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Evaluation of a lifestyle change programme for the treatment of obesity in general practice

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Summary

In order to evaluate the effectiveness of a cognitive behavioural group therapy programme for the treatment of obesity in clinical practice, 122 patients from 14 general practices (n = 70) were randomised into either a treatment or a control arm with a ratio of 3 to 2. The group treatment programme was also assessed in a clinical centre (n = 52; University Hospital Basel). Before therapy, a clinical interview and a mental disorder examination were carried out on all patients.

The instructors of the programme (practitioners; clinic physicians) were trained during two afternoon meetings to supervise the group sessions. The treatment programme consisted of 16 group sessions of 90 min each, and contained psycho-educational elements concerning a balanced diet, instruction for the integration of more activity in everyday life (lifestyle activity), problem-solving strategies, and the cognitive restructuring of dysfunctional cognition regarding the own body.

All the patients who were treated in the various settings demonstrated a benefit from therapy. Compared to the control groups which received usual medical care, they were able to reduce their starting weight by around 5% ($p < 0.001$ for the group treated by practitioners) at the end of treatment and stabilise it until follow up after one year. In regard to psychological factors the treatment groups showed an increased sense of control over eating behaviour, and feelings of distractibility and hunger were reduced after treatment and at follow up ($p < 0.05$). All treatment groups showed statistically relevant increases in feelings of attractiveness regarding their body and shape ($p < 0.05$). These results support the effectiveness of the integrated cognitive behavioural treatment programme in clinical practice over a duration of 12 months.

Key words: obesity; group treatment; cognitive behavioural therapy

Introduction

Obesity is currently described as one of our major health problems [1]. The yearly costs of somatic complications due to obesity are estimated to be 8% of the total health costs in industrialized countries [2]. The distinct increase in the prevalence of obesity among adults, up to 35% in the USA and 28% for overweight and 6.8% for obese subjects in Switzerland [3], runs parallel to an increase in overweight children in all industrial countries [4]. According to the fact that in the last 10 to 15 years the prevalence of obesity in children in Europe and the USA has doubled [5, 6], it is expected that the prevalence of overweight and obese people will increase further during the next coming years. Obesity is closely associated with various chronic disorders such as cardiovascular diseases, metabolic syndrome and mental disorders (e.g. anxiety and mood disorders [7]). Prevention and treatment of these co-morbid disorders represent a considerable workload for the health system.

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Definition and symptoms from a biological, psychological and sociological view

Nowadays aetiology and maintenance of obesity is discussed as a combination of biological, psychological and sociological factors. Defining obesity is straightforward: an excess of body fat. Obesity has to be distinguished from overweight, which refers to weight in excess of some standard. In contrast to clinical studies in which obesity is often defined on the basis of direct measures of obesity (e.g. using underwater weighing, com-

puted tomography); in large-scale, population-based surveys obesity is most often defined on the basis of weight and height. Height and weight data can be expressed in terms of the body mass index (BMI = weight in kilograms per height in meters^2). Overweight is defined as a BMI of 25–29.9 kg/m^2 and obesity as ≥30 kg/m^2 [8].

Obesity is currently regarded as a chronic and recurring disorder [9]. The aim of treatment is the handling of the vulnerability factors, striving for a long-term, moderate weight reduction.

Besides the wide number of medical complications which lead to increased morbidity and mortality, obesity is associated with labelling and negative consequences in psychosocial areas, e.g. with lower working positions despite an equal qualification, or with fewer long-term personal relationships [10, 11].

Allocation of blame and stigmatisation contribute to the person focusing on the negative aspects of body and self, and, due to their wish to loose weight and in order to fit in with the social "norm", they often develop a rigid and restrictive eating behaviour and a negative body and self concept [6, 12, 13]. The often experienced "weight-cycling" leads to further weight gain. Related to the experience of loss of control during diet efforts, the risk of developing eating disorders, especially a Binge Eating Disorder (BED), is increased further [14–17]. As a result, general self-efficacy decreases, resulting in increased resignation and isolation [18]. The negative assessment of self-efficacy can generalize to other problems and promote affective disorders.

