Assessing physicians' satisfaction with diabetes therapy: Development and evaluation of a new questionnaire

Kulzer B.[1], Ehrmann D.[1], Hermanns N.[1], Weißmann J.[2], Müller A.[2], Haak T.[1]

[1] FIDAM Research Institute Diabetes Academy, Diabetes Center Mergentheim, Bad Mergentheim, Germany

[2]Roche Diagnostics Germany, Mannheim, Germany

ABSTRACT

Questionnaires assessing the satisfaction of patients already exist, but no questionnaire assesses the satisfaction of physicians. However, physicians' satisfaction with patient-communication and with diabetes therapy is a crucial factor for the effectiveness of diabetes therapy. A relevant part of patient-communication is the discussion of blood glucose values with the patient. In order to systematically assess the perspective of physicians, we developed a questionnaire that assesses satisfaction of physicians with diabetes therapy in general (Sat-DT) and with the discussion of blood glucose values (Sat-BG) in particular. Data from 188 physicians who completed the questionnaire was analyzed. The final Sat-DT scale comprised 13 items and achieved a Cronbach's Alpha of 0.93 with a mean item-total correlation of r=0.71. The final Sat-BG scale comprised 10 items and achieved a Cronbach's Alpha of 0.92 with a mean item-total correlation of r=0.73. Factor analysis (Varimax rotation) revealed two factors within the Sat-DT scale (65% explained variance): "Effects of diabetes therapy" and "efforts and benefits". The Sat-BG scale could be divided into "Usage of blood glucose data" and "effectiveness of the discussion" by factor analysis (76% explained variance). A greater satisfaction in both scales was associated with a greater satisfaction with the work as a physician (Sat-DT: r=0.2, p<.05; Sat-BG: r=0.32, p<.05), a greater satisfaction with therapy outcomes (Sat-DT: r=0.34, p<.05; Sat-BG: r=0.3, p<.05), and with a greater satisfaction with the results of working as a physician (Sat-DT: r=0.27, p<.05; Sat-BG: r=0.25, p<.05). This new questionnaire with its two scales is a reliable and valid assessment tool to measure the satisfaction of physicians. In future studies, this questionnaire can be used to investigate the influence of physicians' satisfaction on diabetes therapy as well as how physicians' satisfaction can be altered.

INTRODUCTION

There are various questionnaires on different patient-reported-outcomes in the field of diabetes. In contrast, the perspective of physicians is being neglected in current diabetes research. Especially the satisfaction of physicians with diabetes therapy is an important factor for the effectiveness of diabetes therapy. The same is true for the analysis and discussion of blood glucose levels with patients as an integral part of patient-communication. In order to systematically address physicians' perspective, we developed a new questionnaires that assesses physicians' satisfaction with diabetes therapy in general (Sat-DT) and satisfaction with the analysis and discussion of blood-glucose values in particular (Sat-BG). This study reports findings from the evaluation of this new questionnaire.

METHODS

A pool of items for the two scales Sat-DT and Sat-BG was developed and discussed with experts. These items should cover different aspects of physicians' satisfaction such as effectiveness, handling, efforts and benefits, recommendation, effects on patients (motivation, compliance etc.) and practitioner. Items were constructed as statements using a 5-point Likert scale (1 – totally disagree; 5 – totally agree). Satisfaction with diabetes therapy as well as satisfaction with the discussion of blood-glucose values should be answered for each patient separately.

188 physicians (general practitioners and diabetologists) took part in the evaluation study. Validity was assessed using three general questions regarding their satisfaction with (a) the work as a physician, (b) therapy outcomes of their diabetic patients, and (c) the results of working as a physician.

RESULTS

- Physicians had a mean age of 51.3 ± 7 years and were working as a physician for 22.9 ± 6.8 years. The majority of participating physicians (64% male) were diabetologists (64.4%), whereas 24.5% worked as a general practitioner and 11.2% worked in a hospital. A mean of 80.3% of patients in those participating practices had type 2 diabetes, 16.1% had type 1 diabetes and 3.7% gestational diabetes (see figure 1). Per quarter, 732 patients on average were treated in each participating practice.
- The final items for the two scales were selected based on item-characteristics such as difficulty and corrected item-total correlation. The final Sat-DT scale consists of 13 items, the final Sat-BG scale consists of 10 items.
- The Sat-DT scale achieved a very good reliability (Cronbach's Alpha) of α = 0.93 with a mean item-total correlation of r_{it} = 0.71 (see table 1). The Sat-BG scale achieved a very good reliability of α = 0.92 as well, with a mean item-total correlation of r_{it} = 0.73 (see table 2).
- Factor analysis revealed two factors within the Sat-DT scale (65% explained variance) (see figure 2):
  - Effects of diabetes therapy: e.g. The patient is able to achieve his/her treatment goals with help of his/her current diabetes therapy
  - Efforts and benefits: e.g. Efforts and benefits of the patient's current diabetes therapy are well balanced
- Factor analysis revealed two factors within the Sat-BG scale (75.5% explained variance) (see figure 2)
  - Usage of blood glucose data: e.g. I can easily and quickly analyze patient's blood-glucose values
  - Effectiveness of the discussion: e.g. Discussing blood-glucose values with the patient is effective
- Both scales showed significant association with all three validity questions (see figure 3). A higher satisfaction in both scales was associated…
  - … with a higher satisfaction with the work as a physician (Sat-DT: r = 0.2, p < .05; Sat-BG: r = 0.32, p < .05)
  - … with a higher satisfaction with therapy outcomes of their diabetic patients (Sat-DT: r = 0.34, p < .05; Sat-BG: r = 0.3, p < .05)
  - … with a higher satisfaction with the results of working as a physician (Sat-DT: r = 0.27, p < .05; Sat-BG: r = 0.25, p < .05)
  - In addition, all sub-factors showed significant associations with those validity questions (see figure 3)

