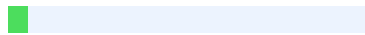




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"Exploring the Awareness and Perspectives on Diabetes Mellitus Complications Among Patients in Chosen Hospitals Agra: A Step Towards Crafting a Self-Instructional Module."

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Abstract:

Diabetes is characterized by a disruption in carbohydrate metabolism, leading to disturbances in fat and protein metabolism. The disease is linked to irregularities in the production and action of insulin. This results in hyperglycemia, which can lead to acute and chronic complications, including diabetic ketoacidosis, CAD, CVA, kidney and eye disorders, and nerve-related issues.

Methods: The research employed a descriptive survey approach to assess knowledge and attitude among diabetic patients in selected hospitals in Agra. Purposive sampling was used with structured interviews to gather data from 60 diabetic patients.

Results: The majority of respondents (43.3%) fell within the age groups of 40-49 and 50-59 years, with 61% being male. Education-wise, 31.6% had primary education, and 66.66% identified as Hindu. 93.3% were married, 73.3% resided in urban areas, and 56.6% had been diagnosed with diabetes for 1-3 years. Health checkups occurred twice a year for 43.3% of respondents, and 53.3% reported a family history of diabetes mellitus.

Interpretation and Conclusion: The study revealed that 56.66% of subjects had moderately adequate knowledge, 25% had adequate knowledge, and 18.33% had inadequate knowledge. In terms of attitude, 51.66% exhibited a favorable attitude, 26.66% had a highly favorable attitude, and 21.66% displayed an unfavorable attitude. Analysis using the chi-square test indicated no significant association between knowledge and attitude with selected socio-demographic variables at the $p < 0.05$ level of significance.

KEYWORDS: Culminate, attitude, Metabolism, diabetes mellitus,

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INTRODUCTION:

Diabetes mellitus, also known as 'Madhumeham,' has been recognized for centuries as an ailment associated with sweetness. Individuals with diabetes experience elevated levels of sugar in both blood and urine. Despite over 30 million people worldwide being affected by diabetes, not everyone is well-informed about the nature of this condition.

The global demographic transition, coupled with urbanization and industrialization, has brought about significant lifestyle changes, with developing countries experiencing a more pronounced impact due to their rapid pace of growth. This transition has resulted in a shift in disease patterns, with non-communicable or lifestyle-related diseases such as diabetes, obesity, cardiovascular diseases, and cancer taking precedence over communicable diseases.

Effectively managing diabetes poses challenges not only to medical and nursing professionals but also to the patients themselves. Given the chronic nature of diabetes, most patients must adhere to a lifelong treatment regimen. The focus is typically on controlling the condition through meticulous monitoring of blood glucose and urine sugar, medication adherence, and adjustments to dietary habits.

Both forms of diabetes ultimately lead to elevated blood sugar levels, a condition known as

hyperglycaemia. Prolonged hyperglycaemia can result in damage to various organs, including the retina (leading to diabetic retinopathy), the kidneys (a leading cause of diabetic nephropathy and kidney failure), the nerves (contributing to diabetic neuropathy and a leading cause of foot and leg amputation), and blood vessels.

NEED FOR THE STUDY :

We are currently facing a widespread diabetes mellitus epidemic, and India is recognized as the global epicenter of this condition. A staggering one-fifth of the world's diabetic population, amounting to 285 million individuals, resides in India. Recent discussions at the IDF conference revealed that India boasts approximately 58 million diabetic cases, surpassing China's 43 million. These numbers are anticipated to surge by 50 percent over the next two decades. For every diagnosed diabetic patient, there is an undiagnosed counterpart, with almost 50 percent of patients being asymptomatic. Raising awareness about this disease is crucial to encourage high-risk individuals to undergo regular follow-ups.

Diabetic complications typically manifest 12-15 years after the onset of diabetes, and alarmingly, 15-25 percent of patients already experience varying degrees of complications at the time of diagnosis. This can be attributed to the fact that by the time diabetes is diagnosed, the patient has endured some level of glucose intolerance for an average of six to eight years. These complications often result in organ dysfunction and damage.

Health workers play a crucial role in the treatment of diabetes, as it is a chronic disease requiring lifelong management. The emphasis is typically on tight control of the condition through a disciplined treatment regimen. Diabetes mellitus stands as a leading cause of heart disease, stroke, adult blindness, and non-traumatic lower limb amputations.

Individuals with diabetes face at least a twofold risk of developing coronary artery disease, and more than 65 percent also suffer from hypertension. Diabetic retinopathy is the primary

cause of blindness in adults aged 30-65 in developed countries, while diabetic neuropathy is an early and common complication, contributing to 14 percent of all deaths in diabetic patients and 25 percent of deaths in those under 30 due to renal failure from diabetic nephropathy.

Over 1.1 billion people in India are at risk of developing type 2 diabetes, a condition associated with high blood sugar resulting from factors such as obesity, stress, and genetics, often leading to severe consequences like blindness and amputation. The medical and financial impact of diabetes is considerable, with 27 million of the 150 million diabetics worldwide residing in India. WHO estimates suggest that this number may rise to 57.5 million by 2025. Regional prevalence varies, with southern India reporting the highest incidence at 13.3%, followed by Kolkata at 11.7%, northern India at 11.6% (Delhi), and western India at 9.3% (Mumbai).

OBJECTIVES OF THE STUDY:

- 1) Evaluate the extent of understanding regarding complications associated with diabetes mellitus among individuals diagnosed with the condition.
- 2) Examine the outlook and disposition concerning the complications of diabetes mellitus among patients grappling with the disease.
- 3) Devise and furnish a self-instructional module aimed at enhancing knowledge regarding complications linked to diabetes mellitus.
- 4) Investigate the correlation between the depth of awareness and attitudes concerning diabetes mellitus complications with specific socio-demographic factors.

OPERATIONAL DEFINITIONS:

- 1) Knowledge: This study pertains to the understanding that diabetic patients possess regarding the significance and potential complications associated with diabetes mellitus.

