diabetes can be controlled only by diet

Sr. No		No. of Respondents	Percentage
1	Yes	44	20.5
2	No	171	79.5
	Total	215	100.0



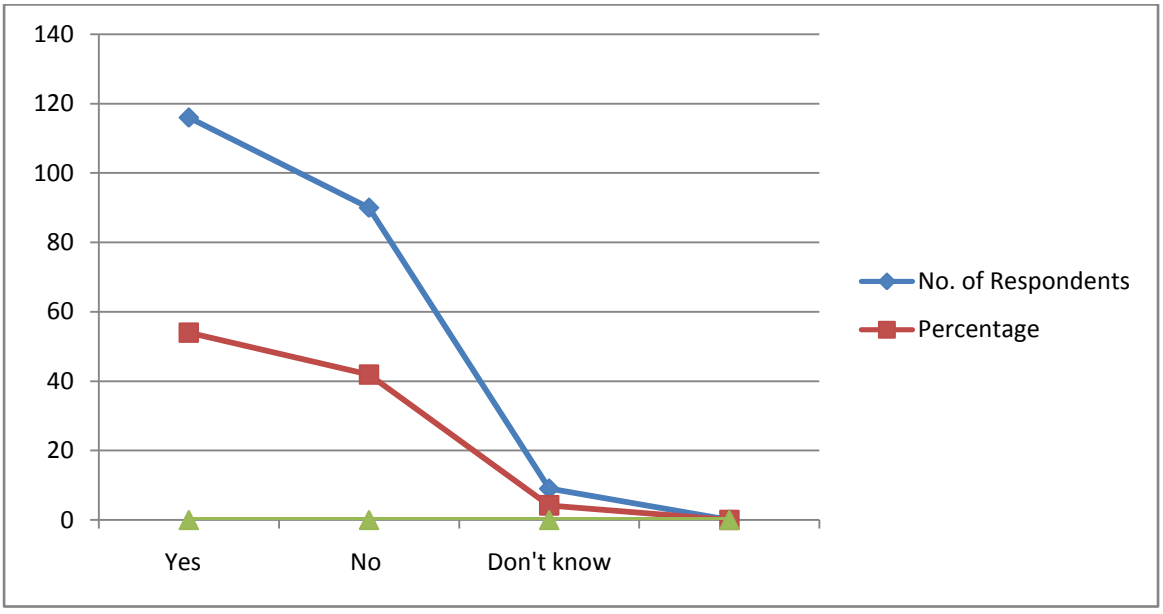
In the opinion of 20.5% respondents only diet can control diabetes. On the contrary, 79.5% respondents stated that cannot controlled diabetes there are some other treatments or therapies which are useful to control the danger of diabetes. It shows that majority of the respondents are having awareness about other therapies or treatment to control on diabetes.

Actually Hyperglycaemia and Hypoglycaemia both are dangerous. If patients have dangerously high blood sugar (hyperglycaemia) or dangerously low blood sugar (hypoglycaemia) can lead to a danger of diabetic coma; and if patient suffer by diabetic coma, he/she may alive but cannot awaken or respond purposefully to sight, sounds and other types of stimulation. Diabetic coma can be fatal and untreated.

Table No. 4A.36

Hypoglycaemia is more dangerous than hyperglycaemia, do you agree with this statement

Sr. No	Opinion	No. of Respondents	Percentage
1	Yes	116	54.0
2	No	90	41.9
3	Don't know	9	4.2
	Total	215	100.0



In the opinion of 54.0% respondents, hypoglycaemia is more dangerous than hyperglycaemia; but on the contrary. 41.9% respondents have opined that, hypoglycaemia is not more dangerous than hyperglycaemia. Only 4.2% respondents have stated that, they don't know anything in this regard.

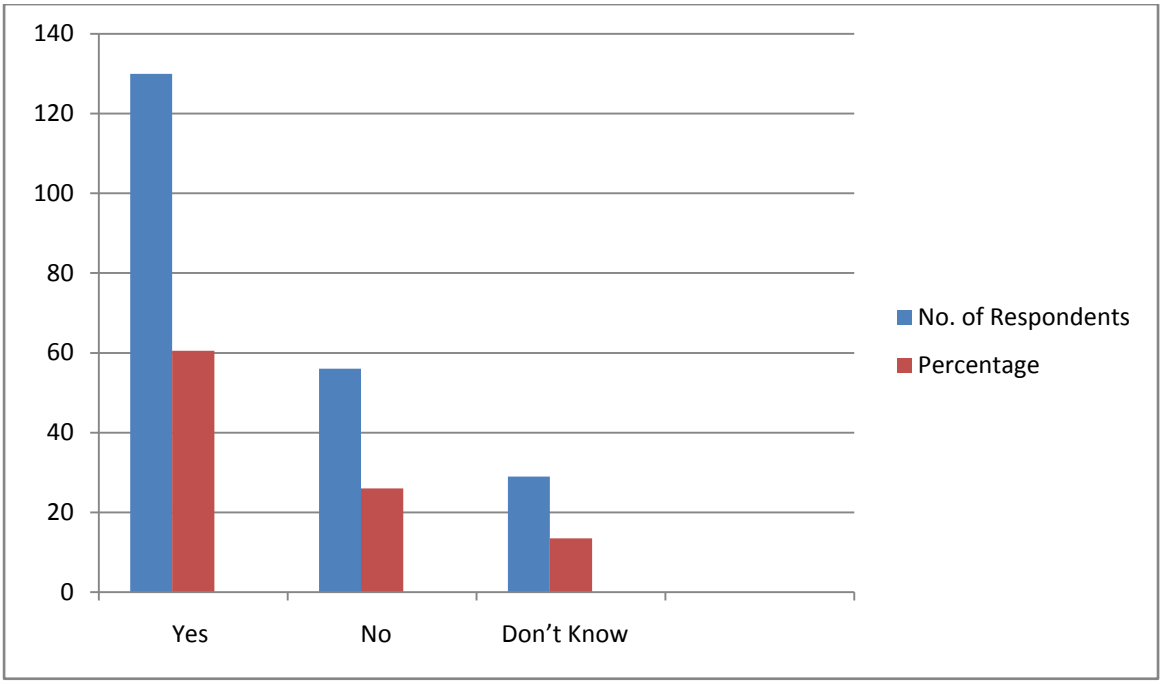
To control blood sugar is very important for type 2 diabetes. Actually, uncontrolled levels of blood sugar may cause to short term problems such as hyperglycaemia, hypoglycaemia. In a long term, uncontrolled sugar levels can create danger to heart, kidneys eye and nerves. Some diabetes patients feel it very difficult to control blood sugar, and faced many health problems.

The following table indicates the opinion of the respondents about the more dangerous between hypoglycaemia and hyperglycaemia.

Table No. 4A.37

Opinion of respondents about sugar control is difficult to achieve.

Sr. No		No. of Respondents	Percentage
1	Yes	130	60.5
2	No	56	26.0
3	Don't Know	29	13.5
	Total	215	100.0



60.5% respondents have opined that, control of blood sugar is very difficult to achieve; on the contrary, 26% of the respondents have opined that if diabetes patients follow proper diet plan, regular exercise, and takes extra care of health, can controlled blood sugar easily. 13.5% respondents have stated that, they don't have any knowledge in this context.

In case if there is no any health care provider for diabetes patients, they are left to their own devices, which lead to self-care practice which many diabetes patients take for granted. Self-care means a commitment to avoiding health complications when there is a lack of a medical provider. To avoid diabetes related problems, there is a need of self-care practices which induces food consuming habit, physical exercise; proper medications intake and control of blood sugar etc. A Socio-economic condition plays an important role to contribute positively in the self-care activities of the diabetes patients. The role of clinicians in promoting self-care is important and has to be emphasized. With view to understand the opinions of the respondents about the importance of self-care practice, a question has been asked to them.

Table No. 4A.38

Table showing awareness regarding importance of selfcare in diabetes.

Sr. No		No. of Respondents	Percentage
1	Yes	205	95.3
2	No	10	4.7
	Total	215	100.0

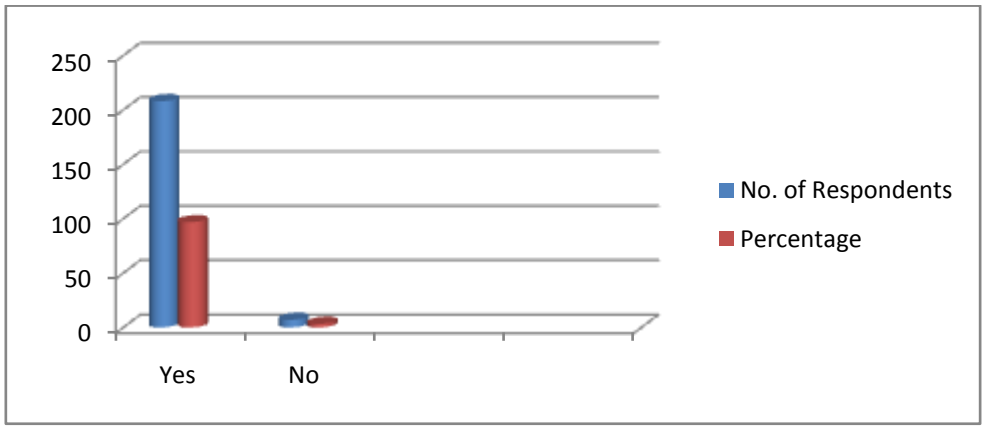
According to majority of the respondents (95.3%) self-care is important in diabetes; on the contrary only 4.7% of the respondents negatively responded in this regard. According to them self-care is not important in diabetes. It shows that, majority of the respondents are aware about the self-care practices to avoid diabetes related problems.

Table No. 4A.39

The following table indicates the opinions of the respondents about taking of medicines regularly and at fixed time.

Opinion of respondents about medicines should be taken regularly at fixed time to control diabetes.

Sr. No		No. of Respondents	Percentage
1	Yes	208	96.7
2	No	7	3.3
	Total	215	100.0



96.7% respondents have stated that there should be regularity in taking medicines at fixed time; and 3.3% of the respondents have negatively responded in this regard. It shows that, majority of the respondents are understand that, if there is any irregularity in taking medicines, and lack of adherence, may be cause to hospitalization, mortality and unnecessary expenditure, Therefore, majority of the respondents in favour of taking medicines regularly and at fixed time.

Table No. 4A.40

Table showing need of medicines when sugar level is controlled.

Sr. No		No. of Respondents	Percentage
1	Yes	10	4.7
2	No	205	95.3%
	Total	215	100.0

As per the collected information, only 4.7% of the respondents have stated that, there is no need of medicine once sugar in controlled; on the contrary, 95.3% respondents have negatively responded in this context. Actually, many studies shows that, if diabetes patients gets control over blood sugar he or she is not need to consume medicine regularly (excluding type 2 diabetes)

Table No. 4A.41

Opinion of respondents about keeping sugar close to normal can help to prevent complications.

Sr. No		No. of Respondents	Percentage
1	Yes	196	91.2
2	No	19	8.8
	Total	215	100.0

As long as the diabetic patient is able to keep blood sugar at normal level, with proper diet an exercise there is no need for medicine. 91.2% of the respondents have opined that, keeping sugar at normal level can help to prevent complications. On the contrary, in the opinion of the 8.8% respondents, mere keeping control over blood sugar cannot help to prevent complications.

Table No. 4A.42

View of respondents about diabetes is a serious disease

Sr. No		No. of Respondents	Percentage
1	Yes	189	87.9
2	No	26	13.1
	Total	215	100.0

58.6% respondents have opined that, whose diabetes is controlled just be diet they do not have to worry about long time complications related to their health. On the contrary 41.3% of the respondents have stated that, whose diabetes is controlled just by diet they also have to take care of their long time health complications, because diabetes is very serious disease opined by (87.9%) but according to the 13.1% of the respondents diabetes is not very serious disease.

Table No. 4A.43

Table showing people with diabetes to take care if their disease is severe

Sr. No		No. of Respondents	Percentage
1	Yes	193	89.8
2	No	22	10.2
	Total	215	100.0

In the opinion of the 89.8% respondents have opined that, people with diabetes, to take care if their disease is severe. On the contrary 10.2% respondents have opined negatively in this regard. It shows that, majority of the respondents are aware about the taking care of health if their disease is severe.

Self-care and self-management is an important component for controlling and treat meeting of diabetes patients. Family support and friend's support has been indicated to influence self-care and self-management practices and glycaemic control and complications. Many studies have shown that, support from family members and friends can be substantially improved the self-care practices and self-management behaviour of diabetes patients.

Table No. 4A.44

Table showing support from family and friends is important while dealing with diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	188	87.4
2	No	27	12.6
	Total	215	100.0

87.4% respondents have stated that, good support from family members and friends is important while dealing with diabetes. On the contrary 12.6% of the respondents have negatively responded in this regard. According to them, mere support from family members and friends is not enough while dealing with the problem of diabetes.

Table No. 4A.45

Patients having mild diabetes do not need insulin

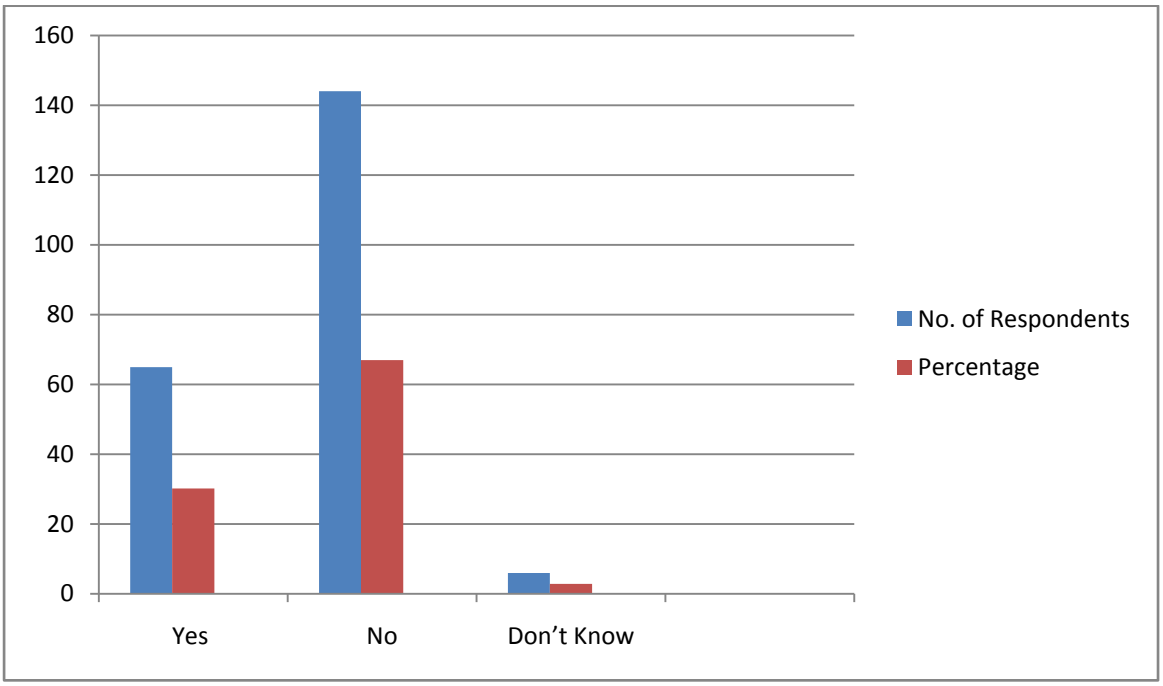
Sr. No		No. of Respondents	Percentage
1	Yes	174	80.9
2	No	41	19.1
	Total	215	100.0

According to the collected information, 80.9% of the respondents have agreed that, the people who do not need insulin to treat their diabetes have a mild disease. Only 19.1% of the respondents have opined negatively in this context.

Table No. 4A.46

Opinion about need of trying to have good blood sugar control

Sr. No		No. of Respondents	Percentage
1	Yes	65	30.2
2	No	144	67.0
3	Don't Know	6	2.8
	Total	215	100.0



From the above table it is revealed that 30.2% of the respondents have agreed that, there is not much use in trying to have good blood sugar control because the complications of diabetes will happen anyway. Majority of the respondents (67%) have not agreed in this regard; according to them, only increased blood sugar level creates complication of diabetes. 2.8% respondents have stated that, they don't know in this regard.

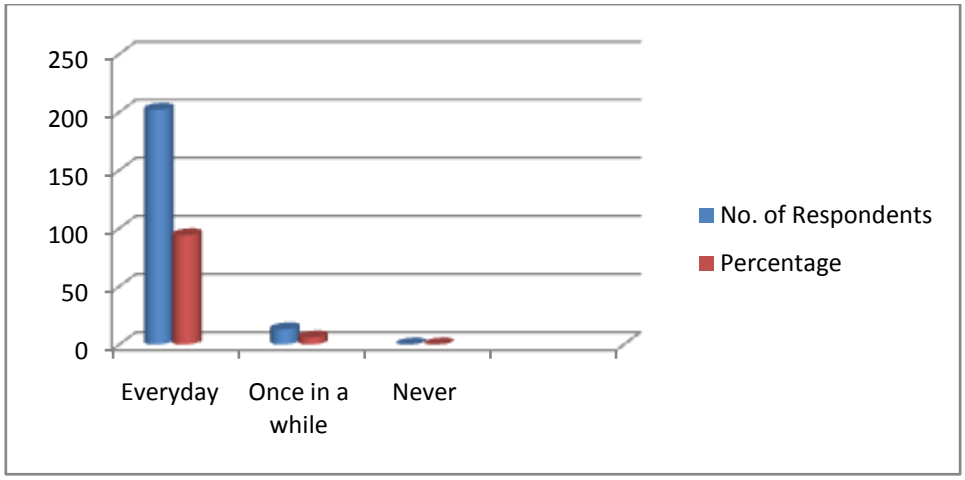
4A.2.4) Practices of Diabetes Patients –

Good and nutritious food intake habits are very important element in the life of the diabetes patients along with other benefits; follow the time table for breakfast, lunch and dinner can help the diabetes patients to keep their blood sugar level low. For this purpose there should be a balance between what they eat and drink with their physical activities and diabetes medicine. Diabetes problem in Indian society has existed as significant health problem, imbalance between food consuming times, addiction of alcohol, smoking consumption of junk food, soft drinks etc. are some of the key factors which are caused to increase the rate of diabetes in Indian society. With a view to know the food habits of the respondents, questions have been asked about the timing of breakfast, types of food item, drinking of soft drinks, eating of junk foods etc.

