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## RESEARCH ARTICLE

### A STUDY TO ASSESS THE KNOWLEDGE OF LATE ADOLESCENTS REGARDING PRIMARY PREVENTION OF TYPE 2 DIABETES MELLITUS IN A SELECTED URBAN COMMUNITY, TIRUPATHI.

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#### ABSTRACT

**Introduction:** Diabetes mellitus is a chronic disease of metabolic disorder characterized by hyperglycaemic condition resulting from defective in Insulin secretion, Insulin action or both. Type 2 DM results from insulin resistance, combined with relative or absolutely insulin / deficiency. In type 2 DM due to insulin resistance in glucose the body tissues do not respond to the action of insulin. When insulin is not properly used, the entry of glucose into the cell is impeded, resulting in hyperglycemia. The prevalence of type 2 diabetes in Adolescents and young adults is dramatically increasing. Similar to older onset type 2 Diabetes, the major predisposing risk factors are obesity, family history, and sedentary life style. Onset of Diabetes at a younger age ( up to age 40 years) is associated with longer disease exposure and increased risk for chronic complications. Young onset type 2 diabetes also affects more individuals of working age, accentuating the adverse societal effects of the disease. **Objectives:** To assess the knowledge of late adolescents regarding primary prevention of type 2 diabetes mellitus in a selected students. To associate the level of knowledge with their selected socio-demographic variables on primary prevention of Type 2 diabetes mellitus among Late Adolescents. **Methodology:** Non-experimental approach was adopted to achieve the objectives of the study, which is felt to be most appropriate in the field of education for its practicability in real life situation. It has the advantage of practicability, feasibility and to a certain extent for generalization. Research design was Descriptive research design. The study was conducted at S.V. nagar urban tirupathi. Population includes Late adolescents studying graduation at selected urban area community Tirupathi. Sample size consists of 100 Late adolescents under inclusion criteria. convenient sampling technique was adopted based on inclusion criteria. **Results:** Out of 100 samples majority (61%) were having moderate knowledge, 12 per cent were having inadequate knowledge and 27 per cent were having adequate knowledge on primary prevention of type 2 diabetes mellitus. There is significant association between level of knowledge of Late adolescents with their age, gender, residence, educational status of mother, occupational status of mother, occupational status of father, income of family, year of degree significant at <0.05 level where as remaining demographic variables (religion, educational status of father, Type of family, previous exposure to educational program, source of information) are not showing any significant. So null hypothesis rejected. The mean knowledge score was 1.85 and the standard deviation was 0.609. Based on the findings, it is found that most of the Late adolescents had moderate knowledge on primary prevention of type 2 diabetes mellitus. **Conclusion:** Association of knowledge of Late adolescents with their age, gender, residence, educational status of mother, occupational status of father, income of family, year of degree significant at <0.05 level where as remaining demographic variables (religion, educational status of father, Type of family, previous exposure to educational program, source of information) are not showing any significant. So null hypothesis rejected. The mean knowledge score was 1.85 and the standard deviation was 0.609 on significant at 0.05 level. These findings suggested structured teaching Program will improve the knowledge regarding primary prevention of type 2 diabetes mellitus. These findings suggested extensive health educational program was needed to bring awareness among late adolescents. So as community health nurse need to encourage public health education programme on primary prevention of type 2 diabetes mellitus and the knowledge and to bring out health community.

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## INTRODUCTION

Adolescence is one of the rapid phases of growth and human development. Late Adolescence covers young people the age range 18-24 years. Diabetes is an “Ice Berg diseases” although it increases in both prevalence and incidence of Non-insulin dependent diabetes occurred globally they have been especially dramatic in societies in Newly industrialized countries and developing countries. Diabetes mellitus (DM) is a chronic disease of metabolic disorder characterized by hyperglycaemic condition resulting from defective in Insulin secretion, Insulin action or both . In type 2 DM due to insulin resistance in glucose the body tissues do not respond to the action of insulin. When insulin is not properly used, the entry of glucose into the cell is impeded, resulting in hyperglycemia.