2) Attitude: Within the context of this research, attitude encompasses the viewpoints, beliefs, and responses expressed by diabetic patients concerning the complications associated with diabetes mellitus.

3) Diabetes Mellitus: For the purposes of this study, diabetes mellitus is defined as a clinical syndrome ¹¹ characterized by elevated blood glucose levels due to either an absolute or relative deficiency in insulin secretion or utilization, encompassing both Type I and Type II diabetes.

4) Individuals with Diabetes: In this investigation, individuals with diabetes refer to patients diagnosed with either Type I or Type II diabetes, found in both the outpatient and inpatient departments of hospitals in Bijapur.

5) Complications of Diabetes Mellitus: The complications of diabetes mellitus explored in this study include diabetic foot issues, diabetic retinopathy, diabetic nephropathy, diabetic neuropathy, and gastro paresis.

6) Self-Instructional Module: Within the confines of this research, a self-instructional module denotes a designed tool aimed at providing fundamental information about the complications of diabetes mellitus, developed by the researcher.

ASSUMPTIONS:

1. Diabetes mellitus stands out as a widespread and economically burdensome chronic health condition. Managing diabetes and its associated complications incurs substantial financial costs.
2. Patients are expected to acquire a thorough understanding of the complications associated with diabetes mellitus.
3. Patients are anticipated to foster a favorable attitude towards the complications linked to

diabetes mellitus.

DELIMITATIONS:

The research is constrained to:

1. Individuals diagnosed with diabetes mellitus.
2. Patients receiving care within designated healthcare facilities in Bijapur, Karnataka.
3. The study encompasses a sample size of 60 individuals diagnosed with diabetes.

REVIEW OF LITERATURE:

1) Research on the understanding and perspectives of complications associated with diabetes mellitus. A cross-sectional survey was conducted utilizing a structured questionnaire to evaluate the awareness of diabetes, its treatment, and complications among 101 diabetic patients attending the integrated medical college in Ludhiana. The study included 67 males (66.3%) and 34 females (33.7%). Among the participants, 90 had type 2 diabetes and 11 had type 1 diabetes. Approximately 50.5% believed diabetes to be incurable, while 46.5% thought it could be prevented. A significant 71.3% lacked knowledge about the risk factors for diabetes development. Regarding the prevention of diabetes complications, only 63.3% took regular care of their feet. Notably, 57.4% knew that diabetes commonly leads to non-traumatic lower limb amputations. The study identified serious knowledge gaps, particularly among women, even among those who had been diabetic for an extended period.

2) An investigation ⁸ was carried out to assess the knowledge, attitude, and practices of type 2 diabetic patients. Out of the 300 participants, 46% demonstrated an understanding of diabetes pathophysiology, while nearly 50% were aware of diabetes complications. Encouragingly, a majority expressed belief in self-care.

3) A cross-sectional survey in a resettlement colony of Chandigarh examined the knowledge and self-care practices of 60 diabetics aged 20 years and above. Results

revealed that 60% believed diabetics should consume whatever is cooked in the family. While 48% of diabetics knew that sweets and fatty foods should be avoided, only 18.3% were actively avoiding them. Genital hygiene was maintained by 51.7%, and foot care through regular washing was reported by 63.3%. Blood sugar monitoring was poor (46.7%), and only three knew and continued self-testing of urine. Oral anti-diabetic drug compliance stood at 62.9%.

4) A descriptive research design was employed to conduct an awareness program on diabetes mellitus, involving 50 randomly selected diabetic patients. Results revealed that 10 male patients experienced major complications without awareness of when to seek follow-up.

5) A cross-sectional descriptive survey involving 1073 diabetic patients in Pakistan explored skin care knowledge, attitude, and practices. Findings indicated that only 14% were aware of skin manifestations in diabetes. A significant portion preferred traditional healers for skin treatment, and a notable percentage lacked knowledge about the connection between diabetes mellitus and skin complications.

METHODOLOGY:

Research approach:

Research Approach and Design:

The chosen research approach guides data collection, analysis, and potential conclusions. Given the study's nature and objectives, an evaluative research approach was deemed suitable. The research design employed was a descriptive survey, aligning with the study's purpose, approach, and variables.

Variables:

- Dependent variable: Knowledge and attitude regarding complications of diabetes mellitus.
- Independent variable: Self-instructional module on complications of diabetes mellitus.

Setting:

The study was conducted in hospitals selected based on participant availability and

feasibility. The chosen hospitals were Mudhol Hospital Bijapur, Government Civil Hospital Bijapur, and Al-Nabi Hospital Bijapur.

Population and Sample:

The population comprised diabetic patients in selected hospitals Agra. The sample included 60 diabetic patients from the same hospitals, chosen through purposive sampling.

Sampling Technique:

Purposive sampling was employed, ensuring the inclusion of participants meeting specific criteria.

Criteria for Sample Selection:

The sampling frame, developed by the researcher, included both inclusion and exclusion criteria.

Tool Development:

Data collection involved using a self-administered questionnaire, developed after an extensive literature review and expert discussions. The questionnaire comprised three parts.

Section I: Socio-demographic Data (10 items):

Collecting information on age, gender, religion, marital status, area of residence, education, duration of illness, frequency of health checkup, family history of diabetes, and the source of health information.

Section II: Structured Knowledge Questionnaire (20 multiple-choice questions):

Assessing knowledge on complications of diabetes mellitus. Each question had one correct answer among three incorrect responses. Scores were assigned based on correctness: Adequate knowledge (>75%), Moderately adequate knowledge (50-74%), Inadequate knowledge (1-49%).

Section III: Structured Attitude Scale (20 statements):

Evaluating attitudes toward complications of diabetes mellitus using a 5-point scale (strongly agree, agree, undecided, disagree, strongly disagree). Scoring considered both positive and negative statements.

These tools collectively aimed to comprehensively gauge the knowledge and attitudes of diabetic patients, ensuring a holistic understanding of the complications associated with diabetes mellitus.