Table No. 4A. 47

Breakfast

Sr. No		No. of Respondents	Percentage
1	Everyday	202	94.0
2	Once in a while	13	6.0
3	Never	0	0.0
	Total	215	100.0

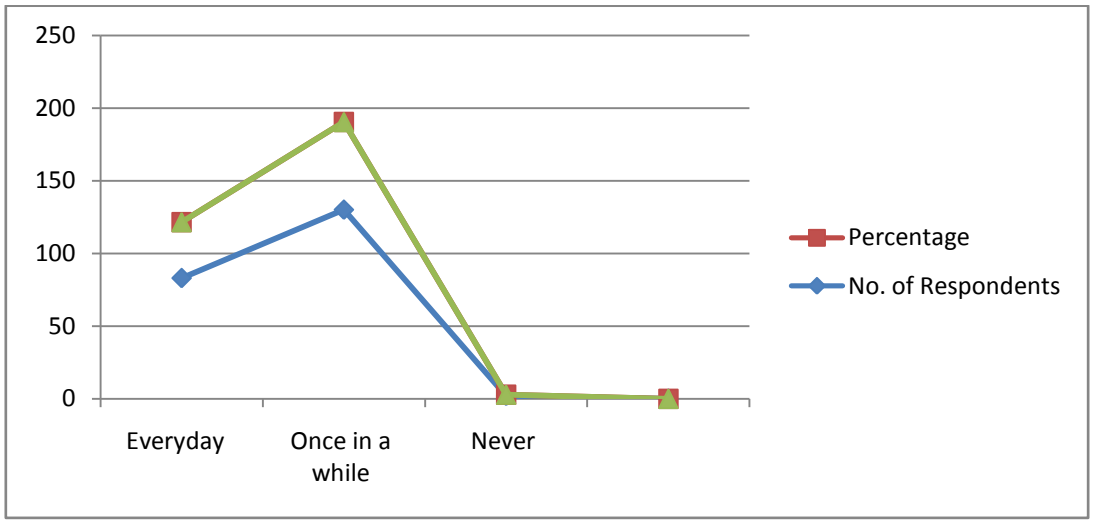


According to the information provided by the respondents, 94% respondents are taking their breakfast every day; only 6% of them have stated that, they take breakfast once in a while. Various studies have been pointed out that, avoiding or skipping breakfast once in a while may increase the risk of developing type 2diabetes. Having daily breakfast good for diabetes patients. Due to having daily breakfast, fibres fill up without raising blood sugar. Having breakfast daily mean better blood sugar control and fewer calories.

Table No. 4A.48

Eating green leafy vegetables

Sr. No		No. of Respondents	Percentage
1	Everyday	83	38.6
2	Once in a while	130	60.5
3	Never	2	0.9
	Total	215	100.0

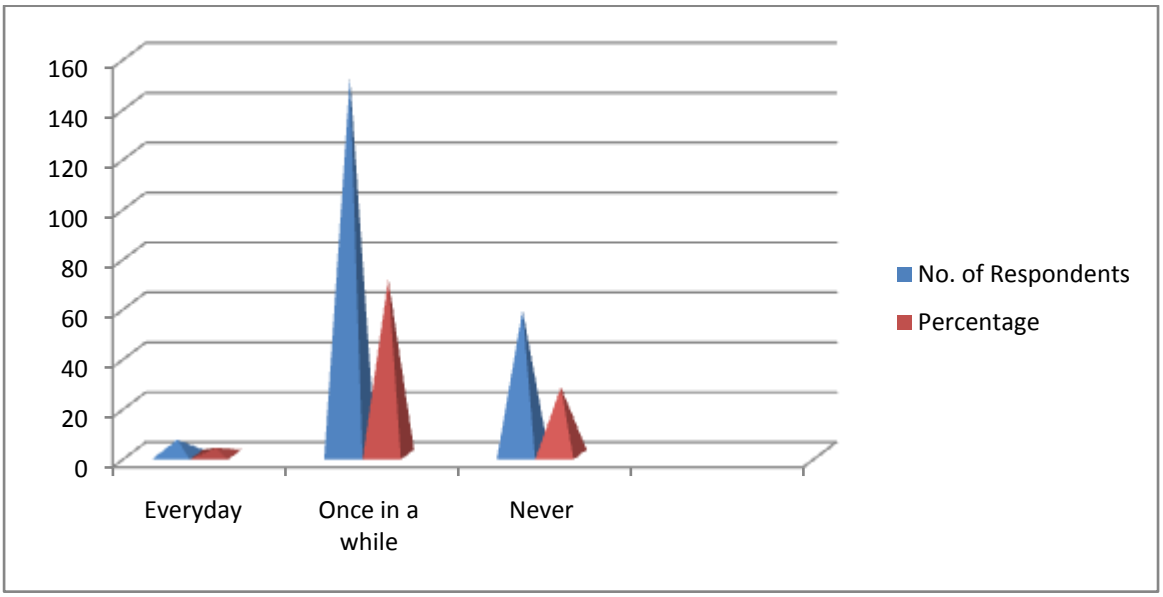


Leafy vegetable intakes has been associated with improved gastrointestinal health and reduced the risk of diabetes. Consuming leafy vegetables with dietary fibre and resistant starch may reduce hunger and appetite and for diabetes patients it is critical for lowering insulin requirement for diabetes patients. Leafy vegetables provide carbohydrates for diabetes patients. Leafy vegetables provide nutrients and energy making diabetes patients safe, efficient and nutritious food choice for them. As per the information provided by the respondents, 38.6% of them eating leafy vegetables every day, majority of them (60.5%) eating leafy vegetables once in a while and 0.9% respondents have stated that they never eat leafy vegetables.

Table No. 4A.49

Status of intake of soft drinks

Sr. No		No. of Respondents	Percentage
1	Everyday	6	2.8
2	Once in a while	151	70.2
3	Never	58	27.0
	Total	215	100.0

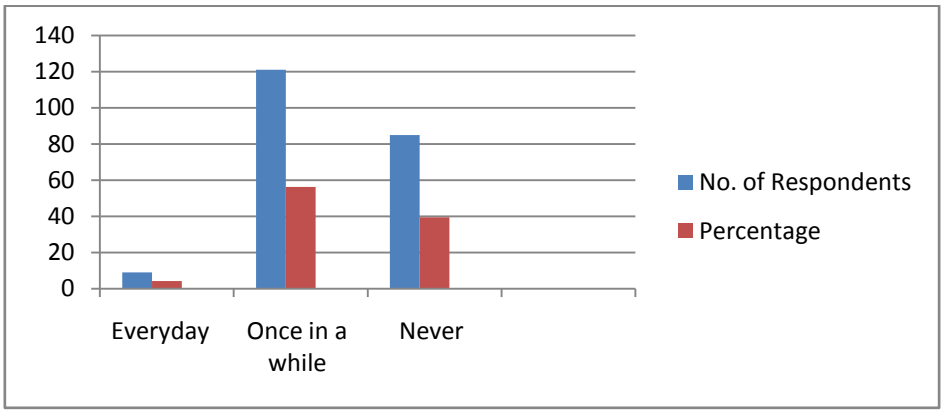


Consumption of soft drinks is associated with an increased danger of diabetes. Frequent drinking of sugar sweetened soft drinks and fruit drinks can create a risk of type 2diabetes. Soft drinks and sodas contribute to diabetes danger, and can create various problems in controlling the level of blood sugar of diabetes patients. As per the information provided by the respondents, only 2.8% of them drink once in a while; and 27.0% of them have stated that, they never drink soft drinks.

Table No. 4A.50

Opinion about intake of junk food items

Sr. No		No. of Respondents	Percentage
1	Everyday	9	4.2
2	Once in a while	121	56.3
3	Never	85	39.5
	Total	215	100.0

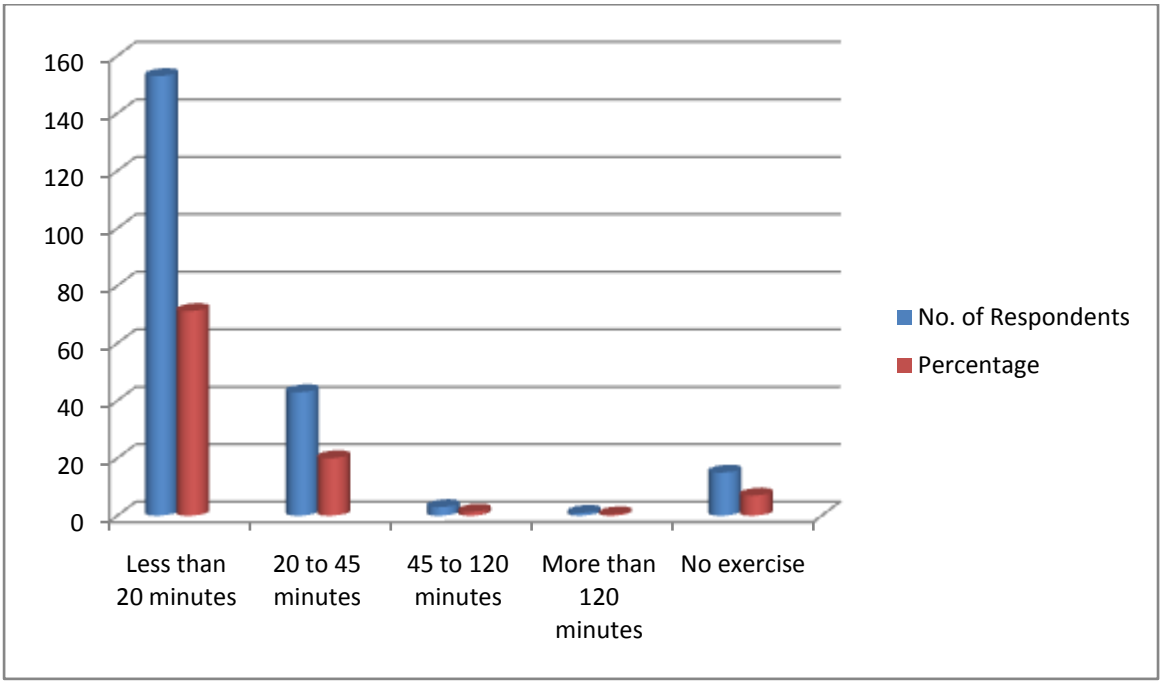


Junk food items are not healthy for body. Junk food contents high calories fat, sugar, salt and processed carbohydrates and this type of food is very low in nutrients, fibre, vitamins and minerals. There is a accurse effects of junk food on blood sugar levels. It breaks down rapidly in the human body and cause for increase in blood sugar level. As per the collected information from the respondents, 4.2% of them are consuming junk food items every day, majority of them (56.3%) are consuming it once in a while and 39.5% respondents have stated that they never consume junk food items. The collected information indicates that, very few of the respondents have totally given up the consuming soft drinks, and junk foods; even though they have diabetes.

Table No. 4A.51

Table showing minutes spend daily for exercise by respondents

Sr. No	Timing	No. of Respondents	Percentage
1	Less than 20 minutes	153	71.2
2	20 to 45 minutes	43	20.0
3	45 to 120 minutes	3	1.4
4	More than 120 minutes	1	0.5
5	No exercise	15	7.0
	Total	215	100.0



Daily exercise or physical activity is important for diabetes patients. Daily exercise in also one of the significant elements of the diabetes patients treatment. Exercise make diabetes patients able to control their blood sugar

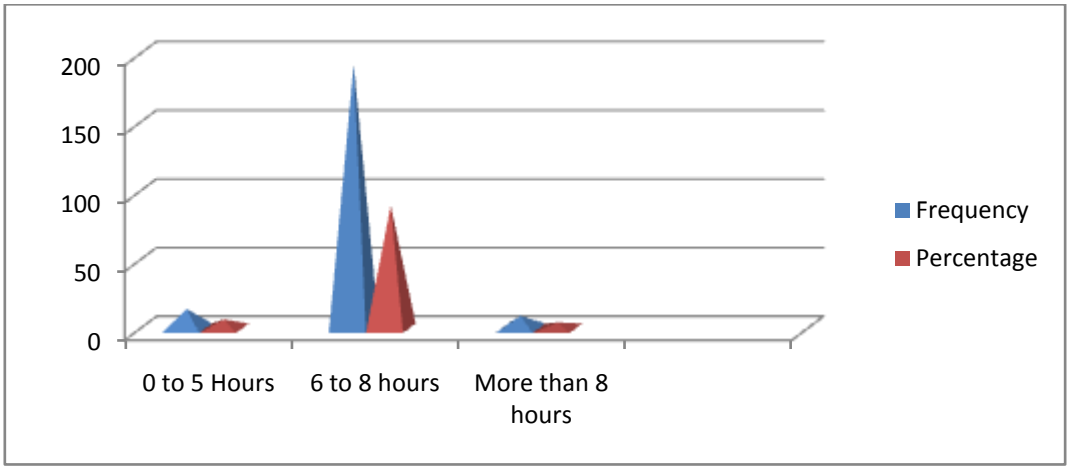
level and help in keeping blood glucose level in the proper range. Daily exercise of physical activities makes insulin more effective, and help to avoid long term complications such as heart problems. Diabetes patients are likely to develop blocked arteries which may result in to a heart attack or heart stroke. As per the information provided by the respondents, 71.2% of them spend less than 20 minutes for daily exercising, 20% of them spend 20 to 45 minutes for daily exercising, and only 1.4% of them spend 45 to 120 minutes, 0.5% respondents, spends more than 120 minutes for daily exercise, and 7% of the respondents have stated that, they never do any exercise daily.

The duration of sleep can be impacted on the blood sugar levels of the diabetes patients. As the duration of sleep decreases, sugar levels in blood increases and may create major diabetic problems. Less duration of sleeping may adversely affected directly and indirectly on the health of diabetes patients; by triggering chances to hormones. It also contribute for weight gain and obesity, and adversely affect on the behaviour and lifestyle. The people belonging to the 18 years to 60 years of age group should get more than 7 hours of sleep at night. However, there is no specific duration of sleep recommended for the diabetes patients. A question has been asked to the respondents with a view to know how many hours they sleep daily.

Table No. 4A.52

Table showing information about sleep hours of respondents

Sr. No.	Sleep Hours	Frequency	Percentage
1	0 to 5 Hours	14	6.5
2	6 to 8 hours	192	89.3
3	More than 8 hours	9	4.2
	Total	215	100.0



As per the information provided by the respondents; 6.5% of them sleep for 0 to 5 hours daily. 89.3% respondents get sleep for 6 to 8 hours daily and 4.2% of them get sleep more than 8 hours. It shows that majority of the respondents are getting adequate duration to sleep.

Table No. 4A.53

Table showing interruption in sleep of respondents

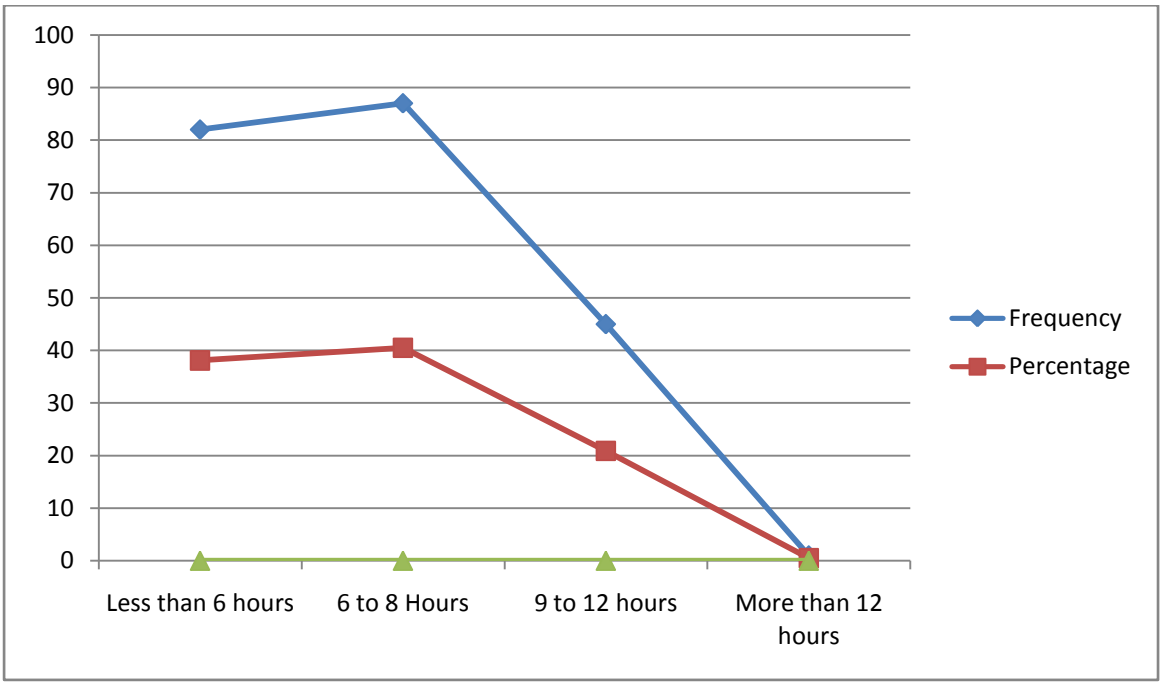
Sr. No.		Frequency	Percentage
1	0 to 1 times	143	66.5
2	More than one time or frequently	72	33.5
	Total	215	100.0

But majority of the respondents (66.5%) have stated that, their sleep is interrupted at least ones time daily. 33.5% respondents have stated that, their sleep is interrupted frequently.

Table No. 4A.54

Showing hours of work of the respondents.

Sr. No.	No. of Hours Work	Frequency	Percentage
1	Less than 6 hours	82	38.1
2	6 to 8 Hours	87	40.5
3	9 to 12 hours	45	20.9
4	More than 12 hours	1	0.5
	Total	215	100.0



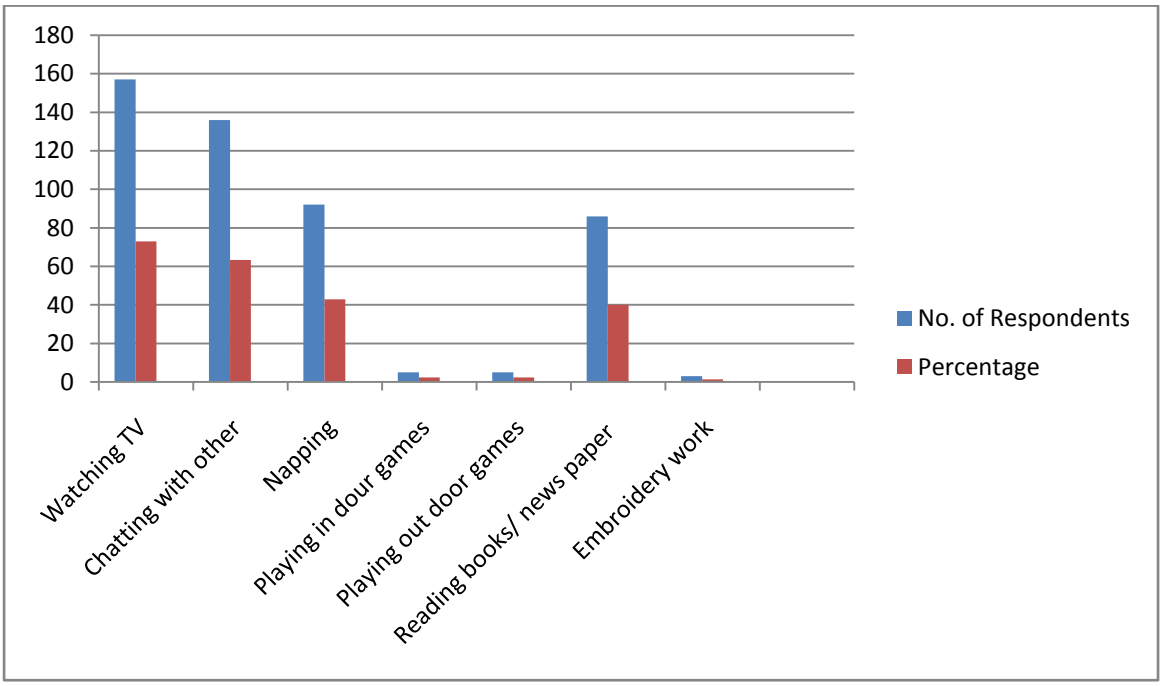
From the above table it is revealed that, 38.1% of them are physically active daily for less than 6 hours by doing their routine work, 40.5% respondents have stated that, they are physically active daily for 6 hours to 8 hours and 20.9% of them have stated that, they work daily for 9 hours to 12 hours; and only 0.5% of the respondents

have stated that they are physically active daily for more than 12 hours. It shows that, almost all the respondents are aware about the importance of exercise or physical activeness for the diabetes patients.

