Research article

A descriptive study to assess the knowledge and measures adopted by adults to prevent diabetes mellitus in selected villages of district sirmour, Himachal Pradesh

Pratibha Khagta*, Sujana Chakravarty

Akal College of Nursing, Baru, Sahib, Himachal Pradesh, India

Abstract

Diabetes mellitus is a chronic multisystem disease related to abnormal insulin production, impaired insulin utilization or both. **Objectives of the study:** The objectives of the study were to assess the level of knowledge and measures adopted by adults to prevent diabetes Mellitus, to find the association of knowledge score with selected variables and to find the correlation of knowledge score with measures adopted by adults to prevent diabetes mellitus. **Methods:** The Quantitative descriptive study was carried out in selected villages of district Sirmour, Himachal Pradesh. Using non-probability convenience sampling technique, 200 adults between the age group of 30-50 years were selected from selected areas. Data were collected using structured questionnaire regarding the prevention of diabetes mellitus and measures to prevent diabetes mellitus. **Results:** The results of the study revealed that 76% of the subjects had "poor knowledge", 23 % had "average knowledge" while only 1% had "good knowledge". Findings of measures adopted depict that majority of respondents adopt average measures (58.5%) and 38.5 % had poor measures while only 3% had good measures. diabetes mellitus. **Conclusion:** Current study reflected the poor knowledge about diabetes in rural India. This indicates that the population needs to be taught about diabetes in early care settings.

Key words: Knowledge, Measures, Diabetes mellitus.

*Corresponding author: Pratibha Khagta, Akal College of Nursing, Baru, Sahib, Himachal Pradesh, E-mail: pratibha.khagta@gmail.com

1. Introduction

Background of the study

Globally, diabetes has been established as a prototypical chronic disease that has affected 347 million people in 2008 and 387 million in 2014. Among them, 77 % of the diabetic people reside in low and middle-income countries (LMICs) and out of this 8.3 % were adult population.

According to the estimates up to 2035, 592 million people will suffer from diabetes and among them, 11 % will be adults. Prevalence of diabetes in South-East Asia is 8.33 %. Data presented by Arogya World Fact Sheet (2012) states that the risk for coronary artery disease (CAD) is two to four times higher in diabetic subjects. Costs of diabetes to the individuals and the society are rising very rapidly. The annual cost for India due to diabetes was about $38 billion in 2011. Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use can prevent or delay the onset of diabetes mellitus [1].

Global scenario of diabetes mellitus

Diabetes remains the 7th leading cause of death in the United States in 2010

with 69,071 death certificates listing it as the underlying cause of death. National Diabetes Statistics Report (2014) revealed that 29.1 million Americans had diabetes in 2012. Diabetes was listed as the primary cause of kidney failure in 44% of all new cases in 2011. In 2010 about 73,000 non-traumatic lower-limb amputations were performed in adults aged 20 years or older diagnosed with diabetes. It is estimated that 61.3 million people aged 20-79 years living with diabetes in India. WHO projected that diabetes will be the 7th leading cause of death by 2030. According to World Health Organization (WHO) if one adult in a low-income family has diabetes; 25% of family income may be devoted to diabetes care [2]

Statement of problem

A descriptive study to assess the knowledge and measures adopted by adults to prevent diabetes mellitus in selected villages of district Sirmour, Himachal Pradesh.