Type of statement

- 7 Strongly Agree
- Agree
- Undecided
- Disagree
- Strongly Disagree

Positive statement

- 5
- 4
- 3
- 2
- 1

Negative statement

- 1
- 2
- 3
- 4
- 5

Section IV: Development of the Self-Instructional Module (SIM):

The creation of the self-instructional module was undertaken by the researcher through a thorough examination of existing literature and consultations with experts. The SIM

provides foundational information on the complications associated with diabetes mellitus.

Blueprint Preparation:

A blueprint was formulated, outlining a structured questionnaire that served as the basis for developing items. This blueprint illustrated the allocation of items across different content areas. The structured knowledge questionnaire comprised three domains: Knowledge, Comprehension, and Application.

Tool Validation:

Validity:

Validity is a multifaceted concept, encompassing the overall robustness of the study's evidence—whether the findings are compelling, convincing, and well-founded.

The developed instrument, along with the objectives, operational definitions, blueprint, and scoring key, was presented to ten experts, including eight nurse educators, one statistician, and a doctor, for content validation. Their suggestions were incorporated, leading to the final valid tool.

Pilot Study:

The pilot study, a scaled-down version or trial run, was conducted in a different population with similar characteristics before the main study. Conducted with prior permission, participants were briefed on the topic, assured of confidentiality, and data were collected from six individuals. The SIM was administered on the same day. The tool and SIM demonstrated reliability, feasibility, and practicability. Data analysis involved descriptive and inferential statistics.

Tool Reliability:

The tool's reliability was determined using the split-half method. Administered to six subjects, the reliability of the Split-Half Test was assessed using Karl Pearson correlation coefficient formula. The resulting r value of 0.86 for knowledge and attitude indicated the tool's reliability. Finalization occurred with the consensus of all experts.

Data Collection Process:

Prior permission was secured from relevant authorities before commencing data collection. On average, 7-8 participants were purposively selected each day. The SIM was administered after each data collection session.

Data Analysis Plan:

Descriptive and inferential statistics were employed for data analysis based on the study's objectives and hypotheses. A master data sheet was prepared by the investigator for comparative analysis.

Protection of Human Rights:

The study proceeded after receiving approval from the Dissertation Committee of the college. Permissions were obtained from respective hospitals, and written consent was acquired from each participant before data collection. Participants were assured of the confidentiality of their information.

RESULTS:

Key Findings of the Study:

Socio-Demographic Characteristics of Respondents:

The study revealed notable insights into the socio-demographic profile of the respondents. The majority of participants, constituting 43.3%, fell within the age range of 40-49 years, while an equivalent percentage was observed in the 50-59 age group (Group 1). In terms of gender distribution, 61.6% of the respondents were males (Group 2). Regarding educational background, 31.60% had received primary education (Group 3).

Religious affiliation showed that 66.6% of the participants identified as Hindu (Group 4), and a significant 93.3% were married (Group 5). The urban population was represented by 73.3% of the respondents (Group 7). When examining the duration of illness, 56.66% fell within the 1-3 year range (Group 8), and the most common frequency of health checkups was twice a year for 41.6% of the respondents (Group 9).

Family history of diabetes mellitus was prevalent among 53.3% of participants (Group 10), with friends and neighbors being the primary source of health information for 50% of the respondents (Group 10).

Section II: Assessment of knowledge on complications of diabetes mellitus among diabetic patients.

Table-2.1: Frequency distribution knowledge on complications of diabetes mellitus among diabetic patients. n=60

Sl. No

Knowledge

Score

No of Respondents

No (f)

%

1

Inadequate

1-49%

11

18.3

2

Moderately adequate

50-74%

34

56.6

3

Adequate

>75%

15

25

Table 2 reveals that 25% of the patients possessed satisfactory knowledge about diabetes mellitus complications, while 56.6% demonstrated a moderately adequate understanding, and 18.3% had insufficient knowledge.

In Table 2.2, various parameters such as maximum statements, maximum score, range, mean, standard deviation, and mean percentage are presented, reflecting the level of knowledge among diabetic patients.

For diabetic patients, the maximum number of statements, maximum score, and knowledge score range are 20, 20, and 6-16, respectively. The mean score, standard deviation, and mean percentage of knowledge stand at 60.66, 10, and 64, respectively.

Table – 2.2: Mean, SD and Mean percentage of knowledge on complications of diabetes mellitus among diabetic patients.

Sl. No

Domain

Maximum Statement

Maximum Score

Range

Mean

Standard Deviation

Mean%

1

Knowledge Score

20

20

6-16

60.66

10.0

64

Section III: Assessment of Attitude on complications of diabetes mellitus among diabetic patients.

Table-3.1: Frequency distribution of Attitude on complications of diabetes mellitus among diabetic patients. n=60

Sl. No

Attitude

Score

No of

Respondents

No (f)

%

1

Unfavorable attitude

1-49%

13

21.66

2

Favorable attitude

50-74%

31

51.66

3

Most favorable attitude

>75%

16

26.66

The table 3.1 depicts that the 21.66 % diabetic patients had unfavorable attitude, 51.66% had favorable attitude and 26.66 % had most favorable attitude on complications of diabetes mellitus.

Table – 3.2: Mean, SD and Mean percentage of Attitude on complications of diabetes mellitus among diabetic patients. n=60

Sl. No

Domain

Maximum Statement

Maximum

Score

Range

Mean

Standard

Deviation

Mean%

1

Attitude Score

20

100

34-92

60.06

6.9

60.16

The provided table outlines key metrics related to the attitudes of diabetic patients, encompassing maximum statements, maximum score, range, ¹² mean, standard deviation, and mean percentage. Specifically, the attitude scale for diabetic patients consisted of 20 statements with a maximum achievable score of 100. The calculated mean attitude score is 60.06, accompanied by a standard deviation of 6.9 and a mean percentage of 60.16.

