Sexual Dysfunction in Women With Type 1 Diabetes

A controlled study

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OBJECTIVE — This study aimed to 1) examine the prevalence of sexual problems in women with type 1 diabetes, 2) compare this prevalence rate with that of an age-matched control group, 3) study the influence of diabetes-related somatic factors on female sexuality, and 4) study the influence of psychological variables on the sexual functioning of both groups.

RESEARCH DESIGN AND METHODS — A total of 120 women with diabetes visiting the outpatient diabetes clinic completed questionnaires evaluating psychological adjustment to diabetes, marital satisfaction, depression, and sexual functioning. Medical records were used to obtain data on Hba1c, use of medication, BMI, and early-onset microvascular complications. An age-matched control group of 180 healthy women attending an outpatient gynecological clinic for preventive routine gynecological assessment also completed the non–diabetes-related questionnaires.

RESULTS — More women with diabetes than control subjects reported sexual dysfunction (27 vs. 15%; P = 0.04), but a significant difference was found only for decreased lubrication. No association was found between sexual dysfunction and age, BMI, duration of diabetes, Hba1c, use of medication, menopausal status, or complications. Women with more complications, however, reported significantly more sexual dysfunctions, and the presence of complications altered treatment satisfaction. Both diabetic and control women with sexual dysfunction mentioned lower overall quality of the marital relation and more depressive symptoms than their respective counterparts without sexual problems. Depression was a significant predictor for sexual dysfunction in both women with diabetes and control subjects.

CONCLUSIONS — Sexual problems are frequent in women with diabetes. They affect the overall quality of life and deserve more attention in clinical practice and research.

Diabetes Care 25:672–677, 2002

Diabetes is known to cause multiple medical, psychological, and sexual problems (1–5). Erectile dysfunction is a well-established complication of diabetes (6). The sexual functioning of women with diabetes has received much less attention in clinical research (7). However, a recent review about diabetes and female sexuality indicated that diabetes slightly increases the risk of female sexual dysfunction (8). The most common sexual dysfunction in women with diabetes is decreased sexual arousal with slow and/or inadequate lubrication. Women with diabetes may, however, also experience a decreased sexual desire and more pain on sexual intercourse, whereas problems with orgasm are not more frequent (8).

Research on diabetes and female sexual dysfunction is not only scarce, it also has been plagued by methodological flaws such as small sample size, absence of a control group, and noncharacterization as to diabetes type, presence and number of diabetic complications, psychological adjustment to diabetes, quality of the partner relation, and depression (5,8).

The present study aimed to 1) examine the prevalence of sexual problems in women with type 1 diabetes, 2) compare this with the prevalence of sexual problems in an age-matched control group, 3) study the influence of diabetes-related factors on female sexuality, and 4) study the influence of psychological factors on the sexual function of both groups.

RESEARCH DESIGN AND METHODS

Setting and sample
During a 2-year period, 120 consecutive women with type 1 diabetes who visited the outpatient diabetes clinic of the University Hospitals of the Catholic University of Leuven were invited to participate. Patients were eligible for inclusion if they 1) were ≥18 years of age, 2) had type 1 diabetes treated with intensified insulin therapy with four daily injections, 3) did not have health problems other than complications of diabetes, and 4) had a stable heterosexual partner relationship for at least 1 year.

An age-matched group of control women (n = 180) visiting an outpatient gynecology clinic for routine screening reasons were also invited to participate by their gynecologist. Women were eligible for inclusion if they 1) were ≥18 years of age, 2) had a stable heterosexual partner...
Methods
Patients and control subjects were asked to complete validated questionnaires at home and return them within 6 weeks. Patients who did not return their questionnaires in due time were sent a reminder. Established self-report questionnaires were used to assess psychological adjustment to diabetes, diabetes-related quality of life, marital satisfaction, depression, and relevant aspects of sexual functioning.

A venous blood sample to determine HbA1c was collected from all diabetic subjects on the day they were invited to participate in this study. HbA1c was determined using the Cobas Integra assay (Roche, Basel, Switzerland) with a normal range of 4.0–6.0%. The medical records of the patients were used to obtain data on use of medications, BMI, and early-onset microvascular complications (neuropathy, nephropathy, and retinopathy).

