

# **PUBLICATIONS on the DTSQ Diabetes Treatment Satisfaction Questionnaire: status (DTSQs) and change (DTSQc)**

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## **Chapter on the current DTSQs and its development**

Bradley C (1994) The Diabetes Treatment Satisfaction Questionnaire: DTSQ. In Bradley C (Ed) (1994) *Handbook of Psychology and Diabetes: a guide to psychological measurement in diabetes research and practice*. Chur, Switzerland: Harwood Academic Publishers.

## **Original development work on the DTSQs**

Bradley C and Lewis KS (1990) Measures of psychological well-being and treatment satisfaction developed from the responses of people with tablet-treated diabetes. *Diabetic Medicine* 7, 445-451.

## **Relationship between the DTSQ and the ADDQoL measure of the impact of diabetes on quality of life**

Bradley C and Speight J (2002) Patient perceptions of diabetes and diabetes therapy: assessing quality of life. *Diabetes Metabolism Research and Reviews* 18: S64-S69.

## **Commentary on FDA draft guidance on patient reported outcome measurement**

Bradley C (2006) Feedback on the FDA's February 2006 draft guidance on Patient Reported Outcome (PRO) measures from a developer of PRO measures. *Health and Quality of Life Outcomes* 4 (1) 78, <http://www.hqlo.com/content/4/1/78>.

## **Response to review of diabetes-specific patient reported outcome measures**

Brose LS, Mitchell J and Bradley C (2009) Comments on Speight et al.'s 'Not all roads lead to Rome – a review of quality of life measurement in adults with diabetes'. *Diabetic Medicine* 26 (9) 1076-1077.

## **World Health Organisation/ International Diabetes Federation Guidelines**

Bradley C and Gamsu DS for the psychological well-being working group of the WHO/IDF St. Vincent Declaration Action Programme for Diabetes (1994). Guidelines for encouraging psychological well-being: Report of a working group of the World Health Organisation Regional Office for Europe and International Diabetes Federation European Region St. Vincent Declaration Action Programme for Diabetes. *Diabetic Medicine*, 11, 510-516.

## **Development of the DTSQc (change version)**

### **Current Change Version Articles**

Bradley C (1999) The Diabetes Treatment Satisfaction Questionnaire (DTSQ): change version for use alongside status version provides appropriate solution where ceiling effects occur. *Diabetes Care* **22**, 3, 530-2.

Bradley C, Plowright R, Stewart J, Valentine J and Witthaus E (2007) The Diabetes Treatment Satisfaction Questionnaire change version (DTSQc) evaluated in insulin glargine trials shows greater responsiveness to improvements than the original DTSQ. *Health and Quality of Life Outcomes* **5** (5) 57, <http://www.hqlo.com/content/5/1/57>

Howorka K, Pumprla J, Schlusche C, Wagner-Nosiska D, Schabmann A and Bradley C (2000) Dealing with ceiling baseline treatment satisfaction level in patients with diabetes under flexible, functional insulin treatment: assessment of improvements in treatment satisfaction with a new insulin analogue. *Quality of Life Research* **9**: 915-930.

### **Early Change Version Article (now superseded)**

Lewis KS, Bradley C, Knight G, Boulton AJM and Ward JD (1988) A measure of treatment satisfaction designed specifically for people with insulin-dependent diabetes. *Diabetic Medicine* **5**, 235-242.

**Validation of translations** (See [www.healthpsychologyresearch.com](http://www.healthpsychologyresearch.com) [Information] for list of available language versions)

Howorka K et al (2000) referenced above. (Validating German DTSQs and c).

Ishii H, Bradley C, Riazi A, Barendse S and Yamamoto T (2000) The Japanese Version of the Diabetes Treatment Satisfaction Questionnaire (DTSQ): translation and clinical evaluation. *Journal of Clinical and Experimental Medicine* **192**, 7, 809-814. (A Japanese Journal publishing in Japanese).

Plowright R, Witthaus E and Bradley C (2000) Psychometric evaluation of Diabetes Treatment Satisfaction Questionnaire in 8 languages. *Proceedings of the British Psychological Society* **8** (2) 43.

Witthaus E, Stewart J and Bradley C (2001) Treatment satisfaction and psychological well-being with insulin glargine compared with NPH in patients with Type 1 diabetes. *Diabetic Medicine* **18**, 619-625.

Wredling R, Stalhammar J, Adamson U, Berne C, Larsson Y and Ostman J (1995) Well-being and treatment satisfaction in adults with diabetes: A Swedish population-based study. *Quality of Life Research* **4**, 515-522.

