

co-ordinated with the Director of the Institute / Head of Department

Institute/ Independent Department / Clinical Co-operation Group / Junior Research Group:

Institute of Health Economics and Health Care Management

FE-No.: 75354

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Title of the Highlight:

The importance of specialist treatment, treatment satisfaction and diabetes education for the compliance of subjects with type 2 diabetes. Results from a population-based survey

Keywords:

Diabetes mellitus, compliance, self-management

Central statement of the Highlight in one sentence:

As compliance with the treatment recommendations is poor, education programs for type 2 diabetic subjects should be propagated and the cooperation with diabetes specialists should be promoted.

Text of the Highlight:

The study aims to investigate the degree to which subjects with type 2 diabetes comply with treatment recommendations concerning diet, physical exercise and self-care, the consistency of compliance across different treatment areas, and the association of compliance with individual characteristics of patients and their medical treatment. The sample consists of 345 type 2 diabetes patients who had been drawn from two population-based surveys (MONICA) and from a myocardial infarction registry in Southern Germany, and who have participated in a survey in 1997/98. Data were collected by interviews, questionnaires and medical exams. Pearson correlation and logistic regression analysis were applied to test the relationships. A compliance score was established by adding up the components of the treatment regimen. The results show: Only one fifth of the subjects with type 2 diabetes showed good compliance in terms of the applied score. Compliance was highest in weight measuring and foot care, and poorest in following exercise recommendations, glucose testing, and recording the results. Overall, weak correlations were found between the components of the treatment regimen. Participation in diabetes education, regular consultation of physicians specialized in diabetes care, age (<70

years), and satisfaction with treatment were all associated with better compliance. It is concluded that correlations between the different components of compliance behaviour is low, indicating that compliance should not be measured by one component only. It is also concluded that much more efforts are needed to increase patient compliance for subjects with type 2 diabetes.

Publication:

Arnold-Wörner N, Holle R, Rathmann W, Mielck A: The importance of specialist treatment, treatment satisfaction and diabetes education for the compliance of subjects with type 2 diabetes - Results from a population-based survey. *Experimental and Clinical Endocrinology & Diabetes* 2008; 116: 123-128.

Taking account of the HMGU mission:

Due to its potential to increase the risk of late complications, non-compliance with the therapeutical regime is a major cost driver in health care for diabetes patients. Research in the factors influencing compliance can help to make diabetes care more cost-effective and, therefore, to eventually contribute to ensure the financial sustainability of our health care system.

The internal HMGU co-operation partners with whom the Highlight was compiled, if appropriate:

Compliance of subjects with type 2 diabetes: The importance of specialist treatment, treatment satisfaction, diabetes education

Compliance of Type 2 Diabetes Patients (n=345)

Dimensions of Compliance		n	%
1) measuring body weight ^a	≥ 1/week	197	60.8
2) checking feet for wounds ^a	≥ 1/week	148	46.1
3) having a diet plan	yes	132	40.4
4) keeping a diabetes diary	yes	87	26.8
5) exercising ^b	≥ 1h/week	84	24.3
6) testing blood glucose ^c			
- patient treated with insulin	≥ 1/day	27	21.6
- patient treated with tablets or diet	≥ 2/week	66	30.1
Compliance-Score: compliant in			
- at least 4 (from 6) dimensions	high	63	19.5
- less than 4 dimensions	low	260	80.5

a) European NIDDM Policy Group; b) Schneider/Ruderman 1990

c) American Diabetes Association; Gallichan 1997

➔ **Compliance is low among type 2 diabetes patients**

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Correlations between the components of compliance behaviour

	1 having a diet plan	2 exer- cising	3 measuring weight	4 checking feet	5 testing blood glucose	6 keeping a diary
1		0.02	-0.02	-0.00	0.07	0.16**
2			0.08	0.05	0.05	0.01
3				0.33**	0.10	0.18**
4					0.09	0.11*
5						0.22**
6						

*p<0.05, **p<0.01

➔ Correlation between components of compliance is low

Compliance of subjects with type 2 diabetes: The importance of specialist treatment, treatment satisfaction, diabetes education

Factors associated with compliance behaviour

	Odds Ratios (p-values) ^a			
	Diet Plan	Physical Exercise	Body Weight	Foot care
<u>Demographic characteristics</u>				
- age: below 70 years (vs. older)	1.49	2.01*	1.54	0.82
- level of education: high (vs. low)	0.84	1.75*	2.22*	0.94
<u>Characteristics of the disease</u>				
- complications: yes (vs. no)	1.72*	0.96	1.95*	1.60
- hyper-/hypoglycemia \geq 1/month (vs. less)	2.10*	0.56*	0.71	1.05
<u>Treatment characteristics</u>				
- with insulin (vs. tablets or diet)	1.83*	0.55*	0.75	1.18
- satisfaction with treatment; yes (vs. no)	1.24	1.69	0.87	1.63
- consultation diabetes specialist: yes (vs. no)	2.12*	1.13	1.31	1.55
- participation diabetes education: yes (vs. no)	2.12*	1.51	1.11	1.37

* ≤ 0.05 ; a) variables controlled for: age, sex, duration of diabetes, myocardial infarction (yes/no), kind of treatment

➔ **Key points to start improvement: e.g. focus on patients with low education**

Compliance of subjects with type 2 diabetes: The importance of specialist treatment, treatment satisfaction, diabetes education

Factors associated with compliance behaviour

	Odds Ratios (p-values) ^a		
	Glucose testing	Diabetes diary	Total Compliance
<u>Demographic characteristics</u>			
- age: below 70 years (vs. older)	2.28*	1.49	1.86*
- level of education: high (vs. low)	1.33	2.50*	1.52
<u>Characteristics of the disease</u>			
- complications: yes (vs. no)	1.08	1.12	1.16
- hyper-/hypoglycemia ≥ 1/month (vs. less)	1.95*	0.98	1.32
<u>Treatment characteristics</u>			
- with insulin (vs. tablets or diet)	0.53*	2.75*	1.38
- satisfaction with treatment; yes (vs. no)	0.96	1.51	2.48*
- consultation diabetes specialist: yes (vs. no)	1.46	1.53	2.39*
- participation diabetes education: yes (vs. no)	1.65	2.55*	3.29*

* ≤ 0.05; a) variables controlled for: age, sex, duration of diabetes, myocardial infarction (yes/no), kind of treatment

➔ **Key points to start improvement: e.g. increase patient education & satisfaction**