Current treatment of obesity emphasizes an individualized and multimodal approach based on diet, exercise and behavioural changes. Regular physical activity is a key component, especially for the maintenance of weight loss [12]. The effect of exercise is more often evident as long-term weight loss than after the initial stages of weight loss programmes. There is no longer any doubt that the likelihood of long-term weight loss during an integrative weight loss programme is enhanced in individuals exercising regularly. Low-level activity if done regularly is likely to have beneficial effects and may produce better adherence than more strenuous exercise prescriptions.

Therapeutic interventions

Table 1 shows the commonly known effective factors in the treatment of obesity, i.e. its treatment aims and the corresponding interventions, which were included in the programme "BASEL" (which stands for: "Behandlungsprogramm der Adipositas mit den Schwerpunkten Essverhalten- und Lebensstiländerung", or: "Treatment programme for obesity with main emphasis on eating behaviour and life style changes").

As opposed to well-known "crash diets" which demonstrate a high risk of weight regain (weight cycling), the concept of a long term change of nutritional, eating and exercise habits is the most promising approach [9, 19, 20].

Evaluation of individual treatment concepts is difficult because the various studies differ regarding measurements of success and because of lack of long-term follow-up [9, 21, 22]. Furthermore, in most studies neither the treatment modules nor the qualification type of the treatment persons were described. The results from the studies reviewed above paint a pessimistic picture, as most of the patients regained their lost weight within the observation period (mainly up to 1 year) [12].

Objective of the present investigation

The aim of the present investigation was to evaluate a treatment programme for obesity with the main focus on changing nutrition and life-style (BASEL), adapted from the programme LEARN, [23] in clinical practice.

Table 1

Therapeutic interventions.

	Motivation-support	Nutritional behaviour	Eating habits	Physical activity	Social skills	Body image
Aims of treatment	Development of long-term motivation and compliance	Long-term changeover to a balanced, fat-reduced nutrition	Reduction of rigid control, development of flexible control	Changing the passive lifestyle, stepwise, long-term increase in daily activity, sport	Reduction of isolation and retreat, development of social skills	Changing the negative body image
Intervention	Psycho-education setting realistic aims for: weight, nutrition, eating habits and increasing activity	Psycho-education, self-observation, gradual substitution of fat and calorie-rich food with a more balanced nutrition	Psycho-education, self-observation practising more flexible control	Psycho-education, increasing and maintaining motivation	Psycho-education, practicing social competence and self-confidence, problem-solving training	Psycho-education, self-observation, body image exercises

Method

Subjects and procedures

The sample consisted of patients from the clinical centre, patients from general practices as well as patients who replied to newspaper advertisements. Severe mental disorders (major depression, schizophrenia) as well as insulin-dependent diabetes, hypothyroidism or terminal diseases were excluded. Inclusion criterion was the presence of obesity (BMI ≥30 kg/m^2); a physical examination was performed by a physician. There was a total of 122 patients (30 males and 92 females) with an average age of 45.2 years (SD: 23.9). Patients from general practices (n = 70) were randomised into either treatment (GP BASEL) or control (GP control) groups with a ratio of 3 to 2. Subjects (n = 52) in the clinical centre (treatment groups were named Clinic BASEL) were treated by an interdisciplinary team consisting of a trained physician, a psychologist and a dietician. Table 2 shows the baseline characteristics of the sample.

There were no differences between the three study groups (Clinic BASEL, GP BASEL, GP control) of subjects regarding sociodemographic variables, with the exception of the BMI. The BMI of the group treated in the clinical centre (Clinic BASEL) was significantly higher than that of the control group treated by practitioners (GP control; U = 17.000, p <0.01).

Treatment programme

The group treatment consisted of a total of 16 sessions of 90 min each, standardised according to the therapy concept of the BASEL programme. The treatment took place at either the clinical centre or in the general practice; there were a total of 18 treatment groups.

In the first group-session the patients were presented with the standardised manual-based procedure. The programme aimed at long-term, stepwise alterations of lifestyle, i.e. of nutrition, eating behaviour, physical activity, social competence and body image. Table 3 shows the contents of each session. During the treatment there was no medical intervention and the patients did not take part in any other weight-reducing programme.

The practitioners and the tutors in the clinic were trained by a psychologist and by a dietician with a structured training course lasting 2 times 4 hours to supervise the behavioural weight loss program groups. In addition, the practitioners and the tutors had supervision sessions every month with a psychologist. The GP control group was mainly observed; it received non-specific comments about general measures to lose weight. No specific technique, tools or written material was used.