The development of diabetes mellitus related to life style and genetic factors. Risk factors are family history, obesity, impaired glucose tolerance hypertension , dietary practices like cholesterol intake , past history of gestational diabetes mellitus. Clinical manifestations 2 Includes polyuria, polydipsia, polyphagia, fatigue, weakness, sudden vision changes, weight loss, Irritability, recurrent infections, delayed wound healing . There are 3 types of diabetes mellitus, Type -1 Diabetes mellitus results from the pancreas failure to produce enough insulin the form was previously referred to as “Insulin – dependent diabetes mellitus”(IDDM) or “ Juvenile diseases. Type -2 Diabetes mellitus with insulin resistance a condition in which cells fail to respond to insulin properly. This form was previously referred to as “Non –Insulin dependent diabetes mellitus”(NIDDM) or “Adult-onset diabetes”. Gestational diabetes mellitus is the third main form, and occurs when pregnant women a previous history of diabetes develop high blood sugar levels.

Diabetes mellitus is a multi-systematic illness associated with a variety of acute & chronic complications, acute complications can include diabetes ketoacidosis, hyperosmolarity hyperglycaemic state or death chronic complications can include cardiovascular disease, stroke, chronic kidney disease, foot ulcers and damage to the eyes. The number of diabetes mellitus in adults estimated by 2019 is 9.3 million had diabetes worldwide with Type 2 DM this represents equal in both women and men. As of 2019 trends suggests the rate would continue to Diabetes at least doubles a person risk of early age death. The global was estimated 1.6 million deaths results from diabetes. Maintaining a healthy weight, regular exercise and physical activity makes a huge difference in your health and quality of life. Action should be taken regarding the modifiable factors that influence its development lifestyle and dietary habits. However with proper testing, treatment and life style, change, healthy eating as strategy, promote walking, exercise and other physical activates have beneficial effects on human health and prevention or treatment of diabetes, promoting adherence to this pattern is of considerable.

**NEED OF THE STUDY:** Type 2 diabetes is one of most prevalent and fastest growing public health problems in developed and developing countries. The term “Adult onset ” diabetes is no longer considered Appropriate because the disease is now seen in a growing number of children and Adolescents. Late Adolescent period is the time that they are greatly influenced in their eating habits by peer, mass media, lack of nutritional knowledge, and sedentary lifestyle resulted in the prevalence of overweight and obese, increasing likelihood of health conditions such as diabetes.

A focus on adolescents is essential for preventing non-communicable disease. Type 2 diabetes is a significant and increasing burden in Adolescents and young Adults. According WHO ( 2019) In India 63 million people affected with Diabetes, The global prevalence of diabetes among adults over 18 years of have rise from 8.5% in 2014, In 2016 estimated 1.6 million deaths were directly caused of deaths , prevalence has been rising more rapidly in low Income countries. In 2012 Another 2.2 million deaths with attributable to high blood glucose level. Health diet, Re avoiding tobacco uses are ways to prevent or delay the onset of type 2 diabetes. Prevalence of type 2 diabetes among adults in state wise In India 63 million people affected with Diabetes, The global prevalence of diabetes among adults over 18 years of have rise from 8.5% in 2014, In 2016 estimated 1.6 million deaths were directly caused by diabetes, it is was seventh leading cause of deaths , prevalence has been rising more rapidly in low- and middle countries than in high Income countries. In 2012 Another 2.2 million deaths with attributable to high blood glucose level. Health diet, Regular physical activity, maintaining normal body weight and avoiding tobacco uses are ways to prevent or delay the onset of type 2 diabetes.

## MATERIALS AND METHODS

**RESEARCH APPROACH:** Non - experimental approach was adopted to achieve the objectives of the study, which is felt to be most appropriate in the field of education for practicability in real life situation. It has the advantage of practicability, feasibility and to certain extent of generalization.