Table – 3.3: Correlation between knowledge and attitude on complications of diabetes mellitus among diabetic patients. n=60

Sl. No

Domain

Mean

SD

Mean%

Correlation value

1

Knowledge

60.66

10

64

0.53

2

Attitude

60.06

6.93

60.16

The provided table presents the mean scores, standard deviations, and mean percentages for the knowledge and attitude levels observed among diabetic patients. Specifically, the mean score for knowledge is 60.66, with a standard deviation of 10 and a mean percentage of 64. Likewise, the mean score for attitude is 60.06, with a standard deviation of 6.9 and a mean percentage of 60.16. The correlation between knowledge and attitude strategies is 0.53, signifying statistical significance with $p < 0.05$.

Section IV: Association of Demographic Variables with Knowledge and Attitude Regarding Diabetes Mellitus Complications.

Association between Knowledge and Demographic Variables in Diabetic Patients:

No significant association was found between knowledge of diabetes mellitus complications and demographic variables such as age, gender, religion, marital status, duration of illness, frequency of health checkups, family history of diabetes mellitus, and the source of health information. However, a notable association was observed with education level and area of residence.

Association between Attitude and Demographic Variables:

No significant association was identified between attitude towards complications of diabetes mellitus and demographic variables like age, gender, religion, area of residence, duration of illness, frequency of health checkups, and the source of health information. Nevertheless, a significant association was noted with education level, marital status, and family history of diabetes mellitus.

DISCUSSION:

The primary aim of this investigation was to assess the knowledge and attitudes regarding complications associated with diabetes mellitus among diabetic patients in specific hospitals located in Agra. To achieve these objectives, a descriptive survey approach was employed, utilizing purposive sampling to select the study participants. Data were collected from 60 diabetic patients at selected hospitals, Agra, The collection instrument used was a structured knowledge and attitude scale.

Description of the socio-demographic characteristics of the sample:

Demographic variables were characterized in terms of their frequency and percentage distribution. The results indicated that 43.3% (26) of participants fell within the age groups of 40-49 years and 50-59 years. Among the subjects, 61.6% (37) were male, 31.6% (19) had primary education, 66.6% (40) identified as Hindu, 93.3% (56) were married, 73.3% (44) resided in urban areas, and 56.66% (34) had a 1-3 year duration of illness.

Additionally, 41.6% (25) reported having health checkups twice a year, 53.3% (32) had a family history of diabetes mellitus, and 50% (30) received information from their family and relatives.

Assessment of knowledge on complications of diabetes mellitus among diabetic patients:

The mean knowledge score on complications of diabetes mellitus was 60.66, indicating a moderately adequate level of knowledge. This finding contrasts with a study from Ludhiana, which reported moderately adequate knowledge among diabetic patients. In this study, 60.06% of patients demonstrated moderately adequate knowledge regarding complications of diabetes mellitus, with encouraging findings related to self-care.

Assessment of attitude on **1 complications of diabetes mellitus among diabetic patients:**

The mean attitude score on complications of diabetes mellitus was 60.06, signifying a

favorable attitude. The majority of subjects (51.66%) exhibited a favorable attitude. This result contrasts with another study that indicated only 14% of male subjects were aware of skin complications in diabetes, and the majority relied on traditional healers for skin treatment.

Association between ¹ knowledge of complications of diabetes mellitus and selected socio-demographic variables:

The study identified a significant association between patients' knowledge and selected demographic variables such as education and area of residence at the 0.05 significance level. However, variables such as age, gender, religion, marital status, duration of illness, frequency of health checkup, family history of diabetes mellitus, and source of health information were not significant at the 0.05 level.

Association between attitudes on complications of diabetes mellitus and selected socio-demographic variables:

The findings revealed a significant association between patients' attitudes and selected demographic variables such as education, marital ⁴ status, and family history of diabetes mellitus at the 0.05 significance level. On the other hand, age, gender, religion, area of residence, duration of illness, frequency of health checkup, and source of health information were not significant at the 0.05 level. In summary, ¹³ there was a significant association between attitudes and selected demographic variables.

CONCLUSION:

Based on the study findings, the following conclusions were drawn. The majority of participants (43.3%) fell within the 40-49 age group, with an equivalent percentage in the 50-59 age group. A significant proportion (61.6%) were male, and 31.6% had primary education. The majority identified as Hindu (66.6%), and 93.3% were married. Additionally, 73.3% resided in urban areas, 56.66% had a 1-3 year illness duration, and 41.6%

underwent health check-ups twice a year. Family history of diabetes mellitus was reported by 53.3%, and friends and neighbours served as the primary health information source for 50%.

The study uncovered a noteworthy association between knowledge of diabetes mellitus complications and certain socio-demographic variables, including education and area of residence (significant at 0.05 levels). Conversely, variables such as age, gender, religion, marital status, illness duration, health check-up frequency, family history, and information source were not significant at the 0.05 level.

Similarly, the study found a significant association between attitudes toward diabetes mellitus complications and demographic variables such as education, marital status, and family history (significant at 0.05 levels). Conversely, age, gender, religion, residence area, illness duration, health checkup frequency, and information source were not significant at the 0.05 level.

Implications for Nursing Practice:

- Nurses in hospitals play a crucial role in providing healthcare, necessitating a focus on patient and family needs, knowledge assessment, and attitude improvement.
- Interventions should be tailored based on study outcomes, with a focus on goal anticipation and implementation of need-based interventions.
- Nurses are responsible for providing psychological support and reassurance, understanding the patient's role, and actively participating in patient care.

Implications for Nursing Education:

- Nursing curricula should integrate comprehensive sections on patient knowledge and attitudes, with an emphasis on training nurses to effectively engage with diabetic patients.
- Future nurses need preparation to assess and identify diabetes mellitus, implementing necessary interventions and reassurance.

Implications for Nursing Administration:

- Nursing administrators should raise public awareness about diabetes mellitus

complications and the importance of immediate care.

- Health education programs should be organized to inform the vulnerable population about preventing and understanding diabetes mellitus complications.