## **Comparison of standard and computerised versions of the DTSQ**

Pouwer F, Snoek FJ, van der Ploeg HM, Heine RJ and Brand AN (1998) A comparison of the standard and the computerized versions of the Well-Being Questionnaire (WBQ) and the Diabetes Treatment Satisfaction Questionnaire (DTSQ). *Quality of Life Research* **7** (1), 33-38.

### **Review papers including the DTSQ**

Bradley C and Gilbride CJB (2008) Improving treatment satisfaction and other patient-reported outcomes in people with Type 2 diabetes: the role of once-daily insulin glargine. *Diabetes, Obesity and Metabolism* **10** (Suppl.1), 50-65. <http://www.blackwell-synergy.com/toc/dom/10/s2> <http://eprints.rhul.ac.uk/712/>

Speight J, Reaney MD and Barnard KD (2009) Not all roads lead to Rome—a review of quality of life measurement in adults with diabetes. *Diabetic Medicine* **26** (4), 315-327.

### **Crossectional and audit studies of diabetes using the DTSQ**

Petterson T, Lee P, Hollis S, Young B, Newton P, and Dornan T (1998) Well-being and treatment satisfaction in older people with diabetes. *Diabetes Care* **21**, 930-935.

Ward, J, Lin M, Heron, G and Lajoie V (1997) Comprehensive audit of quality-of-care and quality-of-life for patients with diabetes. *Journal of Quality in Clinical Practice* **17**, 91-100.

[Note: the authors have misinterpreted the scale (and the patients' responses to it) for the perceived frequency of hyper- and hypoglycaemia items: it is not actual number of episodes but a more general indication of frequency that these items measure]

Wredling R, Adamson L, Berne C, Dahlen M, Ostman J, Larsson Y and Stalhammar J (1993) Quality of life among a representative sample of people with diabetes mellitus in Sweden. *Diabetes, Nutrition and Metabolism* **6**, 393-395.

### **Use of DTSQ in comparison of different treatment regimens for type 1 diabetes**

Ashwell SG, Bradley C, Stephens JW, Witthaus E and Home PD (2008) Treatment satisfaction and quality of life with insulin glargine plus insulin lispro compared with NPH insulin plus unmodified human insulin in people with type 1 diabetes. *Diabetes Care* **31** (6) 1112-7.  
[http://www.ncbi.nlm.nih.gov/pubmed/18339977?ordinalpos=433&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed\\_ResultsPanel.Pubmed\\_RVDocSum](http://www.ncbi.nlm.nih.gov/pubmed/18339977?ordinalpos=433&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum)

Bradley C (1999) On calculating treatment satisfaction. *Diabetes Care* **22**, 10, 1760.

Gale EAM for the UK Trial Group: Alban-Davies H, Bilous RW, Bradley C, et al (2000) A randomized, controlled trial comparing insulin lispro with human soluble insulin in patients with Type 1 diabetes on intensified insulin therapy. *Diabetic Medicine* **17**, 3, 209-214.

Home PD, Lindholm A and Riis A (2000). Insulin aspart vs. human insulin in the management of long-term blood glucose control in Type 1 diabetes mellitus: a randomised control trial. *Diabetic Medicine* **17** (11), 762-770.

Johansson UB, Adamson UCK & Lins PES and Wredling RAM (2000) Improved blood glucose variability, HbA<sub>1c</sub> and less insulin requirement in IDDM patients using insulin lispro in CSII. The Swedish multicenter lispro insulin study. *Diabetes & Metabolism (Paris)* **26** (3), 192-196.

Janes JM, Bradley C and Rees A (1997) Preferences for, and improvements in aspects of quality of life (QoL) with insulin lispro in a multiple injection regimen. *Diabetologia* **40**, suppl 1, A353.

Kawamori R, Kadowaki T, Ishii H, Iwasaki M and Iwamoto Y (2009) Efficacy and safety of insulin glulisine in Japanese patients with type 1 diabetes mellitus. *Diabetes, Obesity and Metabolism*, **11**, 891-899.

<http://www3.interscience.wiley.com/cgi-bin/fulltext/122510731/PDFSTART>

[This paper is an example of a study that shows, appropriately, no change in treatment satisfaction or in perceived frequency of hyper-or hypoglycaemia, when patients switch between two treatments which are used in the same way and have similar effects on blood glucose control.]

Renner R, Pfützner A, Trautmann M, Harzer O, Sauter K and Landgraf R on behalf of the German Humalog-CSII Study Group (1999) Use of insulin lispro in continuous subcutaneous insulin infusion treatment. *Diabetes Care* **22**, 784-788.