Objectives

1. To assess level of knowledge of adults regarding prevention of diabetes mellitus
2. To assess the measures adopted by adults to prevent diabetes mellitus.
3. To find the association of knowledge score with selected variables.
4. To find the correlation of knowledge with measures adopted by adults to prevent diabetes mellitus

2. Materials and methods

This chapter describes how and under what conditions the empirical data underlying this thesis have been produced and utilized.
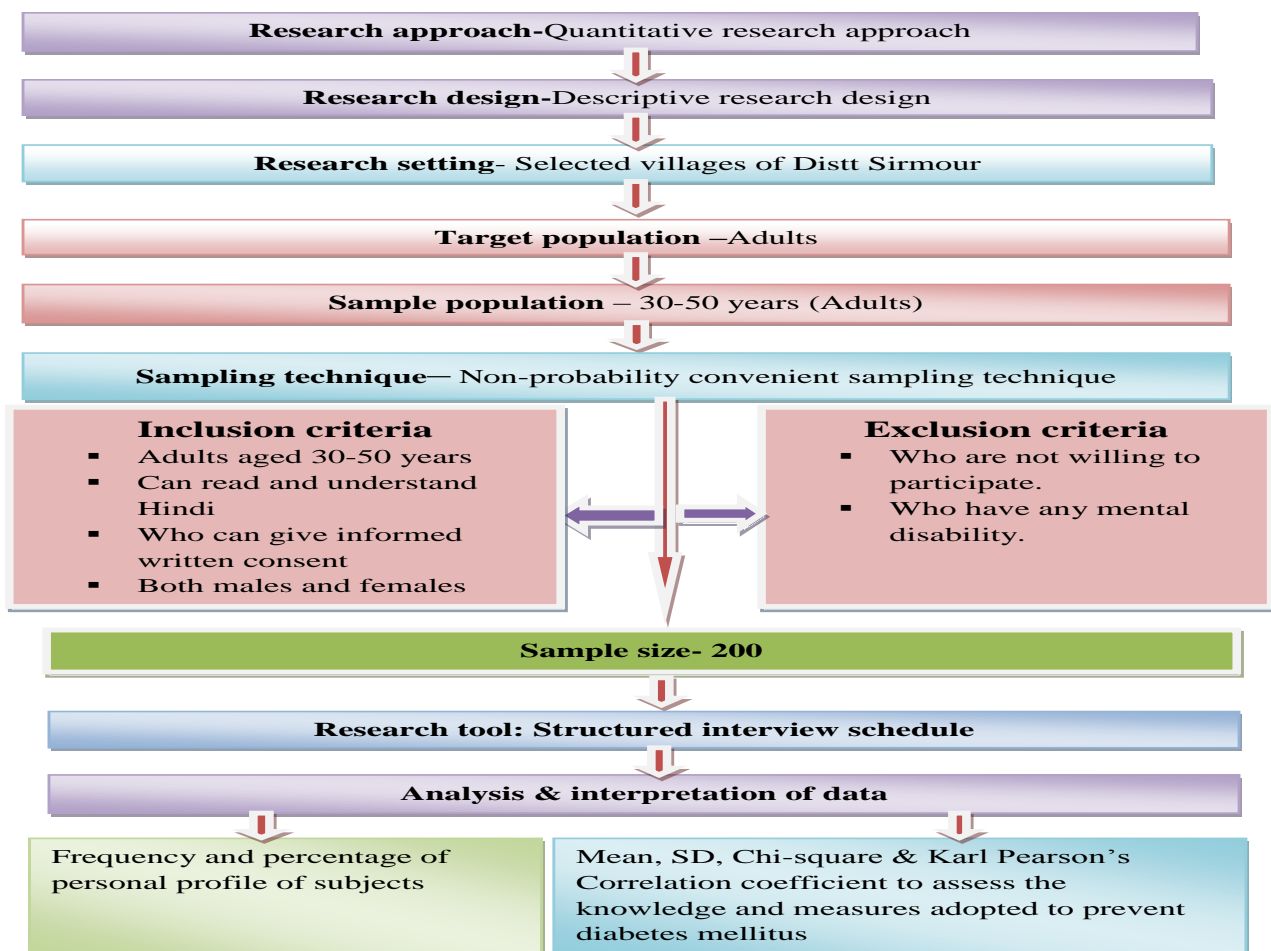
3. 1schematic diagram of research methodology

Figure No 1: Schematic representation of research methodology

Research approach

The quantitative research approach was adopted for the study. In a quantitative approach, formal instruments are used to collect information.

