International Journal of Recent Development in Engineering and Technology
Website: www.ijrdet.com (ISSN 2347-6435(Online) Volume 14, Issue 11, November 2025)

Identification the Prevalence of Diabetes in North India: A Cohort Study

Arvind Kumar[1], Charanjeet[2], Vikas Saxena[3]

[1,2]*Assistant Professor, Department of Pharmacy RBMI Group of institutions, Bareilly, Uttar Pradesh, India.*
[3]*Director, Department of Pharmacy, RBMI Group of institutions, Bareilly, Uttar Pradesh, India.*

***Abstract*-- Diabetes mellitus is a dangerous, long-term disorder characterized by elevated blood glucose levels caused by the body's inability to get enough insulin. Diabetes has impacted an estimated 537 million people globally witha 10.5% prevalence rate, and it is expected to affect 643 million people by 2030 and 783 million people by 2045.Asia is the world's most populated and largest continent, holding 60% of the world's people. The continent's population was predicted to be 4.5 billion in 2025.According to the most recent United Nations projections, the total population of South Asia will be around 2 billion in January 2023; SouthAsia is the most populous subregion in Asia. The procedure included studying published papers between October2022 and January2023, with data gathered from Search gate, Google scholar, PubMed, and another website. The primary goal of this review is to provide information and identify, describe, and evaluate the prevalence of diabetes in South Asia, as well as to study the associated risk factors. There is little available data about diabetes in the population of South Asia. South Asian countries are confronted with significant health problems. As a consequence of rapid economic transformation, physical activity habits and changes in nutrition are substantial issues in rural regions as well as in urban areas to increase the prevalence of diabetes. Successful management and prevention in the south Asian community are needed.**

***Keywords*-- Prevalence, diabetes mellitus, epidemiology, management, observational study.**

I. INTRODUCTION

Diabetes is a dangerous, chronic disorder in which the body fails to generate sufficient insulin or utilize the insulin it makes adequately. Diabetes has impacted an estimated 537 million people globally with10.5 a % prevalence rate, and it is expected to affect 643 million people by 2030, as well as 783 million people by 2045. According to the IDF 10th edition, the world population is estimated to be 7.9 billion by 2021, and it is predicted to be 9.5 billion by 2045[1]. Asia is the world's most populated and largest continent, holding 60% of the world's people. The continent's population was predicted to be 4.5 billion in 2025. This continent also contains three of the most populated subregions: South Asia, East Asia, and Southeast Asia in the world[2].

According to the most recent United Nations projections, the total population of South Asia will be around 2 billion in January 2023; in terms of population, South Asia is the most populous subregion in Asia [3]. South Asia encompasses India, Pakistan, Bangladesh, Iran, Afghanistan, Sri Lanka, Nepal, Bhutan, and the Maldives. South Asians are multicultural and multi-ethnic, with unique socio-cultural norms and culinary patterns. We are also providing rank based on population density; highly populated nations may have a high number of diabetic patients. In this work, we are discussing the epidemiology, features, causes, and critical cultural problems in diabetes care and prevention in South Asians.

II. METHOD

For this observational study, the procedure included studying published papers between October-2022 and January-2023, with data gathered from Search gate, Google scholar, PubMed, and another website and the information about diabetes prevalence data was also collected from published paper 2012 to 2022 in the South-Asian countries. We studied more than 70 published papers on the same interest but we only used 41 to compile this review paper because of available data.

III. EPIDEMIOLOGY

Almost 463 million people were suffering from diabetes and 4.2 million people died because of diabetes worldwide in 2019 as well as around 87 million people had diabetes in South-Asia during IDF 9th edition in 2019 and more than 1 million people died due to diabetes that time [4]. According to the IDF 10th edition (2021), 91 million people had diabetes in 2021 and it is predicted to reach up to 152 million people with 68% prevalence rate in 2045 in South-Asiaand diabetes was chargeable for around 0.75 million deaths in South Asia (2021) [5]. In this section we are providing epidemiological data of top three countries (India, Pakistan, Bangladesh).

