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Knowledge and Attitude towards Diabetes Mellitus among Elderly Residents of Rural Areas of Punjab

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Abstract

Diabetes mellitus is a chronic metabolic disorder with increasing prevalence, particularly among the elderly. Early detection, proper management, and lifestyle modifications are essential, all of which depend significantly on the knowledge and attitude of individuals, especially older adults who are at higher risk. This study aims to assess the level of knowledge and attitude regarding diabetes mellitus among elderly residents of selected community areas. A total of 60 subjects aged more than 60 years, selected community areas of Rajpura, Punjab were enrolled in the study using non-probability convenience sampling. Data were collected using a self-structured questionnaire and a 5-point Likert scale. Descriptive and inferential statistics, including Chi-square test and Pearson correlation, were used for data analysis. Statistical software was used for descriptive and inferential analysis. The majority of participants (80%) had good knowledge, and 58.3% exhibited a very positive attitude towards diabetes mellitus. A strong positive correlation (r = 0.822) was found between knowledge and attitude. Significant associations were observed between knowledge and variables such as age, education, occupation, diabetes

status, and duration of diabetes. Similarly, attitude was significantly associated with age, education, occupation, and diabetes status. The findings highlight that elderly residents in Rajpura generally possess good knowledge and positive attitudes towards diabetes mellitus. Educational status and personal experience with the disease significantly influence their understanding and perception. Targeted community-based awareness programs can further enhance diabetes management among the elderly

Keywords: Diabetes Mellitus, Elderly, Knowledge, Attitude, Descriptive Study, Rajpura, Community Health

Introduction

Diabetes mellitus is one of the most prevalent non-communicable diseases globally and poses a serious public health challenge. It is a long-term metabolic disease marked by high blood sugar levels brought on by deficiencies in either the action or secretion of insulin, or both.[1] The International Diabetes Federation (IDF) estimates that by 2045, there will be 783 million adults worldwide who have diabetes, up from around 537 million in 2021.[2] Developing nations, such as India, which is sometimes referred to as the "diabetes capital of the world," account for a sizable percentage of these cases. An estimated 77 million individuals in India alone have diabetes, and many of them are 60 years of age or older.[3] Diabetes mellitus is influenced by a combination of modifiable and non-modifiable risk factors. Among the non-modifiable risk factors, increasing age plays a significant role, with individuals over 45 years being at higher risk.[4] On the other hand, several modifiable lifestyle-related factors greatly contribute to the onset of diabetes. Obesity, especially central obesity (abdominal fat), is a major risk factor due to its association with insulin resistance.[5] Diabetes is largely caused by age-related variables in older people, including decreased physical activity, unhealthy eating patterns, and increased body fat.[5] Chronic stress, family history, genetic predisposition, and the use of specific drugs are other frequent factors.[6] The three Ps—polyuria, polyphagia, and polydipsia—as well as weight loss, vaginal infection, hazy eyesight, and poor wound healing are the primary indicators and symptoms of diabetes mellitus Type II.[7] Physical inactivity further worsens this condition; as regular exercise improves insulin sensitivity.[8] Diabetes care presents particular challenges for the elderly. Effective self-care techniques are hampered by age-related problems such as limited vision, decreased mobility, cognitive loss, and social isolation. Financial limitations, the existence of several co-morbidities, and polypharmacy frequently make it more difficult to follow treatment plans.[9] In this particular field, community health nurses play a critical role. As advocates, educators, and counsellors, nurses can identified misconceptions and knowledge gaps in the senior population and address them through family engagement, health education, and counselling. Screening efforts, community awareness campaigns, and routine home visits can all aid in the early detection of undiagnosed cases. However, determining the community's baseline knowledge and attitudes regarding the illness is essential for the success of any teaching effort.[10]

Material and Method

A descriptive research approach with a non-experimental research design was employed to assess knowledge and attitude toward diabetes mellitus among elderly residents of selected community areas of Rajpura, Punjab. The study was conducted in village Jhansla and Jangpura Punjab. The target population consisted of 60 residents

aged 60 years and above, selected using a non-probability convenience sampling technique. Inclusion criteria specified participants who were permanent residents of village Jhansla and Jangpura and available during data collection, while individuals who were unwilling to participate were excluded from the study. The key research variable was the knowledge and attitude towards diabetes mellitus among elderly. To assess this variable, a self-structured knowledge and attitude tool, was utilized. The tool consisted of three sections: a socio-demographic profile, questionnaire and 5- point Likert scale. The reliability of self- structured questionnaire and 5-point Likert's scale was calculated using KR-20 Formula (Kuder-Richardson Formula 20) and Cronbach's alpha. The calculated value of KP was 0.71 and α was 0.78~0.85. Ethical clearance was obtained from the Head of Institution, and informed consent was taken from all participants. Confidentiality and anonymity were ensured throughout the study. Data analysis was performed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Chi-square test) to determine associations between demographic variables and factors influencing diabetes mellitus among elderly.