- Continuing education programs for nursing personnel should focus on diabetes mellitus complications.

Implications for Nursing Research:

- Future research studies should explore knowledge and attitude in diabetic patients across various domains.

- The current study identified moderate knowledge levels and positive attitudes, warranting further research exploration.

Study Limitations:

- The reliability of the tool should be tested on a larger population.

- Time constraints prevented long-term follow-up in the study.

RECOMMENDATIONS:

In light of the outcomes obtained from the current investigation, several suggestions are put forth for future research:

1. Initiate a quasi-experimental study to evaluate the efficacy of the Self-Instructional Module (SIM).

2. Undertake a comparative study to assess knowledge and attitudes among individuals without diabetes mellitus.

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The global demographic transition, coupled with urbanization and industrialization, has brought about significant lifestyle changes, with developing countries experiencing a more pronounced impact due to their rapid pace of growth. This transition has resulted in a shift in disease patterns, with non-communicable or lifestyle-related diseases such as diabetes, obesity, cardiovascular diseases, and cancer taking precedence over communicable diseases.

Effectively managing diabetes poses challenges not only to medical and nursing professionals but also to the patients themselves. Given the chronic nature of diabetes, most patients must adhere to a lifelong treatment regimen. The focus is typically on controlling the condition through meticulous monitoring of blood glucose and urine sugar, medication adherence, and adjustments to dietary habits.

Both forms of diabetes ultimately lead to elevated blood sugar levels, a condition known as hyperglycaemia. Prolonged hyperglycaemia can result in damage to various organs, including the retina (leading to diabetic retinopathy), the kidneys (a leading cause of diabetic nephropathy and kidney failure), the nerves (contributing to diabetic neuropathy and a leading cause of foot and leg amputation), and blood vessels.

NEED FOR THE STUDY :

We are currently facing a widespread diabetes mellitus epidemic, and India is recognized as the global epicenter of this condition. A staggering one-fifth of the world's diabetic population, amounting to 285 million individuals, resides in India. Recent discussions at the IDF conference revealed that India boasts approximately 58 million diabetic cases,

surpassing China's 43 million. These numbers are anticipated to surge by 50 percent over the next two decades. For every diagnosed diabetic patient, there is an undiagnosed counterpart, with almost 50 percent of patients being asymptomatic. Raising awareness about this disease is crucial to encourage high-risk individuals to undergo regular follow-ups.

Diabetic complications typically manifest 12-15 years after the onset of diabetes, and alarmingly, 15-25 percent of patients already experience varying degrees of complications at the time of diagnosis. This can be attributed to the fact that by the time diabetes is diagnosed, the patient has endured some level of glucose intolerance for an average of six to eight years. These complications often result in organ dysfunction and damage.

Health workers play a crucial role in the treatment of diabetes, as it is a chronic disease requiring lifelong management. The emphasis is typically on tight control of the condition through a disciplined treatment regimen. Diabetes mellitus stands as a leading cause of heart disease, stroke, adult blindness, and non-traumatic lower limb amputations.

Individuals with diabetes face at least a twofold risk of developing coronary artery disease, and more than 65 percent also suffer from hypertension. Diabetic retinopathy is the primary cause of blindness in adults aged 30-65 in developed countries, while diabetic neuropathy is an early and common complication, contributing to 14 percent of all deaths in diabetic patients and 25 percent of deaths in those under 30 due to renal failure from diabetic nephropathy.

Over 1.1 billion people in India are at risk of developing type 2 diabetes, a condition associated with high blood sugar resulting from factors such as obesity, stress, and genetics, often leading to severe consequences like blindness and amputation. The medical and financial impact of diabetes is considerable, with 27 million of the 150 million diabetics worldwide residing in India. WHO estimates suggest that this number may rise to

57.5 million by 2025. Regional prevalence varies, with southern India reporting the highest incidence at 13.3%, followed by Kolkata at 11.7%, northern India at 11.6% (Delhi), and western India at 9.3% (Mumbai).

OBJECTIVES OF THE STUDY:

- 1) Evaluate the extent of understanding regarding complications associated with diabetes mellitus among individuals diagnosed with the condition.
- 2) Examine the outlook and disposition concerning the **1 complications of diabetes mellitus among patients** grappling with the disease.
- 3) Devise and furnish a self-instructional module aimed at enhancing knowledge regarding complications linked to diabetes mellitus.
- 4) Investigate the correlation between the depth of awareness and attitudes concerning diabetes mellitus complications with specific socio-demographic factors.

OPERATIONAL DEFINITIONS:

- 1) Knowledge: This study pertains to the understanding that diabetic patients possess regarding the significance and potential complications associated with diabetes mellitus.
- 2) Attitude: Within the context of this research, attitude encompasses the viewpoints, beliefs, and responses expressed by diabetic patients concerning the complications associated with diabetes mellitus.
- 3) Diabetes Mellitus: For the purposes of this study, diabetes mellitus is defined as a clinical syndrome **11 characterized by elevated blood glucose levels** due to either an absolute or relative deficiency in insulin secretion or utilization, encompassing both Type I and Type II diabetes.
- 4) Individuals with Diabetes: In this investigation, individuals with diabetes refer to patients

diagnosed with either Type I or Type II diabetes, found in both the outpatient and inpatient departments of hospitals in Bijapur.

5) Complications of Diabetes Mellitus: The complications of diabetes mellitus explored in this study include diabetic foot issues, diabetic retinopathy, diabetic nephropathy, diabetic neuropathy, and gastro paresis.

6) Self-Instructional Module: Within the confines of this research, a self-instructional module denotes a designed tool aimed at providing fundamental information ¹ about the complications of diabetes mellitus, developed by the researcher.

ASSUMPTIONS:

1. Diabetes mellitus stands out as a widespread and economically burdensome chronic health condition. Managing diabetes and its associated complications incurs substantial financial costs.
2. Patients are expected to acquire a thorough understanding of the complications associated with diabetes mellitus.
3. Patients are anticipated to foster a favorable attitude towards the complications linked to diabetes mellitus.