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Presently, India holds a prominent place on the worldwide diabetes epidemiological picture, as it is home to about 74 million diabetic population, in the worldwide as well as this is most populated country in South Asia [6]. Diabetes epidemiologic and causes in Pakistan have a unique mix of risk factors. Strong gene-environment interactions, as well as in-utero reprogramming in the setting of low birth weight and gestational diabetes, are the primary factors to Pakistan's high diabetes prevalence.

Around 33 million people were suffering from diabetes in Pakistan [7,9]. Incidence of diabetes increased in both the urban and rural populations of Bangladesh, according the recent study (IDF 10th edition) 13 million people were having diabetes in Bangladesh in 2021 [8,9]. Country wise population distribution in South-Asia has been shown in table 1and figure 1.

Table.1.
country wise population distribution rank in south-asia [3].

Country	Population in January 2023	Rank
Total South-Asia population	Around 2 billion	N/A
India	1.38 billion	1
Pakistan	22 million	2
Bangladesh	16.5 million	3
Iran	8.4 million	4
Afghanistan	3.8 million	5
Nepal	3 million	6
Shri-Lanka	2.2 million	7
Bhutan	0.7 million	8
Maldives	0.5 million	9

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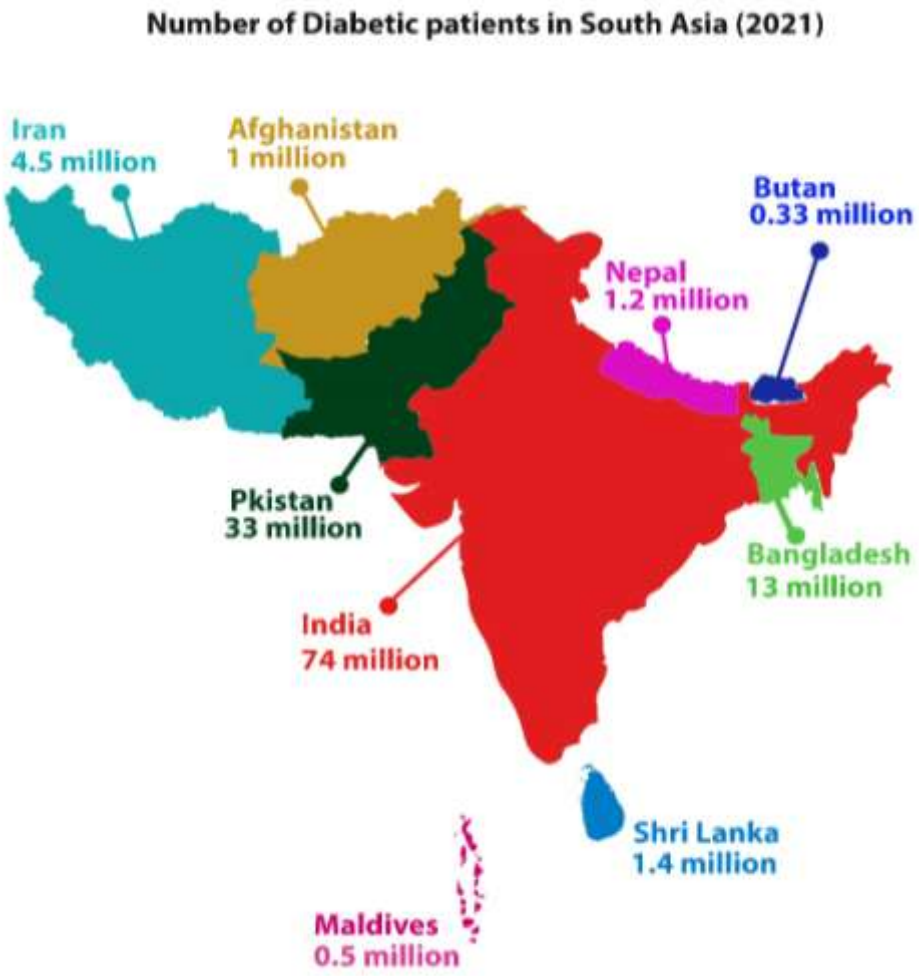

