

The ADDLoC (Audit of Diabetes-Dependent Locus of Control): Positive and negative outcomes in a balanced measure.

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1) Aims

- To design and develop a measure of perceived control over diabetes - related outcomes (the ADDLoC), for use in research and clinical practice.
- To investigate the psychometric properties of the ADDLoC using data from 789 outpatients with diabetes.

2) Introduction

Background:

Clinical research^{1,2,3} has demonstrated the value of perceived control measures in understanding

- patients' preferences
- biomedical outcomes
- suitability of different forms of treatment.

However, inherent in existing instruments are problems of length in attributional-style-type measures, or imbalance of item content in locus-of-control-type measures.

Questionnaire design:

The ADDLoC design includes 10 items on each of 4 subscales:

- Internality
- medical control
- significant others
- chance

(for explanation of subscales and abbreviations see figure 1).

Item content balances within subscales items concerning positive outcomes related to diabetes and its management, and items concerning negative outcomes of diabetes and its management.

Figure 1. Subscales

The ADDLoC subscales relate to perceived control over diabetes outcomes which is attributed to:

- ↳ one's own actions or inaction. - INTERNALITY
- ↳ the influence, advice given or treatment recommended by doctors, nurses and other clinicians - MEDICAL OTHERS
- ↳ the actions, support or lack of support of 'significant others', including family and close friends or colleagues - SIGNIFICANT OTHERS
- ↳ chance factors, such as fate or luck - CHANCE

The design of the ADDLoC was informed by: the literature; experience of existing diabetes-specific attributional-style and locus-of-control measures; and pilot testing and interviews.

3) Method

The 40 - item ADDLoC was included in the questionnaire package of a large-scale study (the DIABQoL+ study)⁴ of 789 patients attending one of two hospital outpatient diabetes clinics (451 insulin-treated and 338 tablet and/or diet-treated patients).

Patients attending for annual review were given questionnaires by a nurse. They were asked to return completed questionnaires to the research team in the pre-paid envelope provided.

In addition, patients who missed their scheduled annual review appointment were posted the questionnaire package and asked to complete and return them.

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Table 1: Factor Structure

Item	Subscale (outcome)	Component					
		1	2	3	4	5	6
1	Internality (pos)	-.157	.136	-.009	-.179	.160	.660
6	Internality (pos)	-.026	.025	.067	-.072	.118	.735
24	Internality (pos)	-.065	.036	-.137	.027	.171	.682
3	Internality (neg)	-.017	.059	.073	-.053	.750	.136
5	Internality (neg)	-.109	.015	-.069	.291	.677	.090
15	Internality (neg)	-.008	.036	-.001	-.143	.713	.235
16	Medical others (pos)	.230	.666	.053	-.071	.055	-.214
9	Medical others (pos)	-.019	.762	.008	-.111	.131	-.058
18	Medical others (pos)	-.054	.634	.041	-.181	.264	.007
12	Medical others (neg)	.309	.039	.010	.627	.063	-.171
14	Medical others (neg)	.180	-.061	.230	.696	-.068	-.089
21	Medical others (neg)	.145	.074	.113	.651	.026	-.011
4	Significant others (pos)	-.012	.688	.071	.132	-.145	.242
11	Significant others (pos)	-.033	.593	-.202	.174	-.055	.195
20	Significant others (pos)	.073	.595	.218	.245	-.085	.149
13	Significant others (neg)	.186	.080	.710	.116	.081	-.058
23	Significant others (neg)	.264	.074	.558	.290	-.051	.075
7	Significant others (neg)	.136	-.009	.838	.043	-.020	-.062
17	Chance (pos)	.698	-.058	.196	.248	-.100	.039
2	Chance (pos)	.773	.042	.022	.051	.097	-.072
22	Chance (pos)	.752	.022	.112	.134	.014	-.009
10	Chance (neg)	.734	-.014	.202	.112	-.155	-.040
19	Chance (neg)	.655	.000	.123	.094	.037	-.096
8	Chance (neg)	.634	.115	.037	.094	-.114	-.107

Extraction Method: Principal Components Analysis.
Rotation Method: Varimax with Kaiser Normalization.

4) Results

A 24-item scale was developed with clear factor structure for eight 3-item subscales. The factor structure is presented in Table 1.

Subscale reliabilities were quite sufficient for 3-item subscales (alpha coefficients ranged between 0.6 and 0.74), and are shown at Table 2.

The scale structure proved robust to analysis in separate treatment groups, and between clinics.

Table 2. Subscale reliabilities

Subscale	Outcome	Alpha co-efficient
Internality	Positive	.60
	Negative	.60
Medical	Positive	.66
	Negative	.60
Significant	Positive	.66
Others	Negative	.64
Chance	Positive	.74
	Negative	.66

5) Conclusions

The 24-item ADDLoC questionnaire provides the first reliable, diabetes-specific perceived control measure that is both short and well balanced.

ADDLoC is now undergoing further investigation using the same patients sampled one year later, to examine its predictive validity and other properties.

References

- Bradley C (1994). Measures of perceived control of diabetes. In C Bradley (Ed) *Handbook of Psychology and Diabetes: a guide to psychological measurement in diabetes research and practice*. Chur, Switzerland: Harwood Academic Publishers.
- Bradley C, Gamsu DS, Moses JL, Knight G, Boulton AJM, Drury J and Ward JD (1987). The use of diabetes-specific perceived control and health belief measures to predict treatment choice and efficacy in a feasibility study of continuous subcutaneous insulin infusion pumps. *Psychology and Health*, 1, 133-146.
- Bradley C, Gamsu DS, Knight G, Boulton AJM and Ward JD (1986) Predicting risk of diabetic ketoacidosis in patients using continuous subcutaneous insulin infusion. *British Medical Journal* 293, 242-243.
- Speight J, Barendse S & Bradley C (1999). The DiabQoL+ Programme. *Proceedings of the British Psychological Society* 7, 35.