



Health-related quality of life in patients with type 2 diabetes compared to their spouses

Sub-study of the Asker and Baerum Cardiovascular Diabetes Study

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Introduction

Type 2 diabetes is one of the most prevalent chronic diseases encountered by healthcare providers inside and outside healthcare settings, and the numbers of people with this condition are increasing.^{1,2} As type 2 diabetes is associated with high morbidity,³ premature mortality,⁴ reduced quality of life^{5,6} and poor social relationships,⁷ effective strategies for improving the treatment and care of people with

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Abstract

Background: Type 2 diabetes mellitus is a chronic disease that may have a severe impact on the quality of life of patients themselves and their families. For patients living in a partnership, the involvement of and relations with spouses might be of importance.

Aims: This study aims to investigate self-assessed health-related quality of life (HRQL) in spouses and people with type 2 diabetes and describe spouses' need for knowledge about type 2 diabetes.

Methods: Caucasian (n=75) people with type 2 diabetes (age 60±9 years, female/male 16/59, HbA_{1c} 7.5±1.6%) and their spouses (age 59±11 years, living in heterosexual relationship) performed self-assessment using SF-36 Norwegian version 1.2. Spouses were also asked about their need for education and information about type 2 diabetes.

Results: Three SF-36 health dimensions (general health perceptions, mental health, social functioning) were significantly reduced among people with type 2 diabetes, as compared to spouses and normative data (p<0.001), while the spouses' HRQL was similar to the normative data. The majority (57%) of spouses wanted more information about the disease. Only a minority (31%) of the spouses felt supported in the provision of diabetes information by the healthcare providers system and few had received information from professionals (23%).

Conclusions: People with type 2 diabetes have reduced HRQL as compared with their spouses; but living in such a partnership does not reduce the SF-36 scores of the spouses, compared with the general population. As the majority of spouses wanted more information about type 2 diabetes and did not feel supported by the healthcare system, strategies that aim to improve their educational levels might be helpful for the treatment of people with type 2 diabetes living in a partnership.

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Key words

Type 2 diabetes mellitus, health-related quality of life, education, aspects of diabetes mellitus

type 2 diabetes are warranted. The management and care of type 2 diabetes is multi-faceted; it is increasingly recognised that diabetes self-management is influenced by several factors, such as the characteristics of patients, degrees and management of stress, characteristics of providers and provider-patient relationships, and characteristics of the social network/context in which disease management takes place.^{8,9} These factors are potentially modifiable, and such

modification might influence the outcome of diabetes treatment. It has been demonstrated that improved illness adaptation and health-related quality of life (HRQL) were related to greater family support and/or less family conflict.^{10–14} Thus, identifying factors that contribute to this improvement is important; the way in which spouses of people with type 2 diabetes contribute in this context might be of importance, as shown



in other illnesses^{15,16} and in some studies involving adults with diabetes.^{17,18} However, it is not known whether spouses are interested in increasing their knowledge about the disease; to what degree they feel supported by their healthcare system; or if the quality of life of these spouses differs from that of their partner with type 2 diabetes.

This study aims to compare the HRQL of people with type 2 diabetes with their spouses, as assessed using the short-form HRQL questionnaire SF-36; and describe the self-reported need for education and knowledge of type 2 diabetes by spouses of patients with the disease.

Materials and methods

This study was a cross-sectional sub-study that took place as a part of the Asker and Baerum Cardiovascular Diabetes Study – a prospective evaluation of intensive treatment of Caucasian patients with type 2 diabetes.

Participants

The study participants were recruited from the outpatient clinic at Asker and Baerum Hospital and through the use of advertisements in the local newspaper. The hospital is a secondary referral centre for a population of 150 000. Patients with diabetes are typically referred from general practitioners in the area for evaluation by a

diabetes specialist and a diabetes nurse. Each participant gave written informed consent before taking part in the study, which was conducted according to the World Medical Association Declaration of Helsinki. All patients included were clinically and biochemically assessed and completed several questionnaires, including the SF-36.

