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Perceived discrimination against diabetics in the workplace and in work-related insurances in Switzerland

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Summary

Background: To investigate the prevalence and risk factors of perceived diabetes-related discrimination in the workplace and in work-related insurances in persons with diabetes mellitus in Switzerland.

Methods: 509 insulin-treated diabetic subjects representative of the northwestern Swiss population responded to a self-report questionnaire on perceived diabetes-related discrimination in the workplace and in work-related insurances (salary loss insurance, supplementary occupational plan). Discrimination was defined as being treated differently at least once in relation to diabetes.

Results: The reported rates of different aspects of discrimination in the workplace and in work-related insurances ranged between 5–11% and 4–15% respectively. Risk factors that independently increased the risk of not being hired due to diabetes were the presence of at least two severe hypoglycaemic events/year and relevant diabetic complications (OR 5.6 and OR 2.6 respectively; both p <0.05). The presence of at least two severe hypoglycaemic events/year was also associated with an increased risk of losing one's job (OR 6.5, p <0.01). Overweight or obesity were related to increased discrimination in work-related insurances (OR for denial 2.1–2.4; OR for reserve 3.9–4.4; all p <0.05).

Conclusions: Perceived diabetes-related discrimination in the workplace and by work-related insurances is a common problem. In the light of our findings the introduction of effective non-discrimination legislation for patients with chronic illnesses appears to be desirable.

Key words: diabetes mellitus; insulin; discrimination; work; insurance

Introduction

The prevalence of diabetes mellitus is increasing in Switzerland and worldwide: a recently published population-based study showed a diabetes prevalence of 6.6% in the Caucasian population aged 35–75 yrs in Lausanne [1], and it is assumed that over 6% of the world adult population will be diabetic in 2025 [2]. The question if diabetes impacts on workplace discrimination will become important, since there have been publications reporting increased workplace discrimination in other chronic diseases such as HIV [3] or mental illness [4], and diabetes is becoming more common in the working-age population [5].

Several patients of the outpatient diabetes clinic of the University Hospital Basel have reported diabetes-related problems at the workplace or when applying for insurances. The only information we found regarding workplace- or insurance-related discrimination of persons with diabetes in Switzerland was based on a phone interview by the Swiss Diabetes Foundation performed in 2007: These data obtained from interviews with 200 members showed that up to 40% of the responders had been faced with discrimination in the workplace or in insurances [6].

The aims of the present study were to investi-

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gate the prevalence and risk factors for perceived discrimination in the workplace as well as in salary loss insurance ("Taggeldversicherung"; "assurance d'indemnités journalières") and supplementary occupational plan ("überobligatorische berufliche Vorsorge, Säule 2b"; "prévoyance professionnelle surobligatoire") in persons with diabetes in a well defined region in Switzerland. On the basis of our experience we postulated that certain diabetes-related factors, such as severe hypoglycaemic events, the presence of chronic complications or overweight would be associated with an increased prevalence of problems at the workplace or with insurances.

Methods

Patients

In 2006, 509 German-speaking insulin-treated diabetic patients (297 type 1, 205 type 2 diabetic patients and 7 patients where no definite attribution to a specific diabetes type was possible) were asked to participate. Some other aspects of this population had been previously published [7]. Briefly, patients were recruited from the Basel University Hospital diabetes outpatient clinic (n = 203), the other 5 regional hospitals in the Basel area (n = 135), 13 of 14 specialist practices (n = 107) and 15 randomly selected general practices (n = 64) from the cantons Basel-Stadt, Basel-Land, Aargau and Solothurn. The questionnaires were sent to all insulin-treated diabetic patients in our outpatient clinic or were distributed consecutively within a time period of two months. This time period was chosen for reasons of feasibility and since most of these patients were seen at 2–3 monthly intervals. Anonymity was ensured. Overall, 636 questionnaires were distributed and 80% were completed and returned. The characteristics of the patients are shown in table 1. The Basel University human research ethics committee approved the study and the study was registered at ClinicalTrials.gov (Identifier: NCT00661908).