**RESEARCH DESIGN:** The research design selected for the present study was descriptive research design.

**VARIABLES OF THE STUDY:** Independent variables : Socio demographic variables.

**Dependent variables:** Level of knowledge regarding primary prevention of type 2 diabetes mellitus

**SETTING OF THE STUDY:** Setting is important because it can influence the subjects and variables. The present study was conducted in a selected urban community at S.V Nagar Tirupati, chittoor district, A.P.

**POPULATION:** The population includes late Adolescents between the ages of 18- 20 years.

**SAMPLE:** Late Adolescents between the age of 18- 20 years in selected urban community at S.v nagar, Tirupati.

**SAMPLE SIZE:** Sample size consists of 100 late Adolescents who fall inclusion criteria.

**SAMPLING TECHNIQUE:** Convenient sampling technique was adopted based on inclusion criteria.

## CRITERIA FOR SAMPLE SELECTION

### Inclusion criteria

- 1) Adolescents between the ages of 18 – 20 years
- 2) who are Studying degree

- ) Able to understand both Telugu and English.
- ) Willing to participate in a selected urban community

**Exclusion criteria**

- ) Not available
- ) Not willing to participate

**Development and Description of The Tool:** The tool was developed with the help of related literature from text books, journals, websites, discussion and guidance from the experts in the field of Nursing and Medicine. The study was carried out by using a structured knowledge questionnaire on primary prevention of type 2 diabetes mellitus.

**The questionnaire consists of II sections**

**Section 1:** It Consists of selected socio-demographic variables  
**Section 2:** Structured Questionnaires consists of 34 questions to assess the level of knowledge on Type 2 Diabetes mellitus regarding primary prevention among late adolescents.

**Score Interpretation**

**Section I:** By coding the demographic variables.  
**Section II:** By coding the right option as ‘1’ and negative option as ‘0’ for multiple choice questions of the primary prevention of type 2 diabetes mellitus.

**Content Validity:** The content validity was obtained from nursing and medical experts The content of validity was given to 10 experts along with objectives. It includes 5 experts from nursing and 4 experts from community medicine 1expert from obstetrics. The experts were permitted to give their opinions and suggestions necessary modifications were made on the tool .It was translated into Telugu and it appropriateness was obtained by Telugu pundit .The modified tool was fit for the pilot study.

**Reliability Of The Tool:** Reliability of research instrument defined as the extent to which the instrument yields the same results in required measures. It is concerned with consistency , accuracy, precision, stability, equivalence and homogeneity. Reliability of instrument was established by administrating the tool to ten late adolescents who are at L.b nagar, Tirupathi who were not included in pilot study and who fulfilled in the inclusion criteria. The reliability was established by Cronbach’s alpha on standardized formula for the structured knowledge questionnaire results obtained from the reliability. The tool was found highly reliable with score of

$$r = \frac{\rho_{KK20}}{k-1} \left( 1 - \frac{\sum_{j=1}^k p_j q_j}{\sigma^2} \right)$$

**Pilot Study:** The pilot study was conducted on 25-06-2020at L.b nagar colony , tirupathi to assess the feasibility of the study and to plan for statistical analysis of the data. While doing data collection obtained consent from the study participants. The samples were selected by following convenient sampling technique ten Late adolescents who fall under inclusion criteria were selected for the pilot study participant and a written consent was obtained from the pilot study samples.

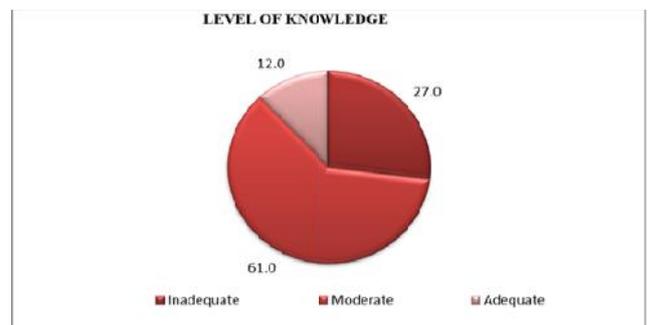
Introduction was given to the participants to answer the questions as per the instructions and they were made to sit comfortably, data was obtained by self-administered knowledge questionnaire, statistical analysis was done by using descriptive and inferential statistics. The findings of the study revealed that the tool and feasible for conducting the study.