Result

The result showed most participants were between 66 and 75 years of age, with a slightly higher proportion of females (51.7%) compared to males (48.3%). A significant number of participants had no formal education (23.3%) or had only primary-level schooling (26.7%). Many were homemakers (30%) or farmers (23.3%), while others were employed in government jobs (33.3%) or unemployed (13.3%). A considerable proportion depended on family support for their daily needs. The knowledge assessment revealed that 80% of participants had good knowledge regarding diabetes mellitus, while 15% demonstrated moderate knowledge, and only 5% had poor knowledge. The study further revealed that a notable number of elderly participants lacked awareness about key aspects of diabetes management, including the importance of glycemic control, dietary adjustments, regular physical activity, and adherence to prescribed medications. Myths and misconceptions, such as the belief that diabetes could be cured through fasting or alternative remedies, were still prevalent among some individuals. Attitudinal analysis showed that 58.3% of participants had a very positive outlook and were willing to follow medical advice, while 25% held a generally positive attitude. However, 11.7% showed a neutral or passive stance, and a small portion (5%) exhibited negative perceptions or resignation toward the disease. A strong positive correlation ($r = 0.822$) between knowledge and attitude was observed, suggesting that better knowledge contributes to a more proactive approach to care. Statistically significant associations were found between knowledge levels and factors such as age, education, occupation, and personal experience with diabetes ($p < 0.05$), while income and family history showed no significant link ($p > 0.05$). These findings highlight the influence of sociodemographic factors on diabetes-related awareness and behavior among the elderly.

Table 1: frequency and percentage distribution of sample characteristics (N=60)

Sn.	Parameter	Frequency(F)	Percentage (%)
1.	Age(years)		
	60–65	13	21.7
	66–70	18	30.0
	71–75	17	28.3
	Above 75	12	20.0
2.	Gender		
	Male	29	48.3
	Female	31	51.7
	Transgender/other	0	0.0
3.	Educational level		
	No formal education	14	23.3
	Primary school	16	26.7
	Secondary school	10	16.7
	Higher education	20	33.3
4.	Marital status		
	Married	47	78.3
	Unmarried	3	5.0
	Widowed	10	16.7
5.	Occupation		
	Farmer	14	23.3
	Government job	20	33.3
	Homemaker	18	30.0
	Unemployed	8	13.3
6.	Monthly income(in Rs.)		
	less than 5000	21	35.0
	5000 to 10000	4	6.7
	10000 to 15000	5	8.3
	More than 15000	30	50.0
7.	Do you have diabetes		
	Yes	33	55.0
	No	27	45.0
8.	If yes, how long have you had diabetes?	(n=33)	

	Less than 1	4	6.7
	1–5	8	13.3
	More than 5	5	8.3
	More than 10	16	26.7
9.	Family History of Diabetes:		
	Yes	26	43.3
	No	34	56.7
10.	If yes, how long they had diabetes?	(n=26)	
	Less than 1	4	6.7
	1–5	2	3.3
	More than 5	9	15.0
	More than 10	11	18.3
11.	Do you have any comorbidity other than diabetes mellitus		
	Yes	16	26.7
	No	44	73.3

Table 1 depicts that majority of participants were older adults (aged 66–75), predominantly married, with a relatively even gender distribution. A third had higher education, and income levels varied widely, though half earned more than ₹15,000 monthly. Over half had diabetes, and a significant number had a family history or comorbidities. This profile provides valuable context for healthcare planning and targeted interventions among elderly populations, especially in relation to diabetes care.

Table 2: Assessment of Knowledge of Residents Regarding Diabetes Mellitus (N=60)

Knowledge	Score	Frequency(F)	Percentage(%)
Poor	0 - 8	3	5.0
Average	9 - 17	9	15.0
Good	18 - 26	48	80.0

Table 2 Depicts that majority of participants (80.0%) had good knowledge whereas minority (5.0%) had poor knowledge regarding diabetes mellitus.

Table 3: Assessment of Attitude of elderly residents regarding diabetes mellitus (N=60)

Attitude	Score	Frequency(F)	Percentage (%)
Very positive	41- 50	35	58.3
Positive	31 - 40	15	25.0
Neutral/Moderate	21 - 30	7	11.7
Negative	11 - 20	3	5.0
Very Negative	10	0	0.0

Table 3 Shows that majority of participants (58.3%) had very positive attitude whereas minority (0.0%) had very negative attitude regarding diabetes mellitus.

