

EFFECT OF PROBIOTICS OR PREBIOTICS ON THYROID FUNCTION: A META-ANALYSIS OF EIGHT RANDOMIZED CONTROLLED TRIALS

Shu, Q ; Kang, C ; Li, J ; Hou, Z ; Xiong, M ; Wang, X ; Peng, H
PloS one. 2024;19(1):e0296733

With Expert Review from Dr Kate Lawrence, BA(Hons), PhD, FHEA - Senior Lecturer at St Mary's University

TAKE HOME MESSAGES: Current evidence does not support a measurable effect of probiotic, prebiotic or symbiotic supplementation on thyroid hormone levels. There may be some benefits of these supplements for patients with Grave's disease, in terms of lowering their thyroid stimulating hormone antibody levels.

Research has highlighted the important role that the gut microbiome might play in thyroid function. As such, the potential role for probiotics and prebiotics to manipulate thyroid function has been considered. This systematic review included 8 peer-reviewed randomised controlled trials and aimed to assess the current consensus in the research in relation to pro-, pre- and syn-biotic supplementation on thyroid function. The meta-analysis showed no significant differences (following supplementation) in a number of key hormones: thyroid stimulating hormone (TSH); free thyroxine (fT4); and free triiodothyronine (fT3). Analysis revealed supplementation was associated with a significant reduction in thyroid stimulating hormone receptor antibody (TRAb) levels. The meta-analysis would suggest that supplementing with probiotics, prebiotics and synbiotics has little impact on the level of thyroid hormones. Supplementing with probiotics, prebiotics and synbiotics may, however, have an impact on thyroid stimulating hormone receptor antibody levels, by reducing them.

DOES FLUORIDE EXPOSURE AFFECT THYROID FUNCTION? A SYSTEMATIC REVIEW AND DOSE-RESPONSE META-ANALYSIS

Iamandii, I ; De Pasquale, L ; Giannone, et. al
Environmental research. 2024;242:117759
With expert review from Wilma Kirsten

Even though a small amount of exposure to fluoride can occur from accidental ingestion of topical dental products, fluoridated water and fluoride-rich and enriched foods and beverages represent the main sources of fluoride intake. The primary aim of this study was to evaluate the effects of fluoride exposure on thyroid function, specifically focusing on thyroid hormone levels and the prevalence of thyroid dysfunction. This research is a systematic review and dose-response meta-analysis, incorporating data from multiple observational studies and clinical trials.

Results showed a clear pattern of association between fluoride content in drinking water consumed by the study participants and their circulating thyroid-stimulating hormones (TSH) concentrations. However, this occurred only above 2 mg/L of water fluoride. Authors concluded that at the highest levels of naturally occurring fluoride exposure there are detrimental effects on thyroid function and possibly thyroid disease risk, whose most evident and consistent finding is a dose-dependent increase in TSH concentrations associated with consumption of drinking water above 2.5 mg/L of fluoride.