Instruments
Questionnaires completed by all women. The Udvalg for Kliniske Undersøgelser (UKU) is a well-validated questionnaire to assess side effects of psychotropic drugs in both clinical studies and clinical practice (9). This questionnaire consists of 48 items, of which we used only the four items that cover sexual function (increased libido, decreased libido, erectile dysfunction/dry vagina, and ejaculatory dysfunction/orgasmic dysfunction). To come closer to the Diagnostic and Statistical Manual, 4th ed. (DSM-IV) definition of a sexual dysfunction, we added to these items a criterion that the disturbance causes marked personal distress or interpersonal difficulty. This criterion is often forgotten in research. The UKU is a checklist of specific symptoms scored on a four-point scale with scores ranging from 0 to 3. Higher scores indicate more severity of the reported problems. Sexual dysfunction was denoted by a score of 2 or 3, which also reflected marked distress. Reliability analysis revealed a Cronbach’s α of 0.70, and good content and concurrent validity has been reported (9,10).

The 21-item Beck Depression Inventory (BDI) was used to assess current self-reported symptoms of depression (11,12). Each item measures the presence and severity of a symptom of depression, and by adding the item scores, a total score is determined. A cutoff score of 16 on the BDI was used as an indication of the presence of clinical depression (13). Higher scores indicate a higher number of depressive symptoms. Reliability analysis has shown a Cronbach’s α ranging from 0.92 to 0.93 and a good 1-week test-retest reliability of 0.93. Content and construct validity are reported (14).

The Dyadic Adjustment Scale (DAS), consisting of 32 items, was used to assess the quality of marital relation (15). Higher scores indicate better marital quality. The DAS has shown good reliability (Cronbach’s α = 0.94) and construct validity, as shown in high correlations with the Locke-Wallace Marital Adjustment Test (16).

Questionnaires completed by the women with diabetes. The Appraisal of Diabetes Scale (ADS), consisting of seven items, was used to assess patients’ cognitive appraisal of diabetes, i.e., their thoughts about diabetes (17). For example, questions such as “How effective are you in coping with your diabetes?” and “To what degree does your diabetes get in the way of your developing life goals?” are included. Higher scores indicate a more positive appraisal of diabetes. Acceptable 1-week test-retest reliability (r = 0.85), internal consistency (Cronbach’s α = 0.73), and convergent validity are reported (17).

The Diabetes Integration Scale (ATT19) was used to assess patients’ emotional adjustment to diabetes (18). This scale consists of 19 items, such as “I dislike to be referred to as A DIABETIC” and “I try not to let people know about my diabetes.” Higher scores indicate that patients are accepting their diabetes, are comfortable with public awareness of their diabetes, have a sense of self-control, and feel well adjusted to their diabetes. Reliability analysis revealed Cronbach’s α ranging from 0.82 to 0.83, and good validity was reported (18).

The Diabetes Quality of Life Questionnaire (DQOL) was used to assess patients’ personal experience of the impact of diabetes care and treatment on major life domains (19). The scale consists of 46 items that address four separate areas. In this study, the subscales “satisfaction with treatment” and “impact of treatment” were used. Each item is rated on a five-point Likert scale ranging from 1 (very satisfied) to 5 (very dissatisfied). Higher scores indicate a higher burden of diabetes treatment on the quality of life of patients with diabetes. Cronbach’s α reported for the scales ranged from 0.67 to 0.92, and good convergent validity was demonstrated with evidence of high correlation with other quality of life measures (20).

Medical records were used to assess use of medication (birth control pills, hormone replacement therapy, antihypertensive medication) and to confirm the presence of microvascular complications. Retinopathy was defined as background or proliferative retinopathy as assessed by a full fundus examination after pupil dilatation performed by a certified ophthalmologist at least once yearly. Neuropathy was defined in symptomatic patients with confirmed neuropathy on clinical neurological examination and nerve-conduction studies and/or needle electromyography. Nephropathy was defined as positive microalbuminuria or macroalbuminuria in the medical history, based on two separate 24-h urine collections at least once yearly, even if albuminuria was negative at present, or as persistent elevated serum creatinine levels.

Data analysis
Analyses were performed using SPSS statistical software (Version 10.0; SPSS, Chicago). Student’s t test, χ² test (Fisher’s exact test, if applicable), and Mann-Whitney U test (mwU) were used to calculate differences between groups. A nonstepwise binary logistic regression analysis was used to study possible predictors of sexual dysfunction in both women with diabetes and control subjects. Scores are presented as mean ± SD. The level of significance used was P < 0.05.

