Therapeutic alliance and glycaemic control in type 1 diabetes: A pilot study


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Abstract

**Aim.** – Effective diabetes care requires integrating physicians’ clinical expertise with patients’ concerns and resources. This prospective study examined whether or not two measures of therapeutic alliance could predict glycaemic control after 1 year of follow-up in patients with type 1 diabetes.

**Methods.** – Consecutive type 1 diabetic outpatients were recruited, and their age, gender, level of education, marital status and age at the time of diabetes diagnosis were self-reported. The presence of diabetes complications was ascertained by the patients’ physicians. Both patients and physicians completed the revised Helping Alliance Questionnaire (HAQ-R) and the 12-item Working Alliance Inventory (WAI-12) to assess therapeutic alliance. Patients also completed the Center for Epidemiological Studies Depression scale to assess depressive mood. HbA1c was measured at baseline and 1 year later.

**Results.** – Sixty-four type 1 diabetic outpatients (32 men, 32 women; mean age ± standard deviation [S.D.]: 38.2 ± 8.0 years) were included. HbA1c level at follow-up (mean ± S.D.: 7.56 ± 1.18%) was positively correlated with the HbA1c level at baseline ($r = 0.698, P < 0.001$), and associated with presence of retinopathy at baseline (8.18 ± 1.24% versus 7.41 ± 1.13%, $P = 0.036$). In addition, the HbA1c level at follow-up was negatively correlated with therapeutic alliance, as assessed at baseline by the physicians using either the HAQ-R ($r = -0.431, P < 0.001$) or the WAI-12 ($r = -0.365, P = 0.003$), even after controlling for the HbA1c at baseline.

**Conclusion.** – Although the observational nature of the present study prevents causal conclusions to be drawn, these preliminary results suggest that promoting therapeutic alliance can improve glycaemic control in type 1 diabetes.

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Keywords: Therapeutic alliance; Glycaemic control; Glycated haemoglobin; Diabetes; Physician–patient relationship

Résumé

Alliance thérapeutique et contrôle glycémique dans le diabète de type 1 : une étude pilote.

**Objectif.** – Intégrer l’expertise des cliniciens et les préoccupations des patients est nécessaire pour traiter efficacement le diabète. Cette étude prospective cherchait à déterminer si deux mesures d’alliance thérapeutique pouvaient prédire le contrôle glycémique après un an de suivi chez des patients diabétiques de type 1.

Résultats. – Soixante-quatre patients diabétiques de type 1 ambulatoires ont été inclus (32 hommes, 32 femmes, âge moyen ± déviation standard [D.S.]: 38,2 ± 8,0 ans). Le taux d’HbA1c à l’inclusion (moyenne ± D.S.: 7,56 ± 1,18 %) était corrélé positivement avec le taux d’HbA1c à l’inclusion (r = 0,698 ; P < 0,001) et associé avec la présence d’une rétinopathie à l’inclusion (P = 0,036). Le taux d’HbA1c à l’an était également corrélé négativement avec le niveau d’alliance thérapeutique rapportée par le médecin à l’inclusion aussi bien avec la HAQ-R (r = -0,431 ; P < 0,001) qu’avec le WAI-12 (r = -0,365 ; P = 0,003), y compris après ajustement sur le taux d’HbA1c à l’inclusion.

Conclusion. – Bien que la nature observationnelle de cette étude ne permette pas de tirer des conclusions causales, ces résultats préliminaires suggèrent que promouvoir l’alliance thérapeutique pourrait améliorer le contrôle glycémique chez les patients diabétiques de type 1.

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Mots clés : Alliance thérapeutique ; Contrôle glycémique ; Hémoglobine glyquée ; Diabète de type 1 ; Relation médecin–malade

1. Introduction

Understanding the modifiable factors that enable patients to achieve therapeutic goals in diabetes is critical for the improvement of diabetes management. Effective diabetes care requires integrating the clinical expertise of the physician with the concerns and resources of the patient in a collaborative relationship [1]. Although such collaborative relationships between patients and their physicians can improve compliance and outcomes in chronic medical illnesses [2], little is known of the role of therapeutic alliance in type 1 diabetes. The concept of therapeutic alliance encompasses collaboration over treatment goals and the tasks required to attain these goals, as well as the formation of a bond between patients and their physicians [3].

In the context of diabetes, patients’ satisfaction with the quality of their relationship with their physician has been shown to be significantly associated with adherence to treatment [4,5] and better glycaemic control [6] in cross-sectional studies. To date, however, prospective studies have been lacking. The present longitudinal study aimed to examine whether two measures of therapeutic alliance could predict glycaemic control in type 1 diabetics. The hypothesis of a positive association between therapeutic alliance and glycaemic control does not entail a linear relationship between therapeutic alliance and the HbA1c delta (the HbA1c level at follow-up minus the level at baseline). Although the factors accounting for better glycaemic control at baseline should clearly predict better glycaemic control at follow-up, such factors may also be associated with either a smaller delta due to better improvement during follow-up, or a larger delta due to optimal control at baseline. Therefore, we hypothesized that a better therapeutic alliance at baseline would be predictive of lower HbA1c at a 1-year follow-up after controlling for baseline HbA1c. In addition, given that depressive mood is associated with poor glycaemic control in type 1 diabetes [7] and may result in a more pessimistic assessment of therapeutic alliance, depressive mood was also controlled for as a potential confounder.