Questionnaire

A questionnaire included 11 questions concerning diabetes-related discrimination in the workplace and in work-related insurances (salary loss insurance and supplementary occupational plan). Table 2 shows the questions with their attribution to a working process phase. The

Table 1

Baseline characteristics of the patients.

	Type 1 diabetic patients n = 297	**Insulin-treated Type 2 diabetic patients n = 205**	**p-value**
Age (yr)	45.4 ± 17.9	63.0 ± 9.9	<0.001
Sex (m/f)(%)	46/54	63/37	<0.0001
Educational level (%)			<0.05
up to 9th grade	26	30	
10–12th grade	40	47	
over 12th grade	34	23	
Employment status (%)			<0.0001
undergoing training	13	0	
working full-time	32	17	
working part-time	13	6	
unemployed*	12	27	
retired	17	39	
others**	13	11	
Origin (Swiss/non-Swiss)(%)	73/27	82/18	<0.05
BMI (kg/m^2)	23.4 (21.3–26)	29.9 (26.5–33.5)	<0.001
HbA_{1c} (%)	7.3 ± 1.0	7.7 ± 1.1	<0.0001
Subjects reporting one ore more severe hypoglycaemic events/year (%)	29	15	<0.01
Total diabetic complications (n/patient)	0.4 ± 0.8	0.6 ± 0.9	<0.01
Single complications (% of all patients)			
Sensory polyneuropathy	11	15	NS
Retinopathy without visual impairment	7	18	<0.0001
Retinopathy with visual impairment	14	19	NS
Cerebrovascular disease	1	4	NS
Coronary heart disease	4	10	<0.05
Nephropathy	7	6	NS
Lower limb amputation	1	2	NS

Data are shown as means ± SD for normally distributed variables and as median and interquartile ranges for not normally distributed variables. * including unemployed persons and subjects receiving social insurance or invalidity pension, ** predominantly housewives, NS not significant

Table 2
Prevalence of reported diabetes-related discrimination according to working process phase.

Phase of working process	Questions in our questionnaire	% of responders with affirmative answer
Application	Have you ever been asked in application interviews if you are diabetic?	11
	Was an application expressly declined because of your diabetes?	10
	Did you spontaneously declare in application interviews that you are diabetic?	44
Entering contract	Did you answer questions concerning your health before entering salary loss insurance?	32
	Was your application for salary loss insurance declined?	6
	Was your application for supplementary occupational plan declined?	4
	Do you have a reserve because of diabetes in salary loss insurance?	14
	Do you have a reserve because of diabetes in a supplementary occupational plan?	15
Dismissal	Have you ever lost a job because of diabetes?	5
Independent of phase	Did an employer ever tell you that you were hired despite your diabetes?	22
	Have you ever considered setting up on your own? If yes, did you renounce because of diabetes-related insurance problems?	27/9

subdivision of questions used in working process phases was originally developed to assess workplace discrimination of HIV-positive subjects [3]. Answering "yes, at least once" confirmed the circumstance of discrimination, since the affirmative answer pointed to a circumstance in which a diabetic subject was treated differently from a non-diabetic subject. Declaring oneself spontaneously to be diabetic was included as one of the questions (table 2), since it carries a high potential for disadvantage. Similarly, having considered setting up on one's own, but not being able to do so due to diabetes-related insurance problems (refusal or reserve in a salary loss insurance and supplementary occupational plan) was included as a question on diabetes-related discrimination.