Figure.1 number of diabetic patients in south asia (2021)

IV. DIABETES IN SOUTH-ASIA

This section gave a brief description of South-Asian diabetic conditions and the other variables that contribute to the rise in diabetes prevalence. South Asians are up to six times more likely than the overall population to have diabetes because of poorer diabetes control, putting them at a higher risk of major health problems, even non diabetic population are three times more likely to experience cardiovascular disease; however, when associated with type 2 diabetes, this risk increases even more, particularly for those aged 20 to 60 [9].

South Asians are at a higher risk because of Diet and obesity, Genetics, Muscles and fat metabolism, there is a need to aware this population about diabetes because it may become pandemic worldwide in future. According to A. Mishra et al., Up to several decades, the Asians people's lifestyles were remained as a labourer, as well as uneducated. At that time most of the people were eating inexpensive meals. That's why the latest economic, nutritional, and other lifestyle changes have made people more sensitive to diabetes and cardiovascular disease [10]. Diabetes has been emerging as a serious issue for public health across most of South Asia since the 1990s [11].

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During this time, South Asian population had seen significant demographic, epidemiologic and social changes, with significant implications for public health, Asian people are ethnically diverse, with disparities in demographic, cultural, and socioeconomic traits. They are also having variation in genetic and environmental factors from other populations such as western countries, that may influence diabetogenesis also be diverse. Diabetes develops at a younger age in Asian communities than in white communities, therefore morbidity and mortality with the illness is high. These consequences are very prevalent among young Asians [12].Diabetes prevalence estimates are high throughout all Asian countries and are anticipated to rise further over the next decades. This rise can be seen high with developing nations with the economic expansion growth in upcoming years [13]. According to Gupta M,*et al.,* south-Asians' population have high LDL (low density lipoprotein) cholesterol levels to the other population. Unlike other known risk factors, the incidence of diabetes in South Asians are generally greater than in other regions because of their lifestyle changes [14,15].

South Asians has higher amounts of visceral obesity and insulin resistance at comparable BMI levels with Europeans. BMI alone may increase the real risk diabetes among South Asians. According to McKeigue PM, et al., study diabetes was four to three times as prominent in South Asians than in Europeans. In South Asian, insulin levels were significantly greater in the fasting period and also higher 2 hours after a carbohydrate load than in European men. These differences persisted following stratification according to plasma glucose level. Fasting insulin sensitivity significantly lower in women than in males, although the South Asian-European disparities were comparable in magnitude[16]. This statement may be helpful to understand the prevalence of diabetes in south Asia, however it is an old study.

V. Status Of Diabetes In Asian Countries

South Asia having mainly nine nations with different population density. All nations having a variety of data sources and studies conducted by different authors, which were analysed to establish diabetes projections mainly in adult populations. In this paper we used some studies from them, to explain what are the actual facts to regular increasing in diabetic patients. In South-Asia, India has a large population density, the population wise distribution explained in table no 1 with their rank.

According to A Ramachandran, the first national epidemiological study undertaken by the ICMR in the 1970s discovered that the incidence of diabetes was about 3.0% in urban areas, and that this was not considered a big concern in the country [6]. But in 2021 study conducted by IDF, that shows the prevalence of diabetes in India have increased with around 9.7% that is three times higher [9]. Diabetes incidence is regularly increasing not in urban populations, but also in rural communities as a result of the urbanization and lifestyle characteristics, according to studies conducted in various areas of India [17].

