Educational needs, metabolic control and self-reported quality of life

A study among people with type 2 diabetes treated in primary health care

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Abstract

The prevalence of type 2 diabetes is increasing. In order to reduce long-term complications and to promote a better life for these patients, health care professionals are important advocates in education and counselling. More knowledge is therefore needed to explore the association between educational needs and quality of life.

In total, 211 people with type 2 diabetes (response rate 48%) were recruited from general practices in a geographically well-defined district in Bergen, Norway. All participants completed a questionnaire measuring demographical and clinical variables, quality of life (WHOQOL-Bref), satisfaction with education and counselling, and symptoms related to the disease. A blood sample was taken from each patient for determination of HbA_{1c}.

The participants reported receiving most information on diet, physical activity and treatment and less information on foot care and long-term complications. Satisfaction with education was significantly positively correlated with self-reported overall quality of life, and quality of life within domains for psychological health, social relationships and environment. More intensive treatment was significantly associated with lower quality of life within the physical health and social relationships domains. For 32% of the participants, HbA_{1c} values did not satisfy the Norwegian guidelines (adjusted for age).

The results from the present study emphasise a need for health education in diabetes primary health care especially in relation to foot care and long-term complications. The association between satisfaction with education and quality of life makes it important to develop educational and counselling methods for nurses in primary health care.

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Key words

education; quality of life; type 2 diabetes

Introduction

The prevalence of diabetes is increasing in Norway[1] and elsewhere,[2] and represents a challenge for health care professionals. The UK Prospective Diabetes Study[3,4] and the Kimamoto study[5] show that even a modest improvement in glycaemic control can contribute to the delay of onset and progression of complications. Other studies[6] show that long-term complications are related to reduced quality of life. In order to reduce long-term complications and to promote a better life for persons with type 2 diabetes, health care professionals in primary health care are important advocates in educating and treating persons with type 2 diabetes.[7]

Nurses in primary health care are in a unique position to offer diabetes education. They meet the patients regularly and thereby can have a deeper understanding of the patient's life situation and educational needs. A meta-analysis of the effect of self-management education for patients with type 2 diabetes shows that self-management education improves metabolic control in the short and long term.[8] One might also expect that satisfaction of educational needs is related to quality of life. More knowledge is therefore needed to explore this association.

Against this background, the present study was designed to investigate what education and counselling persons with type 2 diabetes had received in primary health care, how satisfied they were with these, and what further information they needed. We further investigated whether satisfaction with education and counselling was associated with self-reported quality of life. Finally, we studied the relationships between clinical variables such as HbA_{1c}, type of treatment, disease-specific symptoms and the patients' quality of life.

Material and methods

The population in the present study included all patients with

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type 2 diabetes recruited from a geographically well-defined district of Bergen, Norway. The study was performed from 1998–2000, and 11 of 13 general practices in the district participated. The inclusion criteria were: (1) having had type 2 diabetes for at least one year; (2) older than 40 years of age; (3) oriented to time and place; and (4) spoke Norwegian.

Through their general practitioners, we sent information on the study to all persons with type 2 diabetes – this consisted of a letter asking them to participate, a response form and a questionnaire. Of a total population of 211 people with type 2 diabetes 101 patients participated (response rate 48%). For non-responders, information for 95 persons on gender, age, type of treatment and most recent HbA_{1c} values was obtained. Respondents and non-respondents did not differ significantly except for gender; more men than women participated in the study ($p<0.01$). (Table 1.) The statistical analyses have taken this into account.

Instruments

The questionnaire consisted of four parts:

- Demographic and clinical variables (age, gender and type of treatment).
- The WHOQOL-Bref; a 26-item quality of life questionnaire based on WHO's definition of quality of life.[9] The instrument consists of two global questions (covering overall quality of life and satisfaction with general health), and four domains covering physical health (seven items), psychological health (six items), social relationships (three items) and environment (eight items). Each item is scored from 1–5, and thus mean domain scores range from 4–20. The validity and reliability of the WHOQOL-Bref instrument have been shown to be satisfactory in previous research.[10]
- Satisfaction with education and counselling related to various aspects of type 2 diabetes (eight items). These questions were formulated in co-operation with health professionals and patients, and have been used previously among patients with type 2 diabetes in Norway.[11]
- The Symptom Check-List; an 18-item questionnaire focusing on symptoms related to diabetes such as headache, abnormal thirst, excessive urination and itching. Each question is scored from 1–5, with higher scores meaning more symptoms.