Research design

The research design adopted was non-experimental descriptive design. The purpose of the descriptive study is to observe and describe aspects of a situation as it occurs naturally. A descriptive design provides an accurate portrayal or account of characteristics of a particular individual, situation or group. Surveys often focus on what people do e.g. how they take care of their health needs, their compliance in taking medication or behaviors they engage in. In this study, data was collected on the knowledge and measures adopted to prevent diabetes mellitus.

Variables

Research variables

The research variables of the study include knowledge and measures.

Demographic variables

The demographic variables included in this study were age, sex, education, occupation, monthly income, family history of diabetes, the pattern of diet and habits.

Research setting

The study was conducted in selected villages of district Sirmour, Himachal Pradesh. The villages selected for the current study include Rajgarh, Dimber, Nanu, Bhanog, Maccher, Kheri and Lanabhalta.

Population

The population of the current study comprised of adults residing in selected villages of district Sirmour, Himachal Pradesh.

Sample

A sample is a subset of a population selected to participate in a research study (Polit &Hungler). In this study, the sample was named subjects. Polit and Hungler describe a subject as a person who participates in and provides data for a study. The samples of the present study were adults aged between 30-50 years residing in selected villages of district Sirmour, Himachal Pradesh.

Criteria for sample selection

Inclusion criteria- Inclusion criteria for the current study consist of those:

1. Adults aged between 30-50 years
2. Both males and females
3. Both diabetics and non-diabetics
4. Able to understand Hindi
5. Who give informed written consent

Exclusion criteria- Exclusion criteria for the current study consist of:

1. Adults having any mental disability
2. Who were not present at the time of data collection

Sampling technique

Non-probability convenience sampling was chosen for the current study; because the phenomena under investigation were homogeneous and therefore the risk of bias can be minimized. A convenient sample is the most readily available persons as subjects in a study (Polit & Hungler). The sample consisted of 200 adults.

Sample size

The sample size for the current study was 200.

Development and description of tool

The investigator developed a structured interview schedule to assess the knowledge and measures adopted to prevent diabetes mellitus.
The following steps were carried out for preparing the tool.

- Review of Literature.
- Consultation and discussion with a guide, nursing & medical experts.
- Personal experience and discussion with the colleagues.

The structured interview schedule was chosen because they ensure a high response rate and offer the possibility of complete anonymity, which may be crucial in obtaining information about socially unacceptable behavior. There is less opportunity for bias, as they are presented in a consistent manner.
The tool consisted of following sections:

Section A

Demographic variables such as age, sex, education, occupation, monthly income, family history of diabetes, the pattern of diet and habits.

Section B

Structured interview schedule to assess the knowledge of adults regarding prevention of diabetes mellitus and measures adopted by adults to prevent diabetes mellitus. This section consisted of 34 items on selected aspects of diabetes mellitus. Among 34 items 18 were knowledge-based and 16 were related to measures adopted to prevent diabetes mellitus. A correct answer was given 1 score and 0 for each wrong answer. The total possible score of the knowledge items was 18 and the total score was 16 for measures related items. The score was categorized using Blooms modified cut off point as:

- Good knowledge-80-100% (23-34)
- Average knowledge-50-79% (12-22)
- Poor knowledge- <50% (0-11)

The scores for measures were categorized as:

- Good measures -80-100% (12-16)
- Average measures -50-79% (6-11)
- Poor measures - <50% (0-5)

Content validity of tool was obtained from 5 external experts from nursing and medical fields. To ensure the reliability of tool; the structured interview schedule was pre-tested before the actual data collection began.

Ethical considerations

Permission was obtained from the Principal, Akal College of Nursing Baru Sahib. Prior to approaching subjects for data collection permission was taken from the Pradhans of various Panchayats selected for the study. Prior to data collection, informed written consent was obtained from the study participants. The purpose of the study was explained to the subjects in their own language and confidentiality of the information was ensured.