Table 4: Correlation between knowledge and attitude of residents regarding diabetes mellitus

	Range	Mean ± SD	Correlation coefficient(r)
Knowledge	7 - 25	19.08 ± 3.26	0.822
Attitude	18 - 50	38.73 ± 6.91	

Table 4 Shows that knowledge score ranging 7-25 with mean ± SD 19.08 ± 3.26 and attitude score ranging 18-50 with mean ± SD 38.73 ± 6.91 regarding diabetes mellitus.

Table 5: Association of Knowledge of elderly towards diabetes mellitus with selected socio- demographic variables (N=60)

Sn.	parameter	Frequency (F)	Knowledge			p-value
			Poor (n=3)	Moderate (n=9)	Good (n=48)	
1.	Age(years)		f(%)	f(%)	f(%)	
	60–65	13	2(15.4)	5(38.5)	6(46.2)	0.001^{S}
	66–70	18	1(5.6)	4(22.2)	13(72.2)	
	71–75	17	0(0.0)	0(0.0)	17(100.0)	
	Above 75	12	0(0.0)	0(0.0)	17(100.0)	
2.	Gender					
	Male	29	1(3.4)	7(24.1)	21(72.4)	0.125^{NS}
	Female	31	2(6.5)	2(6.5)	27(87.1)	
3.	Educational level					
	No formal education	14	3(21.4)	5(35.7)	6(42.9)	0.001^{S}
	Primary school	16	0(0.0)	4(25.0)	12(75.0)	
	Secondary school	10	0(0.0)	0(0.0)	10(100.0)	
	Higher education	20	0(0.0)	0(0.0)	20(100.0)	
4.	Marital status					
	Married	47	1(2.1)	7(14.9)	39(83.0)	0.060^{N}
	Unmarried	3	1(33.3)	1(33.3)	1(33.3)	
	Widowed	10	1(10.0)	1(10.0)	8(80.0)	
5.	Occupation					
	Farmer	14	1(7.1)	4(28.6)	9(64.3)	0.044^{S}
	Government job	20	0(0.0)	0(0.0)	20(100.0)	
	Homemaker	18	2(11.1)	3(16.7)	13(72.2)	
	Unemployed	8	0(0.0)	2(25.0)	6(75.0)	

Sn.	parameter	Frequency (F)	Knowledge			p-value
			Poor (n=3)	Moderate (n=9)	Good (n=48)	
6.	Monthly income(in Rs.)		f(%)	f(%)	f(%)	
	less than 5000	21	2(9.5)	1(4.8)	18(85.7)	0.295^{NS}
	5000 to 10000	4	0(0.0)	0(0.0)	4(100.0)	
	10000 to 15000	5	0(0.0)	0(0.0)	5(100.0)	
	More than 15000	30	1(3.3)	8(26.7)	21(70.0)	
7.	Do you have diabetes					
	Yes	33	1(3.0)	2(6.1)	30(90.9)	0.038^{S}
	No	27	2(7.4)	7(25.9)	18(66.7)	
8.	If yes, how long have you had diabetes? (n=33)					
	Less than 1	4	0(0.0)	2(50.0)	2(50.0)	0.004^{S}
	1–5	8	0(0.0)	0(0.0)	8(100.0)	
	More than 5	5	1(20.0)	0(0.0)	4(80.0)	
	More than 10	16	0(0.0)	0(0.0)	16(100.0)	
9.	Family History of Diabetes:					
	Yes	26	0(0.0)	3(11.5)	23(88.5)	0.235^{NS}
	No	34	3(8.8)	6(17.6)	25(73.5)	
10.	If yes, how long they had diabetes? (n=26)					
	Less than 1	4	0(0.0)	1(25.0)	3(75.0)	0.117^{NS}
	1–5	2	0(0.0)	1(50.0)	1(50.0)	
	More than 5	9	0(0.0)	1(11.1)	8(88.9)	
	More than 10	11	0(0.0)	0(0.0)	11(100.0)	
11.	Do you have any co morbidity other than diabetes mellitus					
	Yes	16	1(6.2)	3(18.8)	12(75.0)	0.861^{NS}
	No	44	2(4.5)	6(13.6)	36(81.8)	

S- Significant($p<0.05$) NS-Non significant($p>0.05$)

Table 5 Depicts that the data shows the connection between various demographic traits and knowledge of diabetes mellitus among elderly people. There was a significant link with the age (p=0.001). This means that increasing age showed a higher percentage of good knowledge. Education (p=0.001) also related significantly to diabetes. A strong link was observed between higher education and better knowledge. All individuals with secondary or higher education had good knowledge. Occupation (p=0.044) also have significantly to diabetes. Those in government jobs showed the highest level of knowledge (100% good). Personal diabetes status (p=0.38) significance

association is there. Participants with diabetes demonstrated significantly better knowledge than those without. Additionally, Duration of diabetes (p=0.004) was also significant associations. Those with longer durations of diabetes (especially over 10 years) showed a higher level of good knowledge.