Table 2
Baseline data of the subjects.

Group	Gender F = Females M = Males (n)		Age (yrs)		Body Mass Index (kg/m^2)		First manifestation of obesity (age, yrs)	
	F	M	F	M	F	M	F	M
GP BASEL	42	11	49 ± 12	45 ± 14	35.7 ± 5.6	36.8 ± 5.2	32 ± 14	36 ± 6
GP control	10	7	49 ± 10	49 ± 10	34.0 ± 3.0	33.4 ± 2.5	29 ± 12	28 ± 6
Clinic BASEL	40	12	46 ± 13	37 ± 13	38.3 ± 7.1	40.0 ± 8.2	25 ± 13	20 ± 12

Data are means ± SD.

Table 3
Contents of programme BASEL.

Session No.	Treatment
1	Clarification and enhancing of motivation Realistic weight aims Information about the manual-based treatment
2	Information about the development and maintenance of obesity Self-observation of eating behaviour and nutrition Monitoring sheets
3	Start of continuous informations about a balanced nutrition
4	Recognising rigid examples of eating behaviour, dieting behaviour and introduction of the ABC-model*
5	Learning of strategies for more flexible control of eating behaviour
6	Learning of strategies concerning eating and nutritional habits and their transfer into daily life
7	Alteration of eating and nutritional behaviour: aim-analysis and application of strategies
8	Self-observation and problem analysis concerning physical activity
9	Aim-analysis and acquisition of strategies for increasing physical activity in everyday life
10	Psychoeducation for dealing with the own body, body image and changing the negative body image
11	Stepwise increase of physical activity, information about suitable types of sport
12	Recognition and alteration of dysfunctional cognitions regarding effectiveness in problem solving
13	Recognition and alteration of dysfunctional cognitions
14	Information and acquisition of strategies for improvements in social competence
15	Relapse prevention: recognition of risk situations, acquisition of strategies for dealing with difficult situations
16	Conclusion and final take home messages

* A = Antecedents; B = Behaviour; C = Consequences (reiterative process of behaviour modification)

Instruments

During the investigation the BMI (kg/m^2) was recorded at the start, end and 12 months after completion of treatment. The eating behaviour was assessed using a self report questionnaire "Fragebogen zum Essverhalten", FEV (24, German version of the Three-factor Eating Questionnaire, 25). General psychopathological symptoms were recorded according to the revised Symptom Check List [26], the subjective judgment of the body using a body image questionnaire (FbeK), [27], and quality of life was assessed with a questionnaire for life-satisfaction (Fragebogen zur Lebenszufriedenheit, FLZ) [28]. Data collection was carried out at the beginning of treatment, on completion and 12 months later (1 year follow-up).

Dropout rates

The dropout rate until the end treatment was 23%, 29% and 37% in the GP BASEL, the GP control and in the Clinic BASEL groups, respectively. This resulted in a distorted ratio between BASEL treated and control subjects (ratio: almost 3:1; aimed ratio: 3:2).

The dropout rate between the end of treatment and the 1–year follow up was 0%, 33% and 52% in the GP BASEL, the GP control and in the Clinic BASEL groups, respectively.

Thus, there was a high dropout rate in all groups; the rate was particularly high in the Clinic BASEL group. Due to disparate sample sizes only the comparison between the GP BASEL group and the Clinic BASEL group at the time of the 1–year-follow up reached statistical significance ($p < 0.01$).

Statistical analyses

Wilcoxon- and U-tests were run to compare the different samples concerning the dependent variables at the beginning, the end and one year after the start of treatment.

During treatment there were varying levels of dropouts which reduced data, and a further reduction in the data base is due to limited follow up.

Results

There was a trend towards weight loss in both treatment groups over the three time-points of assessment (see Table 4). Patients in the treatment groups in the GP BASEL setting show a significantly lower weight at the end of treatment ($p < 0.001$) and differ significantly from GP control group at 1–year follow up. The GP BASEL group reached a higher percentage of weight change than the GP control group (4.7% vs. 0.5%; $p < 0.05$).

