AN ITEM ANALYSIS OF THE 24 HOUR HEADACHE DISABILITY QUESTIONNAIRE (DISQ-24) USING CLASSICAL TEST THEORY AND ITEM RESPONSE THEORY METHODS

Ayyar Krishnan A1, Kwong WJ1

1University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; 2GlaxoSmithKline, Research Triangle Park, NC, USA

OBJECTIVE: DisQ-24 is a 14-item questionnaire with a 6-point Likert-type scale that measures disability in the 24 hours following onset of headache pain. Previous analysis on data from transformed migraine sufferers suggested item iterations may improve psychometric properties. The objective of this study was to evaluate the Disq-24 using classical test theory (CTT) and item response theory (IRT) methods to provide recommendations on further revisions.

METHODS: Disq-24 data from 647 subjects who participated in two clinical trials of acute migraine treatment were analyzed. An exploratory factor analysis (EFA) using maximum likelihood estimation and oblique rotation was performed to determine factor structure. Based on results from EFA, CTT and Likert scaling assumptions of equal means, variances and weights, internal consistency and item discriminant validity were examined using the Multi-trait/Multi-item analysis software (MAP-R). Item-characteristic curves, item discrimination (‘a’) and difficulty parameters (‘b’) based on the Samejima’s graded IRT model were estimated using Multilog software.

RESULTS: EFA suggested a 2-factor structure but communality estimates for Item 8 (0.41) and Item 10 (0.46) suggested a high proportion of variance in these items is unexplained in the common factors. MAP-R analysis showed most items met CTT assumptions, except items 8 and 10 had lower means (0.87 and 1.17 respectively) and weights (1.7 and 1.8 respectively) as compared to other items within the same subscale. All items exhibited high item-scale correlations (0.61–0.89) and high internal consistency (>0.9), which may suggest item redundancy. IRT analysis showed most items provided high discriminatory power (range 1.8–2.9) in differentiating varying levels of disability and measured disability over a broad range with no floor/ceiling effects, except items 8 (a = 1.09) and 10 (a = 1.10) had low discrimination and contributed little to the test information function.

CONCLUSIONS: CTT and IRT methods provided similar results that two items may be deleted or revised to improve psychometric properties. Further development may consider deleting items with low discriminatory power to reduce redundancy. Additional analysis is needed to confirm improvement of data fit after revisions.

TOTAL HEALTHCARE EXPENDITURES FOR MIGRAINE PATIENTS ASSOCIATED WITH CHOICE OF DRUG THERAPY

Schabert VF1, Esposito D1, Bowers BW2, Rousey A1, Tillotson F1

1The MEDSTAT Group, Santa Barbara, CA, USA; 2GlaxoSmithKline, Research Triangle Park, NC, USA

OBJECTIVES: Approximately 120 million Americans suffer from migraines, leading to impaired functional capacity and substantial societal costs. Studies have shown that migraine sufferers use more healthcare resources than non-migraine sufferers. This study compares healthcare resource use among migraineurs receiving various drug treatments.

METHODS: Fee-for-service patients with a migraine or headache diagnosis were selected from the MEDSTAT MarketScan databases. Enrollment, medical claims, and prescriptions were analyzed from January 1, 1998 through June 30, 2000. Demographics, utilization, and evidence of seven comorbidities were calculated over a baseline period of 12 months before migraine diagnosis. Costs for patients taking triptan monotherapy during the 12 months after diagnosis were compared to those for patients taking other drug therapies (butalbitals, ergotamines, methysergide, midrin, oral narcotics, and stadol) over the same follow-up period. Ordinary least squares regressions of log healthcare expenditures controlled for demographics, utilization, and comorbidities at baseline. Smearing estimates were used to predict the marginal effect of drug treatment on annual healthcare expenditures.

RESULTS: The final sample included 929 patients taking triptan monotherapy and 3588 patients taking other drug therapies. Triptan patients were more likely to be female than other patients (83.2% vs. 73.5%, P < .001) and less likely to have at least one comorbidity (51% vs. 56%, P = .006) or to visit an emergency room (25% vs. 61%, P < .001), but lower predicted total expenditures ($7468.69 vs. $8974.03, P < .0001), even after controlling for patient differences.

CONCLUSIONS: Triptan monotherapy was associated with lower total healthcare expenditures than were other migraine drug therapies, even though migraine-related costs for triptan patients were higher. The difference was over and above the cost influence of health status as measured by comorbidities and prior utilization.