**Procedure for data collection:** 100 sample were selected by convenient sampling technique, 10 participants per day from 10 to 12 pm. The investigator made the participants to introduce herself to each participant and explained the purpose of the study and written consent was taken from each sample before the questionnaire was administered. The investigator collected the data from late adolescents through structured questionnaire and the respondents were thanked for their co-operation and given the informational booklet on primary prevention as a module for creating awareness among late adolescents.

**RESULTS**

Shows that primary prevention of type 2 diabetes mellitus usage out of 100 adolescents majority of late adolescents (61%) were having moderate knowledge 12per cent of late adolescents were having adequate knowledge on primary prevention of type 2 diabetes mellitus and remaining 27 per cent of late adolescents were having inadequate knowledge on type 2 diabetes mellitus.

Knowledge on primary prevention of diabetes mellitus among late adolescent	Frequency (f)	Percentage (%)
Adequate	12	12%
Moderate	61	61%
Inadequate	27	27%



**DISCUSSION**

The present study mainly concentrates on providing knowledge on primary prevention of type 2 diabetes mellitus among Late adolescents. The problem statement of the study is “descriptive study to assess the knowledge of late adolescents regarding primary prevention of type 2 diabetes mellitus in a selected urban community, Tirupathi “ About 100 late adolescents were selected by convenient sampling technique and with the use of structured questionnaire were used to assess the level of knowledge regarding primary prevention of type 2 diabetes mellitus among late adolescents.

**The first objective of the study to assess the knowledge of late Adolescents regarding primary prevention of type 2 Diabetes mellitus:** The present study shows that 100 Late Adolescents (61%) were moderate knowledge, and 12 per cent were having adequate knowledge and remaining 27 per cent had inadequate knowledge.. It was found that there was

deficit in knowledge regarding primary prevention of type 2 diabetes mellitus. The supported study for the objective conducted a cross sectional study on Adolescents knowledge and awareness of Type 2 diabetes mellitus among 4333 Adolescents students of secondary private and public schools in Kuwait. The results shows The main score obtained by students 63.2 per cent. General knowledge about diabetes sections scores were 71.0 per cent, Knowledge of risk factors of diabetes 63 per cent, Knowledge of symptoms and complications 55.8 per cent , Knowledge about treatment and management 62.7 per cent, and Knowledge of monitoring diabetes 72.3 per cent. They recommended study will clarify these areas to help in designing educational programs to treat these deficient of knowledge about the disease and increase the awareness.

**Second objective of the study To associate the level of knowledge with their selected socio demographic variables on primary prevention of Type 2 diabetes mellitus among Late Adolescents:** There was association between level of knowledge the variables with their age, gender, residence, educational status of mother, occupational status of mother, occupational status of father's, income of family, year of degree, type 2 diabetes mellitus significant at  $p < 0.05$  level. Hence  $H_0$  was rejected. There are some of the variables has not shown significance such as religion, educational status of father, type of family, previous exposure to educational programme, source of health information. The study was supported by a community based cross sectional study was conducted on to assess prevalence of Type 2 diabetes mellitus and it's associated risk factors among 910 adult residents of rural Kham man . finding of the study showed There significant association between level of knowledge and with their socio- demographic variables such as such as age, prevalence of type 2 diabetes mellitus at  $p < 0.05$ .

## Conclusion

The study findings revealed out of 100 Late Adolescents (61%) were moderate knowledge, and 12 per cent were having adequate knowledge and remaining 27 per cent had inadequate knowledge. It was found that there was deficit in knowledge regarding primary prevention of type 2 diabetes mellitus. There was association between level of knowledge the variables with their age, gender, residence, educational status of mother, occupational status of mother, occupational status of father's, income of family, year of degree, type 2 diabetes mellitus level of knowledge significant at ( $p < 0.05$ ) level. These findings suggested extensive health educational program was needed to being awareness among late adolescents. So as community health nurse need to encourage public health education programme on primary prevention of type 2 diabetes mellitus and the knowledge and to bring out health community.