The questionnaire also included sociodemographic confounder variables (table 1) and the following diabetes related factors: type of diabetes, diabetes duration, weight and height, HbA1c, treatment satisfaction, the frequency with which patients forgot to inject insulin, the frequency of severe hypoglycaemic events/year (defined as events requiring the assistance of another person) and number and type of diabetic complications (table 1). For the last variable we used three categories: 1) no complications, 2) nephropathy/sensory polyneuropathy/retinopathy without visual impairment, 3) coronary heart disease/cerebrovascular disease/retinopathy with visual impairment or lower limb amputation. Of all 509 questionnaires returned, complete information on socioeconomic (age, sex, origin, education, occupation etc) and medical (prevalence of severe hypoglycaemia, complications, treatment satisfaction etc) parameters existed for 497 patients. Complete information on all questions, including work- and insurance-related questions, were available for 388 patients.

The entire German-speaking questionnaire is available on the Swiss Medical Weekly website: http://www.smw.ch/dfe/set_archiv.asp→Archive→issue 35-36, 2006).

Statistical analysis

The differences in demographic characteristics between type 1 and type 2 diabetic patients were compared by unpaired t-tests, Mann-Whitney U tests or by χ^2 analysis, as appropriate. The impact of diabetes-related factors (e.g., type of diabetes, frequency of severe hypoglycaemic events, body weight and the presence of diabetes complications) and of informing their employer of their diabetes on discrimination in the workplace and in insurances was assessed by multivariable logistic regression analysis. Data were adjusted for age, gender and employment status (working full- or part-time versus all others) and diabetes type. The results were further adjusted for origin and educational level. P values <0.05 were considered statistically significant. Analyses were performed using Intercooled STATA® (Version 9, StataCorp LP, Texas).

Results

Overall, 78% of patients were Swiss (table 1). 12% were immigrants from western and central Europe (e.g., Germany, Austria, France, etc), 7% were from the Mediterranean area (e.g., Italy, Spain, Turkey etc) and 3% were from other continents (e.g., Asia, Africa, the Americas etc). These patients are comparable to a group of 366 Swiss primary care diabetic patients studied, except that all our patients are treated with insulin and that in our group, also involving patients followed in a university hospital, the unemployment rate is higher [8].

Almost half of responders (44%) declared spontaneously in application interviews that they were diabetic and this was observed more than twice as frequently by patients with type 1 diabetes (OR 2.9, 95% 1.7–5.1, p = 0.0001). 11% were asked about diabetes by their employers. 5–10% of patients reported not having been hired or having lost their job at least once due to diabetes. The reported rate of diabetes-related insurance problems (reserve or denial) at the workplace ranged between 4–15% (table 2).

Diabetes-related discrimination

Having **type 1 diabetes** was independently associated with workplace discrimination (table 3). This persisted even after further adjustment for severe hypoglycaemias (data not shown).

Subjects with at least one severe hypoglycaemic event/year were significantly more often asked about diabetes by employers, and they lost

Table 3

Reported diabetes related risk factors of work and insurance-related discrimination.

Phases of working process		Type 1 versus type 2 diabetes			At least two versus no severe hypoglycaemic events/year			Relevant diabetic* versus no diabetic complications			BMI >25 kg/m² versus BMI ≤25 kg/m²		
		OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Application	Employer asked about diabetes during application interview	3.1	1.2–7.8	0.02	6.4	2.2–18.8	0.001	2.7	1.2–6.1	0.02	2.1	1.1–4.4	0.04
	Application was refused due to diabetes	2.8	1.0–7.7	NS	5.6	1.9–16.5	0.002	2.6	1.0–6.5	0.04	1.8	0.8–4.0	NS
Entering contract	*Refusal by:* Salary loss insurance	1.7	0.6–5.0	NS	N/E			1.7	0.5–5.3	NS	3.9	1.4–11.0	0.01
	Suppl. occupational plan	3.3	0.9–13.0	NS	2.5	0.5–13.3	NS	1.6	0.4–5.7	NS	4.4	1.3–15.0	0.02
	Reserve: Salary loss insurance	1.2	0.6–2.5	NS	1.3	0.3–6.2	NS	0.9	0.3–2.2	NS	2.4	1.1–4.9	0.02
	Suppl. occupational plan	2.6	1.2–5.7	0.02	0.3	0.1–2.5	NS	1.3	0.5–3.0	NS	2.1	1.0–4.1	0.04
Dismissal	Diabetic subject lost job due to diabetes	2.5	0.7–8.6	NS	6.5	1.6–26.4	0.009	2.0	0.6–6.4	NS	0.6	0.2–2.0	NS
Independent of phase	Diabetic subject was employed despite diabetes	2.9	1.4–6.3	0.004	3.9	1.5–10.6	0.006	0.9	0.4–1.8	NS	1.1	0.6–1.9	NS