The primary criteria for inclusion were: type 2 diabetes (according to the WHO 1999 definition);¹⁹ age 18 to 75 years; one or more cardiovascular risk factor (defined as: hypertension [ongoing antihypertensive treatment or 24-hour systolic blood pressure \geq 140 mmHg or 24-hour diastolic blood

	Patients with T2DM		Spouses		Normative data (50–59 years)	
	M	F	M	F	M	F
Mental health	67.9±7.5 (n=59) *** §§§	67.0±8.9 (n=16) * §§	87.5±29.5 (n=16)	78.4±39.1 (n=57)	79.7±16.0 (n=177)	79.5±17.3 (n=174)
Vitality	57.8±11.0 (n=59)	58.4±13.5 (n=16)	63.3±18.3 (n=15)	57.4±23.3 (n=56)	62.4±21.6 (n=178)	62.0±21.0 (n=176)
Bodily pain	74.5±25.6 (n=59)	60.7±27.3 (n=16)	82.0±27.3 (n=16)	72.3±29.6 (n=58)	73.2±25.5 (n=180)	73.8±27.1 (n=179)
General health perceptions	55.1±10.6 (n=59) *** §§§	55.6±11.6 (n=16) *** §	66.6±23.3 (n=14)	69.8±24.9 (n=57)	74.1±22.5 (n=173)	74.7±22.4 (n=162)
Social functioning	47.7±9.7 (n=59) *** §§§	55.5±10.2 (n=16) *** §§§	92.2±14.3 (n=16)	87.5±19.6 (n=58)	86.5±24.1 (n=181)	86.0±21.3 (n=181)
Physical functioning	86.1±13.2 (n=59)	77.8±14.4 (n=16)	87.8±10.2 (n=16)	80.8±21.5 (n=58)	87.2±17.4 (n=171)	85.6±16.6 (n=175)
Role limitations, emotional	85.3±29.9 (n=59)	77.1±33.8 (n=16)	87.5±29.5 (n=16)	78.4±39.1 (n=57)	87.5±27.9 (n=168)	84.3±30.9 (n=173)
Role limitations, physical	74.2±37.1 (n=59)	42.2±43.5 (n=16) *** §	68.8±43.3 (n=16)	68.0±41.1 (n=57)	78.0±35.9 (n=171)	77.6±36.2 (n=174)

Statistical analysis performed by two-sampled t-test. Abbreviations: T2DM; type 2 diabetes mellitus, M; male, F; female.
 *, **, ***: p<0.05; 0.01; 0.001 patients vs normative data
 §, §§, §§§: p<0.05; 0.01; 0.001 patients vs spouses

Table 1. SF-36 1.2 scale results according to gender for patients, spouses and normative data



pressure ≥ 90 mmHg]; current smoker or history of smoking; premature coronary atherosclerotic disease in first degree family [men < 55 years, women < 65 years]; microalbuminuria [defined as positive findings in one urine sample (albuminuria ≥ 15 $\mu\text{g}/\text{ml}$ analysed in overnight urinalysis)] or dyslipidaemia [total cholesterol ≥ 5.0 mmol/l, HDL cholesterol ≤ 1.0 in men, or ≤ 1.1 in women, triglycerides ≥ 2.0 mmol/l], or ongoing treatment for dyslipidaemia). Patients that were positive for anti-glutamic acid decarboxylase and/or insulin autoantibodies, or that had been treated with insulin within one year of the diagnosis of diabetes, were excluded.

Procedure

After they were enrolled in the study, all the participants who were living in a partnership with another person were asked for permission to collect information from their spouses. Between January 2002 and March 2004, 120 people with type 2 diabetes were enrolled in the study, 96 of whom were living in a heterosexual partnership. Of these, 75 were willing to ask their partners to participate. After their initial enrolment in the study, the patients gave the SF-36 questionnaires (five specific questions and some general questions on employment and general education) to their spouses, who wrote down the answers. These answers were then either mailed or handed to us by the patients the following day in a sealed envelope. All 75 spouses responded to the questionnaires.

The study was approved by the Regional Ethical Committee and by the Norwegian Data Inspectorate.