India is the world's second most populated country, with a wide range of caste, culture, environment, socioeconomic status, lifestyle, and dietary traditions. Although numerous infectious and parasitic illnesses are successfully treated in India. But non-communicable disease is growing more prevalent, putting an immense strain on the health-care system. the economic progress is made in India, but the country's enormous population makes effective poverty reduction, malnutrition reduction, and universal health care supply problematic [18]. Various investigations from throughout the world revealed that Indians had a greater frequency of hyperglycaemia than other cultural groups, which was linked to environmental factors such as prosperity, which hid a hereditary inclination for diabetes [19]. The Indian population has access to effective screening procedures and anti-diabetic drugs, similar health advantages are not always available to rural individuals [20].

According to Anjana RM et al., there is an unequal distribution of health resources between urban and rural communities and it may be complicated in term of good food awareness. Food instability, ignorance, inadequate sanitation, as well as the predominance of transmitted illnesses could have a role, implying that policymakers and local governments may be weakening and under prioritizing the rising threat of diabetes [21]. According to Shera AS et al., female with normal glucose tolerance, diabetes, and IGT had a greater frequency of central adiposity than male (rural = 31.4%, urban = 28.5%) in Pakistan. In comparison to men, ladies urban and rural community were a triple higher increased risk of hypertension and diabetes in the Pakistan [22]. Diabetes is prevalent in Pakistan, as previously documented in three studies done in the provinces of Sindh, Baluchistan, and North West Frontier Province (NWFP), with 13.9%, 8.6%, and 11.7% total prevalence of type 2 diabetes, respectively, comparable to other Asian populations [23].

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According to Mohiuddin AK, Bangladesh is an under-developing nation where 75% of the people lives in rural areas, as a result, people have limited access to medical care, as 26% of rural specialists are unemployed and almost 40% are missing. Although official documentation suggests that 80% of the community has access to cheap basic pharmaceuticals, there is ample evidence of a shortage of vital drugs in government healthcare institutions [24]. In comparison to trained medical professionals (approximately 10%-20%), over 45% of rural people seek medical advice from unqualified health workers such as medical assistants, midwives, village physicians, and community health workers. According to the IDF 10th edition in 2021, approximately 13 million of people in Bangladesh were suffering from diabetes and more the 0.75 million people died due to diabetes. According to various studies, 25% of rural and more than 20% of urban people seemed to be overweight; 27% of rural and 28% of urban people were centrally obese (measured by waist-hip ratio); nearly 47% of rural and well almost 52% of urban participants were smoked and 12% of rural and nearly 29% of urban people did not do any type physical work in Bangladesh this may also consider as factor of increasing risk of diabetes this country [25,26]. In 2021, nearly 4.5 million adult Iranians were diagnosed with diabetes; almost a quarter of this group had not previously been diagnosed, and it is anticipated that 9.2 million Iranians will have diabetes by 2030 [27]. This steady and large rise in diabetes prevalence reflects Iran's high disease burden, particularly when diabetes-related co-morbidities are included [28].

Afghanistan seems to be a growing country with a rising diabetes incidence. According to International Diabetes Foundation projections, around 1 million people have diabetes, while between one and two million diabetes incidents have remain undiagnosed in 2021 [29]. According to the United Nations Human Development Index, Afghanistan ranks 168th out of 189 countries and regions. This country is ill-equipped to deal with this epidemic due to a lack of diabetic health care facilities. Unfortunately, no formal countrywide survey has been carried out in Afghanistan to evaluate the prevalence of diabetes [30]. Now a days Nepal is experiencing as a double burden of illnesses as it transitions from a greater incidence of infectious diseases to a larger prevalence of noncommunicable diseases. Diabetes already have become more common in the year 2021 [31].

