

## Association of sensitivity to thyroid hormone indices with 1-year all-cause mortality and readmission in hospitalized heart failure patients

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### INTRODUCTION & AIM

This study aimed to explore the relationship between thyroid hormone sensitivity indices and 1-year all-cause mortality as well as readmission in hospitalized heart failure patients.

### RESULTS & DISCUSSION

In the multivariable Cox proportional hazards model, the hazard ratio (HR) for the composite endpoint in the highest FT3/FT4 ratio group was 0.59 (95% CI: 0.36–0.96, P for trend = 0.047). Kaplan–Meier survival analysis indicated that a lower FT3/FT4 ratio was associated with a worse prognosis (Log-rank P = 0.048). RCS demonstrated a linear relationship between the FT3/FT4 ratio and poor outcomes. In contrast, TT4RI in quartile 2 was associated with the lowest risk, while no significant associations were observed for TSHI or TFQI.

### METHOD

A total of 402 patients admitted to the Department of Cardiology at Heze Hospital, affiliated to Shandong First Medical University, between 2022 and 2023 were included. The composite primary endpoint was defined as all-cause mortality and heart failure readmission within one year after discharge. Four thyroid hormone sensitivity indices were calculated: the free triiodothyronine (FT3)/free thyroxine (FT4) ratio, the thyroid stimulating hormone index (TSHI), the thyroid feedback quantile-based index (TFQI), and the thyrotroph thyroxine resistance index (TT4RI). Participants were grouped based on the quartiles of these indices. The Cox model assessed the effect of thyroid sensitivity on outcomes, with Kaplan–Meier survival analysis and Restricted Cubic Spline (RCS) analysis for non-linear relationships.

### CONCLUSION

The FT3/FT4 ratio is inversely associated with 1-year all-cause mortality and readmission risk in heart failure patients. TT4RI in quartile 2 was linked to the lowest risk, while TSHI and TFQI showed no significant association with outcomes. These findings suggest that thyroid hormone sensitivity indices, especially the FT3/FT4 ratio, may have prognostic value in heart failure patients.

### FUTURE WORK / REFERENCES