RESULTS
Descriptives
A total of 97 women with diabetes (response rate = 80.8%; 9 refused to answer the questionnaire, 10 did not return the questionnaire, and 4 returned a blank questionnaire) and 145 control women (response rate = 80.5%; 10 refused to answer the questionnaire, 18 did not return the questionnaire, and 7 returned a blank questionnaire) completed the questionnaires properly and returned them. Patients’ characteristics are shown in Table 1. For the women with diabetes, the mean
Table 1—Patients’ characteristics

<table>
<thead>
<tr>
<th></th>
<th>Women with diabetes</th>
<th>Control women</th>
<th>ANOVA with post hoc correction (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without complications (I)</td>
<td>With complications (II)</td>
<td>III</td>
</tr>
<tr>
<td>n</td>
<td>50</td>
<td>47</td>
<td>145</td>
</tr>
<tr>
<td>Age (years)</td>
<td>34.4 ± 8.5</td>
<td>39.6 ± 11.3</td>
<td>35.8 ± 9.4</td>
</tr>
<tr>
<td>BMI</td>
<td>24.2 ± 3.6</td>
<td>25.6 ± 4.0</td>
<td>23.3 ± 3.9</td>
</tr>
<tr>
<td>BDI</td>
<td>10.7 ± 7.7</td>
<td>9.3 ± 7.1</td>
<td>7.5 ± 6.8</td>
</tr>
<tr>
<td>DAS</td>
<td>107.1 ± 18.2</td>
<td>109.3 ± 17.4</td>
<td>112.6 ± 15.9</td>
</tr>
<tr>
<td>Menopausal</td>
<td>4.0%</td>
<td>17.0%</td>
<td>10.7%</td>
</tr>
<tr>
<td>Decreased libido</td>
<td>17.0%</td>
<td>16.3%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Decreased lubrication</td>
<td>8.7%</td>
<td>18.6%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Problems with orgasm</td>
<td>8.7%</td>
<td>18.6%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Dysspareunia</td>
<td>10.0%</td>
<td>13.0%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Duration of diabetes</td>
<td>7.7 ± 5.5</td>
<td>21.6 ± 9.1</td>
<td></td>
</tr>
<tr>
<td>HbA1c</td>
<td>3.9 ± 1.4</td>
<td>8.2 ± 1.3</td>
<td></td>
</tr>
<tr>
<td>ATT19</td>
<td>62.4 ± 13.8</td>
<td>61.9 ± 11.9</td>
<td></td>
</tr>
<tr>
<td>ADS</td>
<td>17.7 ± 5.1</td>
<td>17.3 ± 3.9</td>
<td></td>
</tr>
<tr>
<td>DQOL satisfaction</td>
<td>30.9 ± 11.6</td>
<td>30.7 ± 9.1</td>
<td></td>
</tr>
<tr>
<td>DQOL impact</td>
<td>44.6 ± 18.7</td>
<td>45.6 ± 16.7</td>
<td></td>
</tr>
<tr>
<td>DQOL social evolution</td>
<td>8.1 ± 4.8</td>
<td>8.8 ± 6.8</td>
<td></td>
</tr>
<tr>
<td>DQOL somatic evolution</td>
<td>8.2 ± 2.6</td>
<td>8.5 ± 3.1</td>
<td></td>
</tr>
</tbody>
</table>

Data are % and means ± SD. *Significant.

Duration of diabetes was 14.3 ± 10.1 years and the mean HbA1c value was 8.0 ± 1.4%. A total of 52% of women with diabetes had no diabetic complications, whereas 28% had one complication and 20% had multiple complications. Retinopathy was most frequent (31%), followed by autonomic neuropathy (18%), peripheral neuropathy (17%), and nephropathy (11%). No major cardiovascular problems were present in this sample. No nonspecific β-blockers were administered in either group.

Prevalence and type of sexual dysfunction

Significantly more women with diabetes (27%) than women in the control group (15%) reported sexual dysfunction (χ² = 4.5, df = 1; P = 0.04). Sexual problems were not isolated in occurrence: 11% of women with diabetes and 7% of the control women reported two or three sexual problems (χ² = 0.16, df = 2; P = 0.92).

Comparing women with diabetes and women of the control group, a significant difference was found in problems with arousal (χ² = 3.8, df = 1; P = 0.05). No significant differences were found in decrease of desire (χ² = 3.2, df = 1; P = 0.09), dyspareunia (χ² = 2.4, df = 1; P = 0.15), or problems with orgasm (χ² = 0.5, df = 1; P = 0.52).