All data were adjusted for age, gender, employment status and diabetes type. Further adjusting for origin and level of education did not alter these results
* Relevant diabetic complications included coronary heart disease/cerebrovascular disease/retinopathy with visual impairment or lower limb amputation.
OR: Odds ratio; CI: Confidence interval; N/E: Not estimable because there is no case in this category;
NS: Not significant; Suppl.: supplementary

their job four times more often due to diabetes compared to those with no severe hypoglycaemic events (21% versus 8% and 12% versus 3%, all p <0.01). The 59 subjects who had **at least two severe hypoglycaemic events/year** showed a further increase in discrimination rates: their risk of being asked about diabetes, of not being hired due to diabetes, or of losing their job due to diabetes was 6-fold that of subjects without severe hypoglycaemic events (table 3).

Having at least one **diabetic complication** was not associated with increased discrimination compared to subjects without complications. However, subjects with clinically relevant complications such as coronary heart disease, cerebrovascular disease, lower limb amputation or retinopathy with visual impairment reported having been asked about diabetes in application interviews, and not having been hired because of diabetes, 3 times as often as the group without diabetic complications (all p <0.05).

Discrimination was not more frequent in work-related insurances for subjects with severe hypoglycaemic events or with relevant diabetic complications (p = NS). In contrast, being **overweight or obese** was associated with a 2–4 fold increase in insurance-related discrimination due to diabetes (table 3).

Other diabetes-related factors, such as parameters relating to **adherence** (metabolic control [HbA1c], number of times patients forgot to inject their insulin), **treatment satisfaction** or parameters such as education level or origin, were not associated with discrimination in the workplace and in work-related insurances (data not shown).

Diabetes-related factors did not influence the decision to become self-employed (data not shown).

Informing their employers spontaneously of their diabetes and being asked about it by the employer was associated with an increased risk of not being hired due to diabetes (OR 24.6 [95% CI 5.5.–109]; p <0.001 and OR 13.3 [95% CI 5.6–31.6]; p <0.001 respectively) or of losing their job due to diabetes (OR 4.2 [95% CI 1.2–14.3]; p <0.05 and OR 10.6 [95% CI 3.5–31.7]; p <0.001 respectively).

Discussion

The present study of more than 500 insulin-treated diabetic subjects is the first to provide information on perceived diabetes-related discrimination in the workplace and in work-related insurances in Switzerland. The reported prevalence of the different aspects of perceived discrimination ranged between 5–11% and between 4–15% of subjects respectively. The presence of severe hypoglycaemia and clinically relevant diabetic complications represented risk factors for workplace discrimination, but had no impact on discrimination in work-related insurances. In contrast, being overweight or obese was related to increased discrimination in work-related insurances as well as in the workplace during the job application phase. Being asked about diabetes by a potential employer during job application interviews or declaring their diabetes spontaneously during job inteviews were both associated with increased workplace discrimination.