Psychological variables

Eating behaviour

Group means, standard deviations and the course over time of the three scales of the FEV (cognitive control, distractibility, feelings of hunger) within the particular groups are shown in Table 5.

Cognitive control increased significantly in both treatment conditions (GP BASEL setting and Clinic BASEL) over the time course. One year after the end of treatment cognitive control was still significantly stronger and distinctive than at the start of the therapy ($p < 0.001$ and $p < 0.01$, respectively). At the end of treatment the cognitive control of the patients in the GP BASEL setting differed significantly from the one in the GP control condition ($p < 0.05$). The variable distractibility decreased over time in all three study groups. But only in the GP BASEL setting and the Clinic BASEL group did the reduction at treatment end reach a significant level ($p < 0.001$ and $p < 0.05$, respectively). There was a significant decrease of distractibility (eating triggered by emotional or situational cues) ($p < 0.001$) between beginning of

Table 4

BMI, body weight and percent change of body weight.

Variable	Start of therapy		End of therapy (after 16 sessions)			1 year Follow-up			
	Mean	SD	Mean	SD	p-value T1/T2	Mean	SD	p-value T2/T3	p-value T1/T3
BMI (kg/m^2)									
GP BASEL	36.2	6.5	34.8	6.6	***	34.4	6.8	n.s.	***
GP control	32.6	1.8	32.3	2.0	n.s.	32.4	2.7	n.s.	n.s.
Clinic BASEL	38.5	7.5	38.0	7.8	n.s.	37.6	6.4	n.s.	n.s.
Weight (kg)					n.s.			n.s.	n.s.
GP BASEL	96.8	17.1	93.0	17.6	***	92.1	18.2	n.s.	***
GP control	86.3	6.4	85.6	6.8	n.s.	85.9	9.2	n.s.	n.s.
Clinic BASEL	106.8	26.1	105.2	26.1	n.s.	103.9	21.8	n.s.	n.s.
Percent change of body weight									
GP BASEL			–4%			–4.7%			
GP control			–0.7%			–0.5%			
Clinic BASEL			–1.6%			–2.9%			

Notes: T1 = beginning, T2 = end of treatment; T3 = 1 yr follow-up.
The p values refer to pairwise U-tests within groups. ***p <0.001; n.s.: not significant.

therapy and 1-year follow up. Feelings of hunger decreased from the start of treatment until the end of therapy in the GP BASEL and the Clinic BASEL setting (p <0.001and p <0.01, respectively). One year after the end of treatment there was still a further significant decrease of feelings of hunger for both treatment groups (p <0.001 and p <0.01, respectively).

Body image

Group mean values, standard deviations and course over time of the four scales of the FBeK (attractiveness, accentuation of one's own body, insecurity, and physical misperception) within the particular groups are shown in Table 6.

The extent of self evaluation of attractiveness (scale attractiveness) increased in both treatment conditions during therapy (p <0.01 for GP BASEL and p <0.05 for Clinic BASEL, respectively) and

Table 5
Questionnaires of eating behaviour (FEV; QEB).

Scale	Start of treatment (Score)		End of treatment (Score)			1 year Follow-up (Score)			
	Mean	SD	Mean	SD	p-value T1/T2	Mean	SD	p-value T2/T3	p-value T1/T3
Cognitive control									
GP BASEL	8.7	4.4	14.7	4.3	***	13.9	4.7	*	***
GP control	9.0	2.8	10.4	4.6	n.s.	9.6	5.2	n.s.	n.s.
Clinic BASEL	9.1	4.3	15.0	2.4	***	14.7	4.0	n.s.	**
Distractibility									
GP BASEL	9.4	3.7	6.3	4.1	***	6.8	4.0	*	***
GP control	9.9	3.0	8.7	4.0	n.s.	8.4	4.2	n.s.	n.s.
Clinic BASEL	8.8	4.6	6.6	4.2	*	7.3	4.1	n.s.	*
Feelings of hunger									
GP BASEL	6.4	3.4	4.0	3.5	***	4.4	3.9	n.s.	***
GP control	6.9	3.5	5.4	4.2	n.s.	6.0	4.6	n.s.	n.s.
Clinic BASEL	6.5	4.2	3.7	4.1	**	3.6	4.1	n.s.	**

Notes: The p-values refer to pairwise U-tests within groups. * p <0.05; ** p <0.01*; *** p <0.001; n.s.: not significant.
Cognitive control: a higher score represents more restrained eating;
Distractibility: a higher score represents more frequently provoked eating by emotional or situational conditions;
Feelings of hunger: a higher score represents a stronger feeling of hunger.

