

# Psychometric properties of two new measures of quality of life (QoL) and treatment satisfaction in hypothyroidism: the ThyDQoL and ThyTSQ

Royal Holloway  
University of London

C V McMillan<sup>1</sup>, C Bradley<sup>1</sup>, S Razvi<sup>2</sup>, J U Weaver<sup>3</sup>

<sup>1</sup>Health Psychology Research, Dept of Psychology, Royal Holloway, University of London, Egham, Surrey, UK.

<sup>2</sup>Department of Diabetes and Endocrinology, Queen Elizabeth Hospital, Gateshead, UK.

<sup>3</sup>University of Newcastle-upon-Tyne, School of Clinical Medical Sciences, Queen Elizabeth Hospital, Gateshead.



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## Introduction and Aims

- Hypothyroidism is a life-long chronic disease that slows the metabolism, with both physiological symptoms (e.g. cold intolerance, weight gain) and psychological symptoms (e.g. depression)<sup>1</sup>. The disorder is particularly prevalent in women and the elderly<sup>1</sup>.
- Standard treatment is life-long thyroxine replacement but some patients continue to report persistent symptoms despite tests indicating their biochemically euthyroid state<sup>2</sup>.
- The aim of this study was to evaluate the psychometric properties of two recently designed questionnaires of QoL and treatment satisfaction in hypothyroidism: the ThyDQoL and the ThyTSQ<sup>3</sup>.

## Methods

A cross-sectional study in which 110 adults with hypothyroidism (89 women, 21 men), mean age  $55.1 \pm 14.3$  years; 103 treated with thyroxine; attending primary care and hospital clinics; completed the questionnaires.

Reliability and principal components analyses were undertaken.

### ThyDQoL – description

- An individualised, patient-centred questionnaire measuring perceived impact of hypothyroidism on QoL. It is based on the ADDQoL<sup>4</sup> for diabetes.
- 18 domains of life (e.g. family life, physical appearance) and 2 overview items (present QoL, and thyroid-dependent QoL).
- Respondents rate personally applicable life domains for impact of hypothyroidism and importance to their QoL (Fig. 1).
- Larger domain scores (negative and positive, range  $-9$  to  $+3$ ) indicate more impact and more importance for QoL.
- An Average Weighted Impact score (AWI) is obtained by multiplying impact ratings by importance ratings and summing all applicable domains, before dividing by the number of domains applicable to the individual (range  $-9$  to  $+3$ ).

### ThyTSQ – description

- Based on the DTSQ<sup>5</sup> for diabetes but, unlike the DTSQ, has two sections:
  - The 7-item ThyTSQ-Present measures satisfaction with present treatment for hypothyroidism. Questions include satisfaction with control of hypothyroid symptoms, patients' understanding of treatment.
  - The 4-item ThyTSQ-Past, an optional preliminary section to the ThyTSQ-Present, measures satisfaction with past treatment around the time of diagnosis.
- Patients circle a number on scales of 6 (very satisfied) to 0 (very dissatisfied) to indicate their degree of satisfaction with each aspect of treatment (Fig. 2).

Fig. 1: A ThyDQoL item (showing scores assigned)

13 (a) If I did not have underactive thyroid, my physical appearance would be:

-3	-2	-1	0	1
very much better	much better	a little better	the same	worse

(b) My physical appearance is:

3	2	1	0
very important	important	somewhat important	not at all important

Fig. 2: A ThyTSQ-Present item

How satisfied are you with the current treatment for your underactive thyroid?

very satisfied	6	5	4	3	2	1	0	very dissatisfied
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Fig. 3: Perceived impact of hypothyroidism on ThyDQoL domains

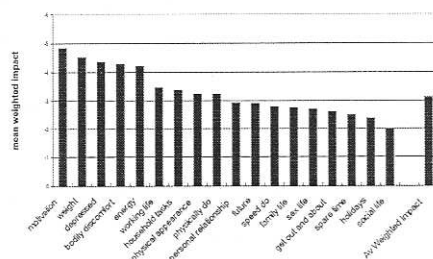
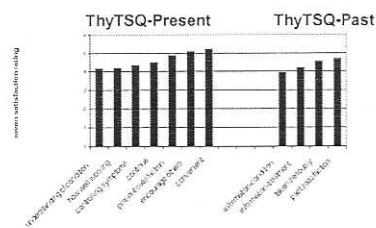


Fig. 4: Satisfaction ratings on ThyTSQ items



## Results

Questionnaire completion rates were  $>98\%$ .

### ThyDQoL

- Very high internal consistency reliability [Cronbach's  $\alpha = 0.95$ ,  $N = 97$ ]
- Forced 1-factor analysis showed that all 18 items loaded satisfactorily ( $>0.4$ ) supporting the validity of calculating the overall AWI score. There were no subscales.
- All domains were perceived as negatively impacted by hypothyroidism (Fig. 3), the most severely impacted were:

	Mean $\pm$ s.d.
Motivation	$-4.8 \pm 2.8$
Weight	$-4.5 \pm 3.0$
Depression	$-4.4 \pm 2.7$
Bodily discomfort	$-4.3 \pm 2.8$
Av Weighted Impact	$-3.1 \pm 2.2$

- The majority (71%) felt that hypothyroidism had a negative impact on overall QoL (overview item, thyroid-dependent QoL).

### ThyTSQ

- Internal consistency reliability was high:
  - ThyTSQ-Present [ $\alpha = 0.91$ ,  $N = 102$ ]
  - ThyTSQ-Past [ $\alpha = 0.9$ ,  $N = 103$ ].
- Forced 1-factor analyses indicated that the 7 items of the ThyTSQ-Present and the 4 items of ThyTSQ-Past could be summed into separate total Present Satisfaction and Past Satisfaction scores.
- ThyTSQ-Present: least satisfaction was found for patient's understanding of the condition (mean  $\pm$  s.d.:  $4.2 \pm 1.7$ ) with 17% of patients dissatisfied (Fig. 4). A minority (12%) were dissatisfied with how well the treatment was working.
- ThyTSQ-Past: least satisfaction was found for information provided about the condition around the time of diagnosis (mean  $3.9 \pm 1.8$ ) (Fig. 4).

Total Present Satisfaction:  $32.5 \pm 7.8$  (max range 0–42)  
Total Past Satisfaction:  $17.5 \pm 6.1$  (max range 0–24)

## Conclusions

- The ThyDQoL and ThyTSQ are new self-completion measures of perceived impact of hypothyroidism on QoL and of treatment satisfaction respectively.
- They are highly acceptable to patients.
- Their face and content validity, and internal consistency reliability are established.
- The ThyDQoL has provided evidence for the perceived negative impact of hypothyroidism on QoL.
- The ThyTSQ has indicated sources of dissatisfaction with present and past treatment for hypothyroidism, with wide individual variation in patients' satisfaction.

- The measures will assist health professionals in considering psychological as well as medical outcomes when treating people with hypothyroidism, and are suitable for clinical trials and routine clinical monitoring.
- The measures' sensitivity to change and other psychometric properties need now to be established in the course of future clinical trials and other studies.

## References

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## Access to questionnaires

Care Bradley PhD, Professor of Health Psychology  
Royal Holloway, University of London  
Egham, Surrey, TW20 0EX, UK  
E-mail: c.bradley@rhul.ac.uk

## Enquiries

Carmyn McMillan PhD, Research Health Psychologist  
Royal Holloway, University of London  
Egham, Surrey, TW20 0EX, UK  
E-mail: c.mcmillan@rhul.ac.uk