[Note: error in reporting of DTSQ scores (all 8 items in DTSQ combined instead of 6 items that should form the treatment satisfaction score) pointed out by Bradley C (1999) On Calculating Treatment Satisfaction. *Diabetes Care* **22**, 10, 1760, and corrected figures supplied by Pfützner A (1999) Response to Bradley. *Diabetes Care* **22**, 10, 1760. Letters also discuss substantial and interesting carryover effects observed when patients switch back from Lispro to standard soluble in crossover trials and show marked reductions in satisfaction with standard soluble]

Silvestre L Bradley C and Witthaus E (2003) Improved treatment satisfaction and perceived metabolic control with insulin glargine, regardless of whether injected before breakfast, dinner or bedtime, in patients with Type 1 diabetes. *Diabetes* **52**, suppl 1, A456, Abstract 1977-PO.

Witthaus E, Ashwell SG, Johnston P, Stephens J, Home PD and Bradley C (2004) Quality of life is improved with insulin glargine + lispro compared with NPH insulin + regular human insulin in patients with Type 1 diabetes. *Diabetologia* **47** (suppl 1), A306, Abstract 849.

### **Use of DTSQ in comparing treatment regimens for Type 2 diabetes**

Best JH, Boye KS, Rubin RR, Cao d, Kim th and Peyrot M (2009) Improved treatment satisfaction and weight-related quality of life with exenatide once weekly or twice daily. *Diabetic Medicine* **26** (7) 722-728.

[http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list\\_uids=19573122](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19573122)

Bradley C, Plewe G, Kliebe-Frisch C, Schweitzer MA and Janka HU (2005) Treatment Satisfaction with a Basal Insulin added to Oral Agents versus Twice-daily Premixed Insulin Alone in Patients with Type 2 Diabetes. *Diabetes* **54** (suppl 1), A304, Abstract 1246-P.

Bradley C and El-Haschimi K (2006) Treatment satisfaction in patients with Type 2 diabetes: basal insulin plus oral agents versus twice-daily premixed insulin alone – analyses by country. *Diabetic Medicine* **23** (Suppl 1) 361 P1010.

Bretzel RG, Nuber U, Landgraf W, Owens DR, Bradley C and Linn T (2008) Once-daily basal insulin glargine versus thrice-daily prandial insulin lispro in people with type 2 diabetes on oral hypoglycaemic agents (APOLLO): an open randomized controlled trial. *The Lancet*, **371**, 1073-1084.

<http://www.thelancet.com/journals/lancet/article/PIIS0140673608604857/abstract>

Cooper HC and Lorains JW (1998) Managing poor control in Type 2 diabetes. *Practical Diabetes International* **15** (6), 173-177.

- Gerstein HC, Yale JF, Harris SB, Issa M, Stewart JA and Dempsey E (2006) A randomized trial of adding insulin glargine vs. avoidance of insulin in people with Type 2 diabetes on either no oral glucose-lowering agents or submaximal doses of metformin and/or sulphonylureas. The Canadian INSIGHT (Implementing New Strategies with Insulin Glargine for Hyperglycaemia Treatment) Study. *Diabetic Medicine* **(23)** (7) 736-742. [See also Houlden et al (2007) for more detailed analysis of patient reported outcomes and Bradley and Gilbride 2008 review (listed above) for critique]
- Heine RJ, Van Gaal LF, Johns D, Mihm MJ, Widel MH and Brodows RG (2005) Exenatide versus insulin glargine in patients with suboptimally controlled type 2 diabetes: a randomized trial. *Ann Intern Med* **143** (8) 559-569.
- Houlden R, Ross S, Harris S, Yale JF, Sauriol L and Gerstein, HC (2007) Treatment satisfaction and quality of life using an early insulinization strategy with insulin glargine compared to an adjusted oral therapy in the management of Type 2 diabetes: the Canadian INSIGHT Study. *Diabetes Res Clin Pract* **78** (2) 254-258.
- Janka HU, Plewe G, Riddle MC, Kliebe-Frisch C, Schweitzer MA and Yki-Jarvinen, H (2005) Comparison of basal insulin added to oral agents versus twice-daily premixed insulin as initial insulin therapy for type 2 diabetes. *Diabetes Care* **28** (2) 254-259. [N.B. used DTSQc as well as DTSQs]
- Jennings AM, Lewis KS, Murdoch S, Talbot JF, Bradley C and Ward JD (1991) Randomized trial comparing continuous subcutaneous insulin infusion with conventional insulin therapy in type II diabetic patients poorly controlled with sulphonylureas. *Diabetes Care* **14**, 738-744.
- Secnik Boye KS, Matza LS, Oglesby A, Malley K, Kim S, Hayes RP and Brodows, R (2006) Patient-reported outcomes in a trial of exenatide and insulin glargine for the treatment of type 2 diabetes. *Health and Quality of Life Outcomes* **4** 80. <http://www.hqlo.com/content/4/1/80>
- Taylor R, Foster B, Kyne-Grzebalski D and Vanderpump M (1994) Insulin regimens for the non-insulin dependent: impact on diurnal metabolic state and quality of life. *Diabetic Medicine* **11**, 551-557.
- Vinik AI and Zhang Q (2007) Adding insulin glargine versus rosiglitazone: health-related quality-of-life impact in type 2 diabetes. *Diabetes Care* **30** (4) 795-800.
- Wilson M, Moore MP, Lunt H (2004) Treatment satisfaction after commencement of insulin in type 2 diabetes. *Diabetes Res Clin Pract* **66**, 263–267.
- Witthaus E, Stewart J and Bradley C (2000) Improved psychological outcomes after initiation of insulin treatment in patients with Type II diabetes. *Diabetologia* **43**, suppl 1, A205.
- Yki-Jarvinen H, Juurinen L, Alvarsson M, Bystedt T, Caldwell I, Davies M, Lahdenpera S, Nijpels G and Vahatalo M (2007) Initiate Insulin by Aggressive Titration and Education (INITIATE): a randomized study to compare initiation of insulin combination therapy in type 2 diabetic patients individually and in groups. *Diabetes Care* **30** (6) 1364-1369.
- Yoo BK, Triller DM, and Yoo DJ (2006) Exenatide: a new option for the treatment of type 2 diabetes. *Ann Pharmacother* **40** (10) 1777-1784.

