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Social and geographical inequalities in the choice of foot therapy as preventive care of diabetic foot ulcers: A nationwide registry study on Danish diabetes patients

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Introduction and objectives

Diabetes is a disease associated with numerous complications. One such complication is diabetic foot ulcers - a serious conduction with high costs and adverse sequelae, such as lower-extremity amputations. Therefore, international guidelines recommend that all people with diabetes should have their feet inspected at least once a year.

This study aimed at determining whether socioeconomic factors influence the frequency of foot inspections on a nationally representative sample of diabetes patients.

How diabetes causes foot ulcers

Diabetes leads to high blood sugar

Nerve damage	Infections and poor healing	Damage to blood vessels

Sores are not noticed due to neuropathy and healing is limited by the reduced blood flow

Methods

We used a nationwide registry for all Danish diabetes patients as our source of data. We estimated a Logit model for the choice determinants of diabetes-related foot inspections among the identified diabetes patients.

Results

In total, 73% of all diabetes patients fail to follow the international recommendations for annual foot inspections.

Further, the study indicates social and geographical inequality concerning diabetic foot care. Especially for ethnic minorities, people with low income and people living in rural and remote areas. The western and non-western immigrants have a 3.13% and 13.40% lower probability, respectively. The 13.40% higher probability is high considering that the average probability in the sample is approximately 25%.

Registries

The Health Insurance Service Registry
- ✓ Information on the publicly supported service of foot therapy for patients with diabetes

National Diabetes Registry
- ✓ A clinical database included all patients with diabetes in Denmark

Key points

- If not discovered and treated diabetic foot ulcers can have serious sequelae including lower-extremity amputation
- Guidelines recommend that people with diabetes should have their feet inspected at least once a year
- In Denmark 73% of all diabetes patients fail to follow international recommendations, and there seem to be social and geographical inequalities

Logistic regression on the use of publicly supported foot therapy 2012, marginal effects

		Foot ulcer treatment (yes/no)	Preventive treatment (yes/no)
Years since diagnosis in registry (Reference: 0-4 years)			
	5-10 years	0.00103*** (0.000188)	0.0311*** (0.00180)
	More than 10 years	0.00669*** (0.000314)	0.145*** (0.00196)
Women (Reference: men)		-0.00276*** (0.000193)	0.00628*** (0.00163)
Income quartiles (Reference: 1st quartile)			
	2nd income quartile	0.0000 (0.0003)	0.0274*** (0.00255)
	3rd income quartile	0.0000 (0.0003)	0.0299*** (0.00239)
	4th income quartile	-0.000937*** (0.000274)	0.0110*** (0.00256)
Age		0.00003*** (0.000007)	0.00440*** (6.29e-05)
Education (Reference: basic school)			
	Vocational education	0.000233 (0.000194)	0.00456** (0.00185)
	Short-cycle higher education	0.00138** (0.000617)	-0.00257 (0.00491)
	Medium-cycle higher education	-0.000123 (0.000327)	-0.0162*** (0.00293)
	Long-cycle higher education	0.000148 (0.000520)	-0.0633*** (0.00431)
	Unknown	-0.000144 (0.000450)	-0.0724*** (0.00386)
Marital status (Reference: living alone)			
	Other	-0.000189 (0.000395)	-0.00644** (0.00318)
	Married/cohabiting	-0.00131*** (0.000220)	0.0208*** (0.00191)
Urban index, based on parishes (Reference: Urban areas)			
	Intermediate urban areas	-0.00002 (0.000256)	0.0135*** (0.00240)
	Rural areas	0.00009 (0.000290)	-0.00491* (0.00261)
	Remote areas	-0.000625*** (0.000239)	-0.0341*** (0.00228)
Ethnic background (Reference: Danish)			
	Immigrants from Western countries	-0.000930* (0.000520)	-0.0313*** (0.00502)
	Immigrants from non-Western countries	-0.00257*** (0.000223)	-0.134*** (0.00269)
Observations		317,962	317,962
Number of people receiving the type of treatment		1,562	85,375

Conclusion

The number of people with diabetes who use foot therapy to prevent foot ulcers is low relative to current recommendations, and further, the use is unevenly distributed among patients with different characteristics.

Recognising health inequalities in preventive treatments is the first step when aiming to reduce health inequalities in serious complications for people with diabetes.

References

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