Despite differences in culture, legislation, employment rate and study designs, the prevalence of perceived diabetes-related workplace discrimination is similar to data in the literature, where 13–50% [9–11] of diabetic subjects reported difficulties in obtaining employment because of diabetes, 4–20% having failed to get a job due to diabetes [10, 12, 13] and 7–19% having lost a job due to diabetes [11, 14]. This could contribute to the lower employment rate for diabetic patients found in some studies [5, 15]. The prevalences of job denial and job loss due to diabetes found in our survey [5–11%] are in agreement with perceived discrimination of other chronic diseases such as mental illness (3–6%), cancer (7–10%), obesity (up to 17%) and HIV/AIDS (6–18%) [16–23]. One main problem is to decide whether unequal treatment of diabetic patients at the workplace or in connection with insurances is (medically) justified or not. In our series there was no difference in perceived discrimination at the workplace or in work-related insurances across the different educational levels. However, if job safety was the major reason for unequal treatment, discrimination would possibly be encountered more frequently in patients with lower educational levels, who are more likely to do jobs requiring high levels of physical effort or where hypoglycaemia could decrease job safety (frequently observed examples are bus or taxi drivers or people working at high elevations). We unfortunately do not know the professions of the patients who filled out the questionnaires, but we have information on the professions of the insulin-treated patients at Basel University Hospital, from which 203 of the 509 patients were recruited. There the vast majority of patients had administrative or secretarial jobs, or IT jobs, while some worked in a laboratory, in a medical setting (nurses, nursing assistants) or were teachers. Fewer than 5 patients had jobs that were clearly physically strenuous or where the strict avoidance of hypoglycaemia is absolutely essential, such as drivers, people working at high elevations, machine operators, construction workers etc. In addition, severe hypoglycaemias at the workplace have been shown to be uncommon and to rarely cause disruption or serious morbidity [24]. Besides job safety, decreased productivity could be another reason for unequal treatment. However, factors associated with improved productivity, such as good metabolic control [25], were not associated with less perceived discrimination in our study. Perceived decreases in productivity may also play a role: in one Swiss study discrimination due to HIV was observed in particular where employers perceived that productivity would be decreased due to HIV/AIDS [3], and this despite the fact that a previous survey in Switzerland had revealed that the productivity of the HIV/AIDS population was even higher than the Swiss average [21]. Stigmatisation may also play a role in the perceived discrimination: stigmatisation is a process of social construction in which attributes are ascribed to a person that are of a degrading character and are not based on "objective" criteria (the stigmatised person may internalise the perception and behave accordingly). People with "inborn stigmas" (or stigmas they did not cause themselves, e.g., diabetes, most types of cancer) could be less harshly judged than those stigmatised identities they do cause (e.g., obesity, HIV). Indeed, the above mentioned prevalence in perceived discrimination may be slightly higher in the latter two illnesses. In a study using simulated job decisions, diabetic and obese applicants were less likely to be hired because of a presumption of poorer working habits and medically related absenteeism, while in obese populations further presumptions were postulated absences by feigning illness and emotional and interpersonal problems [26]. In the above cited Swiss HIV/AIDS study *perceived* productivity seemed to be an even greater concern to employers than the stigma [3].

In our population the observed workplace discrimination during the phases of job application and dismissal due to the presence of severe hypoglycaemias showed a "dose-relation"-ship: reported discrimination was higher when the prevalence of severe hypoglycaemic events increased. The fact that the frequency of these events remained low in our population (median <1/year) makes it unlikely that this discrimination was merely due to a real restriction of the subjects' work capacity or safety, and, as mentioned above, severe hypoglycaemias at the workplace are uncommon and rarely cause disruption or serious morbidity [24]. Similarly, we also observed increased work-related discrimination in subjects with clinically relevant chronic diabetic complications and in

overweight or obese subjects. The association of overweight and obesity with increased workplace discrimination is supported by several authors [18, 22, 26, 27]. As our data were anonymous, we cannot say in what situations the presence of any of the diabetes-related factors mentioned did indeed have an impact on the subjects' job capacity and thus justified the employer's decision.