## **Use of DTSQ in evaluating educational interventions**

DAFNE Study Group\* (2002) Training in flexible, intensive insulin management to enable dietary freedom in people with type 1 diabetes: the dose adjustment for normal eating (DAFNE) randomised controlled trial. *British Medical Journal*, **325**, 746-749 (full 6 page version of paper published on BMJ website <http://bmj.com/cgi/content/full/325/7367/746> ).

\*Amiel S, Beveridge S, Bradley C, Gianfrancesco C, Heller S, James P, McKeown N, Newton D, Newton L, Oliver L, Reid H, Roberts S, Robson S, Rollington J, Scott V, Speight J, Taylor C, Thompson G, Turner E & Wright F.

Deakin TA, Cade JE, Williams DRR and Greenwood DC (2006) Structured patient education: the Diabetes X-PERT Programme makes a difference. *Diabetic Medicine* **23** (9): 944-954.

Kinmonth A-L, Woodcock A, Griffin S, Spiegel N and Campbell MJ (1998) Randomised control trial of patient-centred care in general practice: impact on current well-being and future disease risk. *British Medical Journal* **317**, 1202-1208.

Rogers H, Turner E, Thompson G, Hopkins D and Amiel SA (2009) Hub-and-spoke model for a 5-day structured patient education programme for people with Type 1 diabetes. *Diabetic Medicine* **26**, 915-920 [3-item short-form used in routine monitoring of the outcomes of DAFNE training]

Speight J, Amiel S, Bradley C, Heller S, James P, Oliver L, Roberts S, Rogers H, Taylor C and Thompson G (2007) The Dose Adjustment For Normal Eating (DAFNE) Trial: improvements in HbA1c still apparent and quality of life benefits well maintained at 4-year follow-up. *Diabetic Medicine* **24** (Suppl 1) 95, P224.

## **Insulin delivery systems**

de Luis DA, Aller R, Cuellar L, Terroba MC, Ovalle HF, Izaola O and Romero E (2004) Effect on quality of life with a new insulin injection device in elderly patients with diabetes mellitus type 2. *J Diabetes Complications* **18** (4) 216-219.  
[N.B. uses the wrong reference to DTSQ development work. Should have referred to Bradley and Lewis, 1990]

Korytkowski M, Bell D, Jacobsen C and Suwannasari R (2003) A multicenter, randomized, open-label, comparative, two-period crossover trial of preference, efficacy, and safety profiles of a prefilled, disposable pen and conventional vial/syringe for insulin injection in patients with type 1 or 2 diabetes mellitus. *Clin Ther* **25** (11) 2836-2848.

Menzel R, Chlup R, Jutzi E and Hildman W (1990) "Catheter-Pens" – an alternative to insulin pump treatment? *Experimental Clinical Endocrinology* **95**, 157-164.