DELIMITATIONS:

The research is constrained to:

1. Individuals diagnosed with diabetes mellitus.
2. Patients receiving care within designated healthcare facilities in Bijapur, Karnataka.
3. The study encompasses a sample size of 60 individuals diagnosed with diabetes.

REVIEW OF LITERATURE:

- 1) Research on the understanding and perspectives of complications associated with

diabetes mellitus. A cross-sectional survey was conducted utilizing a structured questionnaire to evaluate the awareness of diabetes, its treatment, and complications among 101 diabetic patients attending the integrated medical college in Ludhiana. The study included 67 males (66.3%) and 34 females (33.7%). Among the participants, 90 had type 2 diabetes and 11 had type 1 diabetes. Approximately 50.5% believed diabetes to be incurable, while 46.5% thought it could be prevented. A significant 71.3% lacked knowledge about the risk factors for diabetes development. Regarding the prevention of diabetes complications, only 63.3% took regular care of their feet. Notably, 57.4% knew that diabetes commonly leads to non-traumatic lower limb amputations. The study identified serious knowledge gaps, particularly among women, even among those who had been diabetic for an extended period.

2) An investigation ⁸ was carried out to assess the knowledge, attitude, and practices of type 2 diabetic patients. Out of the 300 participants, 46% demonstrated an understanding of diabetes pathophysiology, while nearly 50% were aware of diabetes complications. Encouragingly, a majority expressed belief in self-care.

3) A cross-sectional survey ² in a resettlement colony of Chandigarh examined the knowledge and self-care practices of 60 diabetics aged 20 years and above. Results revealed that 60% believed diabetics should consume whatever is cooked in the family. While 48 diabetics knew that sweets and fatty foods should be avoided, only 18.3% were actively avoiding them. Genital hygiene was maintained by 51.7%, and foot care through regular washing was reported by 63.3%. Blood sugar monitoring was poor (46.7%), and only three knew and continued self-testing of urine. Oral anti-diabetic drug compliance stood at 62.9%.

4) A descriptive research design was employed to conduct an awareness program on diabetes mellitus, involving 50 randomly selected diabetic patients. Results revealed that 10 male patients experienced major complications without awareness of when to seek follow-up.

5) A cross-sectional descriptive survey involving 1073 diabetic patients in Pakistan explored skin care knowledge, attitude, and practices. Findings indicated that only 14% were aware of skin manifestations in diabetes. A significant portion preferred traditional healers for skin treatment, and a notable percentage lacked knowledge about the connection between diabetes mellitus and skin complications.

METHODOLOGY:

Research approach:

Research Approach and Design:

The chosen research approach guides data collection, analysis, and potential conclusions. Given the study's nature and objectives, an evaluative research approach was deemed suitable. The research design employed was a descriptive survey, aligning with the study's purpose, approach, and variables.

Variables:

- Dependent variable: Knowledge and attitude regarding complications of diabetes mellitus.
- Independent variable: Self-instructional module on complications of diabetes mellitus.

Setting:

The study was conducted in hospitals selected based on participant availability and feasibility. The chosen hospitals were Mudhol Hospital Bijapur, Government Civil Hospital Bijapur, and Al-Nabi Hospital Bijapur.

Population and Sample:

The population comprised diabetic patients in selected hospitals Agra. The sample included 60 diabetic patients from the same hospitals, chosen through purposive sampling.

Sampling Technique:

Purposive sampling was employed, ensuring the inclusion of participants meeting specific criteria.

Criteria for Sample Selection:

The sampling frame, developed by the researcher, included both inclusion and exclusion

criteria.

Tool Development:

Data collection involved using a self-administered questionnaire, developed after an extensive literature review and expert discussions. The questionnaire comprised three parts.

Section I: Socio-demographic Data (10 items):

Collecting information on age, gender, religion, marital status, area of residence, education, duration of illness, frequency of health checkup, family history of diabetes, and the source of health information.

Section II: Structured Knowledge Questionnaire (20 multiple-choice questions):

Assessing knowledge on complications of diabetes mellitus. Each question had one correct answer among three incorrect responses. Scores were assigned based on correctness: Adequate knowledge (>75%), Moderately adequate knowledge (50-74%), Inadequate knowledge (1-49%).

Section III: Structured Attitude Scale (20 statements):

Evaluating attitudes toward complications of diabetes mellitus using a 5-point scale (strongly agree, agree, undecided, disagree, strongly disagree). Scoring considered both positive and negative statements.

These tools collectively aimed to comprehensively gauge the knowledge and attitudes of diabetic patients, ensuring a holistic understanding of the complications associated with diabetes mellitus.

Type of statement

- 7 Strongly Agree
- Agree
- Undecided
- Disagree
- Strongly Disagree

Positive statement

5

4

3

2

1

Negative statement

1

2

3

4

5

Section IV: Development of the Self-Instructional Module (SIM):

The creation of the self-instructional module was undertaken by the researcher through a thorough examination of existing literature and consultations with experts. The SIM provides foundational information on the complications associated with diabetes mellitus.

Blueprint Preparation:

A blueprint was formulated, outlining a structured questionnaire that served as the basis for developing items. This blueprint illustrated the allocation of items across different content areas. The structured knowledge questionnaire comprised three domains: Knowledge, Comprehension, and Application.

Tool Validation:

Validity:

Validity is a multifaceted concept, encompassing the overall robustness of the study's evidence—whether the findings are compelling, convincing, and well-founded.

The developed instrument, along with the objectives, operational definitions, blueprint, and scoring key, was presented to ten experts, including eight nurse educators, one statistician, and a doctor, for content validation. Their suggestions were incorporated, leading to the final valid tool.

Pilot Study:

The pilot study, a scaled-down version or trial run, was conducted in a different population with similar characteristics before the main study. Conducted with prior permission, participants were briefed on the topic, assured of confidentiality, and data were collected from six individuals. The SIM was administered on the same day. The tool and SIM demonstrated reliability, feasibility, and practicability. Data analysis involved descriptive and inferential statistics.