Table No. 4A.55

Ways of spending leisure time (Multiple responses) of respondents

Sr. No		No. of Respondents	Percentage
1	Watching TV	157	73.0
2	Chatting with other	136	63.3
3	Napping	92	42.8
4	Playing in dour games	5	2.3
5	Playing out door games	5	2.3
6	Reading books/ news paper	86	40.0
7	Embroidery work	3	1.4



As per the information provided by the respondents majority of them (73%) are spend their leisure time by watching Tv, 63.3% are spends their time by chatting with others. 42% respondents take a little bit of nappy, 2.3% playing indoor games

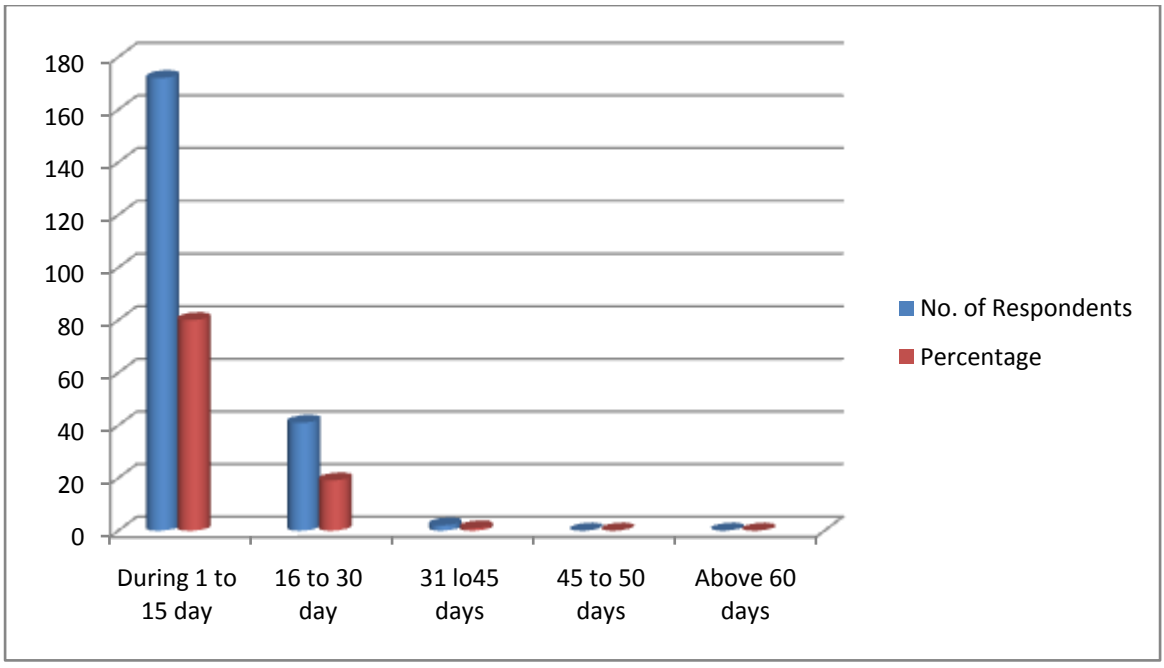
and outdoor games, 40% respondents are spends their leisure time by reading books or newspapers. 1.4% female respondents have stated that, they spends their leisure time by doing embroidery work.

The majority of the studies pointed out that, sugar sweetened beverage intake is associated with an increased risk of type 2diabetes; therefore, it is important to know how frequently diabetes patient avoiding of dinking carbonated drinks or sugar drinks.

Table No. 4A.56

Frequency in avoiding carbonated drinks/sugar drinks

Sr. No		No. of Respondents	Percentage
1	During 1 to 15 day	172	80.0
2	16 to 30 day	41	19.1
3	31 lo45 days	2	0.9
4	45 to 50 days	0	0.0
5	Above 60 days	0	0.0
	Total	215	100.0



80% of the respondents have stated that they try to avoid carbonated drinks or sugar drinks for 1 to 15 days, 19.1% have stated that, they try to avoid sugar drinks for 16 to 30 days and very few of them (0.9%) have stated that, they try to avoid soft drinks at least for 45 days to 50 days.

Today, diabetic retinopathy is becoming an increasingly significant cause of visual impairment. Visual impairment and blindness because of diabetic retinopathy are almost entirely preventable with early detection and timely treatment. Having knowledge about diabetes is related with positive attitude towards diabetes and good practice of retinopathy. On this background it is important to know whether the selected diabetes patients have undergone eye check-up or not.

Table No. 4A.57

Showing the status of eye checkup

Sr. No		No. of Respondents	Percentage
1	Yes	128	59.5
2	No	87	40.5
	Total	215	100.0

According to the information provided by the respondents, majority of them (59.5%) have undergone eye check-up, and 40.5% of them have responded negatively in this regard.

A high level of sugar in blood can creates many problems in various parts of human body; including kidney. The test check of protein in the urine known as albuminuria which helps to know the damage of kidney at an early stage in diabetes patients. On this background it is important to know whether the respondents have undergone kidney check-up or not.

Table No. 4B.58

Information about kidney check up of respondents

Sr. No		No. of Respondents	Percentage
1	Yes	69	32.1
2	No	146	67.9
	Total	215	100.0

(67.9%) As per the information provided by the respondents majority of them/have not undergone kidney check-up and only 32.1% of them have gone kidney check-up. It shows that, majority of the respondents, are not aware about the ill effects of the diabetes on the function of kidney.

Foot care awareness among diabetes patients in a basic care setting improves their foot care practice and is likely to be effective in reducing the danger of diabetic foot ulcer. This type of ulcer exists due to micro vascular and neuropathic complexities in diabetes. There must be daily foot examination and utilization of suitable footwear for prevention of complications. Diabetes patients, having very poor knowledge and practice pertaining to diabetic foot care, there may be chances of diabetic foot ulcers. On this background it is very important to know whether the selected diabetes patients (respondents) are examining their foot regularly or not.

Table No. 4B.59

Information from respondents about regular footcare

Sr. No		No. of Respondents	Percentage
1	Yes	43	20.0
2	No	172	80.0
	Total	215	100.0

Only 20% of the respondents are examine their foot regularly; on the contrary majority of the respondents (80%) are not checking their foot regularly. It also shows that, majority of the respondents are not aware about the bad effects of foot ulcer.

Medication can reduce the physical stress which in turn will improve people's ability to manage their diabetes in a better way. It also helps in maintain blood sugar level low, and reduce the danger of cardiovascular disease. Medication helps diabetes patients to manage the blood sugar level and achieve improved overall well-being. On this background it is important to know how many respondents take medication regularly.

Table No. 4A.60

Do you take medication regularly?

Sr. No		No. of Respondents	Percentage
1	Yes	201	93.5
2	No	14	6.5
	Total	215	100.0

93.5% of the respondents take their medication regularly; and only 6.5% of them do not take their medication regularly. It shows that, majority of the respondents are having good awareness about regularity in taking medication to reduce the diabetic complications, due to proper health communication by the doctors, social workers or health communicators.

Table No. 4A.61

The following table shows the facts about the regularity in consulting with doctors about their health and complications arising due to diabetes.

Information from respondents about regularity in Doctor's consulation

Sr. No		No. of Respondents	Percentage
1	Yes	181	84.2
2	No	34	15.8
	Total	215	100.0

According to information provided by the respondents, majority of them (84.2%) are regularly consulting with doctors about their health and diabetic complications. Only 15.8% of them negatively responded in this context.

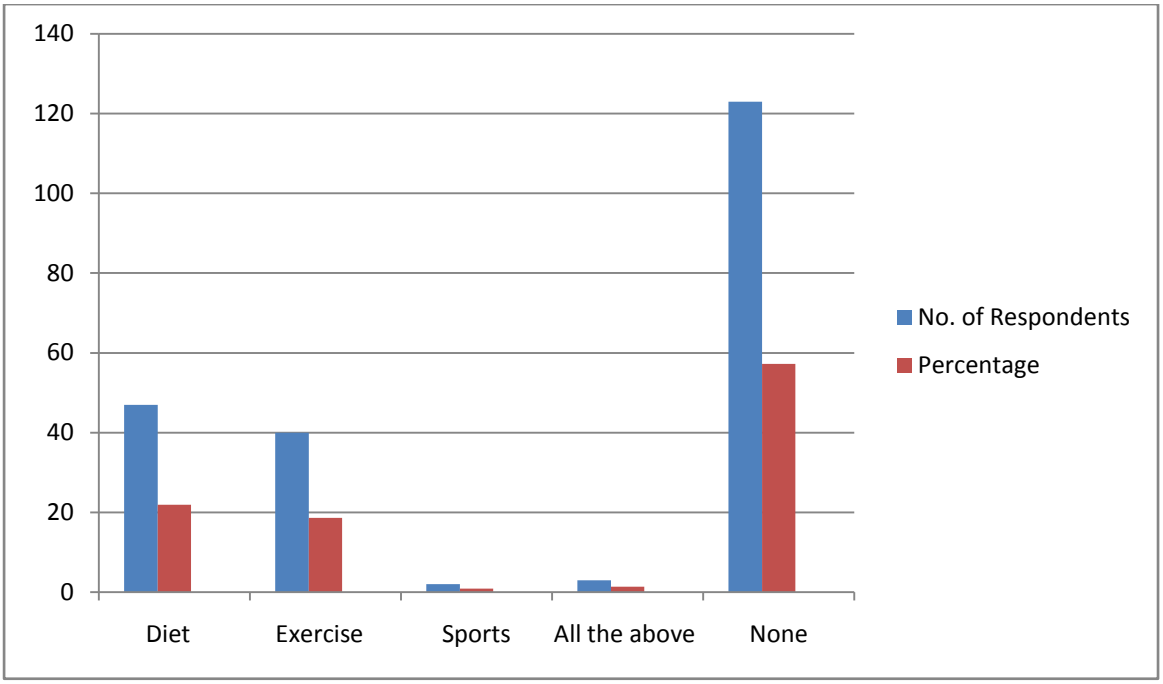
Overweight increases risk of heart disease and stroke. Overweight can also cause to risk of high blood pressure, increase in cholesterol and increase high level of blood sugar. Overweight trigger changes to the human body's metabolism; and can affect insulin responsive cells and may reduce the sensitivity of insulin.

Table No. 4A.62

The following table indicates the various measures taken by the respondents for reducing the weight.

Table showing kind of measures undertaken by respondents for reducing weight

Sr. No		No. of Respondents	Percentage
1	Diet	47	21.9
2	Exercise	40	18.6
3	Sports	2	0.9
4	All the above	3	1.4
5	None	123	57.2
	Total	215	100.0

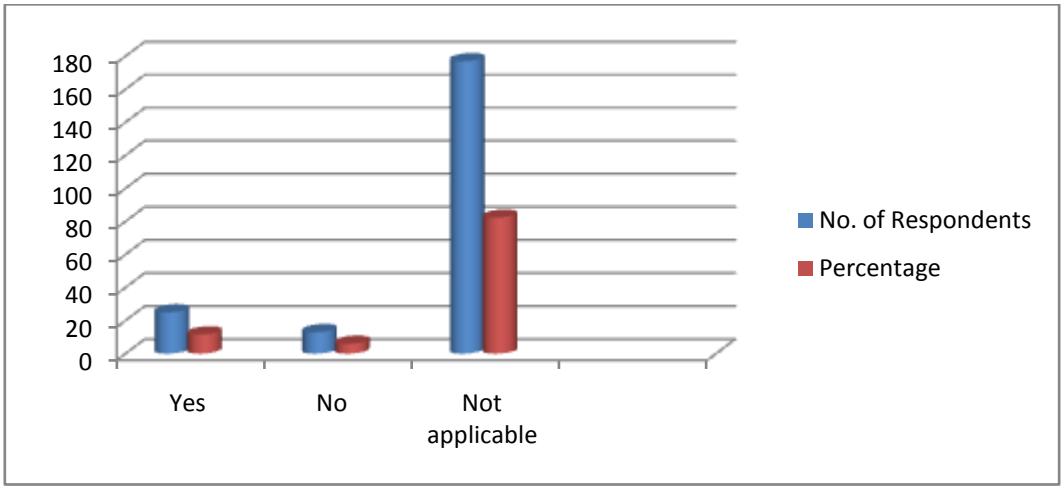


As per the collected information, 21.9% of the respondents doing diet to reduce over weight, 18.6% respondents, doing exercise, 0.9% respondents indulged in various sports activities. 1.4% respondents have stated that, they are doing diet, and exercise and also indulged in sports activities. Majority of the respondents (57.2%) have not taken any type of measure with a view to reduce over weight. It is observed that due to health communication and regular health check-up some respondents are often engaged in the diet, exercise and sports activities.

Table No. 4A.63

Table showing whether respondents have stopped consuming alcohol and smoking after detection of diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	25	11.6
2	No	13	6
3	Not applicable	177	82.3
	Total	215	100.0



11.6% respondents have stated that, as the diabetes detected in their body they have stopped consuming alcohol and smoking, but 5.6% of the respondents do not stopped to consume alcohol and smoking. Majority of the respondents have stated that they have not any kind of addiction.

The number of diabetes patients and their foot complications are also increasing today. Utilization of unsuitable footwear may be a major cause of foot ulceration among diabetes patients.

Table No. 4A.64

Use of suitable footwear for walking

Sr. No		No. of Respondents	Percentage
1	Yes	110	51.2
2	No	105	48.8
	Total	215	100.0

According to the information provided by the respondents 51.32% of them have stated that, they are using suitable footwear every time while walking. On the contrary 48.8% respondents have negatively responded in this regard. It shows that, these respondents are not aware about the utilization of suitable or appropriate foot wear while walking. Unsuitable or inappropriate footwear may cause for wounds of foots which are very dangerous for diabetes patients.

Having small quantity of meals frequently is benefited to the diabetes patients. It decrease blood sugar level after small meals, reduced insulin requirements and keep the cholesterol level lower, it also helps to reduce the overall number of calories during the day. Having small quantity of meals frequently can help to the diabetes patients to attain and maintain glycaemic control; and help to avoid health complications due to diabetes.

Table No. 4A.65

Opinion towards frequency of small quantity of meals by respondents

Sr. No		No. of Respondents	Percentage
1	Yes	28	13.0
2	No	187	87.0
	Total	215	100.0

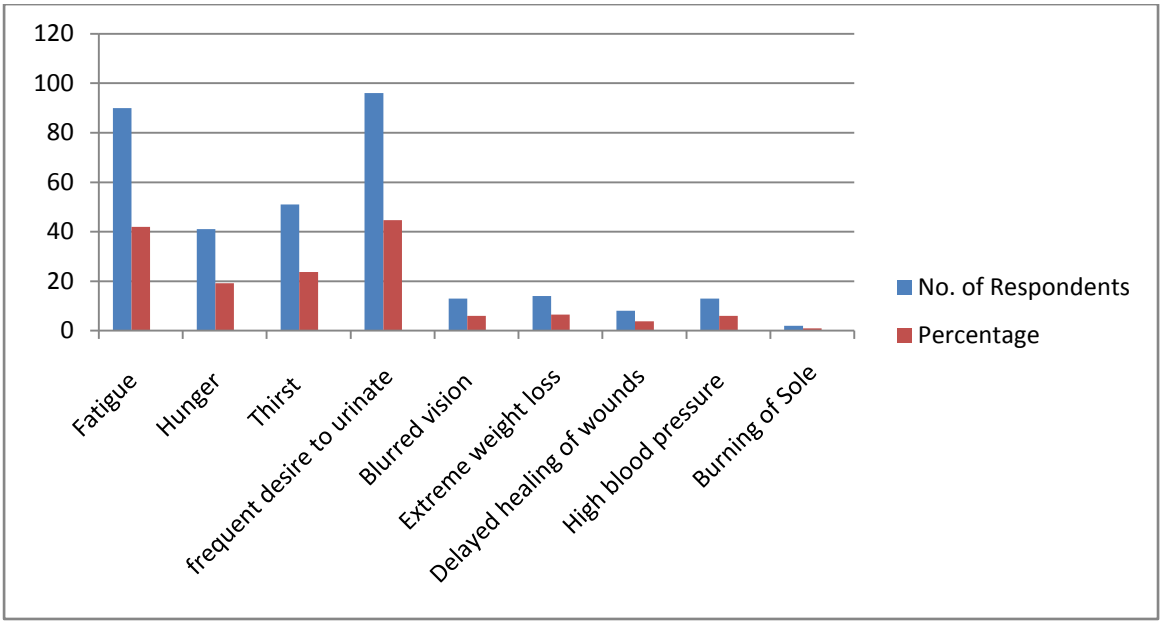
From the above table it is revealed that, only 13% of them are taking small quantity of meals frequently. On the contrary 87% of them have stated that they are not taking small quantity of meals frequently but they consume heavy meals two times in the forms of lunch and dinner only.

There are several symptoms of diabetes faced by patients. The most common symptoms (in type I and type 2) are increased thirst, extreme hunger, weight loss frequency in urination etc.

Table No. 4A.66

Kind of symptoms faced by diabetes patients (Multiple responses)

Sr. No		No. of Respondents	Percentage
1	Fatigue	90	41.9
2	Hunger	41	19.1
3	Thirst	51	23.7
4	frequent desire to urinate	96	44.7
5	Blurred vision	13	6.0
6	Extreme weight loss	14	6.5
7	Delayed curing of wounds	8	3.7
8	High blood pressure	13	6.0
9	Burning of Sole	2	0.9

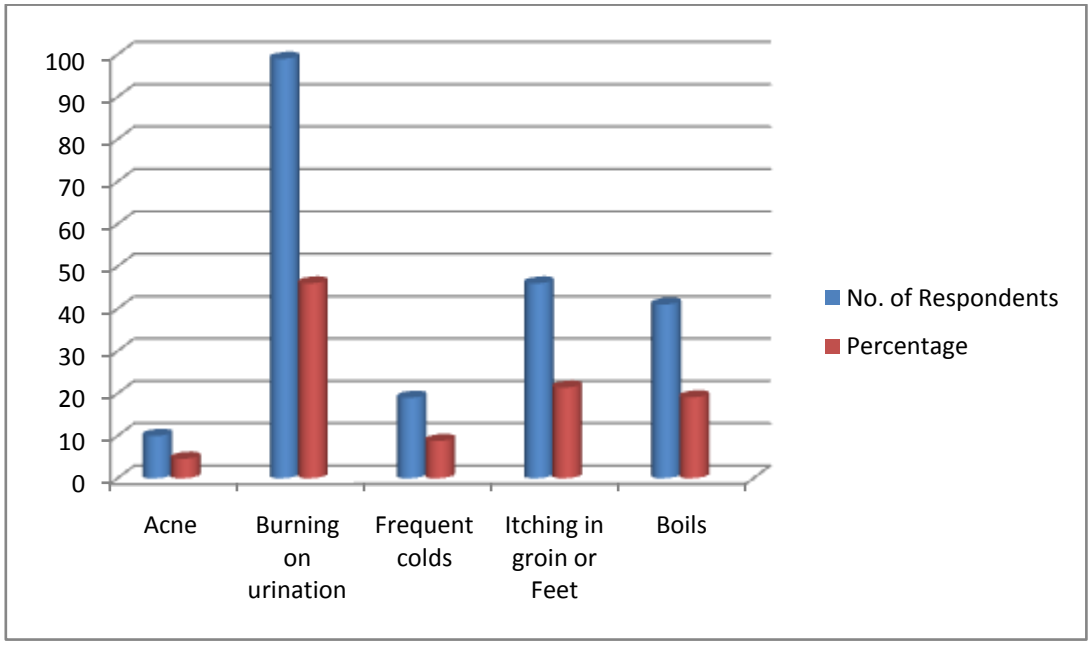


As per the information provided by the respondents, 41.9% of them faced the problem of fatigue due to diabetes. 44.7% respondents faced the problem of frequent desire to urination, 23.7% respondents faced the problem of frequent theist, and 19.1% of them faced the problem of frequent and extreme hunger. A pert from these problems or symptoms of diabetes, there are other symptoms or problems like blurred in eye vision (6%) extreme weight loss (6.5%) delayed in curing of wounds (3.7%) high blood pressure (6%) etc.

