

# Psychological effects of withdrawal of growth hormone (GH) from GH-deficient adults

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## Background

Whilst there is now considerable evidence of the beneficial effects, both physiological and psychological, of GH treatment for adults with GH deficiency (GHD), little is known about the effects of withdrawal of GH treatment.

## Objective

To determine the psychological effects of discontinuation of GH treatment from GH-treated adults with GHD.

## Method

- GH treatment discontinued for 3 months from 12 of 21 adults (mixed adult and childhood onset), in a double-blind placebo-controlled trial, where 9 continued with GH.
- Semi-structured interviews at baseline and end-point.
- Questionnaires measuring quality of life (QoL) and related aspects completed at baseline and end-point

## Questionnaires

### Hormone-deficiency specific QoL

- HDQoL<sup>1</sup>: new individualised measure of impact of hormone deficiency on QoL across 13 life domains (e.g. work, family). Weighted impact scores obtained by multiplying impact ratings by importance ratings. Range -9 to +9, (max negative impact to max positive impact of hormone deficiency on QoL). See Fig 1 for item example.

### Well-being

- General Well-being Index<sup>2</sup> (GWB): British version of the American Psychological General Well-being Index<sup>3</sup> (PGWB).
- Well-being Questionnaire<sup>4</sup> (W-BQ12)

### Health Status

- Nottingham Health Profile<sup>5</sup> (NHP)
- MOS Short-Form 36<sup>6</sup> (SF-36)

Fig. 1: HDQoL domain-specific item with importance rating scale.

1. If I did not have hormone deficiency, my working life and work-related opportunities would be:

	a little better	the same	a little worse	much worse	very worse
very important	important	somewhat important	not at all important		

- Analysis of covariance conducted (age and life events scores as covariates).
- Some treatment-group effects approached 2-tailed significance (See Table 2): placebo group scores tending towards worsening QoL, health status and well-being at end-point, with no change or improvement in the GH-treated group.
- Analysis complicated by small sample size and between-group differences in baseline scores.

## Results

Table 1: Reported key psychological symptoms of GH-withdrawal in Placebo group (6 women, 6 men) during end-point interviews

	women	men
Energy decrease	6	3
Drowsiness	4	1
Sleep pattern - change	4	1
Depression	3	1
Crying episodes	5	-
Irritability	3	-
Memory - worse	3	-
Sociability	2	1
Pain - increase	3	1

GH-treated patients reported few symptoms over the study.

End-point: Belief about treatment received

Belief	Actual	
	Placebo group	GH group
Placebo	9	1
GH	0	5
Don't know	3	3

Fig 2: Somia HDQoL domain scores at baseline (T1) and end-point (T2)

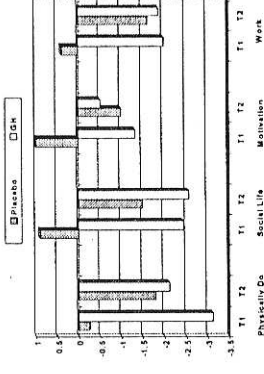


Table 2: Questionnaire results

HDQoL domains:	Group-by-time interactions
Physically do Motivation	F(1,13)=5.59, MSE=1.94, p=0.034** F(1,11)=4.46, MSE=1.94, p=0.056
W-BQ12 Energy	Between-group differences at end-point, baseline scores partialled out F(1,160)=4.27, MSE=2.72, p=0.056
SF-36 General Health	Group-by-time interaction F(1,14)=3.59, MSE=71.08, p=0.08

\*\* treat result with caution: large between-group differences at baseline (See Fig 2).

## Conclusion

- Small sample size (N=21) severely reduced power of analysis
- Discontinuation of GH-treatment in GH-deficient adults has detrimental psychological effects.
- Three questionnaires are recommended to measure these effects: the HDQoL, the W-BQ12 and the SF-36.
- The frequently-used NHP and PGWB (in its British form, the GWB) were not sensitive to change. This explains why some previous GH-replacement trials have not obtained significant psychological results.
- Interviews provide useful qualitative data and are recommended for small samples.

## References

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Access to questionnaires  
 The HDQoL and W-BQ12 can be obtained from the copyright holder and co-author, Prof. Claire Bradley at the address above.

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