In Swiss private law it is unlawful to refuse employment (Article 27/28 of the Swiss Civil Code, "Schweizerisches Zivilgesetzbuch/ZGB") or to dismiss a person on the grounds of diabetes without proving the person's inability to meet the main job requirements (Article 336 of the Swiss Code of Obligations, "Obligationenrecht/OR"). In the public sector, refusing employment or dismissing a person on the grounds of diabetes without justification is a violation of the prohibition on discrimination according to Article 8 section 2 of the Federal Constitution ("Bundesverfassung"). In addition, according to US and EU law (and the Swiss Code of Obligations could represent an analogy to this law), not hiring a person due to decreased productivity is regarded as discrimination due to diabetes, unless the employers assume their responsibility for **"reasonable accommodation"** (i.e., providing an opportunity to have regular meals, regularly measure blood glucose and inject insulin etc). Discrimination on the grounds of health status leads to social exclusion and social costs which must be met by social insurances. In the legal system of the European Union traditional social law is being increasingly supplemented with strong anti-discrimination legislation in the field of occupation and employment ("the duty to accommodate" is part of this legislation), and this approach should also be considered for Swiss law. Useful alternative solutions in addition to "reasonable accommodation" are raising of public awareness, informing and referring patients to specialised centres, more personalised identification of risk factors related to the inability to meet specific job requirements or to qualify for work-related insurances, an increase in future research and a dialogue between medicine, social sciences and jurisprudence.

During the phase of entering into a contract, acute complications such as severe hypoglycaemic events and chronic diabetic complications did not represent risk factors for discrimination in work-related insurances. In contrast, overweight or obese subjects reported discrimination when applying for these insurances. Overweight or obesity-related insurance problems, such as having to pay higher premiums for health insurance or being denied it, along with diabetes-related discrimination by life, accident or automobile insurances, are documented by several authors [22, 28–31].

In the event of preexisting health risks and existing illness such as diabetes, insurance companies and pension funds in Switzerland are allowed by Health Insurance Law ("Krankenversicherungsgesetz/KVG") and the Federal Law on Occupational Pension Plans ("Bundesgesetz über die berufliche Vorsorge/BVG") to impose a maximum five years' reserve in respect of salary loss insurances and supplementary occupational benefits. Under the private Insurance Contract Law ("Versicherungsvertragsgesetz/VVG") including salary loss insurance, diabetic subjects may be excluded or charged higher premiums. However, exclusion or reservation because of health status is not allowed in the context of the compulsory occupational benefits plan (pension fund, which was not investigated in our study).

Our data show a possible association between informing the employer of diabetes and increased diabetes-related workplace discrimination. This observation is confirmed by some [32] but not all [13] studies, but is clearly seen in patients with other chronic illnesses such as HIV [21].

According to Article 328b of the Swiss Code of Obligations (CO) employers are not allowed to inquire about the health status of employees or job applicants, except where the job requirements do not allow certain medications (e.g., pilots, bus drivers). Employees with diabetes must inform the employer regarding their capability/fitness to work, but in general not about the diagnosis.

The strengths of the study are that it is the first to present an analysis of both work- and insurance-related discrimination against diabetic subjects and to identify risk factors for increased discrimination. While other studies investigated only type 1 diabetic subjects [9, 12, 13] or did not distinguish between type 1 and type 2 diabetes [10, 32], we included both types and adjusted statistically in certain analyses for both types and other sociodemographic confounder variables. Since we included insulin-treated diabetic subjects from the University Hospital outpatient clinic, from regional hospitals as well as from specialist and general practitioners, the present study population should be representative for a broad cross section of Switzerland. The present study is the first to provide Swiss data on diabetes-related discrimination. Indeed, the only data regarding illness-related discrimination in Switzerland were obtained in patients with HIV and are not part of the medical literature [3]. Despite the subjectivity of self-reports, several arguments support the validity of our findings: first, they are in agreement with the international literature. Second, we observed a dose-relationship for some risk factors, and third, the subjects investigated did not merely report undifferentiated discrimination for all situations of the work process.