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## REFERENCES

- World health organization, Department of child and Adolescent health and develop; orientation programme on health scare provides.
- Hoff AL, Wagnem JI, Mullin LL, Chaney JM ,Behavioural Management of type 2 diabetes , Sage publications. 2003. 303-24.
- Akerlalom HK, Vaarala D, Hydtoy H. "Environment factors etiology of type 2 diabetes ", American Journal of Medical Genetics. 2002;115:18-29.
- Lean TA, Richard IG . "Diagnosis , Epidemiology and pathogenesis of diabetes mellitus: on update for psychiatrists" , 184: 55-63.
- Ozougwu, JC, Obimba K.C ,Belonwu C, D And Unakalamba C B . The pathogenesis and pathophysiology of Type 1 And Type 2 Diabetes Mellitus Journal of physiology and pathophysiology 2013;4:46-57.
- Brunner And siddharath , Medical and surgical Nursing, 2004;19;1377-82.
- Lewis. Medical- surgical. Reed Elsevier publishers India 2011;7e;1248-9
- World health organization, " Global status on the Non communicable diseases ; june 4, 2018.
- King H, Dowd J E. Primary prevention of type 2 ( Non-insulin dependent ) diabetes mellitus. Diabetologia. 1990 Jan ; 33(1) :3-8. Available from : URL : <https://www.ncbi.nlm.nih.gov/pubmed/2406178>. 10. Ghai OP , Gupta p , paul . Ghai Essential Pediatrics . 6<sup>th</sup> ed . New Delhi: CBS Publishers and distributors : 2004 . p.69 .
- Lewis, Heitkempe , Dirksen. Medical Surgical Nursing : Assessment and Management of clinical problems. 6<sup>th</sup>. St Louis Missouri : Mosby publisher : p; 1270.
- Pouya Saeedi a, Inga Petersohn a , Paraskevi Salpea a , Belma Malanda a , Suvi Karuranga a , Nigel Unwin b , Stephen Colagiuri c , Leonor Guariguata d , Ayesha A. Motala e , Katherine Ogurtsova f , Jonathan E. Shaw g , Dominic Bright h , Rhys Williams h , On behalf of the IDF Diabetes Atlas Committee ,Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas, 9th edition ;September 6 2019; published by Elsevier B.V.
- Dinesh Kumar , Shyamasundar J, Raithatha , Shanti Gupta , Ravi Raj , Nikhil Kharod "Burden of Self –Reported N on communicable Diseases in 26 Villages of Anand District , India". November 15 2015 , Article ID ; 260143, <http://dx.doi.org/10.1155/2015/260143> .
- Aroor Bhagyalaxmi , Tridevi Atul, Jain shikha , " prevalence of risk factors of Non communicable Diseases in a district of Gujarat , India ". March 3 2013 (1) 78-85 International centre for diarrhoeal disease research , Bangladesh.
- Shilpa Gai dhame ,Wani Mittal ,Nazil khantih , Quazi Syed Zahiruddin, pramita A, Abhay Gud hane . " Risk factor of type 2 diabetes mellitus among adolescents from rural area of India" , 2017;6 ; 600-4 Journal of family medicine and primary care. 16.Gadadharan Vijayakumar ,Sreeja Manghat , Vevathi Vijayakumar, Leena simon, Liss Maria Scaria ,Aswathi Vijayakumar, Ganapathy K. Sreehari , V. Raman Kutty ,Arun Rachana,Abdul Jaleel, Incidence of type 2 diabetes mellitus and prediabetes in kerala in kerala results from a 10 year prospective cohort , 2019; [http:// doi.org/10.1186/s12889-019-6445-6](http://doi.org/10.1186/s12889-019-6445-6).

