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Clinically Meaningful Changes in Sexual Desire in the Psychosexual Daily Questionnaire in Older Men from the TTria

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Abstract

Background.—A recent study of older men participating in the Testosterone Trials (TTria) defined clinically meaningful change in the Psychosexual Daily Questionnaire (PDQ) (Question 4) in hypogonadal men age ≥ 65 years. This study defines clinically meaningful change in the same population for sexual desire assessed by the PDQ (Question 1).

Aim.—To determine clinically meaningful change in Question 1 of the Psychosocial Daily Questionnaire (PDQ) in hypogonadal older men.

Methods.—Participants in the Sexual Function Trial of the TTria were randomly divided into a training and test set. Anchor-based methods, including regression analysis, receiver operating characteristics curves, and empirical cumulative distribution functions were used to determine clinically meaningful change on Question 1 in the training set, and the selected threshold was evaluated in the test set for an effect of testosterone treatment.

Results.—Clinically meaningful increase in Question 1 of the PDQ was determined to be ≥ 0.7 points.

Clinical Implications.—Question 1 of the PDQ can be used to assess sexual desire in response to testosterone treatment.

Strengths and Limitations.—Data obtained from a single large study of older hypogonadal men.

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Conclusion.—Clinically meaningful improvement of sexual desire is a change of score of 0.7 score of Question 1 of PDQ.

Keywords

Clinically Meaningful Change; Sexual Desire; Sexual Function Assessment; Testosterone Treatment

Introduction

The Psychosexual Daily Questionnaire (PDQ) is a seven-day, self-reported questionnaire assessing sexual function and mood [1] that has been used in many clinical trials of testosterone replacement in hypogonadal men. Our recent study in older men participating in the TTrial defined clinically meaningful change in sexual desire, measured by the Derogatis Interview for Sexual Function II-Sexual Desire Domain (DISF), and sexual activity, measured by the PDQ (Question 4), in hypogonadal men age ≥ 65 years [2]. This study defines clinically meaningful change in the same population for sexual desire assessed by the PDQ (Question 1) [1].

Materials and Methods

Sample

Eligibility criteria and consent for the Testosterone Trials have been described [3]. The analytic sample for determining a clinically meaningful change threshold was a randomly selected subset (n=235) of participants in the Sexual Function Trial of the TTrial [3], as described in our prior study as the training set [2]. Men averaged 72.1 (standard deviation 5.1) years in age and 31.1(3.4) in BMI; over half (52.3%) were college graduates, and 88.9% were married or living with a partner. TTrial participants were randomized to receive testosterone gel or placebo for 12 months. The test set was the remaining subset of men enrolled in the Sexual Function Trial.

Psychosexual Daily Questionnaire – Question 1

The Psychosexual Daily Questionnaire (PDQ) is a seven-day, 6-item scale designed to assess various domains of sexual interaction, including desire, partner and self-enjoyment, mood, extent of engaging in sexual activity, and quality of arousal. Sexual desire was assessed using Question 1, where Question 1 is an 8-point numerical response scale asking individuals to rate their overall level of sexual desire on the day of the assessment. Possible daily responses range from None (0) to Very High (7), and a 7-day response is calculated as the average daily response over 7 days. The PDQ was assessed at months 0 (baseline), 3, 6, 9, and 12 after the start of the gel application.

Patient Global Impression of Change – Sexual Desire

The Patient Global Impression of Change (PGIC) is a 7-item verbal response scale asking patients to report if ‘From the start of the study, their sexual desire is ‘Very much better’, ‘Much Better’, ‘Little better’, ‘No change’, ‘Little Worse’, ‘Much Worse’, ‘Very Much Worse’. A 5-point response scale was created by pooling the ‘Very Much’ and ‘Much Better/

Worse' categories due to very few participants responding at the extremes. PGIC was measured at months 3, 6, 9, and 12.

Statistical Analysis

As in our prior report [2], clinically meaningful change was defined in this subset using anchor-based methods, where the PGIC Sexual Desire served as the anchor [4]. Regression, Receiver Operating Characteristic (ROC) curves, and empirical cumulative distribution function (CDF) analyses were conducted to determine clinically meaningful change. In regression-based analysis, change from baseline in the PDQ-Q1 was the outcome, and the primary predictor was 5-point categorical PGIC. Models further included for adjustment site and month to account for institutional and temporal variation. Dichotomous PGIC was used for Receiver Operating Characteristic Curve Analysis, where a responder was defined in two ways: a 'Strict' responder was defined by a PGIC response of 'Very/Much Better', and an 'Inclusive' responder included both 'Very/Much Better' and 'Little Better'. Sensitivity and specificity were calculated for candidate thresholds of change on the PDQ-Q1, where candidate thresholds ranged from -4.0 to 6.0 in increments of 0.1. Empirical CDFs were summarized by quantiles for each level of 5-point PGIC.

Results

Regression-based analysis indicated mean change from baseline in the PDQ-Q1 of 0.66 (95% CI 0.12–1.21) among participants who responded 'Very/Much Better.' Mean change from baseline among patients who reported being 'Little Better', 'No Change', 'Little Worse', and 'Very/Much Worse' were 0.37 (-0.07–0.82), 0.12 (-0.27–0.51), 0.13 (0.28–0.51), and -0.06 (-0.54–0.41), respectively (Figure 1). The ROC analysis suggested an increase of 1.0 as the threshold maximizing the sum of sensitivity and specificity, with sensitivity of 0.36 and specificity of 0.84 for PGIC Strict. PGIC Inclusive as the responder definition resulted in the same threshold with sensitivity of 0.30 and specificity of 0.86. Empirical CDF curves revealed month 12 median (IQR) change of 0.14 (-0.43, 1.43), 0 (-0.86, 0.48), -0.14 (-0.57, 0.57), -0.43 (-1.14–0.14), -0.14 (0.71, 0.43) among 'Very/Much Better' respondents, 'Little Better', 'No Change', 'Little Worse', and 'Very/Much Worse' respondents, respectively. A final threshold of 0.7 was selected for PDQ-Q1 clinically meaningful change. In the test set, 34.6%–47.2% of testosterone-treated men achieved a PDQ-Q1 increase of 0.7 across months 3 through 12, whereas only 20–22% of placebo-treated men increased by that amount (Adjusted OR=2.9, 95% CI 2.1–4.1, $p<0.0001$).

Discussion and Conclusion

Prior studies have reported differences in group-average change in the PDQ-Q1 pre- and post-testosterone treatment, but not the difference in the percent of men achieving an increase of a selected magnitude. In these studies, the average within subject difference in sexual desire (PDQ Question 1) comparing baseline and 3 to 12 months of treatment with testosterone gel, lotion, or injections to placebo treatment ranged from 1 to 1.5 in adult middle aged hypogonadal men [5–8]. In the TTrials, the difference in average within subject change was 0.60 (95% CI 0.49–0.71) for PDQ Question 1. In this present study, using

methods that we have previously reported, and reviewing all approaches and considering expert opinion, clinically meaningful change for the PDQ Question 1 (Sexual Desire) was defined to be an increase of 0.7. The men treated with T were twice as likely to experience such an increase as the men treated with placebo. This clinically meaningful change threshold may be used in future clinical trials of interventions to improve sexual desire in older men.

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Figure 1.
Mean Change in PDQ-Q1 by Patient Global Impression of Change Response