Tool Reliability:

The tool's reliability was determined using the split-half method. Administered to six subjects, the reliability of the Split-Half Test was assessed using Karl Pearson correlation coefficient formula. The resulting r value of 0.86 for knowledge and attitude indicated the tool's reliability. Finalization occurred with the consensus of all experts.

Data Collection Process:

Prior permission was secured from relevant authorities before commencing data collection. On average, 7-8 participants were purposively selected each day. The SIM was administered after each data collection session.

Data Analysis Plan:

Descriptive and inferential statistics were employed for data analysis based on the study's objectives and hypotheses. A master data sheet was prepared by the investigator for comparative analysis.

Protection of Human Rights:

The study proceeded after receiving approval from the Dissertation Committee of the college. Permissions were obtained from respective hospitals, and written consent was

acquired from each participant before data collection. Participants were assured of the confidentiality of their information.

RESULTS:

Key Findings of the Study:

1 Socio-Demographic Characteristics of Respondents:

The study revealed notable insights into the socio-demographic profile of the respondents. The majority of participants, constituting 43.3%, fell within the age range of 40-49 years, while an equivalent percentage was observed in the 50-59 age group (Group 1). In terms of gender distribution, 61.6% of the respondents were males (Group 2). Regarding educational background, 31.60% had received primary education (Group 3).

Religious affiliation showed that 66.6% of the participants identified as Hindu (Group 4), and a significant 93.3% were married (Group 5). The urban population was represented by 73.3% of the respondents (Group 7). When examining the duration of illness, 56.66% fell within the 1-3 year range (Group 8), and the most common frequency of health checkups was twice a year for 41.6% of the respondents (Group 9).

Family history of diabetes mellitus was prevalent among 53.3% of participants (Group 10), with friends and neighbors being the primary source of health information for 50% of the respondents (Group 10).

Section II: Assessment of knowledge on 1 complications of diabetes mellitus among diabetic patients.

Table-2.1: Frequency distribution knowledge on complications of diabetes mellitus among diabetic patients. n=60

Sl. No

| Knowledge | Score | No of Respondents | No (f) | % |
|---------------------|--------|-------------------|--------|---|
| Inadequate | 1-49% | 11 | 18.3 | 2 |
| Moderately adequate | 50-74% | 34 | 56.6 | 3 |
| Adequate | >75% | 15 | 25 | |

Table 2 reveals that 25% of the patients possessed satisfactory knowledge about diabetes mellitus complications, while 56.6% demonstrated a moderately adequate understanding, and 18.3% had insufficient knowledge.

In Table 2.2, various parameters such as maximum statements, maximum score, range, mean, standard deviation, and mean percentage are presented, reflecting the level of knowledge among diabetic patients.

For diabetic patients, the maximum number of statements, maximum score, and knowledge score range are 20, 20, and 6-16, respectively. The mean score, standard deviation, and mean percentage of knowledge stand at 60.66, 10, and 64, respectively.

Table – 2.2: Mean, SD and Mean percentage of knowledge on 1 complications of diabetes mellitus among diabetic patients.

| |
|--------------------|
| Sl. No |
| Domain |
| Maximum Statement |
| Maximum Score |
| Range |
| Mean |
| Standard Deviation |
| Mean% |
| 1 |
| Knowledge Score |
| 20 |
| 20 |
| 6-16 |
| 60.66 |
| 10.0 |
| 64 |

Section III: Assessment of Attitude on complications of diabetes mellitus among diabetic patients.

Table-3.1: Frequency distribution of Attitude on complications of diabetes mellitus among

diabetic patients. n=60

Sl. No

Attitude

Score

No of

Respondents

No (f)

%

1

Unfavorable attitude

1-49%

13

21.66

2

Favorable attitude

50-74%

31

51.66

3

Most favorable attitude

>75%

16

26.66

The table 3.1 depicts that the 21.66 % diabetic patients had unfavorable attitude, 51.66% had favorable attitude and 26.66 % had most favorable attitude on complications of diabetes mellitus.

Table – 3.2: Mean, SD and Mean percentage of Attitude on 1 complications of diabetes mellitus among diabetic patients. n=60

| Sl. No | Domain | Maximum Statement | Maximum Score | Range | Mean | Standard Deviation | Mean% |
|--------|----------------|-------------------|---------------|-------|-------|--------------------|-------|
| 1 | Attitude Score | 20 | 100 | 34-92 | 60.06 | 6.9 | 60.16 |

The provided table outlines key metrics related to the attitudes of diabetic patients, encompassing maximum statements, maximum score, range, 12 mean, standard deviation, and mean percentage. Specifically, the attitude scale for diabetic patients consisted of 20 statements with a maximum achievable score of 100. The calculated mean attitude score is 60.06, accompanied by a standard deviation of 6.9 and a mean

percentage of 60.16.

Table – 3.3: Correlation between knowledge and attitude on 1 complications of diabetes mellitus among diabetic patients. n=60

| | |
|-------------------|--|
| Sl. No | |
| Domain | |
| Mean | |
| SD | |
| Mean% | |
| Correlation value | |
| 1 | |
| Knowledge | |
| 60.66 | |
| 10 | |
| 64 | |
| 0.53 | |
| 2 | |
| Attitude | |
| 60.06 | |
| 6.93 | |
| 60.16 | |

The provided table presents the mean scores, standard deviations, and mean percentages for the knowledge and attitude levels observed among diabetic patients. Specifically, the mean score for knowledge is 60.66, with a standard deviation of 10 and a mean percentage of 64. Likewise, the mean score for attitude is 60.06, with a standard deviation of 6.9 and a mean percentage of 60.16. The correlation between knowledge and attitude

strategies is 0.53, signifying statistical significance with $p < 0.05$.