- AKula Sanjeevaiah ,AKula Sushmitha , Thota Srikanth , prevalence of diabetes mellitus and its risk factors ;March 3 2019;6(3); 319-324; ISSN ;2394-0034.
- Nithesh Kumar, K. Sushma Katkuri , I.Ramyacharitha , A study to assess prevalence of diabetes mellitus and its associated risk factor among Adults residence of rural , khammam .2018 April;5 (4); 1360-1364; pISSN 2394-5032/eISSN 2394-6040.
- Shiferaw Birhanu Aynalem ,Ayalew Jejaw Zeleke , prevalence of Diabetes Mellitus and its risk factors among individuals aged 15 years and above in Mizan- Aman town southwest , in Ethiopia , volume 2018 25 March , Article ID9317982
- Poornima M,P, Padmaja R, Walvekar , prevalence of type 2 diabetes mellitus among adults aged between 30 -60 years residing in rural area, belagavi,karnakata, 2018 August ; 5 (8):3639-3642, PISSN 2394-6032/ Eissn 2394-6040
- Ameesh M, Murugan S, Prevalence and its risk factors of diabetic patients in urban area of Palakkad ,Govt of Medical College, Palakkad ,Kerala .2017 October 4(10);3721-3726, Pissn 2394-6032/ eISSN 2394-6040.
- Ranjit Mohan Anjana , Mohan Deepa, Rajendra pradeepa ,jagadish Mahanta , kanwar Narain ,Hiranya kumar Das, prabhas Adhikaram,Lobsong Jampa. prevalence of diabetes and pre- diabetes in 15 states of India results from the ICMR- INDIAB population – based cross-sectional study, published on june 7, 2017 http: // dx.doi.org /10.1016/ s2213-8587 (17)30174-2.
- Worku ANIMaw, Yeshaneh seyoun, Increasing prevalence of diabetes mellitus in a developing country and its related factors, November 7, 2017, http://doi.org/ 10.1371/ journal . pone 0187670.
- Pangi Vijya Nirmala , Mani Gudivada , Chikkam Vijaya Lakshmi , Comparative study was conducted on prevalence of Type 2 diabetes mellitus in various 3 demographic regions of Andhra Pradesh in India: a population based study, International Journal of MCH and AIDS ( 2016), volume 5, Issue 2, 103-111.
- Xiaotian Liu ,Yuqian Li , Linlin Li , Luning Zhang , Yongcheng Ren ,Hao Zhou , prevalence, awareness treatment and control of type 2 diabetes mellitus and risk factor in Chinese rural population ; the Rural Diab study. Published on 11 August 2016, DOI:10 :1038/ srep 31426.. Dhiraj Kapoor , Ashok Bhardwaj ,
- Dinesh Kumar ,sunil kumar Raina , prevalence of diabetes mellitus and its risk factors among permanently settled tribal individuals in tribal and urban areas in northern state of sub- Himalayan region of India, International Journal of chronic Diseases . volume 20`4, Article ID380597, http://dx. Doi.org/10.1155/2014/380597. .
- Dr. Theyamma Joseph, “Effectiveness of a Structured Teaching Programme on Knowledge and Practice Regarding Prevention of Type 2 Diabetes Mellitus among adolescents in selected schools of Kerela”. August 2019 volume 8/Issue 8. International Journal of scientific Research.
- Margaret Amankwah poku A cross- sectional study was conducted on knowledge and awareness of type -2 diabetes mellitus in a student population in Ghana: do make demographics and lifestyle make a difference ,24 jun; 2019; https://doi.org/10.1080/ 21642850. 2019.1637261 -29
- Mervat About , Mariam Abdel Jalil. Mohammad Odeh, Rasha Al Kurdi ,Murhaf Alnan. March 29, 2019,https://doi.org/10.1371/ journal.pone.o214479.
- Razalee sedek ,Saziatul Nazirah saari (2018 Knowledge of type 2 diabetes mellitus among adults with and without diabetes in Universiti Kebangsaan. July 27. 2019; Pakistan journal of nutrition , 18; 109-116.;DOI: 10.3923/pjn.2019.109.116-31.