Table No. 4A.67

Kind of Infection problems faced by the patients

Sr. No		No. of Respondents	Percentage
1	Acne	10	4.6
2	Burning on urination	99	46.0
3	Frequent colds	19	8.8
4	Itching in groin or Feet	46	21.4
5	Boils	41	19.1
	Total	215	100.0



From the above table it is revealed that, majority of them (46%) are facing the inflectional problem like burning on urination. 21.4% respondents are facing the problem of itching in groin and feet. 19% respondents faced the problem of boils and 4.6% of them are facing the problem of acne; 8.8% respondents faced by frequent colds.

A question has been asked to the respondents with a view to know whether they were hospitalized due to diabetes or not.

Table No. 4A.68

Status of Hospitalization due to diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	27	12.6
2	No	188	87.4
	Total	215	100.0

According to the information provided by the respondents only 12.6% of them were hospitalized due to severe health problems faced by them. Majority of the respondents (87.4%) have stated that, they were not hospitalized due to diabetes. It shows that majority of the selected diabetes patients are well aware of health care and the importance of blood sugar control, which help them to avoid hospitalization.

4A.2.5) Impact of diabetes on Social and economic states –

Diabetes is a disease which can affect socio-economic conditions of diabetes patients in many ways; therefore, majority of the diabetes patients feel that diabetes affects their quality of life. Due to diabetes there may be bad effects on the psychological well-being of patients. The relationship between diabetes and socio-economic disorders is multifactorial. Complications raised due to diabetes and cost of treatment affect the quality of life of diabetes patients; and thus suffers from a variety of socio-economic and life style problems. A question has been asked to the respondents with a view to know whether they are negatively affected due to diabetes or not.

The following table shows the fact in this regard.

Table No. 4A.69

Negative effects on social life due to diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	177	82.3
2	No	38	17.7
	Total	215	100.0

Majority of the respondents (82.3%) have stated that, their social life is affected due to diabetes. Only 17.7% respondents have negatively responded in this regard. It shows that the diabetes badly impacted not only on the health conditions of the patients but also adversely impacted on their socio-economic status.

There are an important marital relation problems concerned with the diabetes. Diabetes related stigma which may become a major challenge or issue for a prospective spouse and it may adversely effect on the marital relationships and procreation. Due to diabetes, men and women are stressed due to sexual dysfunction. In the case of women, there is a risk of adverse maternal and fatal outcomes because of higher level of hyperglycaemia at the time of conception and during pregnancy. On this background a question has been asked to the respondents with a view to background their opinions about whether it is difficult for people with diabetes to get married?

Table No. 4A.70

Opinion of the respondents about difficulty to get married for diabetes patient.

Sr. No		No. of Respondents	Percentage
1	Yes	135	62.8
2	No	80	37.2
	Total	215	100.0

According to the collected information, from the respondents, majority of them (62.8%) are in the opinion that, it is very difficult for the people with diabetes to get married. On the contrary 37.2% respondents have negatively responded in this regard. It shows that, majority of the respondents are well aware that, diabetes has an adverse effect on many factors related to mantel life sexual relationship are procreation.

Many times it may happen that, there is an increase in the level of sugar in blood of type 2diabetes the kidneys activated and flushing the excess sugar out of blood into the urine. This results in excess production of urine which requires to or urinate more frequently therefore, there is a need of easily accessible bathroom. If bathrooms are not easily accessible for such patients, there is a risk of urinary tract infections in man and women. On this background a question has been asked to the respondents whether they have easily accessible bathrooms in their home or not.

Table No. 4A.71

Easy accessibility of bathroom in the home

Sr. No		No. of Respondents	Percentage
1	Yes	107	49.8
2	No	108	50.2
	Total	215	100.0

As per the information provided by the respondents 49.8% of them have stated that, there is easily accessible bathroom in their home; but on the contrary 50.2% of the respondents have stated that there is no easily accessible bathroom in their homes.

A question has been asked to the respondents with a view to know whether they are facing adverse effects on their marital life or not.

Table No. 4A.72

Negative effect on marital life due to diabetes

Sr. No		No. of Respondents	Percentage
1	Yes	158	73.5
2	No	57	26.5
	Total	215	100.0

As per the information provided by the respondents, majority of them (73.5%) have affected their marital life due to diabetes; and 26.5% have not affected.

Diabetes is considered as an expensive disease because of its chronic nature and gradual involvement of multiple organs. This calls for an assessment of the financial burden of the disease. The increasing rate of diabetes has profound effect on health care costs; which is expected to increase in coming years. Several studies have been pointed out that, the high rate of treatment expenditure on diabetes amongst all socio-economic groups of patients will result in serious burden on patients suffering from diabetes. On this background a question has been asked to the respondents with a view to know whether they have financially affected or not.

Table No. 4A.73

Negative effects of diabetes on the financial conditions

Sr. No		No. of Respondents	Percentage
1	Yes	87	40.5
2	No	128	59.5
	Total	215	100.0

40.5% of the respondents have stated that they are financially affected. On the contrary. On the contrary, 59.5% of the respondents have negatively responded on this context. Some respondents are financially affected because of costly treatment in the hospitals.

Table No. 4A.74

Readily availability of treatment facility near by residence

Sr. No		No. of Respondents	Percentage
1	Yes	131	60.9
2	No	84	39.1
	Total	215	100.0

60.9% respondents have stated that, the treatment facility is readily available nearby their residence. Only 39.1% respondents have negatively responded in this regard. Means, the treatment facility is not readily available nearby their residence.

Members of family can actively take care of diabetes patients. Family members supports to the diabetes patients in the forms of instrumental support, in driving patients to appointments or helping inject insulin. A part from this, family members of the diabetes patients, also provides social and emotional support in helping diabetes patients to cope with their disease. In this process, sometimes it may happen that, the condition of patients effects on the daily routine of family members and also affected on their jobs or professions. The question has been asked to the respondents with a view to know whether their family members are affected due to their disease conditions or not.

Table No. 4A.75

Effect of the disease condition on the working time or job of family members

Sr. No		No. of Respondents	Percentage
1	Yes	123	57.2
2	No	92	42.8
	Total	215	100.0

As per the information provided by the respondents, 57.2% of them have stated that, due to their disease condition, their family members are affected in terms of working time. On the contrary, 42.8% of the respondents have stated that, their family members are not affected due to their condition of disease.

Table No. 4A.76

Opinion about change the work pattern or job due to diabetes

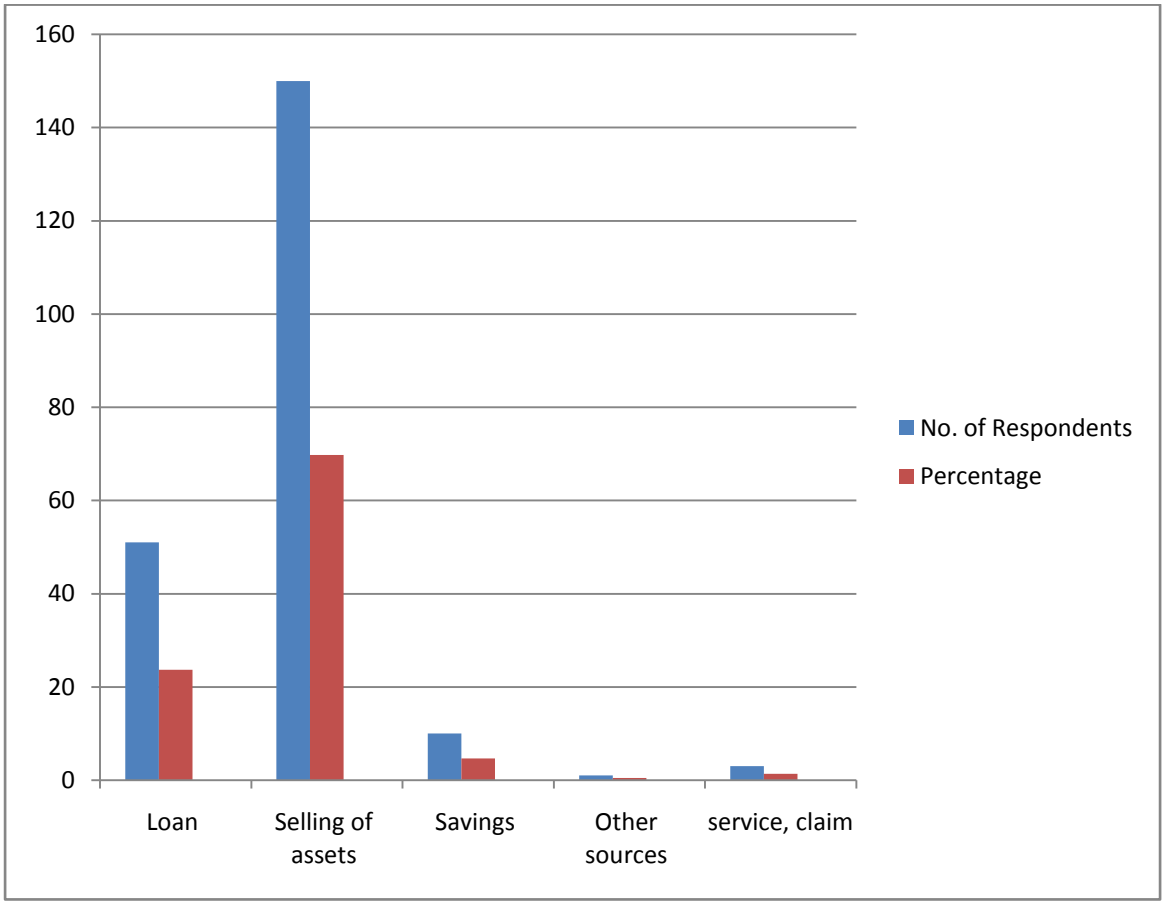
Sr. No		No. of Respondents	Percentage
1	Yes	83	38.6
2	No	132	61.4
	Total	215	100.0

Due to diabetes not only family members are badly affected but also some patients are also affected (38.6%). Their pattern of work and job has been changed due to diabetes. On the contrary 61.4% respondents have stated that they do not face any problem due to diabetes.

Table No. 4A.77

Distress finance mechanisms used in the absence of health insurance coverage

Sr. No	Methods/ means	No. of Respondents	Percentage
1	Loan	51	23.7
2	Selling of assets	150	69.8
3	Savings	10	4.7
4	Other sources	1	0.5
5	Insurance claim	3	1.4
	Total	215	100.0

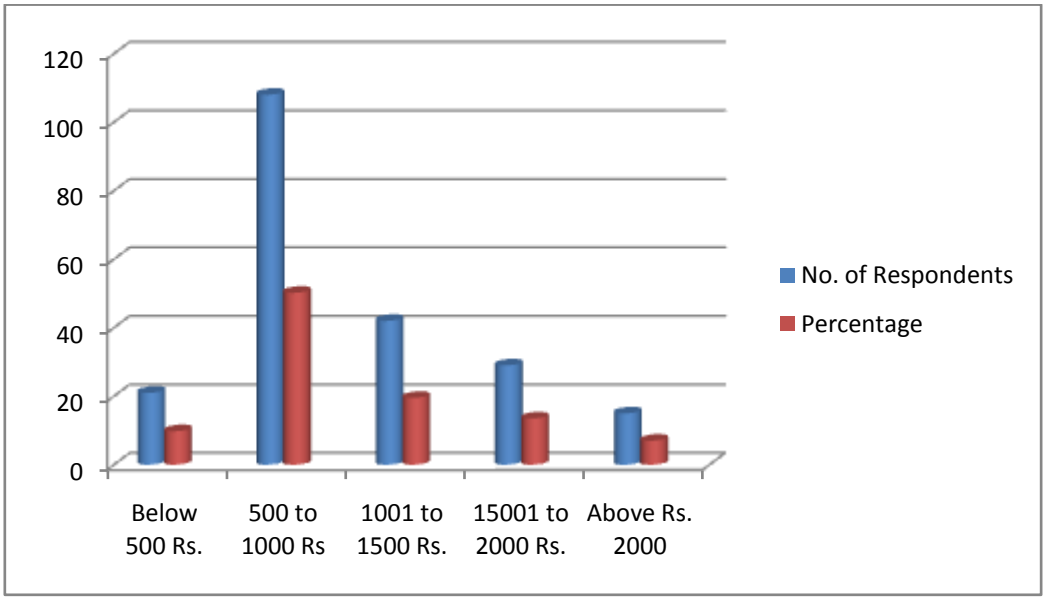


From the above table it is revealed that, majority of the respondents (69.8%) have incurred their diabetes expenditure selling of personal assets; 23.7% of them have incurred expenditure, by taking loan from financial institutions. Personal savings are the main source for 4.7% respondents to incurred treatment expenditure. Very few of the respondents (1.4%) having insurance to incurred treatment expenditure. It indicates that, majority of the respondents are not aware about the health insurance schemes.

Table No. 4A.78

Average direct monthly expenditure on the treatment of diabetes

Sr. No		No. of Respondents	Percentage
1	Below 500 Rs.	21	9.8
2	500 to 1000 Rs	108	50.2
3	1001 to 1500 Rs.	42	19.5
4	15001 to 2000 Rs.	29	13.5
5	Above Rs. 2000	15	7.0
	Total	215	100.0



As per the information provided by the respondents, 50.2% of them expensing Rs. 500 to Rs. 1000 per month for the treatment of diabetes. 19.5% respondents' expenditure on the treatment is between Rs. 1001 to Rs. 1500 per month. 13.5% respondents have stated that, their monthly expenditure on the treatment is between Rs. 1501 to Rs. 2000 per month. 7% respondents have stated that, their treatment expenditure on diabetes is above Rs. 2000 per month.

Chapter - 4

Part B – Impact of health communication on the health of diabetes mellitus.

4B.1) Introduction –

Health communication is the health care process element which diabetes patient can achieve process, understand and communicate regarding diabetes related complications. Proper health communication is able to make patients informed about diabetes, treatment, medicine etc. Health communication represents the cognitive and social skill which helps to motivate and increase the patient's ability to gain access to understand and utilize information with a view to promote and maintain better health. A good and proper health communication is an important measure of diabetes patient's ability to read, comprehend, and follow the medical instructions. The concept of health communication becomes particularly significant with management of chronic disease like diabetes. It is a multifactorial disease and needs long term care and treatment, since it includes many changes in physical and psychological dimension of diabetes patients.

Diabetes patients if not properly communicated or educated there are the chances of developing multiple chronic health related complications which caused to irreversible disability and early death. Coronary heart disease, lower limp amputation, stroke are more common in diabetes patients. Apart from this, the complications like diabetic nephropathy and retinopathy are the major health related problems which caused to worsening of the quality of life of the diabetes patients. On this background, the health communication and health education are very important, because there is still lack of awareness regarding the real aspect of the diabetes problem. A Proper health communication and health education is also important because there is also lack of knowledge regarding the various diabetes prevention methods, various

diabetes management approaches or strategies and intervention of different agencies to prevent diabetes etc. The health communication process is not just an element of the treatment of diabetes patients; it has had some what impressive result in reducing the frequency of certain chronic issues related to diabetes, like foot ulceration amputation etc.

Health communicator must have the skill in interpersonal processing, listening to patients, speaking with patients, observing their health condition etc. Therefore the health communicator or health educator plays an important role in prevention of diabetes. Health communication is a continuous process by which the diabetes patients benefited in self-care, bearing psychological support, increasing awareness and knowledge, etc. Therefore, health communication and health education are critical element of health care that improves the outcomes of diabetes patients. The overall goal of health communication and health education is to help diabetes patients and their families to achieve the important and necessary knowledge, life skills, resources and support required to achieve good health.

There are several studies, research papers and articles available pertaining to the importance of health communication and health education, but there are very few studies or research paper available pertaining to the impact of health communication and health education on the overall health and quality of life of the diabetes patients specifically in Indian context. Through the present chapter researcher has focused on the matters like easy availability of health communication or health educator near by the residence of diabetes patients, how health communication helps diabetes patients to overcome the diabetes related complications, methods of health communication, and also pointed out the difference of blood sugar levels in the pre health communication/education and post health communication/education periods. Through

the present chapter researcher has also discussed on the various methods of health communication for diabetes patients.

4B.2) Approaches of Health Communication for Diabetes Patients –

Systematic health communication for diabetes patients is very important in the health care process of diabetic patients. Health care communication and education integrates care of health not only during the patient's hospitalization but also extended health care and management outside of a hospital. There are various health communication and health education approaches or strategies implement by the health communicator in the forms of therapies, counselling etc. These approaches or strategies are based on the relationship between the health communicator or doctor and the patients; which is specifically suitable for chronic disease like diabetes. The researcher has tried to explain some of the important approaches (Theoretical and Therapy based) or strategies which are often followed by the health communicator or doctor.

1) Patients Awareness Programmes –

The major aim of this type of approach or strategy is to support diabetes patients in decision making, problem solving, self-care behaviours and support to improve clinical outcomes, quality of life and health conditions. These aims are accomplished by systematic awareness programmes for group of diabetes patients frequently. Through this programmes, diabetes patients are provided audio. Visual information pertaining to diabetes mellitus and hypertension, obesity etc. This type of approach orate wider awareness regarding the health maintenance among the diabetes patients. Through this approach health communicator also provides information about the complications aired in health due to diabetes, treatment process, and importance of controlling risk factors etc. Family members of the diabetes patients also participate in

this programme. The patients Awareness programmes promote health related behaviour changes through imparting knowledge and enhance the confidence in the patients so that, they themselves maintain their health.

2) Personal Medical and Nutrition Therapy –

This is a comprehensive and personally negotiated nutrition programme; or approach. Through these approach patient's preferences, family and cultural background and overall treatment programme are considered.

3) Exercise Therapy –

Information about individual exercises is giving in this therapy. The exercises incudes walking, cycling, swimming, and other physical exercises which are very useful to reduce the cholesterol, high level of blood sugar etc. Frequencies and intensities are discussed or negotiated with diabetes patients with proper sensitivity to understanding obstacles and help them to find solutions on the obstacles.

4) Family members and social support –

The support of family members and society support in the self-health management of diabetes is very important. Support from family members, and society (friends, relatives) is the strongest element which is positively, related with bio medical outcomes. The approach or therapy is also known as family therapy.

5) Conducting Workshops, seminar-

Through the workshops, seminars, diabetes patients can get general knowledge of medications effect on the health, knowledge about food and diet, alternative medication options, self-injection of insulin, drug

prescription instructions, symptoms of hypoglycaemia, hyperglycaemia and carbohydrate counting techniques etc.