In contrast factors such as gender, income, marital status, family history, and comorbidities did not show statistically significant connections (p> 0.05). This suggests they have less knowledge of elderly on diabetes mellitus.

Table 6: Association of Attitude of elderly towards diabetes mellitus with selected socio-demographic variables N=60

Sn.	parameter	Frequency (F)	Attitude				p-value
			Very positive (n=35)	Positive (n=15)	Neutral/ Moderate (n=7)	Negative (n=3)	
1.	Age(years)		f(%)	f(%)	f(%)	f(%)	
	60–65	13	4(30.8)	2(15.4)	5(38.5)	2(15.4)	0.023^{S}
	66–70	18	10(55.6)	5(27.8)	2(11.1)	1(5.6)	
	71–75	17	11(64.7)	6(35.3)	0(0.0)	0(0.0)	
	Above 75	12	10(83.3)	2(16.7)	0(0.0)	0(0.0)	
2.	Gender						
	Male	29	16(55.2)	7(24.1)	5(17.2)	1(3.4)	0.624^{NS}
	Female	31	19(61.3)	8(25.8)	2(6.5)	2(6.5)	
3.	Educational level						
	No formal education	14	39(21.4)	3(21.4)	5(35.7)	3(21.4)	0.000^{S}
	Primary school	16	10(62.5)	4(25.0)	2(12.5)	0(0.0)	
	Secondary school	10	4(40.0)	6(60.0)	0(0.0)	0(0.0)	
	Higher education	20	18(90.0)	2(10.0)	0(0.0)	0(0.0)	
4.	Marital status						
	Married	47	29(61.7)	12(25.5)	5(10.6)	1(2.1)	0.089^{NS}
	Unmarried	3	0(0.0)	1(33.3)	1(33.3)	1(33.3)	
	Widowed	10	6(60.0)	2(20.0)	1(10.0)	1(10.0)	
5.	Occupation						
	Farmer	14	8(57.1)	2(14.3)	3(21.4)	1(7.1)	0.014^{S}
	Government job	20	12(60.0)	8(40.0)	0(0.0)	0(0.0)	
	Homemaker	18	13(72.2)	1(5.6)	2(11.1)	2(11.1)	
	Unemployed	8	2(25.0)	4(50.0)	2(25.0)	0(0.0)	

Sn.	parameter	Frequency (F)	Attitude				p-value
			Very positive (n=35)	Positive (n=15)	Neutral/ Moderate (n=7)	Negative (n=3)	
6.	Monthly income(in Rs.)		f(%)	f(%)	f(%)	f(%)	
	less than 5000	21	13(61.9)	5(23.8)	1(4.8)	2(9.5)	0.838^{NS}
	5000 to 10000	4	3(75.0)	1(25.0)	0(0.0)	0(0.0)	
	10000 to 15000	5	3(60.0)	2(40.0)	0(0.0)	0(0.0)	
	More than 15000	30	16(53.3)	7(23.3)	6(20.0)	1(3.3)	
7.	Do you have diabetes						
	Yes	33	25(75.8)	6(18.2)	1(3.0)	1(3.0)	0.010^{S}
	No	27	10(37.0)	9(33.3)	6(22.2)	2(7.4)	
8.	If yes, how long have you had diabetes? (n=33)						
	Less than 1	4	3(75.0)	0(0.0)	1(25.0)	0(0.0)	0.240^{NS}
	1–5	8	6(75.0)	2(25.0)	0(0.0)	0(0.0)	
	More than 5	5	4(80.0)	0(0.0)	0(0.0)	1(20.0)	
	More than 10	16	12(75.0)	4(25.0)	0(0.0)	0(0.0)	
9.	Family History of Diabetes:						
	Yes	26	20(76.9)	4(15.4)	2(7.7)	0(0.0)	0.073^{NS}
	No	34	15(44.1)	11(32.4)	5(14.7)	3(8.8)	
10.	If yes, how long they had diabetes? (n=26)						
	Less than 1	4	2(50.0)	1(25.0)	1(25.0)	0(0.0)	0.143^{NS}
	1–5	2	1(50.0)	0(0.0)	1(50.0)	0(0.0)	
	More than 5	9	7(7)7.8	2(22.2)	0(0.0)	0(0.0)	
	More than 10	11	10(90.0)	1(9.1)	0(0.0)	0(0.0)	
11.	Do you have any co morbidity other than diabetes mellitus						
	Yes	16	9(56.2)	4(25.0)	2(12.5)	1(6.2)	1.000^{NS}
	No	44	26(59.1)	11(25.0)	5(11.4)	2(4.5)	

