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# Prevalence of Complications and Factors Affecting It among People with Type 2 Diabetes in Rural Areas of North Iran

## Objective

This study was aimed to evaluate prevalence of complications and factors associated with it among patients with type 2 diabetes (T2D) in the rural areas of North Iran.

## Materials and methods

This was a cross-sectional, descriptive study conducted at rural areas of Golestan province, Iran. In these areas, diabetes care is provided free of cost through rural government health centers. Three hundred forty patients with T2D were included in this study by stratified random sampling method. The data was collected using a checklist from the medical records of the patients. The data were analyzed using SPSS 16 software.

## Results

Of 340 participants with T2D, 100 had some form of diabetes complications (32.5%). The majority of them were female (71%) and 9% were smokers. More than 80% of patients did not exercise at least three times a week (for 150 minutes). The most common complications of diabetes were related to decreased foot sensation (13.9%), visual impairments (7.7%),

heart complications (6.2%) and kidney complications (5.1%) (Fig. 1).

Advanced age, longer duration of T2D and history of smoking were associated with higher rate of diabetes complications and complications of diabetes in patients who smoke were 2.64 times higher than other patients (Tab. 1).

## Discussion

Similar to studies from around the world, our study found higher prevalence of diabetes complications in rural Iran [1, 2]. Age, diabetes duration and smoking were associated with increasing rate of diabetes complications.

Our study calls have important clinical implications. Patient education, improving the quality of care, adherence of government diabetes program and optimal glycemic control may help to lower complications among people with T2D in rural Iran.

Our study has many limitations. Cross-sectional design, small sample size and collection of data from records are major limiting factors. Generalization of our findings are also limited.

## Funding

This study received no financial support.

## Acknowledgements

The research team of this study would like to thank Golestan University of Medical Sciences and all the study participants for their sincere cooperation.

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Clinical Diabetology 2023, 12; 3: 211-212

DOI: 10.5603/DK.a2023.0016

Received: 1.04.2023 Accepted: 19.04.2023

Early publication date: 30.05.2023

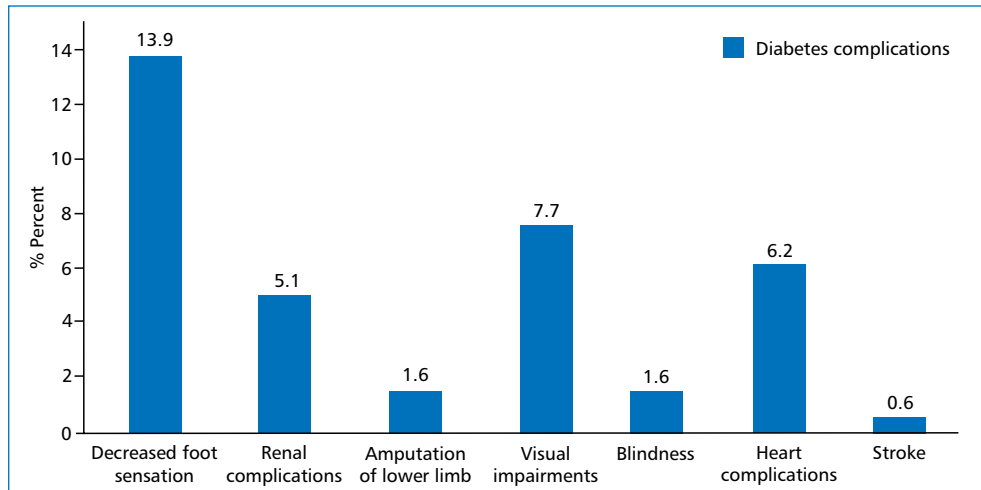


Figure 1. Frequency of Complications in Patients with Type 2 Diabetes

Table 1. Studied Variables in Relation to the Complications

Variable	Mean $\pm$ SD / Number		P-value
	Patients with complications	Patients without complications	
Age [years]	59.8 $\pm$ 9	55.6 $\pm$ 10	0.001
Family size	4.1 $\pm$ 1.6	4.5 $\pm$ 1.8	0.072
Duration of the disease [years]	8.5 $\pm$ 6	7 $\pm$ 5	0.048
Glycated hemoglobin [%]	7.9 $\pm$ 1.6	8.1 $\pm$ 1.8	0.340
Body mass index [kg/m <sup>2</sup> ]	29.2 $\pm$ 7	29.2 $\pm$ 5	0.944
Low-density lipoprotein [mg/dL]	106 $\pm$ 37	99.4 $\pm$ 35	0.140
Sex			0.233
Male	33	55	
Female	67	153	
Smoking (cigarettes, drugs)			0.002
Yes	16	13	
No	84	195	

Independent samples test was used for age, family size, duration of the disease, glycated hemoglobin, body mass index and low-density lipoprotein variables; Chi-Square Tests was used for sex and smoking variables

### Conflict of interest

None declared.

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