6) Printed materials related to diabetes –

Dissemination of printed materials related to health management is also one of the most significant approaches of communication with diabetes patients. These materials contain the information about all the aspects of diabetes and therapies in the form of questions and answers on it.

7) Communication through lectures –

This is the most common communication approach. It provides the means of giving patients good health education. Through this approach, health communicator provides guidance in setting of goal to manage the danger of complications. Sharing experiences and inform to the patients about the techniques to overcome the obstacles in the health care management process.

8) Modification in Lifestyle –

This therapy is related to weight loss, reduced excess fats, Tran's fat and cholesterol intake, moderation of alcohol consumption, quitting smoking and increased physical activities. Through this therapy health communicator give recommendations on exercise and provides medical nutrition counselling and impart comprehensive diabetes related education with a view to change the paradigm of health care in diabetes from health communicator to patient.

9) Glycaemic Control through self-monitoring –

Health communicator helps the diabetes patients about how to control glycaemic through self-monitoring. Diabetes patients are encouraged to monitor their blood glucose, record values, and bring a record book at the time of appointment. Due to proper guideline majority of the

diabetes patients can perform daily self-monitoring of blood glucose and record the results as the instructions given by the health communicator. Through this method of communication, diabetes patients are able to communicate with the health communicator or doctor when goals are not achieved or when there is an increase the complications regarding health.

10) Personal follow-up –

Frequent personal follow-up is one of the important components of health communication process. It is an integral factor of its long term management. This includes follow-up time, risk factors, care of foots, self-injection of insulin, symptoms of hypoglycaemia and hyperglycaemia, questions of diabetes attitude and hypoglycaemic coping measures.

All the above discussed communication strategies methods approaches are very important and useful in the health care process and treatment of type 2diabetes. Proper health communication by health care provider includes increasing the knowledge of patients regarding diabetes and its various factors and also increasing the awareness about health issues. Researcher has tried to understand the opinions of the selected diabetes patients on the health communication/education process and its impacts on their sugar level, and overall health conditions.

4B.3) Opinions of the respondents about Health Communication/education –

The health educator or health communicator follows the verbal and written strategies with a view to influence diabetes patients and empower them to cope with the diabetes. The health communicator often uses the components of multiple theories and models to promote positive changes in the attitudes and behaviour of diabetes patients. Health communicator or educator in every phase and setting care for diabetes patients and try

to obtain uniform quality care requires involvement from all concerned. Therefore the role of health communicator or educator is very important in the treatment process of diabetes patients. The following table indicates the easily availability of health educator/communicator near by the residence of the respondents.

Table No. 4B.1

Showing the availability of health educator/communicator nearby the residence

Sr. No		No. of Respondents	Percentage
1	Yes	20	9.3
2	No	195	90.7
	Total	215	100.0

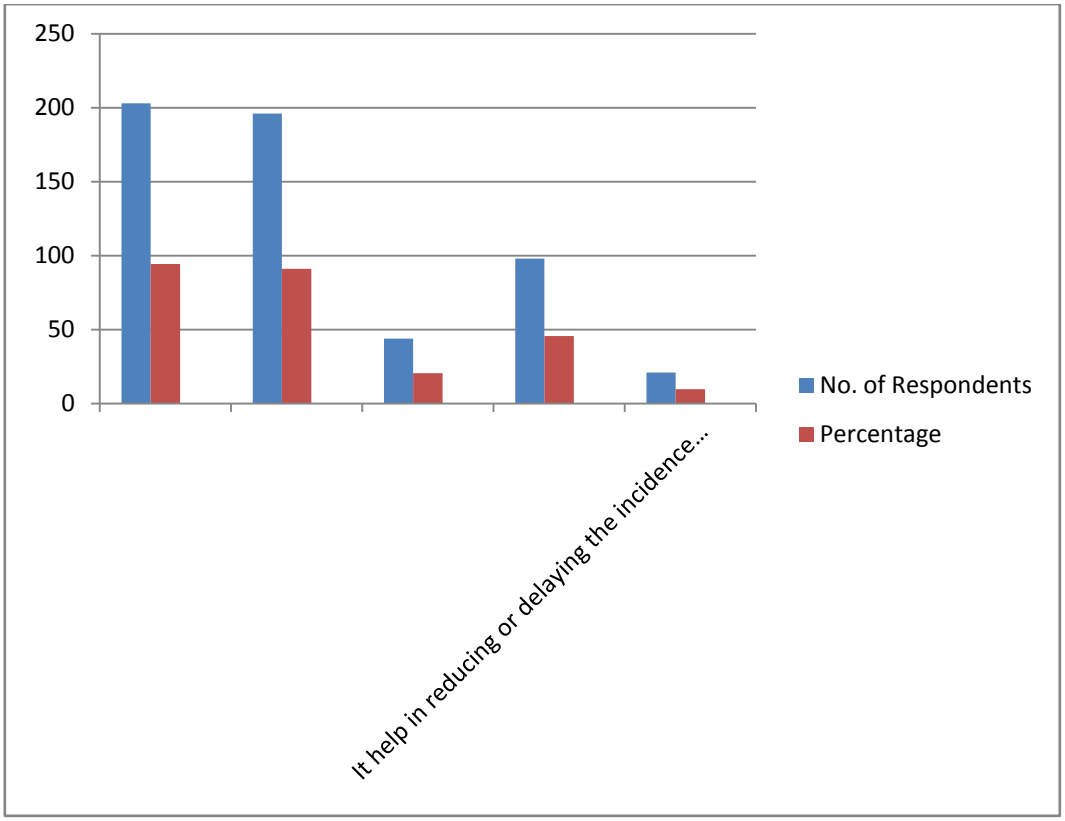
From the above table we come to know that, only 9.3% of the respondents are having health educator/communicator nearby their residence. Majority of the respondents (90.7%) have negatively responded in this regard. It means, there is no health communicator/educator easily available nearby their residence.

Effective Health communication strategy can positively impacts on the behaviour, attitude of the diabetes patients. From the study point of view it is very important to know how has the health communication or education helped to the respondents to overcome the complications raised due to diabetes.

Table No. 4B.2

Impact of Health communication/education in reducing diabetes complications

Sr. No	Nature of Impact	No. of Respondents	Percentage
1	It improved the power of controlling blood sugar and glucose	203	94.4
2	It improved the knowledge pertaining to diet and exercise	196	91.2
3	There is an improvement in weight and insulin resistance	44	20.5
4	There is a reduction in using anti-diabetes medicine	98	45.6
5	It help in reducing or delaying the incidence of diabetes and pre-diabetes	21	9.8



94.4% of respondents have stated that, due to effective health communication or education they have improved their power of controlling blood sugar and glucose. 91.2% of the respondents have stated that, they have improved the knowledge pertaining to diet and exercise due to effective education and communication. In the opinion of 20.5% respondents, there is an improvement in weight and insulin resistance because of guidelines provided through the health education or communication. 45.6% respondents, due to health communication there is a reduction in using anti-diabetes medicine; and 9.8% of the respondents have stated that, due to health communication or health educator received by communicator, they are able to reduce the incidence of major diabetes complications. In variety of ways the health communication or health education helped to the respondents.

The health communication or health education methods followed by health communicators helps to achieve public health goals. These goals can be obtained by using mix epidemiological, social and behavioural science research information. Patient's satisfaction with doctor-patient interactions and communication. An effective health communication is an indicator of doctors and health communication's competence. The following table indicates whether the respondents are satisfied with the health communication methods followed by doctors or health communicators or not.

Table No. 4B.3

Satisfaction status of Respondents towards Heath communication methods

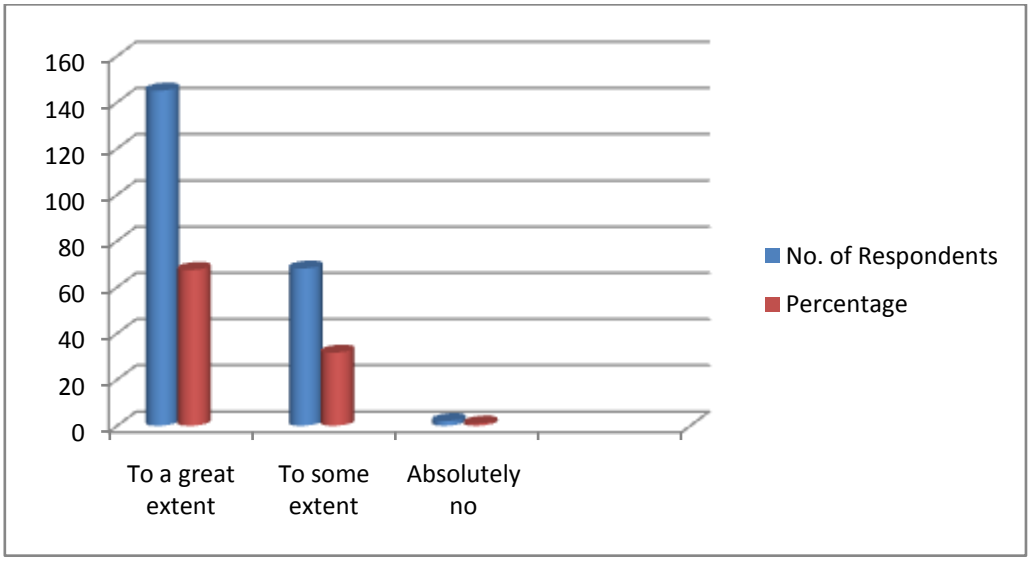
Sr. No		No. of Respondents	Percentage
1	Yes	208	96.7
2	No	7	3.3
	Total	215	100.0

96.7% of respondents have stated that, they are very much satisfied with the methods of health communication followed by their doctors or health care providers. Only 3.3% respondents have negatively responded in this regard. It means, the communication methods followed by the doctors and health care provided are very effective and result oriented.

Table No. 4B.4

Extent of support of Health communication in prevention and control of complication of diabetes

Sr. No		No. of Respondents	Percentage
1	To a great extent	145	67.4
2	To some extent	68	31.6
3	Absolutely no	2	0.9
	Total	215	100.0



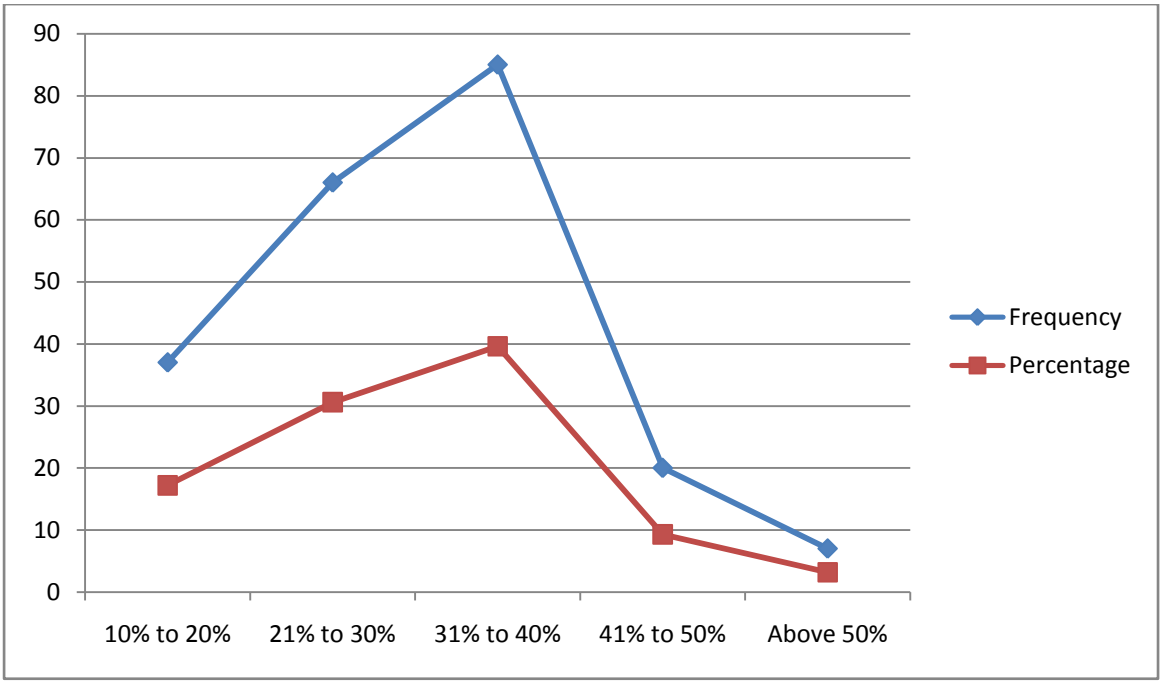
67.4% of the respondents have stated that, the health communication methods followed by their doctor or health care providers are helpful to a great extent in preventing and control of risk or to prevent complications of diabetes. 31.6% of them have stated, to some extent the communication methods helped them to prevent the danger of diabetes complications. Only 0.9% of them have stated that there is absolutely no any help from the communication methods followed by the doctors or health communicators to prevent diabetes.

Glycaemic control and treatment of additional cardiovascular risk can reduce the danger of diabetes. For diabetic patients compliance treatment is an important element in the treatment process and the results of medical care; which includes diabetes and consequently wound care. Good compliance has a positive effect on clinical outcome. There is increasing evidence showing that, due to the lower rates of compliance, increasing effectiveness of compliance interventions may have an impact on the health of diabetes patients. Promotion of therapeutic compliance is known as integral element in diabetes patients care. Majority of the studies have been pointed out that, due to non-compliance and ineffective methods of treatment, majority of the diabetes patients are unable to achieve satisfactory glycaemic control, which leads to accelerated development of complications and increased mortality. The following table indicates the percentage of the overall improvement in health achieved by the respondents by following good compliance.

Table No. 4B.5

Showing the Improvement in Overall health due to compliance

Percentage range of overall health improvement	Frequency	Percentage
10% to 20%	37	17.2
21% to 30%	66	30.6
31% to 40%	85	39.6
41% to 50%	20	9.3
Above 50%	7	3.2
Total	215	100



From the above table it is revealed that compliance in treatment process, 39.6% of them have stated that, there is only 31% to 40% improvement in their health due to compliance 30.6% respondents have stated that, due to compliance in diabetes treatment there is 21% to 30% improvement in their health. There is 10% to 20% improvement in the health, stated by 17.2% respondents. 9.3% of the respondents have stated that, there is a 41% to 50% overall improvement in their health due to good compliance in diabetes treatment process and only 3.2% of the respondents have stated that there is above 50% improvement in their overall health. The level of compliance can be obtained through the improvement of patients' socio-economic conditions, and reduction in the cost of medication, treatment etc. In the study population, the compliance rates were found to be suboptimal. But many of the respondents are complaining with the treatment due to improper communication and education imparted by their health care taker or doctor.

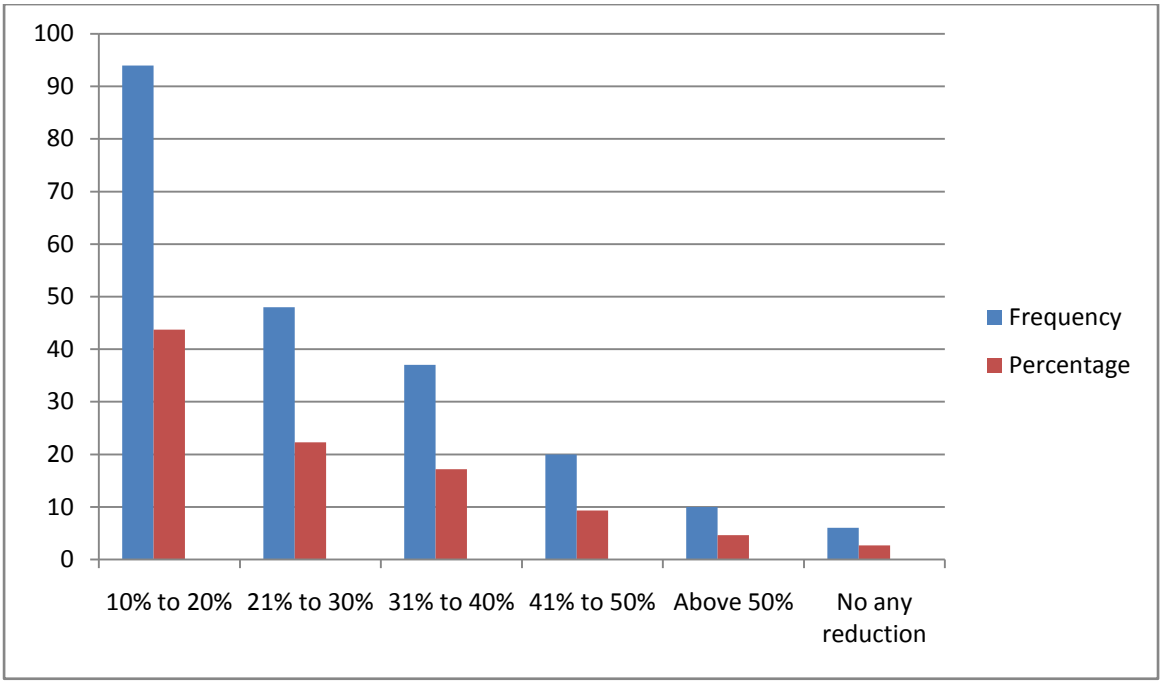
A proper health communication and education consequently increase the knowledge and attitude of the diabetes patients. It leads to good glycaemic and blood sugar level control. The health communication is considered as an integral element of diabetes health care process. Diabetes people if not properly communicated and not monitored properly, there may be a chance of increasing multiple chronic health related complications which causing to irreversible disability and early death.

Table No. 4A.6

Percentage of reduction in the complications after health communication sessions

Percentage range of reduction in the complications	Frequency	Percentage
10% to 20%	94	43.7
21% to 30%	48	22.3
31% to 40%	37	17.2
41% to 50%	20	9.3
Above 50%	10	4.6
No any reduction	6	2.7
Total	215	100

The above table indicates the percentage of the reduction in diabetes related complications after health care communication and education provided by the health care taker or doctors of the selected diabetes patients (respondents).



43.7% respondents have stated that, there is 10% to 20% reduction in the diabetes related complications due to health communication and education. There is 21% to 30% reduction in the diabetes related complications stated by 22.3% of the respondents. 17.3% of the respondents have achieved reduction in the complications in between 31% to 40%, 41% to 50% reduction has been achieved by 9.3% respondents and above 50% reduction has been achieved by 4.6% only 2.7% respondents have stated that there is no any reduction in the complications after health communication.

Through the study point of view it is very important to know the sugar level of the respondents before they go through the health education and communication, by their doctors or health communicators. It is also important to know what the sugar level of the respondents is in the post health education and communication period. The major aim to know the facts in this regard is to understand that, whether there is any positive impact of health communication or health education on the blood sugar level of the selected respondents.

Table No. 4B (A and B)

Sugar level of the respondents in the pre and post health communication/education periods-

Table No. 4B.7- (A)

Pre Health Communication/Education Period

Normal Level		Pre-diabetes level		Diabetic level		Total	
170mg/dl – 200mg/dl		190mg/dl – 230mg/dl		230mg/dl – 300mg/dl		-	
Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
01	0.4	31	14.4	183	85.11	215	100

According to the information provided by the respondents regarding their blood sugar level before they go through the health education or health communication, there were only 0.4% of the respondent who were normal level of blood sugar (That is, between 170mg/dl to 200 mg/dl) after having food. 14.4% respondents who were in the pre-diabetic level category, had blood sugar level in between 190mg/dl to 230mg/dl after having food. It was observed that, majority of the respondents (85.11%) were in the diabetic level and had blood sugar level in

between 230mg/dl to 300mg/dl; which is considered as very danger and caused to diabetic related problems with human organs. There were very few of the respondents who had a normal level of blood sugar before they go through health education/communication; and majority of them were in the diabetic level.