Sexual dysfunction and use of medications

No statistical evidence was found for the fact that menopausal status (χ² = 0.42, df = 1; P = 0.59) or use of hormone replacement therapy or birth control pills (χ² = 0.89, df = 1; P = 0.37) had an influence on the reporting of sexual problems when comparing women with diabetes and control subjects.

Sexual dysfunction and diabetes-related factors

Women with diabetes who reported sexual problems were not significantly different in age (mwU: z = 1.5; P = 0.13), BMI (mwU: z = 1.8; P = 0.08), duration of diabetes (mwU: z = −0.9; P = 0.36), or HbA1c (mwU: z = −0.7; P = 0.47) compared with those who did not report sexual problems. The subanalysis of women with diabetes without complications also did not reveal significant differences for age (mwU: z = −0.9, P = 0.36), BMI (mwU: z = −1.0, P = 0.34), duration of diabetes (mwU: z = −0.3, P = 0.79), or HbA1c (mwU: z = −1.9, P = 0.052) between those with and without sexual problems. The subanalysis of women with diabetes with complications did not reveal significant differences for age (mwU: z = −1.1, P = 0.28), BMI (mwU: z = −1.3, P = 0.18), duration of diabetes (mwU: z = −0.5, P = 0.63), or HbA1c (mwU: z = −1.1, P = 0.29) between those with and without sexual problems.

Not significantly more women with diabetic complications (33%) reported sexual problems than their counterparts without complications (22%) (χ² = 1.3, df = 1; P = 0.34). Peripheral neuropathy,
autonomic neuropathy, nephropathy, and retinopathy were not significantly associated with sexual dysfunction: 31% of women with peripheral neuropathy and 26% of women without peripheral neuropathy reported sexual dysfunction ($\chi^2 = 0.1, df = 1; P = 0.74$). 47% of women with autonomic neuropathy and 23% of women without autonomic neuropathy reported sexual dysfunction ($\chi^2 = 3.6, df = 1; P = 0.11$), 36% of women with nephropathy and 26% of women without nephropathy reported sexual dysfunction ($\chi^2 = 0.6, df = 1; P = 0.50$), and 33% of women with retinopathy and 24% of women without retinopathy reported sexual dysfunctions ($\chi^2 = 0.8, df = 1; P = 0.44$).

An overall comparison of the percentages of women reporting a specific sexual dysfunction showed that a significant difference only for decreased lubrication ($\chi^2 = 6.5, df = 2; P = 0.04$) (Table 1). Subanalyses showed that this was due to the significant difference between the percentage of women with diabetes with complications and control women who reported decreased lubrication ($\chi^2 = 6.5, df = 1; P = 0.03$) (Table 1).

Moreover, an association was found between the number of complications and the number of sexual problems: women with more complications reported more sexual problems ($\chi^2 = 30.9, df = 12; P = 0.002$).

There were significant differences in diabetes-related psychological factors between those with and without sexual problems. Women with diabetes who reported sexual problems had a more negative appraisal of their diabetes (ADS; mwU: $z = -2.5, P = 0.01$), had more problems with emotional adjustment to diabetes (ATT19; mwU: $z = -2.5, P = 0.01$), were less satisfied with the treatment (mwU: $z = -2.8, P = 0.01$), and experienced more impact of treatment on daily life (mwU: $z = -2.0, P = 0.04$). A subanalysis on women with diabetes without complications revealed significant differences between those who did and did not report sexual problems. Those reporting sexual problems had a more negative appraisal of their diabetes (ADS; mwU: $z = -2.5, P = 0.01$), had more problems with emotional adjustment to diabetes (ATT19; mwU: $z = -2.8, P = 0.005$), and experienced more impact of treatment on daily life (mwU: $z = -3.6, P = 0.000$) but did not differ on satisfaction with the treatment (mwU: $z = -1.9, P = 0.06$) compared with their counterparts without sexual problems. A subanalysis of women with diabetes with complications showed no significant differences between those who did and did not report sexual problems in appraisal of diabetes (ADS; mwU: $z = -0.7, P = 0.48$), emotional adjustment to diabetes (ATT19; mwU: $z = -1.1, P = 0.25$), and impact of treatment on daily life (mwU: $z = -0.76, P = 0.45$), but they did differ for satisfaction with treatment (mwU: $z = -2.2, P = 0.03$).

### Psychological factors in women with diabetes and control women

The overall quality of marital relation was significantly lower for women with diabetes than for control women ($t(240) = -2.0; P = 0.04$). Women with diabetes reported more depressive symptoms than women in the control group ($t(239) = 2.7; P = 0.01$). Based on a cutoff score of 16 on the BDI, twice as many women with diabetes (24%) were depressed compared with the control subjects (11%) ($\chi^2 = 6.8, df = 1; P = 0.01$).

