

Interfering Medications in Older Adults on Thyroid Hormone Replacement: Who Is at Risk?

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Background: Thyroid hormone prescriptions have steadily increased in the past few years with levothyroxine being one of the most frequently prescribed medications in the United States. Population-based studies have shown that older age is a significant predictor for thyroid hormone initiation, with use continuing long-term. Thyroid hormone management in older adults is complicated by the presence of comorbidities and polypharmacy, particularly due to medications that can interfere with thyroid function tests. However, the prevalence of concurrent use of thyroid hormone and interfering medications in older adults and patient characteristics associated with this practice remain unknown.

Methods: We conducted a population-based, retrospective cohort study of 538,137 thyroid hormone users aged ≥ 65 years from the Corporate Data Warehouse of the Veterans Health Administration (2004-2017). First, we described the prevalence of concurrent use of thyroid hormone and medications that commonly interfere with thyroid function tests (i.e., prednisone, prednisolone, carbamazepine, phenytoin, phenobarbital, amiodarone, lithium, interferon-alpha, tamoxifen). Then, we performed a multivariable logistic regression analysis to determine patient characteristics associated with concurrent use of thyroid hormone and at least one interfering medication during the study period. Covariates included in the model were patient age, sex, race, ethnicity and number of comorbidities.

Results: Overall, 170,261 (31.6%) of patients were on at least one interfering medication while on thyroid hormone during the study period (median follow up 56 months). Non-white race [odds ratio (OR) 1.18, 95% confidence interval (CI) 1.15-1.21], compared to white race), Hispanic ethnicity (OR 1.11, 95% CI 1.08-1.14, compared to non-Hispanic), female sex (OR 1.12, 95% CI 1.08-1.15, compared to male sex), and presence of comorbidities (e.g. Charlson-Deyo Comorbidity Score ≥ 2 , OR 2.47, 95% CI 2.43-2.52, compared to zero) were more likely to be associated with concurrent use of thyroid hormone and interfering medications. Older age (e.g., ≥ 85 years, OR 0.47, 95% CI 0.46 - 0.48, compared to age 65-74 years) was less likely to be associated with concurrent use of thyroid hormone and interfering medications.

Conclusions: Almost one-third of older adults on thyroid hormone were taking medications that have been known to interfere with thyroid function tests. Our study highlights the complexity of managing thyroid hormone replacement in older patients, many of whom are at risk for adverse effects in the context of polypharmacy and comorbidities.