Despite this, the present study has certain limitations: first, all data are from a self-written questionnaire completed anonymously by the patients; they are therefore subject to a recall bias on the patients' part. Recall bias may be further influenced by the fact that the questionnaire does not refer to a specific recall period and there is no information about the time of the perceived discrimination. Second, the population investigated includes only insulin-treated diabetic subjects and only subjects living in northwestern Switzerland. Third, interpretation of the findings concerning overweight

and obese diabetic subjects is complicated by the fact that the questionnaire asked about diabetes-related discrimination and not directly about overweight- or obesity-related discrimination. Fourth, our questionnaire did not include questions on all possible phases in the work process [3]. Further limitations are the lack of precise information on the nature of individual jobs and lack of a control group (e.g., a group with another chronic disease).

In summary, our data suggest that up to 11% of our population face different aspects of discrimination in the workplace, and up to 15% in work-related insurances. Specifically, acute complications such as severe hypoglycaemic events and chronic diabetic complications represent risk factors for workplace discrimination, but work-related insurances do not appear to differentiate between diabetic subjects with and without these complications. However, overweight or obesity were risk factors for both aspects of discrimination.

Thus the present study suggests that, to preclude unjustified job-selection biases and provide appropriate work-related insurance cover, the introduction of effective antidiscrimination legislation for patients with chronic illnesses would be highly desirable. A further necessity is an intensified dialogue between medicine, social sciences and jurisprudence.