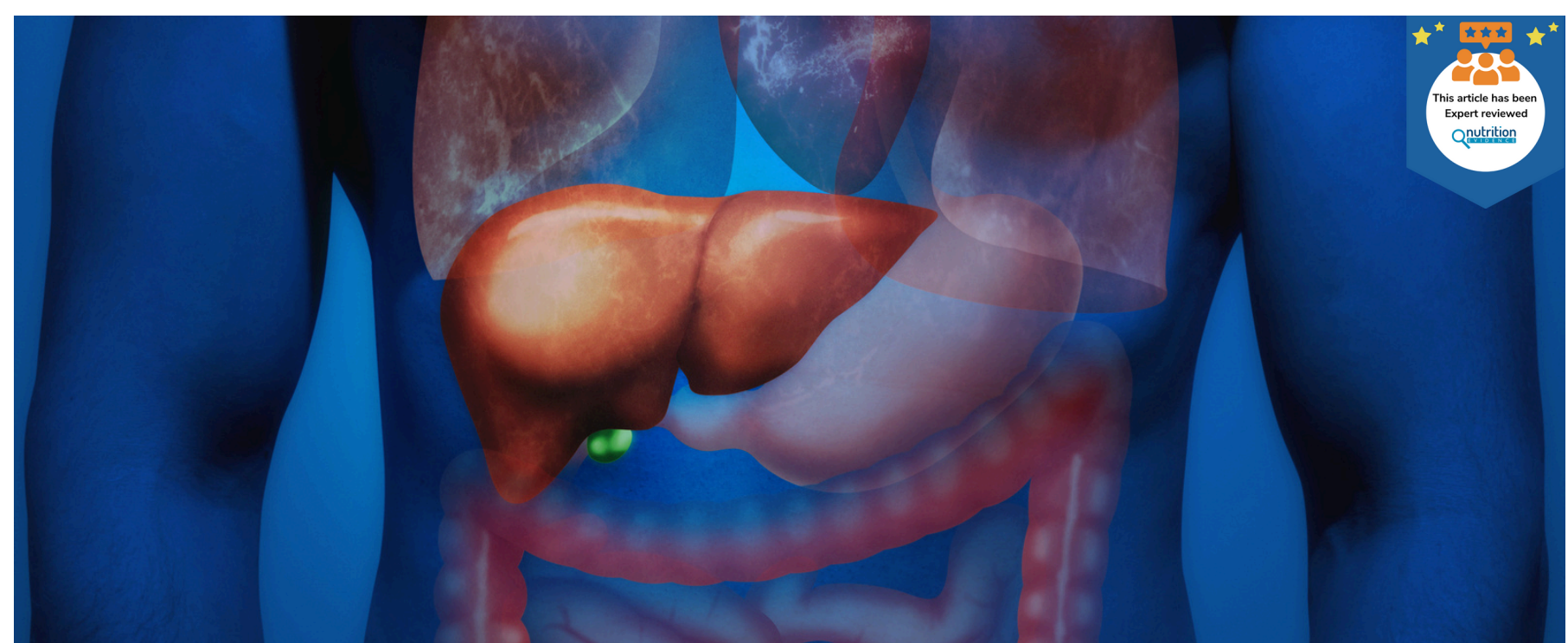


PREVALENCE OF THYROID DYSFUNCTION AND ASSOCIATED FACTORS AMONG ADULT TYPE 2 DIABETES MELLITUS PATIENTS, 2000-2022: A SYSTEMATIC REVIEW AND META-ANALYSIS

Hadgu, R ; Worede, A ; Ambachew, S
Systematic reviews. 2024;13(1):119

Thyroid dysfunction is a common endocrine disorder that can significantly impact metabolic processes. Patients with type 2 diabetes mellitus (T2DM) are at an increased risk of developing thyroid dysfunction (TD) due to the interplay between insulin resistance and thyroid hormone metabolism.

The aim of this study was to systematically review and analyse the prevalence of thyroid dysfunction among adult patients with T2DM and to identify factors associated with this comorbidity. This research is a systematic review and meta-analysis, incorporating data from studies conducted between 2000 and 2022. It includes data from 45 observational studies involving a total of 12,345 participants. Results showed that the pooled prevalence of TD among T2DM patients was found to be higher compared with the general population. Additionally, being female, obese, with a family history of TD, smoking, advanced age, and family history of DM were factors associated with TD among adult T2DM patients. Authors concluded that findings underscore the importance of regular thyroid function screening in T2DM patients to ensure timely diagnosis and management.



ASSOCIATION BETWEEN THYROID FUNCTION AND NONALCOHOLIC FATTY LIVER DISEASE: A DOSE-RESPONSE META-ANALYSIS.

Xiang, LL ; Cao, YT ; Sun, J ; Li, RH ; Qi, F ; Zhang, YJ ; Zhang, WH ; Yan, L ; Zhou, XQ
Frontiers in endocrinology. 2024;15:1399517
With Expert Review from Kirsty Baxter

Non-alcoholic fatty liver disease (NAFLD) affects around a quarter of the world's population. Thyroid hormones, including thyroxine (T4), 3-iodothyronine (T3) and thyroid-stimulating hormone (TSH), are essential for lipid metabolism in the liver. The aim of this meta-analysis of observational studies was to evaluate the association between thyroid hormones and NAFLD. 7 cohort and 3 case-control studies with a total of 38,425 individuals were included in the meta-analysis. When comparing high versus low levels of thyroid hormones, no significant association with risk of NAFLD was found for T4 or TSH, whilst high levels of T3 were associated with a 58% increased risk of NAFLD (based on 2 studies, 7442 participants). Higher levels of TSH were associated with a higher risk of liver fibrosis, whilst there was no correlation between T4 or T3 and liver fibrosis (based on 5 articles, 2508 participants). In dose-response analysis for TSH and T4, a U-shaped relationship between the thyroid hormones and NAFLD was found. There was no dose-response relationship between TSH or T4 and fibrosis. There was insufficient data for a dose-response analysis for T3.