IDF 10th edition were reported that Nepal have more than 1 million diabetic patients in 2021. Family history, urban location, advanced age, increased BMI, bad lifestyle, poor diet and hypertension were discovered to be important causes behind the rising diabetes incidence in Nepal [32]. According to the IDF 10th edition in Shri-Lanka around 1.4 million people were suffering from diabetes with 11.3% prevalence rate which was very high in terms of population in 2021 [9]. Advancing age, duration of diabetes, and poor glycaemic control are well-known risk factors for diabetes' rising incidence, whereas retinopathy, hypertension, obesity, hyperlipidaemia, and micro-albuminuria may also be identified as possible risk factors [33].Based on IDF 10th edition reports Bhutan has 10.4% prevalence rate of diabetes and made significant progress over the past decade in terms of reaching major healthcare outcomes and health-related Development Goals; nonetheless, but there is a growing trend of noncommunicable illnesses, particularly diabetes mellitus [34]. Diabetes is expected to affect roughly 0.35 million people in Bhutan, and a countrywide STEP-wise surveillance (STEPS) study done in 2014 discovered that 6.4% had elevated fasting blood glucose [35]. Region of residence and socioeconomic position are also important factors in diabetes incidence in Maldives, even within a single nation, it is useless when studying the secular trend in diabetes prevalence [36]. The Maldives is a South-Asian Island country positioned in the Arabian Sea of the Indian Ocean. By the end of 2022, the total population was 0.5 million [37,3].

VI. Management Of Diabetes

According to Glasgow RE, management of diabetes is divided into three major categories, that are outlined as follows:

- Socio-environmental and situational elements, which have received minimal scientific attention.
- Interactions between patients and health care providers, self-management practices, and short-term physiological results all contribute to a continual cycle of care feedback.
- Long-term health and quality-of-life outcomes, including the significant societal expenses of managing diabetic complications [38].

Diabetes patients are unable to adequately utilize glucose owing to insulin shortage or absence. As a result, fat and protein reserves are mobilized to provide energy, and losing weight, weakness, and lethargy emerge unless insulin is enhanced or replaced to manage blood glucose [39]. Glycaemic management requires careful control and monitoring of blood sugar levels by food and glucose-lowering medications (insulin and/or oral drugs)[40]. If the doctors and nurses provide appropriate instructions for glucose levels for diabetic patients with advanced illness, it is likely to enhance the patient's quality of life It would also be helpful to investigate the problems of relatives and carers who care for people who have diabetes and advanced terminal disease.Obesity is a prevalent diabetes condition, with more than 60% of obese people having diabetes. Dieticians should provide appropriate information about diet to the diabetic patient. It will help to improve the patient's quality of life [41].

VII. CONCLUSION

South Asian countries are confronted extraordinary health problem. A consequence of rapid economic transformation, physical activity habits and changes in nutrition these are major issues in rural regions as well as in urban areas to increase the prevalence of diabetes. Successful management and prevention in the south Asian community are need. also improve the unhealthy food habits and lack of physical activity. Should guarantee affordable access to high-quality health care for those who are in need, by the healthcare experts. Currently more than 537 people suffering from diabetes and it will reach up to 783 million as per IDF 10th edition reported. South-Asia is most populated continent in the world it means a greater number of diabetic patients are there and it will be more in future because of the variety of factors which were discussed in this manuscript. In this manuscript we were discussed almost every aspect, which involves diabetic incidence in south-Asia.

Conflicts of interest: There are no conflicts of interest.

Financial support and sponsorship: "No funding received".

Ethical statement: "No human or animal studies involved or no ethical statement for the study".

REFERENCES

[1] https://www.diabetesatlas.org/data/en.

[2] https://www.worldatlas.com/articles/continents-by-population.html

[3] www.worldometers.info/world-population/southern-asia-population.

[4] https://diabetesatlas.org/upload/resources/material/20200302_133351_IDFATLAS9e-final-web.pdf.

[5] Federation, I. D. "IDF Diabetes Atlas, Tenth." (2021).

[6] Ramachandran A. Epidemiology of diabetes in India—three decades of research. J Assoc Physicians India. 2005 Jan 29;53(34):34-8.