Metabolic control

HbA_{1c} values were obtained using a DCA 2000 analyser (Bayer Norge, Oslo, Norway). To assure the quality, the same instrument was used for all measurements. The analyser was calibrated about every 15 samples to reduce error, and the test material used had the same batch and lot number. The scores in the series were satisfactory according to standard criteria.[12]

Data analysis

The data were analysed using SPSS for Windows, version 11.0. Pearson's correlation coefficients, two sample *t*-test, partial correlation analyses, analysis of variance and chi-square were used. Significance was set at $p<0.05$.

Ethics

The project complied with the Helsinki Declaration and was approved by the Regional Research Ethics Committee West and the Norwegian Social Science Data Service. The Regional Research Ethics Committee West did not allow us to send a reminder to the patients.

	Respondents (n=101)	Non-respondents (n=95)
Age		
Mean	68.3	69.7
SD (range)	10.3 (40–87)	10.7 (41–86)
*Gender (%)**		
Women	36.6	54.7
Men	63.4	45.3
Treatment (%)		
Diet	38.5	37.9
Oral pharmaceuticals	42.6	42.1
Insulin	18.9	20.0
HbA_{1c}		
Mean	7.4	7.4
SD (range)	1.3 (5.4–12.5)	1.4 (5.2–11.4)

*More men than women participated in the study ($p<0.01$).

Table 1. Demographic and clinical characteristics

Results

Demographic and clinical variables

Table 1 provides the demographic and clinical characteristics. Mean HbA_{1c} was 7.4% (range 5.4–12.5%, SD 1.3) and 32% of the participants exceeded the age-adjusted Norwegian guidelines.[13] These guidelines suggest that the level

aimed at for younger people is HbA_{1c} <7.5% and for people over 80 years of age is HbA_{1c} <9%. The aim of treatment is prevention of late complications in younger people, and symptom reduction in elderly people.

Self-reported quality of life

Participants reported the lowest quality of life in relation to the physical health domain (mean 13.5, SD 3.1). The questions in this domain include items such as satisfaction with capacity for work, ability to perform daily living activities and medical treatment to function in daily life. The participants scored highest in relation to the environmental domain (mean 15.2, SD 2.3).

Sources of information and satisfaction with education and counselling

The most important sources of information were general practitioners (59%), books (28%) and the journal of the Norwegian Diabetes Association (27%). Table 2 shows that many respondents perceived that they had received a considerable amount of information on diet (70%), physical activity (65%), measuring blood glucose (66%) and oral pharmaceutical treatment (52%). Substantially fewer reported receiving much information on long-term complications (27%), smoking (27%), alcohol consumption (19%), foot care (18%), procedures in relation to travelling (6%), and managing fever and illness (7%).

Half of the respondents (50%) reported that their needs were usually met in counselling situations, 34% sometimes, and 4% almost never – 12% did not answer this question. Most respondents (85%) had not participated in any course or meeting on type 2 diabetes and 55% reported not having received adequate information.

	Much information	Little information	No information
Diet (n=91)	70	29	1
Physical activity (n=80)	65	31	4
Blood glucose (n=76)	66	24	10
Oral treatment (n=67)	52	30	18
Alcohol consumption (n=59)	19	49	32
Long-term complications (n=59)	27	36	37
Smoking (n=52)	27	29	44
Foot care (n=55)	18	26	56
Travelling (n=66)	6	29	65
Fever and illness (n=58)	7	22	71

Table 2. Perceived information on their diabetes (% of those who answered)

Disease-specific symptoms

In relation to disease-specific symptoms (range 1–5) the symptoms reported most frequently were urinating at least twice each night in the past month (mean 3.0, SD 1.4), daytime sleepiness (mean 2.7, SD 1.2), joint pain (mean 2.5, SD 1.4), exhaustion (mean 2.5, SD 1.2) and excessive daytime urination (mean 2.1, SD 1.3).