## **Adaptations of the DTSQ for teenagers and for parents of children with diabetes (DTSQ-Teen and DTSQ-Parent)**

Bradley C, Loewenthal K, Woodcock A and McMillan C (2009) Development of the diabetes treatment satisfaction questionnaire (DTSQ) for teenagers and parents: the DTSQ-Teen and the DTSQ-Parent. *Diabetologia* **52**: (Suppl 1) S397, Abstract 1013.

## **Adaptations of the DTSQ for inpatients with diabetes (DTSQ-IP)**

Bradley C, Singh H, Walden E, Jones C, Dhatariya K and Sampson MJ (2008) Psychometric evaluation of the Diabetes Treatment Satisfaction Questionnaire for Inpatients (the DTSQ-IP) and investigation of predictors of satisfaction. ISOQOL Conference Abstracts Issue October 2008, *Quality of Life Research*, A-86, Abstract 1204.

Sampson MJ, Singh H, Dhatariya KK, Jones C, Walden E and Bradley C (2009) Psychometric validation and use of a novel diabetes in-patient treatment satisfaction questionnaire. *Diabetic Medicine*, 26, 729-735. <http://www3.interscience.wiley.com/cgi-bin/fulltext/122372006/PDFSTART>

### **Adaptations of the DTSQ for other conditions**

#### **HIV**

Jordan J, Cahn P, Goebel F, Matheron S, Bradley C and Woodcock A (2005) Abacavir Compared to Protease Inhibitors as Part of HAART Regimens for Treatment of HIV Infection: Patient Satisfaction and Implications for Adherence. *Aids Patient Care and STDs* **19** (1) 9-18  
[http://www.ncbi.nlm.nih.gov/pubmed/15665631?ordinalpos=52&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed\\_ResultsPanel.Pubmed\\_RVDocSum](http://www.ncbi.nlm.nih.gov/pubmed/15665631?ordinalpos=52&itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum)

Woodcock A and Bradley C (2001) Validation of the HIV Treatment Satisfaction Questionnaire (HIVTSQ). *Quality of Life Research* **10**, 517-531.

Woodcock A and Bradley C (2006) Validation of the revised 10-item HIV Treatment Satisfaction Questionnaire status version (HIVTSQs) and new change version (HIVTSQc). *Value in Health* **9** (5) 320-333. <http://www.ncbi.nlm.nih.gov/pubmed/16961550>

#### **Renal Failure**

Barendse SM, Speight J and Bradley C (2005) The Renal Treatment Satisfaction Questionnaire (RTSQ): A Measure of Satisfaction With Treatment for Chronic Kidney Failure. *American Journal of Kidney Diseases* **45** (3) 572-579.

#### **Diabetic Retinopathy**

Brose, LS & Bradley, C (2009). Psychometric development of the Retinopathy Treatment Satisfaction Questionnaire (RetTSQ). *Psychology, Health & Medicine*, 14(6), 740-754

Woodcock A, Plowright R, Kennedy-Martin T, Hirsch A, ffytche T and Bradley C (2005) Development of the new Retinopathy Treatment Satisfaction Questionnaire (RetTSQ). *Proceedings of Vision 2005; International Congress Series*, Vol 1282, 342-346.

#### **Macular Disease**

Mitchell J, Brose LS, Bradley C (2007) Design of a measure of satisfaction with treatment for Macular Degeneration (MacTSQ). *ISOQOL 14th Annual Conference. Quality of Life Research 2007:A-120*.

Eye Diseases generally - including cataract and glaucoma as well as retinopathy and macular disease

Brose LS, Plowright R, Mitchell J and Bradley C Individualised Quality of Life (QoL) and Treatment Satisfaction Questionnaires for People with Eye Conditions: EyeDQoL and EyeTSQ Design. *Accepted by ISOQOL 2009 as Abstract 1361.*

Genital Herpes

Taback NA and Bradley C (2006) Validation of the Genital Herpes Treatment Satisfaction Questionnaire (GHerpTSQ) in status and change versions. *Quality of Life Research* **15** (6): 1043-1052.

Hypothyroidism

McMillan CV, Bradley C, Woodcock A, Razvi S and Weaver JU (2004) Design of new questionnaires to measure quality of life and treatment satisfaction in hypothyroidism. *Thyroid* **14** (11) 916-925.

Fertility

The Frozen Embryo Replacement Treatment Satisfaction Questionnaire: FERTSQ (FERTSQ) is currently under evaluation.

JC/JB 5.4.05 / JC 1.6.05 / JB 19.4.06/CB/CG/JB 9.6.06/JB 12.9.06/14.11.06/JB 27.3.07.  
JC 28.11.07/CB 6/12/07/JB27.5.09/JB1.7.09/JB13.7.09/JB 24.8.09/AW 11.11.09/  
AW 28.01.10/ AW 4.6.10