Pilot study

A pilot study was conducted to find the feasibility of the tool after obtaining formal permission from the concerned authority. The data was collected from 20 samples by using structured interview schedule at the selected village of district Sirmour- Bagroti in the month of November 2015 through non-probability convenience sampling technique. The samples that have been included in Pilot study were not included in the main study. The investigator introduced her and obtained written consent from the respondents. The reliability of tool was established by Karl Pearson's formula; using split-half method. The findings of pilot study revealed that the tool was reliable with a reliability score of 0.70

Procedure of data collection

After obtaining permission from the concerned authorities and informed written consent from the subjects, the investigator collected the data pertaining to the demographic variables. Data were collected by using close-ended questions in the form of the structured interview schedule. It took 10-15 minutes to collect data from each sample. Per day data was collected from 15 - 20 study subjects.

Plan for data analysis

The data collected from adults was proposed to be grouped and analyzed by statistical measures in terms of objectives:

- The number and percentage distribution to explain demographic variables.
- The significant association between the selected variables and knowledge scores regarding prevention of diabetes mellitus was proposed to be analyzed by using chi-square test.
- The correlation between knowledge and measures score was proposed to be analyzed by using Karl Pearson's Correlation Coefficient.

Statistical Analysis: Data was proposed to be analyzed by using SPSS version 15. It was proposed that Mean, Median, Standard deviation, Chi-square test and Karl Pearson's Correlation Coefficient will be calculated

3. Result

This section deals with the analysis and interpretation of data collected from 200 adults regarding knowledge about prevention of diabetes mellitus and measures to prevent diabetes mellitus. The collected data was organized, analyzed and interpreted by using descriptive and inferential statistics with the help of statistical package for social sciences (SPSS). Analysis and interpretation were done based on objectives of the study. In the current study, data analysis was described in following sections:

Section A: Frequency and percentage distribution of personal profile of adults.

Section B: Level of knowledge regarding prevention of diabetes mellitus among adults

Section C: Measures adopted by adults to prevent diabetes mellitus

Section D: Association of knowledge score with selected variables.

Section E: Correlation of knowledge score with measures score.

Table no 1: Frequency and percentage distribution of adults according to demographic variables

N=200

SN	Demographic variables		f	%
1.	Age in years	30-35	53	26.5
		35-40	47	23.5
		40-45	36	18.0
		45-50	64	32.0
		M±SD=40.04±6.535		
2.	Gender	Male	125	62.5
		Female	75	37.5
3.	Education	Illiterate	43	21.5
		Primary education	62	31.0
		Secondary	38	19.0
		Higher secondary	48	24.0
		Graduate or above	9	4.5
4.	Occupation	Self-employed	54	27.0
		Unemployed	132	66.0
		Government job	9	4.5
		Any other specify	5	2.5
5.	Monthly income (Rs.)	<5000	115	57.5
		5000-10000	20	10.0
		10000- 15000	7	3.5
		> 15000	51	25.5
		No income	7	3.5
6.	Family history of Diabetes mellitus	Not present	180	90.0
		Present	19	9.5
7.	Pattern of diet	Vegetarian	130	65.5
		Non-vegetarian	69	34.5
8.	Habits	Smoker	16	8.0
		Alcoholic	16	8.0
		Tobacco chewing	5	2.5
		No bad habits	159	79.5
		Any other specify	3	1.5

Table no 2: Knowledge regarding prevention of diabetes mellitus among adults

N=200

Questions	Aware		Not aware	
	f	%	f	%
What do you mean by Diabetes mellitus?	141	70	59	30
What is the normal range of fasting blood sugar?	75	37.5	125	62.5
Which population is likely to get Diabetes mellitus?	89	44.5	111	55.5
Which type of diabetes is more common?	35	17.5	165	82.5