### Psychological factors and sexual dysfunction

In general, women with sexual problems reported significantly lower overall quality of marital relation (mwU: $z = -4.6, P < 0.001$) and significantly more depressive symptoms (mwU: $z = -4.7, P < 0.001$) compared with women without sexual problems. Based on a cutoff score of 16 on the BDI, more than four times more women with sexual problems (38%) were depressed compared with women without sexual problems (8%) ($\chi^2 = 25.3, df = 1; P < 0.001$).

Women with diabetes and women in the control group who had sexual problems reported significantly lower overall quality of marital relation (mwU: $z = -3.3, P = 0.001; z = -2.9, P = 0.004$) and significantly more depressive symptoms (mwU: $z = -2.5, P = 0.01; z = -3.8, P < 0.001$) than their respective counterparts without sexual problems. No significant differences were found between diabetic women with sexual problems and control subjects with sexual problems in quality of marital relation (mwU: $z = -0.4, P = 0.72$) or depression score (mwU: $z = -1.9, P = 0.05$).

### Correlates of sexual dysfunction in women with diabetes and control women

To determine which variables predict the presence of sexual problems in women with diabetes and control women, a non-steepwise binary logistic regression analysis was performed. This regression analysis examined the power of age, diabetes, depression, use of birth control pills or hormone replacement therapy, and the quality of the partner relation to predict the reporting of sexual problems. This analysis showed that being depressed was the only factor that significantly contributed to the reporting of sexual problems (Table 2).

### Conclusions

Considering the young age of this sample, the reported frequencies of sexual dysfunction (13–27%) are high. We found that significantly more women with diabetes (27%) than women of the control group (15%) reported sexual dysfunction. This is in accordance with previously reported data on women with type 1 diabetes. In two different studies on women with type 1 diabetes, Jensen found that 28–29% of the women with diabetes mentioned sexual dysfunction compared with 25% of control women, i.e., women seeing a general practitioner (21,22). Diemont et al. (23) reported a prevalence of sexual problems of 14.9% in women from the general Dutch population. Levine and Yost (24) and Bachman et al. (25) reported a frequency of sexual problems in 17–19% of women attending a general gynecology clinic. The small differences in frequency of sexual dysfunction between our study and the other studies could be due to differences in sample size and recruitment of the control group (general practitioners versus outpatient gynecology clinic) and the used methodology (questionnaire versus questionnaire combined with a semistructured interview).

Although significantly more women with diabetes than control women reported sexual dysfunction in our study, this seems not to be due to a dramatic increase of one problem. As described above, several phases of the sexual response cycle seem to be affected (decrease of libido, arousal, and dyspareunia), but due to the small numbers studied, only the difference in arousal problems reached statistical significance. The prevalence rates we found for the specific sex-
Diabetes and female sexual dysfunction

Table 2—Summary of a non-stepwise binary logistic regression analysis of variables hypothesized to predict the presence of sexual problems in women with diabetes and control subjects

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>SE</th>
<th>Sig</th>
<th>Exp(β)</th>
<th>95% CI for Exp(β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low partner relation quality</td>
<td>0.687</td>
<td>0.416</td>
<td>0.098</td>
<td>1.988</td>
<td>0.880–4.491</td>
</tr>
<tr>
<td>Birth control pill or hormone replacement therapy</td>
<td>-0.616</td>
<td>0.431</td>
<td>0.153</td>
<td>0.540</td>
<td>0.232–1.256</td>
</tr>
<tr>
<td>Depression</td>
<td>1.556</td>
<td>0.454</td>
<td>0.001</td>
<td>4.738</td>
<td>1.948–11.525</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.625</td>
<td>0.377</td>
<td>0.098</td>
<td>1.868</td>
<td>0.892–3.912</td>
</tr>
<tr>
<td>Diabetes Age (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19–29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30–39</td>
<td>-0.035</td>
<td>0.486</td>
<td>0.763</td>
<td>1.00</td>
<td>0.372–2.504</td>
</tr>
<tr>
<td>40–49</td>
<td>-0.131</td>
<td>0.585</td>
<td>0.823</td>
<td>0.877</td>
<td>0.279–2.760</td>
</tr>
<tr>
<td>≥50</td>
<td>-0.526</td>
<td>0.635</td>
<td>0.408</td>
<td>1.692</td>
<td>0.487–5.878</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.238</td>
<td>0.463</td>
<td>0.000</td>
<td>0.107</td>
<td></td>
</tr>
</tbody>
</table>