CONCLUSION

A new reliable and valid questionnaire was developed that assesses two important aspects of physicians' perspective regarding the treatment of diabetes. With two separate and short scales the satisfaction of physicians with diabetes therapy and with the analysis and discussion of blood-glucose values can be assessed. With the new questionnaire is will be possible to assess the influence of physicians' satisfaction on diabetes therapy. In turn, it will be also possible to analyze how physicians' satisfaction can be influenced and altered. In addition, new interventional measures and their influence on physicians can be evaluated. The questionnaire with its both scales enables the investigation of new research questions as well as the control of an important influencing factor of diabetes therapy.

Contact Information

FIDAM - Research Institute Diabetes Academy Mergentheim
Bernhard Kulzer
97980 Bad Mergentheim, Germany
Phone: +49 7931 594-151
kulzer@diabetes-zentrum.de

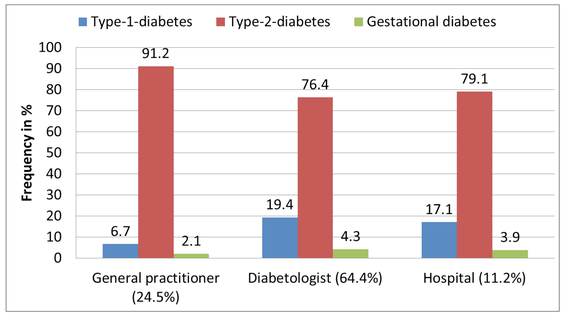

Figure 1: Frequency of patients in each care unit

Table 1: Item characteristics of the Sat-DT scale

Item	Difficulty (mean item response)	Item-total correlation
1. I am satisfied with the current diabetes therapy of the patient	3.88	0.79
2. The patient can easily handle his/her current diabetes therapy in daily life	3.92	0.71
3. The patient can easily implement his/her current diabetes therapy	3.79	0.74
4. I am satisfied with the treatment outcome of the patient's current diabetes therapy	3.75	0.78
5. Efforts and benefits of the patient's current diabetes therapy are well balanced	3.96	0.70
6. I can recommend the patient's current diabetes therapy to other patients	4.23	0.70
7. The current diabetes therapy of the patient strengthens his/her motivation	3.87	0.72
8. I will continue to treat the patient with his/her current diabetes therapy	4.30	0.61
9. Benefits of the patient's current diabetes therapy clearly exceeds the efforts	3.64	0.49
10. I can easily manage the patient's current diabetes therapy	4.23	0.74
11. I am convinced that the patient is also satisfied with his/her current diabetes therapy	3.94	0.77
12. The patient is able to achieve his/her treatment goals with help of his/her current diabetes therapy	3.93	0.82
13. The patient's current diabetes therapy can be implemented time-efficiently	3.85	0.49
Mean item-total correlation=		**0.71**
Cronbach's Alpha =		**0.93**

Table 2: Item characteristics of the Sat-BG scale

Item	Difficulty (mean item response)	Item-total correlation
1. I can easily and quickly analyze the patient's blood-glucose values	3.89	0.81
2. I can easily detect conspicuous patterns in the patient's blood-glucose values	3.89	0.77
3. I can easily adjust therapy parameters based on the patient's blood-glucose values	3.87	0.81
4. Discussing blood-glucose values with the patient is effective	3.85	0.68
5. I can easily and quickly use the patient's blood-glucose values for changes in his/her therapy	3.90	0.85
6. Efforts and benefits of discussing blood-glucose values with the patient are well balanced	3.57	0.58
7. I can easily and quickly get an overview over the patient's blood-glucose values	3.91	0.77
8. Discussing blood-glucose values with the patient is timesaving	3.17	0.55
9. I am satisfied with the way I can discuss blood-glucose values with the patient	3.92	0.57
10. Discussing blood-glucose values with the patient enables me to quickly find starting points for optimizing the therapy of the patient	4.07	0.75
Mean item-total correlation=		**0.73**
Cronbach's Alpha =		**0.92**

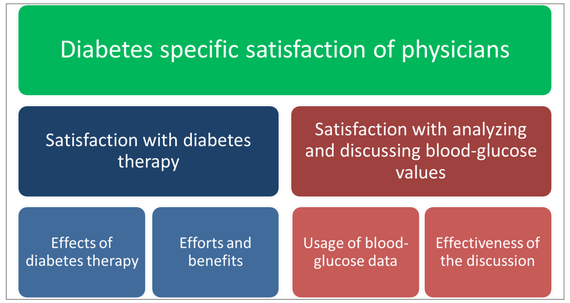

Figure 2: Factorial structure of the questionnaire

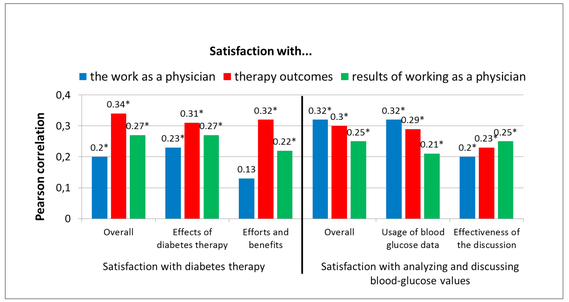

Figure 3: Associations of the questionnaire scales with the validity questions. * p<.05