Table No. 4B.7-(B)

Post Health Communication/Education Period.

Normal Level		Pre-diabetes level		Diabetic level		Total	
170mg/dl – 200mg/dl		190mg/dl – 230mg/dl		230mg/dl – 300mg/dl		-	
Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
20	9.3	138	64.1	57	26.5	215	100

According to the information provided by the respondents regarding their blood sugar levels after they have gone through the health education/communication, there are 9.3% of them have obtained normal blood sugar, which is increased in the post health education period. There are 64.1% respondents whose blood sugar level is between 190mg/dl to 230mg/dl which is considered as a pre-diabetic level; on the contrary there are only 26.5% of the respondents who are in the diabetic level, having 230mg/dl to 300mg/dl blood sugar. The percentage of the respondents who were in the diabetic level category has been decreased after these they have gone through the health communication/education. It means, the methods or strategy of health communication/education followed by the health communicator is very effective and proper which has positively impacted on the blood sugar levels of the respondents.

4B.4) Social work Intervention in diabetes prevention -

Managing any chronic diseases and illness is a great challenge to the social workers. It is due to the myriad formal and informal health care services needed by the old age patients, and also because of the health care providers too. Patients and health service providers require the support of the well trained and experienced social workers. As a professionals, social workers experience first-hand the effects of the met and unmet patient requirements, which brings with it a responsibility. Which ensure that practice and policy decisions give recognition to the effect of psychological factors and services that provide care to old age patients having chronical diseases.

Today, all over the world, diabetes is one of the most prevalent and serious chronic diseases. In India several people suffer from the diabetes due to which many people facing the problems concerned with heart, kidney, eyesight, lower limbs and family and social life also. Social work intervention with the diabetes appears limited in India. However, social workers have the potential to make significant differences in the life of people having diabetes. Statistic information showing that the rate of incidence and prevalence for diabetes continue to be greatest among ethnic and minority communities. Social workers provide health and psychological health services to the old age diabetes patients in many settings across the continuum of care. After going through the short term training, social workers can able to provide some important services like - curative services, preventive services and promotive interventions. Social workers act as a coordinator between health system and the society. Now a day, social workers are also involved in the diabetes prevention programmes and health system through many initiatives especially through NGOs. In

these instances, the NGOs either put forth models providing a range of services or the government contracts out various services that the NGOs provide on its behalf.

The specific role of social workers in health care of diabetes patients is concerned with psychological behavioral and some important social elements like-assessing diabetic and diabetic's family psychological health requirements. The social workers are also providing interventions which needed to address their psychological requirements and encourage the patient's adaptation to illness and disability. There is an important role of social workers in developing promoting and implementing various effective methods of delivery of health services. Trained social workers are especially effective in providing support to diabetes patients. Social workers are also playing their roles as a educator, outreach coordinators, supporters of psychological and social requirements. They also have demonstrated a significant role in providing ongoing support. Social workers are having general academic knowledge regarding importance of healthy food and exercise related to diabetes and they are able to communicate fundamental and evidence-based lifestyle recommendations. Social health workers are known as Level I Diabetes Educators and they are working as a diabetes care providers. They are expert in identifying the social and cultural obstacles and they overcome the social and cultural obstacles to self-care or behavior change.

Social workers provide culturally specific basic health information regarding diabetes. They convey diabetes self-management information and health care provider of recommendations specifically to the person having diabetes. Social workers are actively participating in the programme evaluation and involved in the evaluation program for agency using clinical practice guidelines. They assess the patient having diabetes supper systems. Social workers are working with the health care team which

using basic concept of behavior change to help the diabetes patients with effective self-management. Within the patient centered medical home, the clinical social worker is the team member and best determinants related to the health may affect diabetes and cardiovascular risk factor control and serve as significant goals for social interventions for diabetes patients. A health care provider social worker as a member of health care team may be a special person to address the social determinants of health. Social worker plays an important role in addressing social determinants as a resource broker and helping patients in applying for medication assistance. On the basis of some studies it is observed that, for the patients having severe diabetes there is a close relation between social work intervention and improvement in diabetes control ability of the patients.

Social workers have a ability to perform a roles as a educator, counsellors and resource brokers for specifically addressing the underlaying influences of diabetes control. There is a wide range of health care providers in India, who provide some form of diabetes education. These health care providers includes general practioners, nurses, allied health workers and indigenous health workers and social workers. A well trained social worker promote optimal health and well-being for patients of diabetes by using a wide range of specialized skills. A well trained and well experienced social workers integrate diabetes self-management education with clinical care which is a part of a therapeutic intervention to promote physical, social and psychological well-being of diabetes patients. Social workers also work as a link between diabetes patients and diabetes health care team. Social worker assists to the diabetes patients in their efforts to make changes in their daily routine; and develop community coalitions to meet the requirements of a particular people like diabetes patients.

Imparting education, providing information pertaining to diabetes to the patients is a complicated process. To deal with the challenge of increasing number of diabetes patients, a social workers has to intervene to provide psychological support by encouraging patients to talk about their concerns or threats about diabetes. Social worker can actively import information pertaining to self-management skills and help to the patients to accept the fact and live their life with diabetes. Social workers motivate diabetes patients and helps to building self confidence in patients and building a independence and flexibility of the life style. Social workers are ensuring better compliance to treatment and facilitating decision making on the part of the diabetes patient. Apart from promoting good and healthy life style skills, the social workers can help to the medical providers by supporting diabetes patient's needs which do not require the clinician expertise. In this capacity, the social workers are having non-technical and non-clinical instructional responsibilities and receive the ongoing informal and formal training.

Social workers instruct diabetes patients regarding time management principles and skills, assisting them in prioritizing life activities and accommodating diabetic self-care demands within their personal family and daily work schedules. Exercise is one of the most significant methods for controlling diabetes. Exercise improves glycemic control cholesterol levels, cardiovascular fitness, physical strength etc. well trained social worker assists the diabetes patients in this regard due to difficulty of life style changes, and social workers can provide supportive counseling to the diabetes patients and their family members. The principle of social work intervention may be to provide didactic and experiential lessons on stress management and relaxation techniques to enhance the patient's ability to recognize the signs and symptoms of stress. In short, there have been a many ways in which

social workers have interacted with the diabetes patients. The government has also handed over a number of service provision, service support functions to the social workers. Well trained social workers are able to maintain an excellent coordination and cooperation between all the stake holders of health delivery care system of diabetes. Again, social worker's back ground of behavioral science, his/her ability to work with individuals, group of individuals or families, cultural competence, ecological approach etc. can be helpful to the diabetic patients and useful for the implementation of various programmes pertaining to diabetes prevention. While working with group of people and individuals, the social workers can provide instruction and assistance along with behavior modifications, targeting diet and habit of exercise in manner respectful of cultural differences.

Although social workers in traditional health care settings such as acute and rehabilitation hospitals, clinics, dialysis units, hospice agencies must increase their awareness and involvement with diabetes the same holds true for social workers in other fields of practice. Social workers have followed various approaches to impart education, provide information to the patients about diabetes. The major approaches are-

i) One to one education/information.

ii) Imparting education/providing information to the group of patients.

iii) Conducting inter-group discussions, organizing conferences.

iv) Visiting to nurse and health care providers for discussion.

v) Providing information through printed literature, leaflets, pamphlets, book, etc.

vi) Providing information by using audio-visual instruments.

vii) Organizing medical camps and implementing public awareness programmes.

Health communication is a continuous process. It is benefited to the diabetes patients in all aspect including awareness, knowledge level of patients social workers can support to these patients in self-care bearing and fulfill the psychological requirements regarding the diabetes. To deal with the various challenges increased in diabetes prevalence a social worker has to intervene and explain the preventive steps to the patients. Social work intervention in diabetes prevention programme of govt. will make the public health care system more effective. An experienced social worker can provide support by encouraging diabetes patients to talk about their concerns or fears about diabetes. Apart from this when issues related to family psychology are inhibit the educational process, social work intervention can help to resolve the problems of diabetes patients by allowing continued instruction, social workers facilitate family centered approach, considering family as the focus of intervention. Among the multidisciplinary diabetes patient health care team may be more preventive approach for addressing resistance.

4B.5) Specific proposed area of social work intervention -

Social worker looks a person-in-environment; which includes all the factors that influence total health of a person. He practices at micro and macro level of health care and thus has the ability to influence policy change and development at local, state and central levels.

Social workers intervention plains in Diabetic patients can be as such –

- Needs identified of diabetic patient in assessment can be addressed by social worker using various strategies.
- The social worker can be engaged in individual, group and family counseling.

- Financial counseling can be done by social worker for diabetic patient.
- Vocational and supportive counseling of Diabetic patients.
- Social worker can be a part in inter disciplinary care planning and collaboration.
- To meet the various needs of diabetic patient social workers can work in the area of client and system advocacy.
- Social worker can be engage in resource mobilization for diabetic patients.
- Social workers can do advocacy for charging policies at areas such as public heath care for diabetes patients.
- Social workers can intervene in three levels of prevention : Primary prevention, Secondary prevention and tertiary prevention for diabetic patients.
- Social worker can work in areas of rehabilitation of Diabetic patients, having serious complications such as neuropathy, retinopathy etc.
- Most important area of health education for diabetes is school childrens. As obesity is one of the leading cause of diabetes healthy lifestyle should be practiced religiously since childhood. Hence social workers can engage in conducting various camps in schools for the same.
- Co-ordinator between health system and society.

4B.6 Applicability of Social Work Method :

1. Social case work :-

Social casework is one of the primary method of social work. This is based on one to one relationship and enables the social functioning of individual. This method is carried out to achieve specific aim. Social case work was helpful for interview schedule, health education of individual patients and family in the research.

Diabetic patients passes through various stages like awareness, interest, evaluation, decision making and adaptation of new idea or acquired behaviour during health education. The above stages are not rigid; there is skipping of stages. Also in some community people may be in different stages of adoption process at this point social case work played a important role for motivation, counselling and health education.

2. Social Group Work : -

Group work is a method of working with people in groups. Support Group of Diabetic patient was formed and regular meeting was held for them. Diabetic patients were encouraged to join support group where members had interaction with one another, shared their problems, knowledge with each other Learning came through sharing of experiences which brought a great change in group of diabetic patients. Support group facilitated interaction and helped members to overcome their problems.

3. Community work in social work :-

Working with community is one of the method of social work. Diabetic patients are increasing globally and also in India. There are may diagnosed and undiagnosed cases in community to deal with this problem working with community was beneficial. Many screening camps were organized in community of diagnose diabetic patients. Many health education camps were organised in community to reach a large group of people at a time. Different camps were held to detect retionopahy, neuropathy, nephropathy etc.

Camps for screening of sugar level and health education were organized frequently.

4. Social Work Research :-

Research gives a scientific base to social work practise Research is a critical and exhaustive investigation of something in order to gain more knowledge.

This research is done with the objective to know the Role of Health Communication and awareness in prevention and control of Diabetes and its complications.

5. Social Welfare Administration :-

Social welfare administration is a process in which professional competence is applied to implement certain programme of social welfare through social agencies to fulfil objectives and policies of agencies while study the problems of diabetes patients collecting information, analyzing the collected information and plain appropriate measures to solve the problems of diabetic patients administration plays an important role, Pre counselling and post counselling proper record and reports were maintained of diabetic patients in this research which is a important function of administration. Administration also see that there is suitable co-ordination within the various departments at various levels.

4B.7) Models of Health Education

1. Medical Model –

The medical model is primarily interested in the recognition and treatment of disease and technological advances to facilitate the process. In this model social, cultural and psychological factors were thought to be of little or no importance. The medical model do not bridge the gap between knowledge and behaviour

2. Motivational Model –

When people do not act upon the information they received health education starts emphasizing “motivation” as the main force to translate health information into the desired health action. But the adaption of new idea or behaviour

is not an easy task; it consist of several stages through which an individual passes before adaptations.

The individual first gets information or Awareness about the subject or idea. In health education, we must first create awareness of health needs and problems through a programme of public information mere awareness is not of much value unless it leads to "Motivation" Motivation includes various stages like interest evolution and decision making. The individual takes interest in the subject; seeks more detailed information about the usefulness, limitations or applicabilities of the new idea or practice. He then evaluates the various aspects of information received. Such an evaluation is a mental exercise and results in decision making. He finally decides whether to accept or reject the new idea, programme or proposal convication leads to action, adaption or acceptance of new idea.

The new idea or acquired behaviour becomes part of his own existing values.

Effective communication strategy should be evolved to help the individual in passing from one stage to another.

3. Health Belief Model –

It is a theoretical model which can be used to guide health promotion and disease prevention program. It is used to explain and predict individual changes in health behaviour.

The Health Belief Model attempts to predict health related behaviour in terms of certain belief patterns. A persons motivation to undertake a health behaviour can be divided into three categories, individual perceptions, modifying factors and likelihood of action.

4. Behaviour Change Model –

The Behviour Change Model is a preventive approach. The main focus of this is on lifestyle behaviour that has an impact on health. It seeks to persuade individuals for adopting healthy lifestyle behaviours, to use preventive health services and to take responsibility of their own health. The main focus and belief of this model is that providing people with information will change their attitude, behaviours and beliefs.

This can be achieved with effective health communication or health education. This model is ineffective in many cases because it ignores the factors in the social environment that affects health, including social, cultural, economic and political factors.

Health education is part of health that is concerned with promoting healthy behaviour. The modern concept of health education emphasis on health behaviour and related actions of people.

Diabetes is longterm disease with clinical manifestation and progression chronic hyperglycaemia leads morbidity and mortality creating saviour complications in human body. As mentioned above diabetes is a longterm disease the medical regime eg. Diet, exercise, insulin theraphy, footcare etc becomes difficult for patients to follow due to various reasons such depression, anxiety, burnout, some social and economic factors etc. Each patient is individual entity with different age, sex, diet, sugar level, complications, lifestyle, personality traits, attitude social economical status; accessibility to public health services etc. hence a single specific model of health education is not applicable to each and every Diabetic patients.

Reliance on only one method is likely to lead failure. A combination of approaches using all the methods to change lifestyle and appropriate use of medical care will be necessary.

Social workers' role in diabetes prevention is indicated in the following figure.

Chapter – 5

Major findings and suggestions

5.1) Introduction –

The present study provides a snapshot of the current situation of awareness, knowledge of diabetes patients of Ahmednagar. Through the present study researcher has attempted to discuss on the knowledge level, awareness, and opinions of the selected diabetes patients (respondents) about diabetes, and its various aspects. Prevalence of diabetes is very high in India. Majority of the people come to know that, they have diabetes only when they develop one if its problems or complications. Today, the problem of diabetes is considered as a clinical and public health issue accounting thousands of death annually. Various studies have pointed out that, the problem of diabetes is not limited up to the rich people only but it is now becoming a problematic issue in middle income group and poor sections of the society. Majority of the patients, have facing the difficulty in achieving optimal blood sugar level. The potential advantages of early detection of diabetes may improve the quality of life of the patient.

Health communication and education are the important factors in ensuring good treatment and diabetes control. Through majority of the studies it is pointed out that, there is increasing knowledge about diabetes among the patients. Due to this increasing knowledge, there is an increase in compliance to treatment. Due to this increasing awareness complications pertaining to diabetes in decreasing. Primary information is collected through the interview schedule prepared for the selected diabetes patients in Ahmednagar. Through these chapter major findings, observations and conclusions have been presented which are based on the collected primary

information. At the end of the chapter some suggestion also suggested with a view to prevent the danger of diabetes and improve the health communication methods.

5.2) Major findings/observations and conclusions –

1. As stated earlier, there is a close association between age factor and the intensity of diabetes. As per the collected information, majority of the respondents of study sample are belonged to the age group of 40 years to 50 years and above 50 years.
2. As per the sample there are 50% of the male respondents and nearly 50% of female respondents. It shows that the danger of diabetes is equally spread among male and female patients.
3. As per the collected information, majority of the respondents are married very few of them are single and divorcee, widow/widower. It shows that, the danger of diabetes is also closely related to the married people because of their routine life, worry towards family well-being future of children etc.
4. As per the collected information, it is found that, majority of the respondents have completed their graduation and secondary level education. Very few of them are sound as an illiterate.
5. It is observed that, majority of the respondents occupation is service and in the case of female, house wife. There are also some business men and retired persons in the study sample. The selected respondents are belonging to various occupations.
6. According to the information provided by the respondents it is observed that, majority of the respondent's monthly income is between Rs. 10000 to 15000 Rs. and below Rs. 10000. Very few of respondents are having their monthly income above Rs. 25000.

5.2.1) Major findings/observations on the basis of information provided by the respondents about their knowledge of Diabetes –

7. As per the information provided by the respondents, it is observed that, very few of them complying with diabetes at average level, but majority of them complying with the treatment positively. It means their compliance to the treatment is good. It is found that, majority of the respondents are having good awareness about the ill effects of the diabetes and having good awareness about the importance of the compliance to the treatment.
8. Imparting proper education of physical health motivates to the diabetes patients to improve and maintain their health with a view to avoid the risk of diabetes. On this background it is found that, majority of the selected respondents have not got any proper health education previously.
9. As per the collected information it is found that, majority of the selected diabetes patients are having good and proper awareness caused to good compliance to the diabetes treatment and reduction in health complications raised due to diabetes. Majority of the respondents are having the knowledge about diabetes disease, its ill effects, treatment procedure, precaution to be taken various types of diabetes etc.
10. According to the information collected from the respondents, majority of them are having knowledge about the normal sugar level in blood. It is found that, very few of the respondents sugar level are between 0 to 69mg/dl and some of the respondents (38.1%) are having normal sugar level. Very few of the respondents do not have any knowledge pertaining to the blood sugar level.
11. Majority of the respondents have opined that, diabetes disease is heritable and very few of them have stated that, they do not have any knowledge about,

whether, diabetes is heritable or inheritable. It means majority of the respondents are having awareness that, diabetes is heritable if it is type-2diabetes.

12. Majority of the respondents have opined that, consuming excess sweet causes diabetes and very few of them have stated that, they do not have any knowledge about whether consuming of sweet causes to diabetes or not.
13. There is no any chance to cure diabetes, unless the patients try to control blood glucose or sugar level and brings it at normal level. On this background, it is found that, majority of the respondents have agreed that, unless sugar level of blood is controlled there is a danger of diabetes. According to these respondents, diabetes is not cured completely; and few of them are not aware about, whether diabetes cured completely or not.
14. The problem of diabetes is not limited to the rich people only; it is now spread to the poor people also. On this background, majority of the respondents have opined that, diabetes is not rich people's disease but it has now spread among poor people and almost 50% of the respondents were not able to opine in this regard. It shows that, majority of the respondents, are having good awareness that, the disease like diabetes spread not only among rich people but also spread among poor people; if proper health care is not taken by them.
15. Consuming bitterroots caused for reduction in the sugar level, and lower the HbAIC in the Type-2diabetes patients. Some respondents have agreed for that, but some of them have opined that mere consuming bitterroots daily diabetes cannot cured. According to these respondents, some other precautions should be taken by the diabetes patients. It shows that, majority of the respondents are

having good awareness pertaining to the diet food. Exercises, health management, in the case of diabetes.