2. Patients and methods

Seventy-seven consecutive type 1 diabetic outpatients, aged 20 to 50 years and followed by the same physician for at least 1 year in the diabetology department of a university hospital (Hotel-Dieu Hospital, Paris, France), were approached, and none refused to participate. However, any infectious episode, surgical procedure or corticosteroid treatment during the past year, as well as the use of an insulin pump, constituted criteria for exclusion, as they may have influenced glycaemic control independently of therapeutic alliance. All patients gave their written informed consent after a complete description of the study, which had been approved by the local ethics committee.

The following data were self-reported: education level; marital status; and age at the time of diabetes diagnosis. The presence of diabetes complications (arteriopathy [including coronary heart disease], retinopathy, nephropathy and neuropathy) was ascertained by the patients’ physicians, who referred to clinical records.

Therapeutic alliance was assessed through the revised Helping Alliance Questionnaire (HAQ-R) and the 12-item Working Alliance Inventory (WAI-12). Their French translations were checked by back translation. The HAQ-R has 11 items, rated on a 6-point (-3 to 3) Likert-type scale, and two subscales: helping alliance and collaboration [8]. The WAI-12 has three subscales of four items each, rated on a 7-point Likert-type scale, covering agreement over goals, agreement over tasks, and physician–patient bonding [9]. Both patients and physicians completed the two scales before the consultation. For both scales and subscales, higher scores indicate better therapeutic alliance. In addition, to control for depressive mood as a potential confounder, patients completed the Center for Epidemiological Studies Depression (CES-D) scale to assess depressive mood [10].

For each patient, baseline glycaemic control was assessed by calculating their mean HbA1c level for the past year. Neither patients nor physicians were blind to the baseline HbA1c. Glycaemic control at follow-up was assessed 1 year later according to HbA1c, as measured by a Bayer DCA 2000 machine.

Our dependent variable was the HbA1c level at follow-up. Its association with baseline variables was assessed by Pearson’s correlation coefficients and Student’s t-tests for quantitative and qualitative variables, respectively. Baseline variables associated with the HbA1c at follow-up with a P value < 0.10 were subsequently entered in a backward stepwise multiple linear regression.
3. Results

The HbA1c value was available at follow-up for 83.1% of the initial study population, resulting in a final study population of 64 patients (32 men, 32 women; mean age ± standard deviation [S.D.]: 38.2 ± 8.0 years). HbA1c levels at baseline for these 64 patients did not differ from those of the 13 patients who failed to complete the study (mean ± S.D.: 7.49 ± 1.09% vs. 7.64 ± 1.61%, respectively; \( P = 0.747 \)). At baseline, 42 patients (65.6%) were part of a couple and 32 (50.0%) were graduates. The mean (± S.D.) duration of diabetes was 13.6 (± 9.4) years. Sixteen patients (25.0%) presented with at least one diabetes complication at baseline, 13 (20.3%) had retinopathy, three (4.7%) had arteriopathy, three (4.7%) had nephropathy and two (3.1%) had neuropathy. The mean (± S.D.) CES-D scale score was 13.6 (± 10.5), and 13 patients (20.3%) presented with significant depressive mood (CES-D score ≥ 20).

The HbA1c level at baseline was negatively correlated with therapeutic alliance, as assessed by physicians using either the HAQ-R (\( r = -0.328, P = 0.008 \)) or WAI-12 (\( r = -0.257, P = 0.041 \)). Although measures of therapeutic alliance by patients and physicians were positively correlated for both the HAQ-R (\( r = 0.347, P = 0.005 \)) and WAI-12 (\( r = 0.328, P = 0.008 \)), there was no significant correlation between HbA1c at baseline and therapeutic alliance as assessed by the patients.

HbA1c at follow-up (mean ± S.D.: 7.56 ± 1.18%) was positively correlated with the HbA1c at baseline (\( r = 0.698, P < 0.001 \)) and associated with presence of retinopathy at baseline (mean ± S.D.: 8.18 ± 1.24% vs. 7.41 ± 1.13%; \( P = 0.036 \)). In addition, the HbA1c at follow-up was negatively correlated with therapeutic alliance, as assessed by baseline physicians using either the HAQ-R (\( r = -0.431, P < 0.001 \)) or WAI-12 (\( r = -0.365, P = 0.003 \)) (Fig. 1). Regarding the HAQ-R subscales, the HbA1c level at follow-up was negatively correlated with both helping alliance (\( r = -0.357, P = 0.004 \)) and collaboration (\( r = -0.434, P < 0.001 \)) whereas, with the WAI-12 subscales, the HbA1c at follow-up was negatively correlated with agreement over goals (\( r = -0.411, P = 0.001 \)) and agreement over tasks (\( r = 0.442, P < 0.001 \)), but not with physician–patient bonding (\( r = -0.096, P = 0.451 \)). Furthermore, there was a trend towards a positive correlation with duration of disease (\( r = 0.242, P = 0.054 \)), so this was included in the first step of the multivariate analysis. There was no significant correlation between HbA1c at follow-up with any other baseline variables, including depressive mood and therapeutic alliance as assessed by patients.