Section IV: Association of Demographic Variables with Knowledge and Attitude Regarding Diabetes Mellitus Complications.

Association between Knowledge and Demographic Variables in Diabetic Patients:

No significant association was found between knowledge of diabetes mellitus complications and demographic variables such as age, gender, religion, marital status, duration of illness, frequency of health checkups, family history of diabetes mellitus, and the source of health information. However, a notable association was observed with education level and area of residence.

Association between Attitude and Demographic Variables:

No significant association was identified between attitude towards complications of diabetes mellitus and demographic variables like age, gender, religion, area of residence, duration of illness, frequency of health checkups, and the source of health information.

Nevertheless, a significant association was noted with education level, marital ⁴ status, and family history of diabetes mellitus.

DISCUSSION:

The primary aim of this investigation was to assess the knowledge and attitudes regarding complications associated with diabetes mellitus among diabetic patients in specific hospitals located in Agra. To achieve these objectives, a descriptive survey approach was employed, utilizing purposive sampling to select the study participants. Data were collected from 60 diabetic patients at selected hospitals, Agra. The collection instrument used was a structured knowledge and attitude scale.

Description of the socio-demographic characteristics of the sample:

Demographic variables were characterized in terms of their frequency and percentage distribution. The results indicated that 43.3% (26) of participants fell within the age groups of 40-49 years and 50-59 years. Among the subjects, 61.6% (37) were male, 31.6% (19) had primary education, 66.6% (40) identified as Hindu, 93.3% (56) were married, 73.3% (44) resided in urban areas, and 56.66% (34) had a 1-3 year duration of illness.

Additionally, 41.6% (25) reported having health checkups twice a year, 53.3% (32) had a family history of diabetes mellitus, and 50% (30) received information from their family and relatives.

Assessment of knowledge on complications of diabetes mellitus among diabetic patients:

The mean knowledge score on complications of diabetes mellitus was 60.66, indicating a moderately adequate level of knowledge. This finding contrasts with a study from Ludhiana, which reported moderately adequate knowledge among diabetic patients. In this study, 60.06% of patients demonstrated moderately adequate knowledge regarding complications of diabetes mellitus, with encouraging findings related to self-care.

Assessment of attitude on complications of diabetes mellitus among diabetic patients:

The mean attitude score on complications of diabetes mellitus was 60.06, signifying a favorable attitude. The majority of subjects (51.66%) exhibited a favorable attitude. This result contrasts with another study that indicated only 14% of male subjects were aware of skin complications in diabetes, and the majority relied on traditional healers for skin treatment.

Association between knowledge of complications of diabetes mellitus and selected socio-demographic variables:

The study identified a significant association between patients' knowledge and selected demographic variables such as education and area of residence at the 0.05 significance

level. However, variables such as age, gender, religion, marital status, duration of illness, frequency of health checkup, family history of diabetes mellitus, and source of health information were not significant at the 0.05 level.

Association between attitudes on complications of diabetes mellitus and selected socio-demographic variables:

The findings revealed a significant association between patients' attitudes and selected demographic variables such as education, marital ⁴ status, and family history of diabetes mellitus at the 0.05 significance level. On the other hand, age, gender, religion, area of residence, duration of illness, frequency of health checkup, and source of health information were not significant at the 0.05 level. In summary, ¹³ there was a significant association between attitudes and selected demographic variables.

CONCLUSION:

Based on the study findings, the following conclusions were drawn. The majority of participants (43.3%) fell within the 40-49 age group, with an equivalent percentage in the 50-59 age group. A significant proportion (61.6%) were male, and 31.6% had primary education. The majority identified as Hindu (66.6%), and 93.3% were married. Additionally, 73.3% resided in urban areas, 56.66% had a 1-3 year illness duration, and 41.6% underwent health check-ups twice a year. Family history of diabetes mellitus was reported by 53.3%, and friends and neighbours served as the primary health information source for 50%.

The study uncovered a noteworthy association between knowledge of diabetes mellitus complications and certain socio-demographic variables, including education and area of residence (significant at 0.05 levels). Conversely, variables such as age, gender, religion, marital status, illness duration, health check-up frequency, family history, and information source were not significant at the 0.05 level.

Similarly, the study found a significant association between attitudes toward diabetes mellitus complications and demographic variables such as education, marital status, and family history (significant at 0.05 levels). Conversely, age, gender, religion, residence area, illness duration, health checkup frequency, and information source were not significant at the 0.05 level.

Implications for Nursing Practice:

- Nurses in hospitals play a crucial role in providing healthcare, necessitating a focus on patient and family needs, knowledge assessment, and attitude improvement.
- Interventions should be tailored based on study outcomes, with a focus on goal anticipation and implementation of need-based interventions.
- Nurses are responsible for providing psychological support and reassurance, understanding the patient's role, and actively participating in patient care.

Implications for Nursing Education:

- Nursing curricula should integrate comprehensive sections on patient knowledge and attitudes, with an emphasis on training nurses to effectively engage with diabetic patients.
- Future nurses need preparation to assess and identify diabetes mellitus, implementing necessary interventions and reassurance.

Implications for Nursing Administration:

- Nursing administrators should raise public awareness about diabetes mellitus complications and the importance of immediate care.
- Health education programs should be organized to inform the vulnerable population about preventing and understanding diabetes mellitus complications.
- Continuing education programs for nursing personnel should focus on diabetes mellitus complications.

Implications for Nursing Research:

- Future research studies should explore knowledge and attitude in diabetic patients across various domains.
- The current study identified moderate knowledge levels and positive attitudes, warranting

further research exploration.

Study Limitations:

- The reliability of the tool should be tested on a larger population.
- Time constraints prevented long-term follow-up in the study.

RECOMMENDATIONS:

In light of the outcomes obtained from the current investigation, several suggestions are put forth for future research:

1. Initiate a quasi-experimental study to evaluate the efficacy of the Self-Instructional Module (SIM).
2. Undertake a comparative study to assess knowledge and attitudes among individuals without diabetes mellitus.

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