Blood sampling protocol for analysis of gluco-metabolic parameters

Serum glucose was analysed using the glucose hexokinase method (Cobas

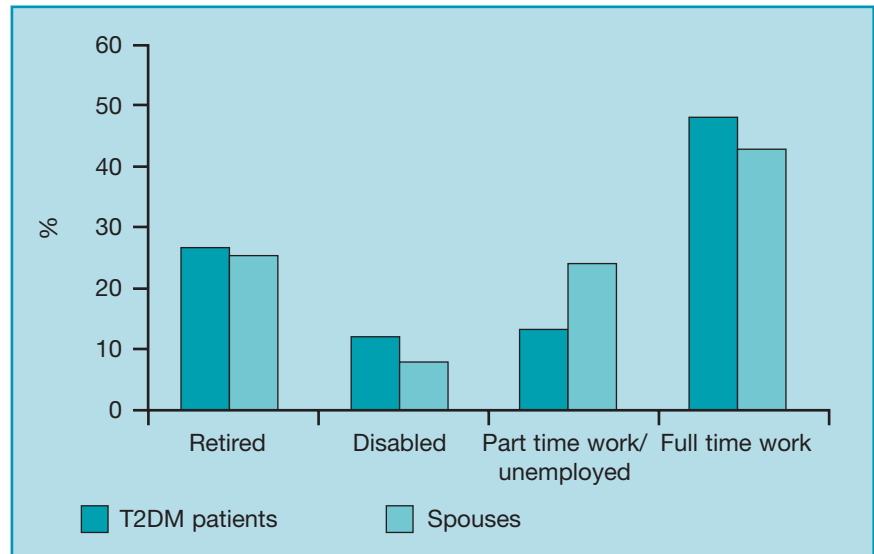


Figure 1. Work status for patients with T2DM and their spouses (%)
Abbreviations: T2DM; type 2 diabetes mellitus

Integra system, Roche Diagnostics GmbH, Mannheim, Germany). Haemoglobin A_{1c} (HbA_{1c}) was analysed by colorimetric and immunoturbidimetric methods (Cobas Integra system, Roche Diagnostics GmbH) in whole blood with an upper normal limit of 6.2 %.

Short-form HRQL questionnaire SF-36

This 36-item measure²⁰ assesses perceived status during the previous four weeks on eight domains of function and is widely used to assess overall HRQL. The 36 items contained in the SF-36 health survey are scored as eight scales: physical functioning, role limitations due to physical health problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health.

The SF-36 Norwegian version 1.2 was used, which has been validated for use in Norway.^{21–23} For each scale, a score ranging from 0 (worst measured health) to 100 (best measured health) was calculated²⁴ and normative data were derived for these scores from the general Norwegian population.²⁵

Specific and general questions to spouses of patients with type 2 diabetes

The patients' spouses were asked the following self-generated specific questions (Q) in addition to completing SF-36: Q1: Are you in need of more information about type 2 diabetes? Q2: Do you want to participate in a structural educational programme for spouses of patients with type 2 diabetes? Q3: Has the economic burden of your family increased as a consequence of your partner's type 2 diabetes? Q4: Do you feel supported by the healthcare system with respect to type 2 diabetes information? Q5: Have you ever received information about type 2 diabetes from professional healthcare providers? In addition, they were asked about their perceptions of their own general health, compared to their partner's general health, as divided into four categories: poor, average, good and excellent; and for background data for educational status and employment status.

Statistics

The data analysis was performed using SPSS statistical software



version 12.0.1 for Windows (SPSS Inc. Chicago, USA) and StatPac version 3.0 (StatPac Inc, Bloomington, USA). Results for continuous variables are presented as mean and standard deviation unless otherwise stated, and statistical analyses for group comparisons were performed by independent t-test or ANOVA. Categorical variables are presented as counts or proportions (%), and statistical comparisons of these parameters utilised the chi-square test. The level of statistical significance was chosen as $p < 0.05$. All p-values are two-sided.

Results

Characteristics of the 75 Caucasian patients with type 2 diabetes included in the study were: age 60 ± 9 years, female/male 16/59, diabetes duration 7 ± 7 years, HbA_{1c} $7.5 \pm 1.6\%$ and fasting blood glucose 9.3 ± 3.1 mmol/l. They were all living in heterosexual relationships with spouses aged 59 ± 11 years. The couples had been cohabitants for 31 ± 13 years and for 7 ± 6 years since type 2 diabetes was diagnosed. The educational level of the people with type 2 diabetes and their spouses was similar where 26.7% and 22.7% of patients and spouses respectively had four or more years of higher education; and where 20% and 24% respectively had between one and three years of higher education, while 53.3% of both patients and spouses had lower level education. Also, work status was similar among patients and spouses (Figure 1).