Questions	Aware		Not aware	
	f	%	f	%
What are the risk factors for diabetes mellitus?	15	7.5	185	92.5
What are the common signs and symptoms of diabetes mellitus?	118	59	82	41
Which diagnostic test helps to rule out diabetes mellitus?	150	75	50	25
Do you think diabetes is reversible	98	49	102	51
Can diabetes mellitus be managed at home?	82	41	118	59
Do you know about Insulin therapy?	45	22.5	155	77.5
Do you think diabetes can be managed by lifestyle changes?	106	53	94	47
Do you know any home remedies to prevent diabetes mellitus?	20	10	180	90
What are the lifestyle changes that can prevent diabetes mellitus?	24	12	176	88
Which type of diet is helpful to prevent diabetes?	27	13.5	173	86.5
Can untreated diabetes lead to?	33	16.5	167	83.5
Do you think diabetes is communicable?	188	94	12	6
Are you aware of any national program related to prevention of diabetes?	11	5.5	189	94.5
What are the sources of information on diabetes mellitus?	187	93.5	13	6.5

Table no 3: Categories of level of knowledge regarding prevention of diabetes mellitus among adults

N=200

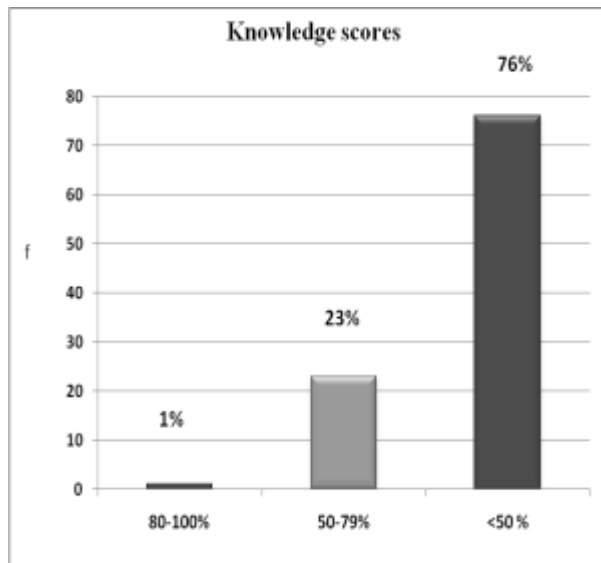| Categories of knowledge	f	%
80-100%	2	1.0
50-79%	46	23.0
<50 %	152	76.0

N=200

Figure no 2: Percentage distribution of categories of knowledge scores

Table no 4: Measures to prevent diabetes mellitus among adults

N=200

Questions	Measures followed		Practices not followed	
	f	%	f	%
Do you limit sugar in your daily diet?	79	39.5	121	60.5
Do you consume fruits in your daily diet?	109	54.5	91	45.5
Do you consume vegetables in your daily diet?	154	77	46	23
Do you limit spices in your daily diet?	19	9.5	181	90.5
Do you perform yoga?	51	25.5	149	74.4
Do you go for walk daily?	35	17.5	165	82.5
Do you consume any natural products to prevent diabetes mellitus?	17	8.5	183	91.5
Do you go for regular health checkups?	36	18	164	82
Do you get your BP checked daily?	25	12.5	175	87.5
Do you ever attend any health education program related to diabetes mellitus?	2	1	198	99
Do you wear any ring bracelet and significant others to prevent diabetes mellitus?	185	92.5	15	7.5

Questions	Measures followed		Practices not followed	
	f	%	f	%
Do you watch TV for longer duration?	187	93.5	13	6.5
Do you spend most of your time sitting?	192	96	8	4
Do you have stress in your working place?	193	96.5	7	3.5
Are you a smoker?	184	92	16	8
Do you consume alcohol?	180	90	20	10