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References

1 Firmann M, Mayor V, Vidal PM, Bochud M, Pecoud A, Hayoz D, et al. The CoLaus study: a population-based study to investigate the epidemiology and genetic determinants of cardiovascular risk factors and metabolic syndrome. BMC Cardiovasc Disord. 2008;8:6.
2 IDF. Diabetes Atlas, Executive Summary. 2003 [cited 2008 June 16]; Second Edition:Available from: http://www.eatlas.idf.org/webdata/docs/Atlas%202003-Summary.pdf
3 Pärli K, Caplazi A, Suter C. Recht gegen HIV/Aids-Diskriminierung im Arbeitsverhältnis: eine rechtsvergleichende Untersuchung zur Situation in Kanada, Grossbritannien, Frankreich, Deutschland und der Schweiz. Bern: Haupt Verlag; 2007.
4 Stuart H. Mental illness and employment discrimination. Curr Opin Psychiatry. 2006;19(5):522–6.
5 Tunceli K, Bradley CJ, Nerenz D, Williams LK, Pladevall M, Elston Lafata J. The impact of diabetes on employment and work productivity. Diabetes Care. 2005;28(11):2662–7.
6 SDG. Gib Diabetes ein Gesicht. 2008 [cited 2008 June 16]; Available from: http://www.gibdiabeteseingesicht.ch/index.php?id=9
7 Puder JJ, Endrass J, Moriconi N, Keller U. How patients with insulin-treated type 1 and type 2 diabetes view their own and their physician's treatment goals. Swiss Med Wkly. 2006;136(35-36):574–80.
8 Sebo P, Abetel G, Stalder H, Bovier PA. Importance of lifestyle counselling by primary care physicians for diabetic patients. Swiss Med Wkly. 2006;136(35-36):566–73.
9 Petrides P, Petermann F, Henrichs HR, Petzoldt R, Rolver KM, Schidlmeier A, et al. Coping with employment discrimination against diabetics: trends in social medicine and social psychology. Patient Educ Couns. 1995;26(1-3):203–8.
10 Griffiths RD, Moses RG. Diabetes in the workplace. Employment experiences of young people with diabetes mellitus. Med J Aust. 1993;158(3):169–71.
11 Robinson N, Yateman NA, Protopapa LE, Bush L. Employment problems and diabetes. Diabet Med. 1990;7(1):16–22.
12 Matsushima M, Tajima N, Agata T, Yokoyama J, Ikeda Y, Isogai Y. Social and economic impact on youth-onset diabetes in Japan. Diabetes Care. 1993;16(5):824–7.
13 Bergers J, Nijhuis F, Janssen M, van der Horst F. Employment careers of young type I diabetic patients in The Netherlands. J Occup Environ Med. 1999;41(11):1005–10.
14 Robinson N, Stevens LK, Protopapa LE. Education and employment for young people with diabetes. Diabet Med. 1993;10(10):983–9.
15 Ng YC, Jacobs P, Johnson JA. Productivity losses associated with diabetes in the US. Diabetes Care. 2001;24(2):257–61.
16 Bhui K, Stansfeld S, McKenzie K, Karlsen S, Nazroo J, Weich S. Racial/ethnic discrimination and common mental disorders among workers: findings from the EMPIRIC Study of Ethnic Minority Groups in the United Kingdom. Am J Public Health 2005;95(3):496–501.
17 Bouknight RR, Bradley CJ, Luo Z. Correlates of return to work for breast cancer survivors. J Clin Oncol. 2006;24(3):345–53.
18 Carr D, Friedman MA. Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. J Health Soc Behav. 2005;46(3):244–59.
19 Dray-Spira R, Gueguen A, Lert F. Disease severity, self-reported experience of workplace discrimination and employment loss during the course of chronic HIV disease: differences according to gender and education. Occup Environ Med. 2008;65(2):112–9.
20 Ehrmann-Feldmann D, Spitzer WO, Del Greco L, Desmeules L. Perceived discrimination against cured cancer patients in the work force. Cmaj. 1987;136(7):719–23.
21 Pärli K, Müller Kucera K, Spycher S. Aids, Recht und Geld eine Untersuchung der rechtlichen und wirtschaftlichen Probleme von Menschen mit HIV/Aids. Zürich: Verlag Rüegger; 2003.
22 Puhl R, Brownell KD. Bias, discrimination, and obesity. Obes Res. 2001;9(12):788–805.
23 Schultz PN, Beck ML, Stava C, Sellin RV. Cancer survivors. Work related issues. Aaohn J. 2002;50(5):220–6.
24 Leckie AM, Graham MK, Grant JB, Ritchie PJ, Frier BM. Frequency, severity, and morbidity of hypoglycemia occurring in the workplace in people with insulin-treated diabetes. Diabetes Care. 2005;28(6):1333–8.
25 Testa MA, Simonson DC. Health economic benefits and quality of life during improved glycemic control in patients with type 2 diabetes mellitus: a randomized, controlled, double-blind trial. JAMA. 1998;280(17):1490–6.
26 Klesges RC, Klem ML, Hanson CL, Eck LH, Ernst J, O'Laughlin D, et al. The effects of applicant's health status and qualifications on simulated hiring decisions. Int J Obes. 1990;14(6):527–35.
27 Puhl RM, Andreyeva T, Brownell KD. Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. Int J Obes. (Lond) 2008.
28 Runge CF. Economic consequences of the obese. Diabetes. 2007;56(11):2668–72.
29 Songer TJ, LaPorte RE, Dorman JS, Orchard TJ, Becker DJ, Drash AL. Health, life, and automobile insurance characteristics in adults with IDDM. Diabetes Care. 1991;14(4):318–24.
30 Frier BM, Sullivan FM, Stewart EJ. Diabetes and insurance: a survey of patient experience. Diabet Med. 1984;1(2):127–30.
31 Borch-Johnsen K. Improving prognosis of type 1 diabetes. Mortality, accidents, and impact on insurance. Diabetes Care. 1999;22 (Suppl 2):B1–3.
32 Songer TJ, LaPorte RE, Dorman JS, Orchard TJ, Becker DJ, Drash AL. Employment spectrum of IDDM. Diabetes Care. 1989;12(9):615–22.