Figure 2 shows the SF-36 scores for the eight health dimensions for spouses and patients, as well as normative data for the general population aged 50–59 years. The scores in three of the dimensions differed significantly between patients and their spouses (mental health, general health perceptions and social functioning). Table 1 shows data for all the eight

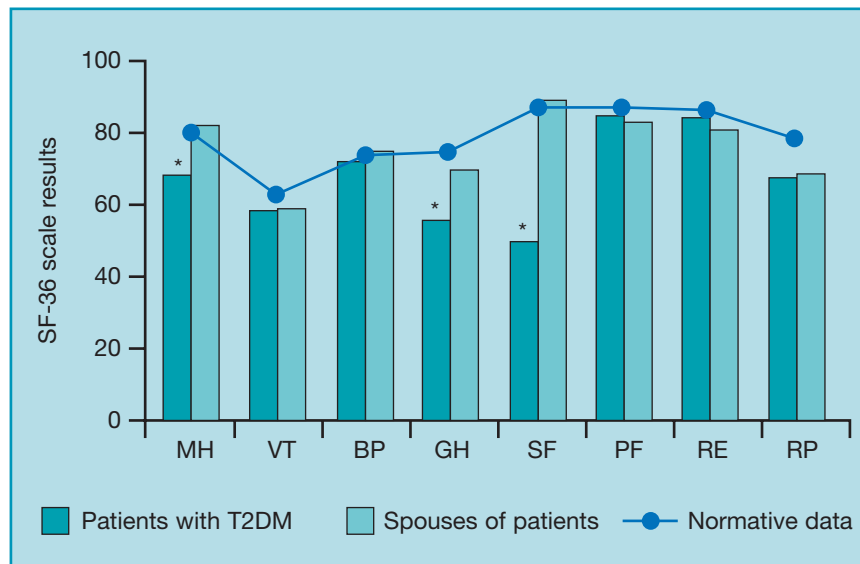


Figure 2. SF-36 scale results for patients with T2DM, their spouses and normative data for the Norwegian population aged 50–59 years. *: $p < 0.001$. Abbreviations: T2DM; type 2 diabetes mellitus, MH; Mental health, VT; Vitality, BP; Bodily pain, GH; General health perceptions, SF; Social functioning, PF; Physical functioning, RE; Role limitations – emotional, RP; role limitations – physical

SF-36 dimensions for patients, spouses and for the general Norwegian population – controlled for gender.²⁴ There were no significant differences between the scores in any of the subscales between the scores of the patients versus spouses or normative data. Figure 3 shows the spouses' assessment of their own and their partners' general health. When a comparison was performed between the scores of the patients and spouses, the spouses assessed their own general health as better compared with their partners ('Excellent' and 'good' versus 'average' and 'poor', $p = 0.009$).

Of the spouses, 57% answered that they wanted more information about type 2 diabetes (Q1) and 41% indicated that they would like to participate in an educational programme (Q2). Less than a quarter (24%) felt supported by the healthcare system (Q4) or had ever received information about type 2 diabetes (21%) from professional

healthcare providers (Q5), while 41% experienced an increased economic burden as a consequence of their partner's disease (Q3). The proportion of positive answers to the five specific questions did not differ when analysed for the following possible determinants (data not shown): insulin treatment versus no insulin, diabetes duration, duration of partnership or gender, except for the question: 'Do you feel supported by the healthcare system?' where significantly fewer women (17%) than men (50%) gave a positive answer ($p = 0.007$). The spouses' age was a significant determinant of the need for further information (Q1) about type 2 diabetes: 95% in the first quartile versus 40% in the last quartile, indicated this ($p < 0.01$). When assessing educational needs related to the HRQL of spouses, there were only weak associations. Poorer HRQL ratings in the 'bodily pain' and 'physical functioning' subscales were associated with the need for more education; and 'bodily pain'