Table no 5: Categories of score for measures to prevent diabetes mellitus among adults

N=200

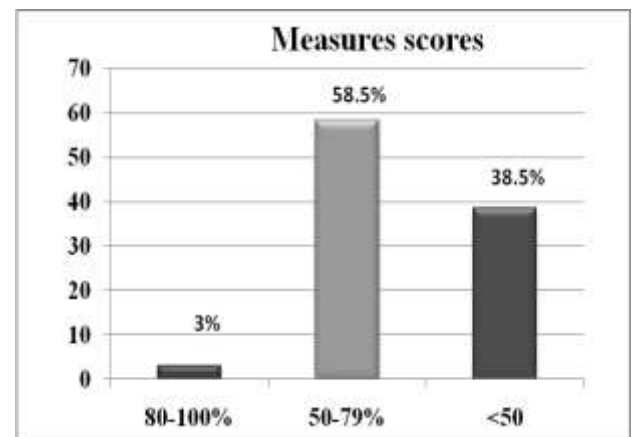| Categories of measures	f	%
80-100%	6	3.0
50-79%	117	58.5
<50	77	38.5

N=200

Figure no 3: Percentage distribution of categories of measures score

Table no 6: Association between knowledge regarding prevention of diabetes mellitus &selected personal profile variables of the subjects.

N=200

Variables	Calculated value (χ2)	df	Tabulated value (χ2)	Sig (0.05)
Age	5.476	6	12.59	0.484
Sex	2.629	2	5.99	0.269
Educational status	13.953	8	15.51	0.083
Occupation	4.592	6	12.59	0.597
Monthly income	11.452	8	15.51	0.177
Family history of DM	7.395	4	9.49	0.116
Pattern of diet	1.752	2	5.99	0.781
Habits	2.365	8	15.51	0.993

Table no 7: Correlation between knowledge & measures regarding prevention of diabetes mellitus.

N=200

Correlation between knowledge & practice		Total practice score
Total knowledge score	Pearson correlation (r)	.292
	N	200

4. Discussion

In the current study, the mean age of the subjects was 40 years and age ranges from 30-50 years. Majority of subjects were males (62.5%). In a similar study conducted by Veghari G et al. the mean age of participants was 39.2 years

In the current study, most of the subjects (21.5%) were illiterate. Ahmed AT, Karter AJ &Liu J described in their study that urban diabetic patients are much more educated about diabetes when compared with the rural diabetic patients. One factor, which was observed to play a role in improving awareness, was the level of education attained. A well-educated person had a much higher awareness level than a person who had received no education whatsoever. [3]

In the current study knowledge regarding prevention of diabetes mellitus and measures to prevent diabetes mellitus were assessed. The results related to knowledge showed that majority (76%) of adults had inadequate knowledge, 23% had the average knowledge and remaining 1 % had adequate knowledge regarding prevention of Diabetes mellitus.

In the present study, the findings related to measures showed that majority (58.5%) of adults were following good measures, 38.5% were following fair measures and remaining 3% were following poor measures for the prevention of diabetes mellitus. In a study conducted by Vankudre AJ, Padhyegurjar MS, Gladius HJ & Padhyegurjar SB knowledge scores based on correct responses on various aspects of diabetes mellitus revealed that out of 123, 80(65%) had good knowledge of diabetes mellitus, 109 (88.6%) were well aware of self-care practices and 79(64.2%) knew about the complications of diabetes mellitus. It was observed that 69 (56.1%) did not answer correctly that DM is a lifestyle disorder and following good practices can prevent it [4].

Aljoudi AS & Taha AZA in their study mentioned that more than half of the participants were not able to correctly mention any DM risk factors or preventive measures. Mohan V and Pradeepa R in Chennai observed that even among self-reported diabetic subjects, knowledge about diabetes including awareness of complications of diabetes was poor. This indicates that majority of population needs to be taught about diabetes in early care settings [7].