[7] Hakeem R, Fawwad A. Diabetes in Pakistan: epidemiology, determinants and prevention. Journal of diabetology. 2010 Sep 1;1(3):3.

[8] Biswas T, Islam AS, Rawal LB, Islam SM. Increasing prevalence of diabetes in Bangladesh: a scoping review. Public health. 2016 Sep 1; 138:4-11.

[9] https://www.diabetes.co.uk/south-asian.

[10] Misra A, Ramchandran A, Jayawardena R, Shrivastava U, Snehalatha C. Diabetes in south Asians. Diabetic Medicine. 2014 Oct;31(10):1153-62.

[11] Hills AP, Arena R, Khunti K, Yajnik CS, Jayawardena R, Henry CJ, Street SJ, Soares MJ, Misra A. Epidemiology and determinants of type 2 diabetes in south Asia. The lancet Diabetes & endocrinology. 2018 Dec 1;6(12):966-78.

[12] Ramachandran A, Ma RC, Snehalatha C. Diabetes in asia. The Lancet. 2010 Jan 30;375(9712):408-18.

[13] Shaw JE, Sicree R. Epidemiology of type 2 diabetes. Type 2 Diabetes Mellitus. 2008:

[14] Gupta M, Singh N, Verma S. South Asians and cardiovascular risk: what clinicians should know. Circulation. 2006 Jun 27;113(25): e924-9.

[15] Banerji MA, Faridi N, Atluri R, Chaiken RL, Lebovitz HE. Body composition, visceral fat, leptin, and insulin resistance in Asian Indian men. The journal of clinical endocrinology & metabolism. 1999 Jan 1;84(1):137-44.

[16] McKeigue PM, Shah B, Marmot MG. Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in South Asians. The Lancet. 1991 Feb 16;337(8738):382-6.

[17] Ramachandran A, Snehalatha C. Current scenario of diabetes in India. Journal of diabetes. 2009 Mar;1(1):18-28.

[18] Planning Commission of India.Population: A Human And Social Development. 2005. Available from: http://planningcommission.nic.in (accessed 20 March 2008).

[19] King H, Aubert RE, Herman WH. Global burden of diabetes, 1995–2025: prevalence, numerical estimates, and projections. Diabetes care. 1998 Sep 1;21(9):1414-31.

[20] Kaveeshwar SA, Cornwall J. The current state of diabetes mellitus in India. The Australasian medical journal. 2014;7(1):45.

[21] Anjana RM, Ali MK, Pradeepa R, Deepa M, Datta M, Unnikrishnan R, Rema M, Mohan V. The need for obtaining accurate nationwide estimates of diabetes prevalence in India-rationale for a national study on diabetes. The Indian journal of medical research. 2011 Apr;133(4):369.

[22] Shera AS, Jawad F, Maqsood A. Prevalence of diabetes in Pakistan. Diabetes research and clinical practice. 2007 May 1;76(2):219-22.

[23] Khan IA, King H. Pakistan National Diabetes Survey prevalence of glucose intolerance and associated factors in North West Frontier Province (NVVFP) of Pakistan. JPMA-Journal of the Pakistan Medical Association, OPMA. 1999; 49:206.

[24] Mohiuddin AK. Diabetes fact: Bangladesh perspective. International Journal of Diabetes Research. 2019 Feb 24;2(1):14-20.

[25] Talman P, Duong T, Vucic S, Mathers S, Venkatesh S, Henderson R, Rowe D, Schultz D, Edis R, Needham M, Macdonnell R. Identification and outcomes of clinical phenotypes in amyotrophic lateral sclerosis/motor neuron disease: Australian National Motor Neuron Disease observational cohort. BMJ open. 2016 Sep 1;6(9):e012054.

[26] Akter J, Shahjahan M, Hossain S, Chowdhury HA, Ahmed KR, Fatema K, Ara BR, Ali L. Determinants of overweight and obesity among Bangladeshi diabetic women of reproductive age. BMC Research Notes. 2014 Dec;7(1):1-6.