S- Significant($p<0.05$) NS-Non significant($p>0.05$)

Table-6: Shows that there was significant associations between the attitude of elderly individuals toward diabetes mellitus and specific demographic variables. A statistically significant relationship was observed with age ($p = 0.023$), showing that older participants, particularly those above 70 years, were more likely to express very positive attitudes toward diabetes management. Educational level ($p = 0.000$) also played a key role-elderly individuals with secondary or higher

education showed predominantly very positive attitudes, while those without formal education demonstrated more neutral or negative perceptions. Occupation ($p = 0.014$) was another important factor. Participants employed in government jobs or working as homemakers showed more positive attitudes, whereas unemployed individuals and farmers had a higher share of moderate or negative attitudes. Furthermore, having a personal history of diabetes ($p = 0.010$) was significantly linked to better attitudes. Elderly participants diagnosed with diabetes were far more likely to exhibit positive or very positive attitudes, likely due to personal experience with the condition.

In contrast factors such as gender, income, marital status, family history, and comorbidities did not show statistically significant connections ($p > 0.05$). This suggests they have less attitude of elderly on diabetes mellitus.

Discussion

The study found that 80% of elderly participants had good knowledge of diabetes mellitus, 15% had average knowledge, and only 5% had poor knowledge. In terms of attitude, 58.3% showed a very positive attitude, 25% had a positive attitude, 11.7% were neutral, and 5% had a negative attitude. A strong positive correlation ($r = 0.822$) was found between knowledge and attitude, suggesting that better knowledge is linked to a more positive outlook on diabetes management. The mean knowledge and attitude scores were 19.08 ± 3.26 and 38.73 ± 6.91, respectively. Al-Maskari et al. (2013) in Oman found that while only 32% could correctly identify diabetes symptoms, 70% showed a positive attitude when educated by healthcare providers, emphasizing the value of interpersonal communication.[11] , Mohammadi et al. (2018) in Iran noted low knowledge levels (40%) but a fairly positive attitude (55%), especially among those with a family history of diabetes.[12] Joseph & Mathew (2019) in Kerala reported fair knowledge (45%) among the elderly, influenced by family exposure and media access, stressing the need for continuous diabetic education.[13] Nayak et al. (2020) demonstrated that structured educational programs significantly boosted both knowledge and attitude scores.[14] Mbah et al. (2020) in Nigeria linked low diabetes awareness (36.7%) to poor literacy and limited healthcare access, though over half the participants had a positive attitude.[15] Singh & Tiwari (2021) in Uttar Pradesh found only 38% had good knowledge, but 62% were willing to adopt lifestyle changes.[16] Kaur et al. (2022) in Punjab highlighted the urban-rural divide, with urban elderly showing significantly better knowledge and attitude, influenced by education and media exposure.[17] Lastly, Mesfin et al. (2024) in Ethiopia revealed that despite 65.6% having moderate knowledge, misconceptions persisted, and good preventive practices were low (35.4%), underscoring the gap between knowledge, attitude, and practice (KAP).[18] Collectively, these studies underline the urgent need for targeted, culturally appropriate, and accessible diabetes education for elderly populations worldwide. The study, which included 60 participants, found that 80% had good knowledge of diabetes mellitus, indicating a relatively high level of awareness. This may be attributed to educational background, personal or family experience with diabetes, and exposure to health programs. In contrast, Singh et al. (2019) reported only 40% with good knowledge in rural Punjab, highlighting regional disparities.[19]

Conclusion

This study evaluate the knowledge and attitude regarding diabetes mellitus among elderly individuals in selected community areas of Rajpura, District Patiala, Punjab. This study highlights that the knowledge and attitude of elderly individuals toward diabetes mellitus are influenced by factors such as age, education, occupation, and personal experience with the disease. While many showed basic awareness, deeper understanding and proactive behaviors were lacking, especially among those with limited education or no direct experience with diabetes. A strong positive correlation (r = 0.822) between knowledge and attitude emphasizes the need for targeted, elderly-friendly health education.

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