

Psychometric evaluation of the Diabetes Treatment Satisfaction Questionnaire for Inpatients (the DTSQ-IP) and investigation of predictors of satisfaction

Clare Bradley¹, Harsimran Singh², Esther Walden³, Christine Jones³, Ketan Dhatariya³ and Mike Sampson³



¹Health Psychology Research, Dept. of Psychology, Royal Holloway University of London, Egham, Surrey, UK.
²University of Virginia Health System, P.O. Box 800223, Charlottesville, Virginia, USA.
³Elsie Bertram Diabetes Centre, Norfolk & Norwich University Hospital, Norwich, UK.

Norfolk and Norwich University Hospitals NHS Foundation Trust

1. Introduction

- Up to 10% of inpatient populations have diabetes.⁽¹⁻³⁾ Clinical & financial implications of effective inpatient diabetes care are widely recognised,⁽⁴⁻⁶⁾ however, there is evidence of high levels of inpatient dissatisfaction with diabetes care.⁽⁷⁻⁸⁾
- To date there has been no (published) structured attempt to record inpatient experiences of people with diabetes & analyse factors that may contribute to their dissatisfaction.
- A psychometrically validated instrument that quantifies the level & causes of dissatisfaction in diabetes inpatients is a necessary first step to improving inpatient diabetes care.

2. Methods

- The Diabetes Treatment Satisfaction Questionnaire (DTSQ)⁽⁹⁻¹⁰⁾ measures patient satisfaction with diabetes treatment & has been used extensively with outpatients. It formed the basis for developing the Diabetes Treatment Satisfaction Questionnaire for Inpatients (DTSQ-IP).
- Items in the DTSQ-IP were also informed by interviews with diabetes inpatients, diabetes inpatient specialist nurses, ward staff involved with diabetes care, diabetes specialist physicians & patient representatives on local clinical diabetes networks.
- The DTSQ-IP was distributed to adult inpatients with diabetes at the Norwich & Norfolk University Hospital, Norwich, UK (Feb 2004 - Oct 2005) for data collection.

Distribution of respondents

- ⇒ Total questionnaires distributed, n = 770
- ⇒ Completed questionnaires returned, n = 408
- ⇒ Respondents recognising they were insulin treated, n = 366 Data analyses conducted on these 366

Study sample: main characteristics

- N = 366 (predominantly Type 2 diabetes)
- Men = 212; Women = 154
- Length of hospital stay = 7 days (mean)
- Diabetes duration = 17.1 years (mean)*
- Insulin received for first time on admission = 23.4%
- Duration of insulin treatment = 14.6 years (mean)*
- Medical ward = 74.8%; Surgical ward = 25.1%

*Data from inpatients not receiving insulin for the first time

3. Results & Discussion

A. Psychometric evaluation of the DTSQ-IP

- Principal Components Analysis indicated that an **Inpatient Treatment Satisfaction Score can be computed** for this measure as the sum of the 17 DTSQ-IP items (i.e. all items except 2 & 3, which are analysed individually as in the DTSQ). Forced one-factor scores ranged from 0.537 to 0.750.

4. Conclusions

- The DTSQ-IP shows strong psychometric properties & is sensitive enough to detect significant differences in satisfaction between groups & relationships with process of diabetes care.
- The DTSQ-IP will be useful in designing and evaluating interventions to improve diabetes inpatient satisfaction.

- Cronbach's alpha** for the DTSQ-IP (i.e. all 17 items except 2 & 3) was 0.92, indicating high internal consistency reliability.

B. Further data analyses

- Mean **Inpatient Treatment Satisfaction Score** was 79.2 (SD 16.5) (possible maximum score=102).
- Hypoglycaemia** was a major concern with 53% feeling that their blood glucose levels had frequently been too low while 21% had concerns about **hyperglycaemia**.
- Meal choices at the hospital** were an area for concern as 21.1% indicated that they would never or rarely have made similar meal choices at home. Inpatients also expressed extreme dissatisfaction with the **appropriateness of meals considering their insulin treatment** (12.3%).
- Inpatients who were women, had longer duration of diabetes & insulin use, more injections pre-admission, longer hospital stay (LOS) & those on surgical wards were **significantly (p<0.05) more dissatisfied**.
- Multiple regression accounted for 8.2% variation in scale scores with LOS (p=0.01) & injection frequency preadmission (p=0.02) independent contributors.

References

- Sampson MJ et al. Trends in bed occupancy for inpatients with diabetes...*Diabetic Med* **23**: 1008-15, 2006.
- Ray NF et al. Hospitalisation & expenditures for treatment ...*J Clin Endo Metab* **81**: 3671-9, 1997.
- Sampson MJ et al. Total and excess bed occupancy by age...*Diabetes Res Clin Pract* **77**: 92-8, 2006.
- ADA position statement. Inpatient diabetes & glycemic control: www.diabetes.org, 2006.
- Lien LF et al. In hospital management of type 2 diabetes mellitus. *Med Clin N Am* **88**: 1085-1105, 2004.
- Clement S et al. Management of diabetes ...in hospitals. *Diabetes Care* **27**: 553- 591, 2004.
- Audit Commission. Testing Times: a review of diabetes services ... (www.audit-commission.gov.uk), 2002.
- Dept of Health. NSF for Diabetes... www.dh.gov.uk/PublicationsandStatistics/Publications, 2004.
- Bradley C et al. Measures of ...well-being and treatment satisfaction ...*Diabetic Med* **7**: 445-51, 1990.
- Bradley C. The DTSQ. In: Bradley C, Ed. Handbook of Psychology & Diabetes...Harwood Acad Pub, 1994.

Acknowledgements

Funding for the psychometric analyses of the DTSQ-IP was provided by the Charitable Norfolk and Norwich Diabetes Trust in a research grant (Ref: GA No.021) to CB at RHUL.

Competing interests

CB is Managing Director of Health Psychology Research Ltd which licences the DTSQ-IP and other measures.

Enquiries

Corresponding author & website for access to the DTSQ & the DTSQ-IP:

Clare Bradley, PhD
Professor of Health Psychology
Royal Holloway,
University of London
Egham, Surrey, TW20 0EX, UK.
Email: c.bradley@rhul.ac.uk
www.healthpsychologyresearch.com