Finally, as hypothesized, even when controlling for HbA1c at baseline, the HbA1c at follow-up remained negatively correlated with therapeutic alliance as assessed at baseline by physicians using both the HAQ-R and WAI-12 in the final models (Table 1).

### Table 1

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictors</th>
<th>Beta</th>
<th>( P )</th>
<th>( R^2 )</th>
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<tr>
<td>1</td>
<td>HAQ-R score</td>
<td>-0.212</td>
<td>0.039</td>
<td>0.534</td>
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<td>HbA1c at baseline</td>
<td>0.615</td>
<td>&lt; 0.001</td>
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<td>Presence of retinopathy</td>
<td>-0.008</td>
<td>0.944</td>
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<td></td>
<td>Duration of disease</td>
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<td>0.637</td>
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<tr>
<td></td>
<td>HbA1c at baseline</td>
<td>0.616</td>
<td>&lt; 0.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of disease</td>
<td>0.052</td>
<td>0.576</td>
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<tr>
<td>3</td>
<td>HAQ-R score</td>
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<td>WAI-12 score</td>
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<td></td>
<td>HbA1c at baseline</td>
<td>0.638</td>
<td>&lt; 0.001</td>
<td></td>
</tr>
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<td></td>
<td>Presence of retinopathy</td>
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<td></td>
<td>Duration of disease</td>
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<td></td>
<td>HbA1c at baseline</td>
<td>0.646</td>
<td>&lt; 0.001</td>
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</table>

HAQ-R: revised Helping Alliance Questionnaire; WAI-12: 12-item Working Alliance Inventory

### Discussion

The present prospective study aimed to examine whether or not the perception of therapeutic alliance by type 1 diabetes...
outpatients and their physicians was associated with glycaemic control 1 year later. Our results showed that therapeutic alliance as perceived by physicians, but not patients, predicted HbA1c levels at follow-up. One possible explanation for the discrepancy is that physicians may have taken into account compliance or baseline glycaemic control in their appraisal of therapeutic alliance. Note, however, that the HbA1c at baseline was considered a potentially confounding variable in our analyses. The results are therefore unlikely to be explained by the influence of glycaemic control at baseline on the physicians’ perception of therapeutic alliance. Overall, these results suggest that therapeutic alliance could be an important factor in predicting glycaemic control in type 1 diabetics.

Glycaemic control at follow-up was partly predicted by the subscales relating to collaborative relationships rather than interpersonal bonds. Therapeutic alliance may, therefore, promote better glycaemic control by reducing the discrepancy between the objectives assigned by physicians and the patients’ concerns regarding either their quality of life or efficacy of treatment. Treatment goals in diabetes involve both avoiding secondary illnesses through optimal glycaemic control and maintaining the patient’s quality of life. As these goals may conflict to some extent, agreement between patients and their physicians is critical to avoid non-compliance. Treatment goals that may fall short of the guidelines, but which are more acceptable to the patient, may indeed result in better outcomes than the application of more stringent goals. Therapeutic alliance may also promote both outcome expectancy (the patients’ perception of the tasks prescribed by their physicians as being useful for achieving glycaemic control) and self-effectiveness (the patients’ perception of themselves as being able to achieve such tasks properly), two psychological features that are crucially associated with treatment compliance and, ultimately, its efficacy [11]. Therapeutic alliance may, therefore, complement diabetes education by promoting self-empowerment and self-management of diabetes.

Some limitations of the present study, however, should be mentioned. First, the small sample size and single site of investigation limit generalization of the results. Second, the measures used to quantify the mean HbA1c at baseline were not all obtained by the same technique and, finally, despite its prospective design, the naturalistic (observational) nature of the study prevents causal conclusions to be drawn. Also, the results may have been partly explained by unaddressed confounders such as anxiety, which was not measured.

For these reasons, our present findings should be regarded as preliminary. However, the data suggest that therapeutic alliance could be a useful target for improving glycaemic control in type 1 diabetic patients. Further studies are needed to determine the mechanisms linking therapeutic alliance with glycaemic control (e.g., treatment compliance) and the extent to which the therapeutic alliance is modifiable in diabetes care. Interventions targeting therapeutic alliance may, for instance, draw physicians’ attention to the importance of a collaborative relationship, thereby leading to better integration of their clinical expertise with the concerns and resources of the patient.

Conflict of interest statement

The authors have no conflicts of interest to declare.

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References