[27] Esteghamati A, Larijani B, Aghajani MH, Ghaemi F, Kermanchi J, Shahrami A, Saadat M, Esfahani EN, Ganji M, Noshad S, Khajeh E. Diabetes in Iran: prospective analysis from first nationwide diabetes report of National Program for Prevention and Control of Diabetes (NPPCD-2016). Scientific reports. 2017 Oct 18;7(1):1-0.

[28] Javanbakht M, Mashayekhi A, Baradaran HR, Haghdoost A, Afshin A. Projection of diabetes population size and associated economic burden through 2030 in Iran: evidence from micro-simulation Markov model and Bayesian meta-analysis. PloS one. 2015 Jul 22;10(7): e0132505.

[29] Akhtar S, Nasir JA, Javed A, Saleem M, Sajjad S, Khan M, Wadood A, Saeed K. The prevalence of diabetes in Afghanistan: a systematic review and meta-analysis. BMC public health. 2021 Dec;21(1):1-8.

[30] Mbaku JM. UNITED NATIONS DEVELOPMENT PROGRAM." Human Development Report, 1991" (Book Review). Journal of Third World Studies. 1993 Apr 1;10(1):613.

[31] Gyawali B, Sharma R, Neupane D, Mishra SR, van Teijlingen E, Kallestrup P. Prevalence of type 2 diabetes in Nepal: a systematic review and meta-analysis from 2000 to 2014. Global health action. 2015 Dec 1;8(1):29088.

[32] Jayawardena R, Ranasinghe P, Byrne NM, Soares MJ, Katulanda P, Hills AP. Prevalence and trends of the diabetes epidemic in South Asia: a systematic review and meta-analysis. BMC public health. 2012 Dec;12(1):1-1.

[33] Katulanda P, Ranasinghe P, Jayawardena R, Constantine GR, Sheriff MH, Matthews DR. The prevalence, patterns and predictors of diabetic peripheral neuropathy in a developing country. Diabetology & metabolic syndrome. 2012 Dec;4(1):1-8.

[34] Bhutan Annual Health Bulletin 2013. http://www.health.gov.bt/wp-content/ uploads/ftps/annual-health-bulletins/ahb2013/ahbContent2013.pdf. Accessed on 7th March 2014.

[35] Chhetri VI, Pokhrel HP, Zangmo LU, DZED L. Diabetes case burden at central regional referral hospital, Gelephu, Bhutan; a retrospective study. Int Healthcare Res J. 2020; 4:38-43.

[36] Jayawardena R, Ranasinghe P, Byrne NM, Soares MJ, Katulanda P, Hills AP. Prevalence and trends of the diabetes epidemic in South Asia: a systematic review and meta-analysis. BMC public health. 2012 Dec;12(1):1-1.

[37] Majeed NA, Shiruhana SA, Maniam J, Eigenmann CA, Siyan A, Ogle GD. Incidence, prevalence and mortality of diabetes in children and adolescents aged under 20 years in the Republic of Maldives. Journal of Paediatrics and Child Health. 2020 May;56(5):746-50.

[38] Glasgow RE. A practical model of diabetes management and education. Diabetes care. 1995 Jan 1;18(1):117-26.

[39] Quinn K, Hudson P, Dunning T. Diabetes management in patients receiving palliative care. Journal of pain and symptom management. 2006 Sep 1;32(3):275-86.

[40] Dunning T. Care of People with Diabetes: A Manual of Nursing. Malden: Blackwell Publishing. 2003.

[41] Mooradian AD. Cardiovascular disease in type 2 diabetes mellitus: current management guidelines. Archives of internal medicine. 2003 Jan 13;163(1):33-40.

Address for Correspondence:

Arvind Kumar

Assistant Professor, Department of Pharmacy, RBMI Group of institutions, Bareilly, Uttar Pradesh, India.

e-mail: arvindmehtar008@gmail.com

Ph: +91-9462037862