Effect on hypnotic prescribing of a quality improvement collaborative for primary care of insomnia: a segmented regression analysis

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Problem

Patients with insomnia commonly present to general practice. Hypnotic misuse and underuse of psychological treatments demonstrates scope for improved care. To explore this, we undertook a feasibility study of a Quality Improvement Collaborative (QIC) across 8 general practices to investigate the effect of implementing sleep assessment and psychological interventions. Here we report a before-after analysis of the time series of prescribing of benzodiazepines (e.g. diazepam, temazepam, lorazepam) and Z-drugs (e.g. zopiclone, zolpidem, zaleplon) across the intervention practices. We contrast results to those for 8 control practices not subject to the QIC.

Approach

Data: were constructed as average daily quantity of hypnotic prescribed per Specific Therapeutic group Age-sex weightings Related Prescribing Unit (STAR–PU) for the period October 2005 to March 2010. Modelling: is by 2-segment intercept-trend regression performed on the 24 month periods either side of the 6-month operation of the QIC (October 2007 to March 2008). Estimation: is by either least squares or corrected using the Prais-Winsten method if error serial correlation is present in the errors. We then jointly re-estimate across all intervention practices (repeated on all control practices) using seemingly unrelated regressions to allow for any potential correlations in the models' errors. Testing: whether the intervention had been successful in inducing a structural break such that post-QIC prescribing of either drug was reduced we construct a bespoke test S based on the mean prediction error in the post-QIC period for aggregated intervention practices.

Findings

Here we focus on aggregate prescribing of hypnotics across the 8 intervention practices and then the 8 control practices. Firstly, in total across the intervention practices there was a noteworthy and significant reduction in benzodiazepine prescribing over the post-QIC term of 12 months (S=-2.46, p=0.007), but this was not sustained when consideration was extended to the full 24 month post-QIC period (S=-0.72, p=0.236). On the other hand, reduction in Z-drugs prescribing across the intervention practices was sustained across the entire of the post-QIC period (for the shorter 12 month initial period: S=-1.98, p=0.024; for the full 24 month period, S=-1.90, p=0.029). Next, repeating the same before-after comparison in aggregate prescribing across the control practices there was no significant reduction in prescribing in either class of hypnotic drug.

Consequences

Efficacy of the QIC in reducing hypnotic prescribing was shown, giving support to the need for a full scale trial of this intervention. Attention though to follow-up is warranted in any such design in order that it account for any possible variation in length of persistence of outcomes over time.

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