- Ibrahim Bin Ahmed, Fahad A .Alateeq,Saleh Hadi Alharbi, Hussain Gadelkarian Ahmed. Awareness and knowledge towards type 2 diabetes mellitus risk factors in northern Saudi Arabia. Intenational journal of medical research & health sciences-32 , 2018, 7 (5); 33-40; ISSN NO;2319-5886.
- Riccardo Rossiello, Roberto Nappi,Francesco Napolitano, Gabricella Di Giuseppe.Biomed Research International, volume 2019, ArticleID 2753131, https//doi.org/10.1155/2019/2753131-33
- Kaniz Fatema, sharmin Hossain, Khurshid Natash, Hasina Akher Chowdhury ,Jesmine Akter, Tahmina khan , Liaquat Ali;26 April 2017 ; BMC Public health Volume 17,-34 Mistire Wolde, Nega Berhe, Irma Van Die, Girmay Medhin, Aster tsegaye knowledge and practice on prevention of diabetes mellitus among Diabetes mellitus family members, in suburban cities in Ethiopia. Wolde et al BMC res Notes ( 2017)
- Ying Xu , Dongdong Zhang, Kaiqian Liu, Yanfang Guo, Yi Yang self knowledge of diabetes and its related factors among Chinese college in china.BMJ 2016; 6eo11963. Doi;10;1135/ bmjopen -2016-011963.
- Dr. Sonika Sangra, Dr. Nida Nowreen , Dr. Sunil Sachedev on knowledge, Attitude and practice about Type -2 diabetes mellitus in an adult population attending primary health Centre in rural, Jammu ..IOSR Journalof dental and Medical Sciences (IOSR-JDMS). E-ISSN;2279-0853, p-ISSN;2279-o861. Volume 15,Issue 4 ver , XII APRIL. 2016, PP 54-57-
- Raymond G. Mabaso , Olalekan A . Oduntan, 03 november. 2015;
- Marayam AL Hussaini , Seham Mustafa adolescents knowledge and awareness of diabetes mellitus in Kuwait. . 15april2015 – 39
- Fakir M , Amirul Islam , Rahul chakrabarti, Mohammed Dirani, M.Tauhidul Islam , Gail ormsby., Mohamed Waheb , Chrisine critchley , Robert P. F inger, October 2014, volume 9/Issue 10/ e11o368-40.
- Melanie Me Ewen, Evelyn M , Wills, text book of theoretical basis for nursing, Lippincott Williams publications , 2002; page no; 243-236.
- Goldhader andBrewer, the centre for public education, November 1, 2016.
- Fuller and alexander’s, the centre for public education November 1, 2005 feb 2018.
- Denise F.Polit, Cheryl Tatano, text book of nursing research, generating Wilkins assessing evidence for nursing practice, 8 edition , Lippincott Williams and Wilkins company, Wolterkulvier publications, New Delhi, page no;272-273
- Suresh k sharma , nursing research, statistics 2<sup>nd</sup> edition elsvier publications 2014;page no; 101-103. Holla R, Prabhu S, Shetty S, Deshpande S, Balla K, et al. “Awareness about diabetes among Adolescents of Mangalore, South India “. June 2014; 4(2). Available fro

**INTERNET REFERENCES**

1. [http://www. Diabetes researchclinical practice.com](http://www.Diabetesresearchclinicalpractice.com)
2. [http://www. Indiaspend.com](http://www.Indiaspend.com).
3. [http://www. Livemint.com. health](http://www.Livemint.com.health).
4. [http://www. Who.Int. home](http://www.Who.Int.home).
5. [http://www. Amchg.org.com](http://www.Amchg.org.com).
6. [http// doi.org/ 10.1016/s2214- 109x\(18\)30556-4](http://doi.org/10.1016/s2214-109x(18)30556-4).
7. [http//origin.scero.who.Int.com](http://origin.scero.who.Int.com)
8. [http//www. Ncbi.nlm.nih.gov.com](http://www.Ncbi.nlm.nih.gov.com)
9. [http..www.times of india.com](http://www.timesofindia.com)
10. [http//www.indiaenvironment portal.org. in , com](http://www.indiaenvironmentportal.org.in)

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