Table 6
Questionnaires of body image (FBeK; QOB).

Scale	Start of treatment (Score)		End of treatment (Score)			1 year-Follow-up (Score)			
	Mean	SD	Mean	SD	p-value T1/T2	Mean	SD	p-value T2/T3	p-value T1/T3
Attractiveness/ self-confidence									
GP BASEL	7.0	3.7	8.6	3.9	**	8.6	3.8	n.s	*
GP control	6.0	5.2	6.7	6.0	n.s.	5.2	6.5	n.s	n.s
Clinic BASEL	5.2	2.6	8.4	4.7	*	8.1	4.1	n.s	*
Accentuation of appearance									
GP BASEL	6.7	2.2	6.7	2.7	n.s	6.6	2.5	n.s	n.s
GP control	5.8	2.5	6.5	2.2	n.s	6.0	1.7	n.s	n.s
Clinic BASEL	6.2	3.1	6.4	2.7	n.s	6.7	2.1	n.s	n.s
Insecurity/concern									
GP BASEL	4.8	1.9	4.2	2.8	n.s	3.7	2.0	n.s	***
GP control	5.8	4.0	6.8	3.3	n.s	5.7	3.9	n.s	n.s
Clinic BASEL	4.8	3.2	5.0	3.5	n.s	4.8	3.3	n.s	n.s
Physical/sexual misperception									
GP BASEL	2.0	1.4	1.7	1.6	n.s	1.7	1.5	n.s	n.s
GP control	3.7	1.8	3.7	1.2	n.s	3.8	2.5	n.s	n.s
Clinic BASEL	1.4	1.5	2.1	1.8	n.s	1.3	1.9	n.s	n.s

Notes: The p-values refer to the pairwise U-tests within groups; * p <0.05; ** p <0.01*; *** p <0.001; n.s.: not significant.
Attractiveness/self confidence: a higher score represents an accepting attitude to the own body;
Accentuation of appearance: a higher score represents a conscious and confident dealing with the own appearance;
Insecurity/Concern: a higher score represents focussing on negative aspects of the body and feelings of insecurity;
Physical/sexual misperception: a higher score represents more physical/sexual misper-ceptions.

was still significantly stronger and distinctive one year after the end of the treatment than at the beginning of treatment ($p < 0.05$ for GP BASEL and Clinic BASEL). There were no significant changes in the GP control group. The insecurity and concern considering one's body decreased significantly only in the GP BASEL setting from the first assessment to the one-year-follow-up ($p < 0.001$). The groups differed – but not significantly – in the scale of physically-sexual misperception by the fact that the control group expressed a stronger misperception than the two treatment groups at all of the three measurements.

Psychopathological symptoms

The scale "depression" of the revised Symptom-Check-List (SCL-90) demonstrated a decreasing trend for the patients in the GP BASEL group. Anxiety decreased, trendwise, in both the GP BASEL and in the Clinic BASEL settings. There were no further significant changes over time and between treatment groups.

Discussion

The aim of the present study was to evaluate the treatment programme BASEL for clinical practice. The standardised cognitive-behavioural treatment concept was applied to patients in general practices (GP BASEL group) and in a clinical centre (Clinic BASEL group) setting. A group of patients in general practice treated using no specific weight loss methods served as a waiting control group (GP control group). The manual-based treatment turned out to be effective in the GP BASEL setting in a short-term perspective and after one year. The 4.7% weight loss observed during therapy represents a modest but significant health improvement [29, 30]. A weight loss of 5–10% can successfully reduce the co-morbid conditions associated with obesity such as dyslipidaemia, hypertension and diabetes [31].

Regarding the subjects treated in a specialised clinical institution, there was also a reduction of body weight, but it did not reach statistical significance.

In addition, the results of the present study demonstrated that the patients of the two treatment groups learned to control their eating behaviour in a flexible way. The increase in cognitive control over eating behaviour represents an achievable goal, indicating a long term (1 year) success [32].