Demographic variables, clinical variables and quality of life

Age and satisfaction with general health showed a positive significant correlation ($r=0.36$, $p<0.001$). The younger the persons with type 2 diabetes were, the less satisfied they were with their general health.

The results showed a significant difference according to gender and quality of life in two domains. Women reported significantly poorer quality of life in the physical health domain ($p<0.01$) and psychological health domain ($p<0.05$), than did men.

The respondents were categorised according to age and HbA_{1c} based on Norwegian guidelines of metabolic control.[13] Those older than 75 years with HbA_{1c} exceeding 9% had a significantly poorer quality of life within the physical health domain ($p<0.01$).

Table 3 shows the differences in quality of life experience according to treatment received. People with type 2 diabetes solely receiving dietary treatment reported significantly better quality of life related to the physical health and social relationships domains than did people receiving oral pharmaceutical or insulin treatment.

Satisfaction with health education and quality of life

Having one's educational needs met was significantly correlated with overall quality of life ($r=0.27$, $p<0.05$), and also with quality of life related to psychological health ($r=0.28$, $p<0.01$) and environment ($r=0.27$, $p<0.05$).

Respondents who perceived that they had received adequate information reported significantly better overall quality of life (single question) compared to those who had not ($p<0.05$).

Disease-specific symptoms and quality of life

The mean symptom score was significantly negatively correlated with the overall quality of life question ($r=-0.34$, $p<0.001$), satisfaction with general health ($r=-0.52$, $p<0.001$) and all of the four quality of life domains: physical health ($r=-0.51$, $p<0.001$), psychological health ($r=-0.37$, $p<0.001$), social relationships ($r=-0.33$, $p<0.002$) and environment ($r=-0.50$, $p<0.001$).

	Diet		Oral pharmaceuticals		Insulin			
	Mean (SD) (n=38)		Mean (SD) (n=43)		Mean (SD) (n=19)		*F*	p†
Overall quality of life*	4.0	(0.7)	3.7	(0.7)	3.6	(0.9)	2.91	0.059
General health*	3.4	(1.1)	3.2	(1.0)	2.8	(1.1)	1.96	0.147
Quality of life domains**								
Physical health	14.8	(2.6)	13.5	(3.3)	12.6	(3.2)	3.75	0.027
Psychological health	15.2	(2.8)	15.0	(2.5)	13.9	(2.8)	1.64	0.200
Social relationships	15.4	(2.7)	14.5	(2.8)	13.3	(2.7)	3.21	0.045
Environment	15.5	(2.0)	15.2	(2.4)	14.3	(2.2)	1.89	0.157

*Range 1–5. **Range 4–20. †Analysis of covariance.

Table 3. Scores on WHOQOL-Bref according to treatment groups

Discussion

Demographic variables, clinical variables and quality of life

The correlation analyses in the present study show that the younger the persons with type 2 diabetes were, the less satisfied they were with their general health. This is in accordance with a study of people with type 2 diabetes in primary health care in The Netherlands[14] and a Norwegian study among adults with diabetes.[15] This may be related to expectations related to health. As people get older, chronic diseases become more common and older individuals may therefore more easily accept having a chronic disease. This is important information of which nurses should be aware in their consultations.

Previous research[6,14,16] demonstrates that males with diabetes report better quality of life than females. This corresponds with the gender differences in reporting quality of life in populations.[6] Whether this reflects differences in general health or in reporting problems or discomfort is unclear, and emphasises the need for more research in this field.

In the present study, the majority of the patients (68%) had satisfactory HbA_{1c} values based on the Norwegian guidelines.[13] However, 32% exceeded the age-adjusted guidelines. Furthermore, 66% of the respondents perceived that they had received a considerable amount of information measuring blood glucose. Nurses play an important role in explaining the significance of the values obtained and in discussing how people with diabetes can convert theoretical knowledge into action.