16. Insulin can make side effects like low blood sugar, weight gain etc. As per the collected information, it is observed majority of the respondents have agreed that taking insulin in excess level is very harmful for the health. Majority of them also opined that, taking insulin regularly may become habit forming. According to these respondents, the patients who require insulin therapy have to learn various skills, such as measuring blood sugar level etc.
17. Diabetes cannot be transmitted to the spouse. Majority of the respondents have agreed for this statement. Very few of them have opined that, diabetes can be transmitted to the spouse. It shows that, majority of the respondents are aware that, diabetes is only body disorder problem and not a sever diseases. They better know that, diabetes cannot be transmitted to the spouse and it develops inside of the human body.
18. As per the collected information, almost all the respondents have opined about the various factors which are caused to diabetes. Majority of the respondents stated that mental stresses, family history of diabetes, obesity, less physical activities, excess consumption of sweet etc. are the major factors. According to these respondents mental stress contribute to chronic hyperglycaemia in diabetes, and has a long term adverse effect on the metabolic activity of the diabetes patients. Obesity is also one of the important factors which caused to diabetes stated by 46% respondents. It shows that, almost all the respondents are having good knowledge about the factors contribute for increasing diabetes.

19. Majority of the respondents have agreed that, there may be severe complications and damages of other body organs and damage of large and small blood vessels. It is found that, majority of the respondents are aware about the danger of heart attack, and other health complications pertaining to kidneys, eyes, gums feet and nerves. It is concluded that, almost all the respondents are having good knowledge about that, the disease like diabetes has a potential to devastate the entire human body.
20. In the opinion of doctors, prevention of diabetes is easy, if patient is physically active and losing extra weight, and if patients can change their life style, eating habits etc. they can easily prevent the risk raised due to diabetes. In this context it is found that, very few respondents agreed in this regard; and majority of the respondents, either do not know about it or they negatively responded in this context. It means majority of the respondents do not have any knowledge about whether diabetes can be prevented or not.
21. As per the collected information, researcher has observed different opinions about the best way to check diabetes is to check urine. Very few of the respondents have opined that, checking of urine frequently is the best way to check diabetes; but, some respondents have negatively responded and majority of them have not knowledge about whether checking of urine is the best way to check diabetes or not. It shows that majority of the respondents have not proper knowledge about the various ways to check diabetes.
22. It is true that, wounds of diabetes patients cure slowly or heal. Or do not heal well. It is observed that in the opinion of majority of the respondents, wound of diabetes patients heal or cure more slowly. It shows that, majority of the respondents are having good knowledge about the risk of wound in diabetes

even they properly take care while cutting their nails. It is also found that, some respondents do not take care while cutting their nails.

23. As per the collected information, it is found that, majority of the respondents are having awareness about low blood sugar (hypoglycaemia) and high blood sugar (hyperglycaemia) and its symptoms like shaking, sweating, hungry feeling etc. but some of the respondents so not have any knowledge about the symptoms of hypoglycaemia and hyperglycaemia.
24. Danger of diabetes in Indian people is increasing due to unhealthy food consumption; and lack of physical activeness. According to the collected information, only some respondents (10.2%) are having knowledge about the diabetes diet and special food for diabetes patients. Majority of the respondents either negatively responded or they do not have any knowledge pertaining to diet food or special food for diabetes patients.
25. There are several risk factors for diabetes. As per the collected information, it is found that, majority of the respondents are having awareness about the risk factors responsible for diabetes. Such as extreme stress, consumption of saturated fast food, obesity, addiction of alcohol, smoking, sedentary life etc.
26. Researcher has observed that, majority of the respondents are having good knowledge about the side effects of the over doses of insulin such as. Hypoglycaemia, headaches, rashes, dizziness, cough and dryness in mouth, kidney disease failure etc. Majority of the respondents (80.5%) have opined that switching to insulin means complications in diabetes, and therefore insulin should be avoided as for as possible. It is also found that, some respondents have not any knowledge about the side effects of the over consumption of insulin.

27. As per the collected information, it is observed that, majority of the respondents have opined that, health complication for diabetes patients cannot be occur if they control on blood sugar level. But in the opinion of some respondents, complications can occur even with good sugar control. It is also found that, some respondents so not any knowledge about it.
28. Diet is a simply a healthy eating plan which is helpful to the diabetes patients for controlling blood sugar level. A good diet plan helps to the diabetes patients to use the insulin that body produces or gets through a medication. As per the collected information, it is found that, majority of the respondents have opined that, mere good diet plan cannot controlled the danger of diabetes, there are some other treatments, or therapies which are also useful in controlling the danger of diabetes. It is also found that, some respondents have agreed that, diabetes can be controlled only by diet. On the basis of collected information it is concluded that, majority of the respondents are having awareness about other therapies or treatment process for diabetes.
29. Majority of the respondents are opined that, hypoglycaemia is more dangerous than hyperglycaemia, and some of the respondents negatively responded in this regard; or they simply do not know in this regard. Majority of the respondents, have knowledge about the ill effects of the hyperglycaemia like – sweating, giddiness, frequent thirst and frequent urination. It is concluded that, majority of the respondents are aware about the ill effects of hypoglycaemia and hyperglycaemia. It is also observed that, almost all the respondents are well aware about the importance of self-care in diabetes.
30. As per the provided information, majority of the respondents are taking their medicines regularly and at fixed time. Very few of them cannot take

medicines regularly and at fixed time. It is concluded that, almost all the respondents are realized that if there is any irregularity in taking medicines and lack of adherence towards instructions given by health care taker or doctors, may be cause to hospitalization, mortality and huge expenditure on costly treatments. It is found that, majority of the respondents are in favour of taking medicines regularly and fixed time.

31. It is found that, in the opinion of majority of the respondents, there is a need of medicines even if once the level of sugar is controlled. According to some respondents, if patient is able to keep blood sugar level normal, with proper diet and exercise there is no need of medicine. On the contrary, some of the respondents have opined that, mere maintaining sugar level at normal level cannot help to prevent diabetes complications. It shows that, majority of the respondents are realized the need of medicines, even if they have controlled their blood sugar at normal level.
32. As per the collected information according majority of the respondents, whose diabetes is controlled just by diet, they do not have to worry about long time complications related to their health, but according to some respondents, whose diabetes is controlled just by diet they also have to take care of their long time health complications; because diabetes is very serious diseases. It is concluded that, majority of the respondents are aware about the taking care of health if the diabetes is at severe level.
33. As per the information provided by the respondents, majority of them have agreed that, self-care and self-management is an important component for controlling and treatment of diabetes patients. They have also stated that, family support and friends support is equally important for self-care and self-

management. It is concluded that, support from family members and friends can be substantially improved the self-care practices and self-management behaviour of diabetes patients. It also indicates that, support from family members and friends are very important while dealing with diabetes patients.

34. Through the study it is found that, majority of the respondents considered that, people who do not need insulin to treat their diabetes they have mild diabetes. But if the blood sugar level is increased it may be a harmful to the health. In the opinion of these respondents, there is not much in trying to have good blood sugar control because the complications of diabetes will happen anyway. Majority of the respondents have also stated that, only increased blood sugar level creates complications of diabetes.
35. As per the collected information, majority of the respondents are taking their breakfast every day at fixed time. They are well aware that, avoiding or skipping breakfast once in a while may increase the risk of developing complications of type 2diabetes. It is also found that, majority of the respondents eating leafy vegetables every day and they know the importance of the leafy vegetables in the daily meals. The collected information indicates that, very few of the respondents have totally given up the consumption of soft drinks and junk food items. It is also found that, almost all the respondents are doing exercise daily and very few of them never do any type of exercise daily.
36. As per the collected information from the respondents it is found that, very few of them take sleep for 1 hour to 5 hours daily; but majority of the respondents take sleep for at least 6 to 8 hours daily. It means, majority of them are getting adequate sleep and rest daily. It is also found that, some respondents are physically active from 6 hours to 12 hours daily. Majority of

them engaged in their routine work. They are aware about the importance of exercise or physical activeness for diabetes patients. In their leisure time almost all the respondents spends their time by chatting with others, playing indoor and outdoor games, reading books, watching books etc.

37. As per the provided information, majority of the respondents try to avoid carbonated drinks or sugar drinks at least for 1 to 15 days in a month, and some of the respondent avoid it for 15 to 50 days; because they are aware that, sugar sweetened beverage intake is associated with an increased risk of type 2 diabetes.
38. Today, diabetic retinopathy is becoming an increasing significant cause of visual impairment. As per the collected information, researcher has come to know that, majority of the respondents have undergone eye check-up. Very few of them did not check-up their eye. It is also found that majority of the respondents have not undergone kidney check-up and very few of them have gone kidney check-up. It is concluded that, majority of the respondents are not aware about the ill effects of diabetes on the function of kidney.
39. As per the collected information, majority of the respondents are not checking their foot regularly. It shows that, these respondents are not aware about the adverse effects of foot ulcer raised because of diabetes. Very few respondents (20%) are having good awareness about the foot ulcer and its ill effects.
40. As stated before, medication can reduce the physical stress which may be helpful for the diabetes patients to reduce their diabetes problem. It also helps in maintaining blood sugar level low. In this context, it is found that, almost all the respondents are having good awareness regularity in taking medication

to reduce the diabetes complications. Majority of the respondents also regularly consult their doctors about their health and diabetic complications.

41. Pertaining to the measures taken by the respondents to reduce weight, researcher has found that, some respondents are taking diet food to reduce weight, some of them doing exercise and indulged in sport activities to weight loss. Researcher has also come to know that, majority of the respondents (57.2%) have not taken any type of measure to reduce excess weight.
42. As per the information provided by the respondents, it is observed that some of them have totally stopped drinking alcohol and smoking cigarettes. As per the total sample of population, majority of the respondents are not having any kind of addiction.
43. As per the provided information, some of the respondents (51.2%) are using suitable footwear every time while walking; but majority of them are not using suitable footwear. They are not aware about the using of unsuitable or inappropriate footwear may cause to wound of foots which are very dangerous for diabetes patients.
44. As stated earlier, having small quantity of meals frequently is benefited to the diabetes patients; and helps to reduce health complications. As per the information provided by the respondents, very few of them (13%) are taking small quantity of food frequently. But majority of them are not aware about the benefits of having small quantity of food frequently, these respondents consume heavy meals two times in a day in the forms of lunch and dinner.
45. Researcher has found that, almost all the respondents, are facing the various kinds of health problems (symptoms) due to diabetes, such as fatigue, frequent hunger, frequent thirst, frequent desire to urinate, blurred vision; high blood

pressure, delayed in curing of wounds, extreme weight loss etc. Researcher has also observed that, almost all the respondents are also facing the infection problems like-acne, burning on urination, frequent colds, itching in groin of feet etc.

46. As per the collected information, it is found that, very few respondents were hospitalized due to diabetes problem. Majority of the respondents negatively responded in this regard. All the patients are well aware of health care and the importance of control of blood sugar level; therefore majority of them were not hospitalized in the past.
47. Several studies have been pointed out that, diabetes can badly effects on the socio-economic condition of the patients in various ways. As per the collected information provided by the respondents, it is observed that, almost all the respondent's social and economic life is affected badly due to the health complications raised by diabetes.
48. According to the collected information, majority of the respondents stated that, it is very difficult for the people with diabetes to get married. All these respondents are aware about that, marital relation problems are associated with the diabetes; they also know about that, men and women are stressed due to sexual dysfunction.
49. If there is an increase in the level of sugar in blood, the kidneys are activated and flushing the excess sugar out of blood in to urine. The excess production of urine requires flushing out or urinating more frequently, therefore there is a need of easily accessible bathroom. As per the information provided by the respondents it is found that, in some respondents home there is easily

accessible bathroom/washrooms. But in almost 50% respondents home there is no easily accessible bathrooms or washrooms.

50. It is found that majority of the respondents marital life is negatively affected due to diabetes.
51. The increasing rate of diabetes has profound effect on health care costs. The higher rate of treatment expenditure on diabetes amongst all socio-economic groups of diabetes patients will results in serious burden on patients suffering from diabetes. In this context researcher has found that, some respondents (40.5%) are financially affected due to the higher cost of treatment on diabetes.
52. As per the provided information it is found that, the treatment facility is readily available nearby the residence of the majority of the respondents. It is also found that, due to diabetes, respondents family members are affected in terms of their working time and routine work. Patients are also affected in terms of their pattern of work and job due to diabetes. But majority of the respondents have not changed their job or work pattern.
53. According to the collected information, it is found that, majority of the respondents, have incurred treatment expenditure by selling of their personal assets or by bank loan or by personal savings. It is found that, majority of the respondents have no health insurance, very few of them (1.4%) are having health insurance. It is concluded that, majority of the respondents have not any other financial source to incurred the treatment expenditure on diabetes. They have only sources like personal savings, assets selling or bank loan etc. As per the collected information, majority of them expensing Rs.500to Rs.1000on

their treatment. Some of them expensing Rs.2000 and above 200 per month on the treatment.

54. Through the study it is found that, health communicator is not available nearby majority of the respondents residence. Therefore, majority of the respondents cannot get help of health communicator immediately if any complication arises with their health due to diabetes.
55. As per the collected information it is found that, health communication help to the respondents to the power of controlling blood sugar and glucose and improved the knowledge about diet and exercise. It is also found that, health communication helps them to reduce anti diabetes medicine and helps in reducing the incidence of diabetes and pre-diabetes.
56. As per the information provided by the respondents, it is found that, majority of them are satisfied with the methods of health communication followed by their doctors or health communicators. It is concluded that the communication methods followed by the doctors or health communicators are effective and result oriented. Majority of the respondents get help through the various communication methods to prevent diabetes and other health complications.
57. It is observed that, the compliance rates were found to be suboptimal. But many of the respondents are complaining with the treatment due to proper communication and education imparted by their health communicator or doctor.
58. There is at least 10% to 50% reduction in the health complications due to diabetes after health communication sessions by doctors or health communicators. It is also found that, there were very few of the respondents, who had a normal level of sugar before they go through health communication

or education. But the percentage of the respondents who were in the diabetes level has been decreased after they have gone through the health communication. It shows that, the methods or strategies of health communication followed by the communicator are very effective and proper and positively impacted on the blood sugar level of the respondents.

5.3) Testing of Hypothesis –

1) The Diabetes are significantly aware of the illness but not serious about the consequence of the Diabetes.

To verify above hypothesis, researcher has formulated following null and alternate hypotheses.

Null Hypothesis :

H_0 : The Diabetes are significantly aware of the illness and are serious about the consequences of the Diabetes.

Alternate Hypothesis :

H_a : The Diabetes are significantly aware of the illness but not serious about the consequences of the Diabetes.

To test the above null hypothesis, researcher has used variables such as 'Awareness of illness (diabetes)' and 'Seriousness about Consequences of Diabetes'. To accept the null hypothesis, it is necessary to prove the association between 'Awareness of illness (diabetes)' and 'Seriousness about Consequences of Diabetes'. This has been investigated through questionnaire and compiled responses in the form of contingency table.

Contingency Table for 'Awareness of illness' and 'Seriousness about Consequences of Diabetes'

Awareness about illness	Seriousness about Consequences (Frequency)			
	Serious	Not Serious	No. of Respondents	Percentage
Aware	82	96	178	82.8
Not Aware	21	16	37	17.2
Total	103	112	215	100
	47.9	52.1	100	

Researcher used above two variables to ascertain the null hypothesis and has presented Test Statistics in following table for the variable 'Awareness about illness' and 'Seriousness about Consequences', calculated with the help of SPSS package.

Chi-Square test has been used to measure the critical value and p-value for the given variable with degree of freedom 2 and level of significance 0.05. Pearson's Correlation Coefficient is also measured.

Chi Square Test Results

Variables	Significance of Chi Square (p value)	Pearson's Correlation
'Awareness about illness' and 'Seriousness about Consequences'	0.000	0.822

Inference:

As the significance of chi square (p value) less than 0.001 and Pearson's correlation coefficient is 0.822 (close to 1), null hypothesis can be rejected. Therefore researcher accepts alternate hypothesis and conclude that "The Diabetes are significantly aware of the illness but not serious about the consequences of the Diabetes**".**

2) Given a systematic health counseling and education can reduce the mortality and morbidity of Diabetes.

Null Hypothesis :

H_0 : Given a systematic health counseling and education cannot reduce the mortality and morbidity of Diabetes.

Alternate Hypothesis :

H_a : Given a systematic health counseling and education can reduce the mortality and morbidity of Diabetes.

Researcher has sought responses from respondents (Diabetes) regarding their Counseling and Education and status of mortality and morbidity of diabetes.

To test the null hypothesis researcher has used chi square test to check the association between variables related to Counseling, Education and status of mortality and morbidity of diabetes.

Here null hypothesis states that 'Given a systematic health counseling and education cannot reduce the mortality and morbidity of Diabetes' which means there is no association of counseling and reduction in morbidity of diabetes.

It is important to note that all respondents have been counseled and educated about the diabetes and diabetes status before and after counseling is assessed. The reduction in mortality and morbidity of diabetes is measured by comparing before and after status of diabetes levels among 215 respondents.

Status and Reduction in Morbidity of Diabetes

Assessment of level of diabetes	Status of Diabetes (No. of Respondents)			
	Normal	Pre-Diabetes	Diabetes	Total
Before Counselling	1	26	188	215
After Counselling	20	138	57	215
Reduced By	19	112	-131	

Above figures shows that, out of 215 total respondents, 188 were diabetic before counseling, which has reduced to 57 respondents after counseling i.e. there is reduction of 131 respondents from diabetic to pre diabetic and normal level.

Based on the above data, SPSS package results shows the following outcome for Chi Square test.

Variables	Significance of Chi Square (p value)	Pearson's Correlation
Counseling and Reduction in morbidity of diabetes	0.000	0.879

Inference:

As the significance of chi square (p value) less than 0.001 and pearson's correlation coefficient is 0.879 (close to 1), null hypothesis can be rejected. Therefore researcher accepts alternate hypothesis and conclude that "Given a systematic health counseling and education can reduce the mortality and morbidity of Diabetes".

3) **Proper health communication procedure followed by medical professional leads to prevention and control of risk of complication of Diabetes**.

To test the above hypothesis, researcher has formulated following null and alternate hypothesis.

Null Hypothesis :

H_0 : Proper health communication procedure followed by medical professional does not lead to prevention and control of risk of complication of Diabetes.

Alternate Hypothesis :

H_a : Proper health communication procedure followed by medical professional leads to prevention and control of risk of complication of Diabetes.

Here null hypothesis states that all three categories of response (to great extent, to some extent, absolutely no) are equally proportionate which means health communication procedure followed by medical professional does not make any effect to prevent and control of risk of complication of Diabetes.

It is important to note that all the 215 respondents have received health related

communication. Question was asked to respondents to understand the extent of help of health communication to prevention and control of risk of complication of diabetes. In responses, 3 categories of responses viz. to great extent, to some extent, absolutely no were received. As the sample size of responses is 215, ideally three categories are expected to have equal frequency i.e. 71.7 for each category.

Frequencies

	Observed N	Expected N	Residual (Observed N - Expected N)
To a great extent	145	71.7	73.3
To some extent	68	71.7	-3.7
Absolutely no	2	71.7	-69.7
Total	215		

In above table it is observed that, for the response category 'To a great extent', observed frequency or number of responses are 145 which is higher than the expected frequency i.e. 71.7 and residual is 73.3. This suggests that health communication by medical professional has helped to prevent and control of risk of complication of Diabetes, to a great extent for a major portion of respondents (145 out of 215) additionally it has helped to some extent for 68 respondents.