Sexual dysfunctions are also in accordance with previously reported data. In the present study, decreased sexual desire was reported by 17% of the women with diabetes and 9% of the control women. These numbers are concordant with previous studies with prevalence rates varying between 11 and 45% in diabetic women and between 10 and 31% in control subjects (21,22,26,27). Reduced vaginal lubrication was reported by 14% of women with diabetes and 6% of the control women (21,22,26,27). Reduced vaginal lubrication was associated with sexual problems. The presence of diabetic complication did not have an influence on the reporting of sexual problems. A relation could, however, be found between the number of complications and the number of sexual dysfunctions.

In this study, no association was found between sexual dysfunction and age, BMI, or use of medication (birth control pills, hormone replacement therapy). No diabetes-related somatic factors, such as glycemic control, duration of diabetes, or diabetic complications, seemed associated with sexual problems. The presence of diabetic complication did not have an influence on the reporting of sexual problems. A relation could, however, be found between the number of complications and the number of sexual dysfunctions. The present study also did not reveal an association between the kind of complications and the reporting of sexual problems. Jensen, however, did find such an association between peripheral neuropathy and sexual dysfunction, but he could not confirm this association in a second study (21,22). Tyrer et al. (27) found that symptomatic autonomic neuropathy was associated with a decrease in the experience of sexual arousal during intercourse. These results suggest that although neuropathy is theoretically (on analogy of men) a likely cause of sexual dysfunction in women with diabetes, there is still no clear evidence for such a link (5). It is, however, questionable if all these studies had enough power to detect such an association due to the small number of patients (with complications) included.

The present study revealed that diabetic women with sexual dysfunction had more problems with emotional adjustment to diabetes, experienced more impact of the treatment on daily life, and were less satisfied with the treatment. We found, however, important differences in the relation between psychological factors and sexual dysfunction when analyzing women with and without complications separately. Women without complications who reported sexual problems differed on all psychological variables, except satisfaction with their treatment for diabetes, compared with those not reporting sexual problems. In women with complications, those reporting sexual problems did not differ on any psychological variable, except satisfaction with their treatment for diabetes. A possible explanation for this difference is that women with uncomplicated diabetes still are satisfied with their treatment, which could prevent the development of complications, and that sexual dysfunction, possibly experienced as the first complication of diabetes, negatively influences their psychological adjustment to diabetes. Women with complicated diabetes are not satisfied with their treatment, which could not prevent the development of complications, and a sexual dysfunction, possibly experienced as another complication of diabetes, does not have more influence on their psychological adjustment than any other complication.

The finding that psychological adjustment to diabetes and sexual dysfunction are related is in accordance with the finding that disease acceptance is a crucial factor in predicting the sexual function of a couple. Our findings confirm that there is
a relation between sexual dysfunction and psychological adjustment to diabetes, and the addition of complications can alter the perception of this psychological impact of sexual dysfunction in women with diabetes. The correlational design of our study, however, does not allow a causal interpretation of this observed association, which should be studied in future research.

This study also revealed that sexual dysfunction was related to general psychological factors in both women with diabetes and control women. Sexual dysfunction was associated with lower overall quality of marital relation and more depressive symptoms in both groups. This is not surprising because the relation between marital relation, depression, and sexual dysfunction is well established in the literature. Our attempt to find significant predictors of sexual dysfunction showed only depression to be a significant predictor of sexual dysfunction. This suggests that, in both women with diabetes and control women, sexual dysfunction seems to be related to psychological rather than other factors.

In the interpretation of the results of this study, some limitations are noteworthy. Although our study is the largest ever done in the comparison of women with and without sexual problems, large numbers could not be included in every analysis. The cross-sectional design of the study does not allow us to make any causal interpretation of the observed associations between psychological variables and sexual dysfunction. Concerning the relation between demographic and medical variables, there was an unequal appraisal of the two groups. In individuals with diabetes, medical records were reviewed, whereas in the control group, we relied on self-report data, which enabled us to guarantee complete anonymity.

In conclusion, the results of this study confirm that women with diabetes are clearly at risk for decreased desire and dyspareunia and that especially the arousal phase can be affected. Our results also suggest that psychological and non-diabetes-related somatic factors are related to sexual dysfunction in women with diabetes. The sexual problems of women with diabetes deserve more attention in clinical research and practice.

References