Type 2 diabetes is a complicated disease to manage. When the disease is developing, the impaired quality of life could reflect problems with adaptation and with the attention offered by the health care system. Intensified treatment was associated with significantly poorer quality of life. Several studies elsewhere have reported similar findings;[14,16] another did not.[6]

Self-reported quality of life

The main task of quality of life research has been to explain which factors – related to society, families and work – promote or adversely affect the quality of life of individuals.[17] The present study demonstrates that persons with type 2 diabetes reported poorer quality of life in the physical health domain. It impacts on items such as capacity for work, activities of daily living and dependence on medical treatment to function in daily life. These aspects are important for nurses to discuss with those with type 2 diabetes since diabetes management requires people to actively counteract the disease on a daily basis. A systematic review of the effectiveness of self-management training in type 2 diabetes underlines that effective diabetes management programmes must be non-complex, individualised to a person's lifestyle, and reinforced over time. Furthermore, such programmes must respect an individual's habits and routines and incorporate social support.[18]

Sources of information and satisfaction with health education and quality of life

Health education on dietary and exercise habits is an important part of the basic treatment.[13] Most of the people with type 2 diabetes in the present study were satisfied with the education and counselling in these aspects. Aspects about which people felt they had received insufficient information may have been those aspects which were either not relevant for them or which had not been emphasised by the health care professionals. Although knowledge does not necessarily change lifestyle, people need knowledge to manage self-care.[19] The knowledge desired

by participants in the present study was especially related to foot care, alcohol consumption, smoking and long-term complications. The respondents, whose educational needs were best met, reported better quality of life. According to Rosenqvist *et al.*[20] 'Integration of the biomedical dimension of disease to the psychosocial needs of the patients is the challenge of a more efficient approach to diabetes therapy.' Based on an empowerment approach, health education includes individual participation strongly in all decisions related to treatment and treatment goals.[21] Shifting from the acute care/compliance-focused paradigm to an empowerment/collaborative approach requires a new vision of diabetes education and a new definition and enactment of the roles of patients as well as those of nurses, physicians and other professionals in the diabetes team.[22] In the present study the results show that there is a correlation between educational needs and quality of life, although we cannot determine causal pathways because of the cross-sectional design of the study.

An intervention study concluded that the failure of the nurses to sustain behaviour change over time stems from a basic dilemma – namely, the extent of the nurses' responsibility and how they ought to discharge.[23] In the present study, only 15% had participated in a course or meeting on diabetes. There is a need to raise the amount of health education and also that of research and evaluation in order to ascertain whether the increasing role of the nurses in dealing with diabetes in primary health care translates into improved outcomes for patients.[24]

Disease-specific symptoms and quality of life

Type 2 diabetes has been characterised as a silent disease with few symptoms.[13] In the present study, despite few symptoms, the total mean score of symptoms was significantly negatively correlated with overall quality of life on all four quality of life domains. Therefore, when patients with diabetes report symptoms, the individuals and health care professionals should jointly assess how to reduce these to improve people's quality of life.

Material and methods

The participants in the present study were selected from primary health care and selection biases, such as predominance of patients with physical and possibly mental problems,[25] are not a problem. Nevertheless, the low response rate is a weakness of the study. However, by comparing respondents with non-respondents, the analysis showed that they did not differ substantially except that more men than women participated in the study ($p<0.01$). This weakness together with earlier research, finding that men report better quality of life and are more satisfied with their diabetes treatment,[6] reinforces the need to control for gender. The statistical analyses have taken this into account.

Conclusion

The results from the present study emphasise a need for health education in diabetes primary health care, especially in relation to foot care and long-term complications. The association between satisfaction with education and quality of life makes it important to develop educational and counselling methods for nurses in primary health care.

The challenge is to promote the ability of people with diabetes to take actions that can improve their individual quality of life and also contribute to the delay of onset and of progression to diabetic long-term complications.

In order to empower the nurse regarding future challenges relating to the care of people with type 2 diabetes, it is important to focus on nursing educational and counselling methods used in primary health care, and to evaluate pedagogical skills and activities.

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