Researcher has presented Test Statistics in following table for the variable 'Extent of help of health communication' calculated with the help of SPSS package. Chi-Square test has been used to measure the critical value and p-value for the given variable with degree of freedom 2 and level of significance 0.05.

Test Statistics	
	Extent of help of health communication
Chi-Square	142.949[a]
Df	2
Asymp. Sig. (p-value)	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 71.7.	

Inference:

For the variable 'Extent of help of health communication' with response categories 'To a Great Extent', 'To Some Extent", 'Absolutely No', Chi-Square critical value is 142.949 is greater than the expected critical value of 5.99 at 0.05 level of significance and 2 degree of freedom. Also probability (p value) that frequency of all the 3 categories of responses is equal (71.7) is 0.000 which is less than 0.005, hence null hypothesis "Proper health communication procedure followed by medical professional does not lead to prevention and control of risk of complication of Diabetes" is rejected.

4) **There is significant association between satisfaction level of counseling and level of sugar.**

To test the above hypothesis, researcher has formulated following null and alternate hypothesis.

Null Hypothesis :

H_0 :**There is no association between satisfaction level of counseling and level of sugar**

Alternate Hypothesis :

H_a :**There is significant association between satisfaction level of counseling and level of sugar**

To test the null hypothesis, i.e. 'There is no association between satisfaction level of counseling and level of sugar', with the variables 'Satisfaction about Health Communication' and 'Sugar Level', researcher have responses in the categories 'Satisfied' and 'Not Satisfied' for variable 'Satisfaction about Health Communication', and for 'Sugar Level' variable responses are 'Normal', 'Pre-Diabetes' and 'Diabetes'.

In other words, null hypothesis states that 'Sugar Level' responses for 'Satisfied' and 'Not Satisfied' categories of responses are same as expected frequencies of responses. Following cross tabulation shows the observed and expected frequencies of responses for both variables.

Satisfaction about Health Communication versus Sugar Level (After)

			Sugar Level (After)			Total
			Normal	Pre-Diabetes	Diabetes	
Satisfaction about Health Communication	Satisfied	Observed Count	19	133	54	206
		Expected Count	19.2	132.2	54.6	206.0
	Not Satisfied	Observed Count	1	5	3	9
		Expected Count	0.8	5.8	2.4	9.0
Total		Observed Count	20	138	57	215
		Expected Count	20.0	138.0	57.0	215.0

Researcher has calculated chi-square value and Pearson's coefficient for the variables 'Satisfaction about Health Communication' and 'Sugar Level' with the help of SPSS package and presented following test statistics.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	0.307	2	0.858
N of Valid Cases	215		

Symmetric Measures

		Value	Asymp.	Approx. T	Approx. Sig.
Interval by Interval	Pearson's R	0.018	0.075	0.267	0.790
N of Valid Cases		215			

Inference :

Test statistics shows that calculated Chi-Square values 0.307 is much lower than the critical table value of 5.99 at degree of freedom 2 and 0.05 level of significance, p value (sig.) is 0.858 is greater than 0.005. Further, the Pearson's Coefficient (R) is 0.018 which does not show correlation hence the null hypothesis, 'There is no association between satisfaction level of counseling and level of sugar',is accepted.

5.4) Suggestions –

1. There is a high requirement of countrywide diabetes awareness programmes and education programmes which will help to make public health care system more effective. Through the proper health communication health communicator can provide support to the diabetes patients by encouraging them to talk about their concerns or fears about diabetes.
2. Health communicator can also help to the patients to learn the things that they can control and offer ways to cope with the things which cannot be changed.
3. It is important to realize the cost effective treatment measures for the diabetes patients, and proper communication pertaining to early check-up tight metabolic control, frequent observation of risk factors and frequent check-up of organ damage.
4. Results-oriented organized programmes should be conduct by the government with the help of NGOs. This programme should contain patient education, consulting, monitoring various medical fraternities on various developments in the control of diabetes. Apart from this health communicator should provide an opportunity to the patients to use and analyse the other treatment options through observe themselves with a view to eradicate the danger of diabetes.
5. Errors in proper communication, and inefficiency in answering the questions of the patients, can be provoking to the diabetes. Therefore there should be continuous training, counselling and supervision of the expert health communicators for ensuring the quality and expertising to answer the various

questions and queries of patients. For this purpose there should be proper interaction between health communicator and diabetes patients.

6. There should be arrangement of group patient education programmes pertaining to the advantages and cost-effectiveness of telemedicine in the diabetes.
7. Personal level counselling is still followed by the health communicators for conducting health communication and education. But today, there is increasing number of diabetes patients, thus this method is unsuitable for doctors or health communicators who have other tasks and responsibilities. With a view to reduce the time spent on personal or individual health communication, there is a need to provide health education materials in printed forms like booklets, pamphlets etc.
8. All health communication should be provided with the help of audio-visual equipment's particularly for those patients of type -2 diabetes. Apart from this for under-standing the psychological mechanism motivating patient's adherence to therapeutic regimens, research approaches should be followed by the health communicators.
9. There should be utilization of effective and suitable communication and educational approaches by the health communicators with a view to promote behavioural changes in self-management practices to achieve good quality of life of diabetes patients.
10. There is a need of radical changes in the attitude of health communicators leading them to accept the patient as a partner. For this purpose health communicators should have basic skills in communication and socio-psycho sciences.

11. The health communicator should help to the diabetes patients and their family members to achieve the knowledge, life skills resources and support them to obtain optimal health of diabetes patients.
12. There should be frequent contacts, interaction between health communication and diabetes patients which can improve outcomes of treatment through enhancing compliance to the prescriptions.
13. There should be government initiatives in providing comprehensive care which includes undisturbed supply of medicines, laboratory experts, qualified health communicators/educators etc. There should be arrangement of programmes to increase awareness about ill effects of diabetes among the patients and update the family physicians about early detection and management of diabetes.
14. There should be study researches which consider the patient education and communication within the context of overall diabetes care and as such follow guidelines for the development and evaluation of complex intervention.
15. Medical practioners may regularly organize the health campaign with the help of social workers or NGOs in the rural areas to identify the hidden cases of diabetes. There is a need of imparting knowledge pertaining to diabetes in the rural areas with a view to prevention and early detection of diabetes and prevention of its complications.
16. Survey should be made by the local government authorities with the help of NGOs to find out the number of diabetes patients at local level. Local should appoint qualified health communicator/educator at local level, so that the patients can get their help immediately and consult them about the health problems raised due to diabetes.
17. Doctors association can conduct diabetes awareness programmes at local level or at district level.

5.5 Contribution of Research to Social Work

- Community health is one of the important domin of social work practice.
- Health issues; it's impact on social life and social functioning is the major concern to social work.
- This study is going to deal with Diabetes which is one of the major health issue.
- Social work methods, tools, techniques will help to deal with health issue like Diabetes.
- Social work non medical treatment like counselling, stress management can be used in Diabetes Patients.
- Social workers practice at the macro and micro level of health core and thus have the ability to influence policy change and development at the local, state and central levels and within systems of care.

5.6 Scope for future research

- There should be study researches which consider the patient education and communication within the context of overall diabetes care and as such follow guidelines for the health development of diabetes patients.
- Medical doctors association may regularly conduct the surveys in collaboration with social workers or NGOs specially in the rural areas to identify the hidden cases of diabetes.
- Study survey should be made with a view to understand the need of imparting education and knowledge to the diabetic patients in rural areas.
- Study survey should be made by the local government authorities with the help of NGOs to find out the number of diabetes patients at local level.
- Study should be done to identify ideal duration of repeat counseling sessions.
- Study should be done to determine adequate number of sessions for proper understanding and compliance.

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Interview Schedule

"Role of Health Communication and Awareness in Prevention and control of Diabetes and its Complications with reference to Evangeline Booth Hospital and Community Health Development Program of Booth Hospital-Ahmednagar."

Demographics:

I) General Information –

1) Name –

2) Age –

a) Below 30 [ ]

b) 30 Years to 40 Years [ ]

c) 40 Years to 50 Years [ ]

d) Above 50 Years [ ]

3) Gender –

a) Male [ ]

b) Female [ ]

4) Marital Status –

a) Single [ ]

b) Married [ ]

c) Divorcee [ ]

d) Widow/Widower [ ]

5) Education –

a) Primary [ ]

b) Secondary [ ]

c) Higher Secondary [ ]

d) Graduation [ ]

e) Post-Graduation [ ]

6) Living status –

a) Living alone [ ]

b) Living with Family [ ]

c) Living with Spouse [ ]

7) Occupation –

a) Service [ ]

b) Business [ ]

c) Profession [ ]

d) Retired [ ]

8) Monthly Income –

a) Below 10000Rs [ ]

b) Rs. 10001 to 15000 [ ]

c) Rs. 15001 to 20000 [ ]

d) Rs. 20001 to 25000

e) Above 25000 Rs.

II) <u>Knowledge about Diabetes</u>

1) Type of Diabetes – ----------

2) Sugar Level – ----------

3) **Duration of Diabetes –**

a) Less than 1 year [ ]

b) 1 to 5 years [ ]

c) 5 to 10 years [ ]

d) Above 10 years [ ]

4) **Compliance– ----------**

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5) **Do you received health education piror?**

a) Yes [ ]

b) No [ ]

6) **Do you know, what is diabetes?**

a) Yes [ ]

b) No [ ]

7) **Do you know about the types of diabetes?**

a) Yes [ ]

b) No [ ]

8) **Do you know about the normal sugar levels?**

a) Yes [ ]

b) No [ ]

9) **What is the normal sugar level?**

a) 0-69[ ]

b) 70-140[ ]

c) 140-200[ ]

d) Less than 20[ ]

10) **In your opinion is diabetes heritable?**

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

11) Do you think Consuming excess sweet causes diabetes?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

12) Do you think diabetes can be cured completely?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

13) Do you think diabetes is more among rich people?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

14) Do you think diabetes can be cured by eating bitter foods?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

15) Do you think, taking insulin is very harmful?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

16) Do you think insulin is habit forming?

a) Yes [ ]

b) No [ ]

c) Don't Know [ ]

17) Do you think diabetes can be transmitted to the Spouse?

a) Yes [ ]

b) No [ ]

c) Don't Know [ ]

18) In your opinion which factors are contributing to diabetes?

a) Obesity [ ]

b) Decreased or less physical activities [ ]

c) Family history of diabetes [ ]

d) Mental stress [ ]

e) Wrath of god [ ]

19) Do you think, diabetes may cause complication in other organs?

a) Yes [ ]

b) No [ ]

c) Don't Know [ ]

20) If yes, what are the complications?

a) Kidney failure [ ]

b) Blindness [ ]

c) Loss of sensations [ ]

d) Diabetic foot [ ]

e) Heart problem [ ]

f) Paralysis stroke [ ]

21) Do you think diabetes can be prevented?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

22) In your opinion the best way to check diabetes is to check urine?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

23) Do you think wounds heal more slowly in diabetes?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

24) So you think, extra care should be taken while cutting nails?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

25) In your opinion, what are the major signs of low blood sugar?

a) Shaking [ ]

b) Sweating [ ]

c) Both sings [ ]

d) Don’t Know [ ]

26) In your opinion what are major signs of high blood sugar?

a) Frequent urination [ ]

b) Frequent thirst [ ]

c) Both signs [ ]

c) Don’t Know [ ]

27) Do you think diabetic diet consists of mostly special foods?

a) Yes [ ]

b) No [ ]

c) Don't Know [ ]

28) In your opinion what are the risk factors diabetes?

a) Extreme stress [ ]

b) Consumption of saturated rich food items [ ]

e) Sedentary life [ ]

d) Obesity [ ]

e) Hereditary [ ]

f) Addiction of Alcohol, smoking [ ]

29) Insulin should be avoided as much as possible, do you agree with this statement?

a) Yes [ ]

b) No [ ]

c) Don't Know [ ]

III) <u>Attitude towards Diabetes</u>

30) Switching to insulin means complications in diabetes, do you agree with this statement?

a) Yes [ ]

b) No [ ]

c) Don't Know [ ]

31) Complications can occur even with good sugar control, do you agree with this statement?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

32) Do you think diabetes can be controlled only by diet?

a) Yes [ ]

b) No [ ]

33) Hypoglycemia is more dangerous than hyperglycemia, do you agree with this statement?

a) Yes [ ]

b) No [ ]

34) Do you think sugar control is difficult to achieve?

a) Yes [ ]

b) No [ ]

c) Don’t Know [ ]

35) Self-care is important in diabetes, do you agree with this statement?

a) Yes [ ]

b) No [ ]

36) Do you think medicines should be taken regularly at a fixed time to control diabetes?

a) Yes [ ]

b) No [ ]

37) There is no need of medicines, once sugar is controlled, do you agree with this statement?

a) Yes [ ]

b) No [ ]

38) Keeping sugar close to normal can help to prevent complications, do you agree with this statement?

a) Yes [ ]

b) No [ ]

39) Do you think whose diabetes is controlled just by diet, do not have to worry about long time complications

a) Yes [ ]

b) No [ ]

40) Diabetes is a very serious disease, do you agree with this statement?

a) Yes [ ]

b) No [ ]

41) Do you think, people should learn a lot about disease to take better care of themselves?

a) Yes [ ]

b) No [ ]

42) Do you think it is frustrating for people with diabetes to take care if their disease is severe?

a) Yes [ ]

b) No [ ]

43) People taking tablets should be as concerned as people taking insulin regarding their sugar levels; do you agree with this statement?

a) Yes [ ]

b) No [ ]

44) Do you think, support from family and friends is important while dealing with diabetes?

a) Yes [ ]

b) No [ ]

45) People who do not need insulin to treat their diabetes have a precty mild disease, do you agree with this statement?

a) Yes [ ]

b) No [ ]

46) There is not much use in trying to have good blood sugar control because the complications of diabetes will happen anyway, do you agree with this statement?

a) Yes [ ]

b) No [ ]

IV) Practices of Diabetes patients.

47) How many times do you consume the following (√) tick mark wherever necessary.

Sr. No.	Particulars	Everyday	Once in a while	Never
01	Breakfast			
02	Eating green leafy vegetables			
03	Soft drinks			
04	Junk food items			

48) How many minutes do you spend daily for exercising?

a) Less than 20 minutes [ ]

b) 20 to 45 minutes [ ]

c) 45 to 120 minutes [ ]

d) More than 120 minutes [ ]

49) How many hours a day do you sleep?

a) 0 to 5 hours [ ]

b) 6 to 8 hours [ ]

c) More than 8 hours [ ]

50) How many times your sleep is interrupted?

a) 0 to 1 time [ ]

b) More than one time or frequently [ ]

51) How many hours in a day do you work?

a) Less than 6 hours [ ]

b) 6 to 8 hours [ ]

c) 9 to 12 hours [ ]

d) More than 12 hours [ ]

52) How do you spend your leisure time?

a) Watching TV [ ]

b) Chatting with other [ ]

c) Napping [ ]

d) Playing in dour games [ ]

e) Playing out dour games [ ]

f) Reading books/newspapers [ ]

53) Do you avoid sugar drinks?

a) Yes [ ]

b) No [ ]

54) Do you avoid carbonated drinks?

a) Yes [ ]

b) No [ ]

55) How frequently do you check sugars?

a) During 1 to 15 days [ ]

b) 16 to 30 days [ ]

c) 31 to 45 days [ ]

d) 45 to 60 days [ ]

e) Above 60 days [ ]

56) Have you undergone eye checkup?

a) Yes [ ]

b) No [ ]

57) Have you undergone kidney checkup?

a) Yes [ ]

b) No [ ]

58) Do you examine your feet regularly?

a) Yes [ ]

b) No [ ]

59) Do you take medication regularly?

a) Yes [ ]

b) No [ ]

60) Do you consult doctor regularly?

a) Yes [ ]

b) No [ ]

61) What kind of measures taken by you to reduce weight?

a) Diet [ ]

b) Exercise [ ]

c) Sports [ ]

d) All the above [ ]

e) None [ ]

62) Have you stopped consuming alcohol and smoking after detection of diabetes?

a) Yes [ ]

b) No [ ]

c) Not applicable [ ]

63) Do you use footwear every time while walking?

a) Yes [ ]

b) No [ ]

64) Do you take a small quantity of meals frequently?

a) Yes [ ]

b) No [ ]

IV) Symptoms and problems of Diabetes-

65) Have you symptoms of high blood sugar lately?

a) Yes [ ]

b) No [ ]

66) If yes, what kind of symptoms you have?

a)Fatigue [ ]

b) Hunger [ ]

c) Thirst [ ]

d) Frequent desire to urinate [ ]

e) Blurred vision [ ]

f) F Extreme weight loss [ ]

g) Delayed healing of wounds [ ]

h) High blood pressure [ ]

67) Have you any problems with infections?

a) Yes [ ]

b) No [ ]

68) If yes, what kind of inflectional problems you have?

a) Acne [ ]

b) Burning on urination [ ]

c) Frequent colds [ ]

d) Itching in groin or feet [ ]

e) Boils [ ]

69) Have you been hospitalized for your diabetes?

a) Yes [ ]

b) No [ ]

V) Impact of diabetes on socio-economic status-

70) Do you think diabetes negatively affects social life?

a) Yes [ ]

b) No [ ]

71) It is difficult for people with diabetes to get married; do you agree with this statement?

a) Yes [ ]

b) No [ ]

72) Do you think diabetes negatively effect on the profession?

a) Yes [ ]

b) No [ ]

73) Is the bathroom easily accessible in your home?

a) Yes [ ]

b) No [ ]

74) Has diabetes negatively affected on your marital life?

a) Yes [ ]

b) No [ ]

75) Has diabetes negatively affected on your financial condition?

a) Yes [ ]

b) No [ ]

76) Is treatment facility readily available nearby your residence?

a) Yes [ ]

b) No [ ]

77) Did your disease condition affect the working time or job of your family members?

a) Yes [ ]

b) No [ ]

78) Did you change the pattern of your work/job due to diabetes?

a) Yes [ ]

b) No [ ]

79) What is the distress finance mechanisms used in the absence of health insurance coverage?

a) Loan [ ]

b) Selling of assets [ ]

c) Savings [ ]

d) Other sources [ ]

80) What is your average direct monthly expenditure for the treatment of diabetes?

a) Below 500 Rs. [ ]

b) 500 to 1000 Rs. [ ]

c) 1001 to 1500 Rs. [ ]

d) 15001 to 2000 Rs. [ ]

e) Above Rs. 2000 [ ]

81) Is there any health educator/communicator nearby your residence?

a) Yes [ ]

b) No [ ]

82) How has health communication/education helped you to overcome the complications arised due to diabetes?

a) It improved the power of controlling blood sugar and glucose [ ]

b) It improved the knowledge pertaining to diet and exercise [ ]

c) There is a improvement in weight and insulin resistance [ ]

d) There is a reduction in using anti-diabetes medicine [ ]

e) It help in reducing or delaying the incidence of diabetes and pre-diabetes [ ]

83) Do you satisfied with the health communication method followed by your doctor or health care providers?

a) Yes [ ]

b) No [ ]

84) To what extent the health communication followed by your doctor or health care providers help to you for prevention and control of risk of complication of diabetes?

i) To a great extent[ ]

ii) To some extent [ ]

iii) Absolutely no [ ]

(To be filled atleast one month after the health education)

Date: / / S. No.

Sugar level before health education session: ----------

Sugar level after health education session: ----------

Compliance: ----------

Improvement in Overall health (%): ----------

Improvement in complications (%): ----------

Would you recommend it to be a regular practice?

a) Yes [ ]

b) No [ ]