The reduction of distractibility during eating implicates a better coping with triggers (e.g. emotions, external factors such as viewing or smelling of food) of uncontrolled eating behaviour. It would be interesting for future studies to investigate, whether this decrease in distractibility was associated with the literally mentioned change in nutritional habits (carbohydrate-rich and fat-poor nutrition, [33]. Overall, these changes in eating behaviour point to an increase in self-control of eating behaviour by internal factors such as hunger or satiety.

Regarding body image, treatment with the programme resulted in a more accepting attitude concerning one's own body and appearance. This result is especially relevant because it can be assumed that concerning only moderate weight loss, the better acceptance of the own body represents a restructuring of dysfunctional cognitions which is not to be attributed to a visible change of shape. A better acceptance of the own body turns out to be an achievable goal in the treatment of obesity, because it is shown in the literature that a negative body image leads to more distress, a negative self-concept, isolation, and can be a relevant trigger of uncontrollable eating behaviour. Further, it has been shown that acceptance of the own body represents a predictor of long term weight loss [6, 34, 35].

There were no significant changes concerning psychopathological symptoms over the treatment course and at 1-year follow up. While the two treatment groups showed a trend of decreased feelings of depression in the GP BASEL group and anxiety in the Clinic BASEL group, the control group suffered from even more symptoms during the time of the investigation. Considering the fact that especially mood and anxiety disorders are widely spread in obese patients [35–37] further treatment programmes should take the prevention and treatment of these symptoms into account.

There are several limitations to the study warranting consideration. First, there was no randomisation of the participants into the two treatment settings. It can not be excluded therefore that differences between the patient groups might have influenced the results. For example we found a high percentage of co-morbid mental disorders (assessed by structured clinical interviews) in the sample of the specialised institution. For reasons of practicability these clinical interviews could not be carried through in the GP BASEL and the GP control group. Further, our results are limited by the fact that we had a high dropout rate compared to the literature. The dropout rates were even different in several samples. The lower dropout rate in the groups treated by practitioners suggests that the latter had a more intense patient-doctor relationship. It also has to be investigated whether there were differences in patients characteristics (especially concerning point prevalence of mental disorders) between clinical and nonclinical samples which influenced dropout rates and treatment outcome. Further studies should assess the reasons

why patients dropped out and what they did after dropping out of the treatment procedure.

It also remains open whether an equal or similar effect could be reached by reducing the treatment frequency [38].

Finally a standardised follow-up should be carried out and be evaluated to optimise and test the effect of a prolonged treatment phase.

Besides these limitations, the data of the present investigation underline that the programme BASEL is an effective treatment procedure for clinical practice, as demonstrated during the one year follow-up. A reasonable weight loss was achieved, and further changes in important eating behaviour characteristics, such as increase in cognitive control and decrease of distractibility were initiated. Additionally, the acceptance of the own body was improved. These results are of special relevance because it is generally accepted that these changes are predictive for long-term weight loss and changes of lifestyle.

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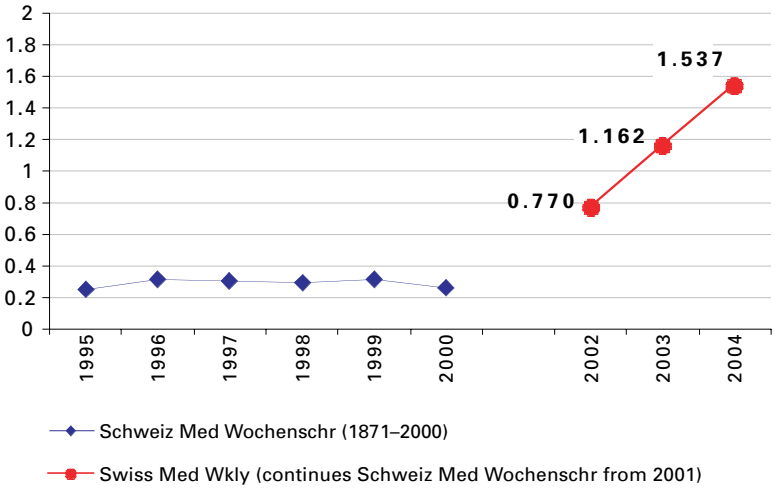

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