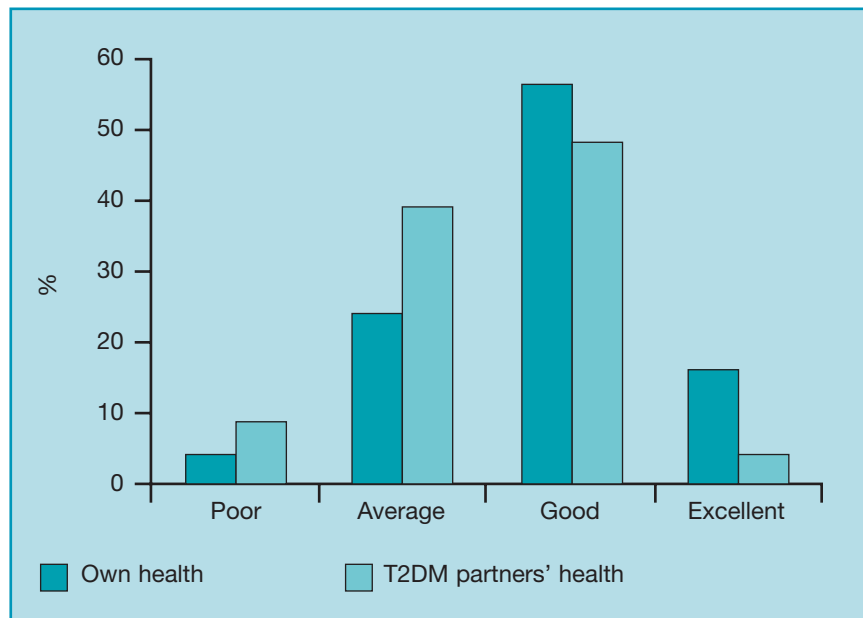


Figure 3. Spouses assessment of own and partners' health. Chi-squared test for the categories 'Poor' and 'Average' versus 'Good' and 'Excellent' between spouses assessment of own and partners' health; $\chi^2=6.9$, $df=1$, $p=0.009$. Abbreviations: T2DM; type 2 diabetes mellitus

was also associated with a lack of feeling supported by the healthcare providing system.

Discussion

This study shows that quality of life – as assessed with the SF-36 scores – of relatively unselected middle-aged patients with type 2 diabetes and their spouses is different. Patients with type 2 diabetes had significantly reduced scores in general health perceptions, social functioning and mental health. These dimensions may be interrelated. This is consistent with many other studies comparing people with diabetes with the general population,^{6,26} but this is the first study to address these issues in a partnership context. We also found that spouses considered their partners to have poorer general health than themselves, further underscoring the findings of the SF-36. Since the SF-36 scale scores of the spouses were comparable to normative data,²⁴ it seems likely that the spouses in this trial are

representative of the general population, and that living in a partnership with a person with a chronic disease such as type 2 diabetes does not affect their HRQL. That the educational level and employment status of the people with type 2 diabetes and spouses were similar gives further support to this finding. Low educational levels have a negative impact on HRQL²⁵ and not being in the work-force has been associated with a negative impact on mental components in SF-36.²⁶

We also show that the majority of spouses of people with type 2 diabetes feel that they do not have enough knowledge about the disease. Interestingly, the finding is not restricted only to spouses of patients with a short duration of diabetes. Spouses report that most of them have not been given information about the disease from healthcare providers. A minority felt adequately supported by the healthcare providers. However, it may come as a surprise that only around 30% indicated that they

needed some education. This could reflect that other forms of education are warranted, other than the standard lecture classes or hand-outs – although we specifically did not address this question.

In trying to determine which factors were most closely associated with the need for more education, the age of the spouses was the strongest determinant. It emerges that the youngest spouses were those most interested in receiving more information and participating in educational programmes about type 2 diabetes. Also associated with this were spouses that on the SF-36 subscale reported having the most bodily pain.

As earlier studies have shown that education of spouses might improve several aspects of diabetes treatment,¹⁷ interventions based on this finding should be implemented on a larger scale, given that we now know that the majority of spouses are interested in participating in such programmes. Furthermore, as earlier studies have demonstrated that the quality of a relationship might be of importance,^{14,18} this should be taken into account when designing educational programmes.

Some of the limitations of our study include the fact that it is a single-centre study involving Caucasian patients and spouses, and that the numbers of participants was limited. Also, all the participants in this study were living in heterosexual partnerships.

In conclusion, this report shows that, compared with their spouses, people with type 2 diabetes have poorer quality of life as assessed with SF-36, especially in subscales evaluating perception of social functioning, general health and mental health. On the other hand, the spouses of people with type 2 diabetes do not seem to differ from the general population regarding HRQL.



Furthermore, the majority of spouses of people with type 2 diabetes would like to receive more education and information about type 2 diabetes, especially the youngest spouses. This finding is consistent, regardless of the diabetes duration of their partner, the spouse's gender or whether the patients are on insulin treatment or not. Further studies are needed to explore whether interventions to improve spouses' educational levels and understanding of various aspects of type 2 diabetes might improve the social function of people with type 2 diabetes, their general health perceptions and mental health. The findings from this report indicate that spouses should probably be considered as an untapped resource, and that there is a need for the provision of continuing education and information to partners of people with type 2 diabetes.

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Conflict of interest:

None

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