Ahmed et al. also studied the relationship between alcohol consumption and glycemia control and concluded that the relationship is inversely proportional; thus diabetic complications can be minimized by the restricting alcohol consumption. In the present study, 10% of the subjects were consuming alcohol. [3]

In a similar study conducted by Veghari G et al. 25% of patients were undiagnosed as a whole, 43% of patients were unaware of their problem, in men more than women (48.5% versus 39.2%) and in a rural area more than in urban area (35.1% versus 54.4%). The study revealed a significant association between FBS, waist circumference and BMI. [6]

In the current study, it was found that there is a weak positive correlation between the level of knowledge and measures adopted to prevent diabetes mellitus. In the similar study conducted by Bhojani U et al., The findings were analyzed and a low positive correlation (r = .2306, p = .038) was found, indicating that nurses perceived knowledge of diabetes was positively related to actual knowledge. [8]

The current study reflects the poor knowledge about diabetes in rural India. This emphasizes the need for increasing diabetes awareness activities in the form of mass campaigns in both urban and rural areas of India.

Nursing implications

- Findings of the study can be the platform for designing better preventive programs for diabetes mellitus at institutional and community level.
- Health personnel should take initiative in conducting awareness programmes, mass media campaigns on prevention of diabetes mellitus
- Nurse administrator can plan and organize the in-service education programme for community health personnel to update and renew their knowledge
- Nursing research should focus on behavior modifications after multifaceted interventions.
- Nursing research should focus on various risk factors of diabetes mellitus prevailing in rural areas of our nation.

Recommendations

- The current study can be replicated on large sample and can be undertaken in different age levels to validate and generalize findings
- The further interventional study can be carried out to improve knowledge and awareness of population regarding prevention of diabetes mellitus.
- Utilizing the findings of the study in planning educational program about diabetes mellitus in rural areas.
- Organizing education campaigns in public gathering area e.g. Village fairs

Conclusion

Diabetes is a popular example where prevention is bound to be better than cure. The current study shows that there is inadequate knowledge among adults regarding prevention of Diabetes mellitus. We need to develop comprehensive health education programs for the awareness of people in the community.

References

[1]   Gautam A, Bhatta DN, Aryal UR. Diabetes related health knowledge, attitude and practice among diabetic patients in Nepal. BMC endocrine disorders. 2015 Dec; 15(1):25.

[2]   Arogya World. Fact sheet: Diabetes in India: Arogya World: 2013.

[3]   Ahmed AT, Karter AJ, Liu J. Alcohol consumption is inversely associated with adherence to diabetes self-care behaviours. Diabetic medicine. 2006 Jul 1; 23(7):795-802.

[4]   Vankudre AJ, Padhyegurjar MS, Gladius HJ, Padhyegurjar SB. Awareness regarding Diabetes and factors affecting it. Healthline [Internet] Dec 2013[Cited 2015 Sept 12]; 7 (4). 2320-152.

[5]   Mohan V, Pradeepa R. Epidemilogy of Diabetes in Different Regions of India. Health administrator. 2009; 22(1-2):1-18.

[6]   Veghari G, Sedaghat M, Joshaghani H, Hoseini SA, Niknezad F, Angizeh A, Tazik E, Moharloei P. Association between socio-demographic factors and diabetes mellitus in the north of Iran: A population-based study. International Journal of Diabetes Mellitus. 2010 Dec 1; 2(3):154-7.

[7]   Aljoudi AS, Taha AZ. Knowledge of diabetes risk factors and preventive measures among attendees of a primary care center in eastern Saudi Arabia. Annals of Saudi medicine. 2009 Jan; 29(1):15.

[8]   Bhojani U, Mishra, Azim P, Pandey RM, Yadav K. Constraints faced by urban poor in managing Diabetes. Glob Diabetes Action [Internet] 2013 Sept. [Cited 2013 Oct 15]; 6: 10.