SJIF Impact Factor: 6.711

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 9.
Issue: 9
Page N. 169-172
Year: 2025

Original Article www.wjahr.com

THE TRIGLYCERIDE-GLUCOSE (TYG) INDEX WORKS IN THE FORM OF BAD PROGNOSTIC ANTICIPATORIN PATIENTS WITH HEART FAILURE WITH PRESERVED EJECTION FRACTION - A SHORT COMMUNICATION

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Article Received date: 08 July 2025 **Article Revised date:** 28 July 2025 **Article Accepted date:** 18 August 2025

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ABSTRACT

Earlier we had detailed the association amongst abdominal obesity(AO), type2 diabetes mellitus(T2DM), Heart failure with preserved ejection fraction (HFpEF), role of adipose tissue (AT) impairment on liberation of adipocytokines, inclusive of adiponectin, leptin, resistin, visfatin, omentin, angiopoietin like protein, zinc—α-2glycoprotein, glypican 4, lipocalin 2, secreted frizzled – related protein(SFRP), retinol binding protein-4, TNFα, IL-6& IL-18,. Additionally, Diabetic cardiomyopathy (DbCM) represents a cardiovascular disease (CVD). Men & women having DM possessed 2. 4 &5 fold greater incidence of HF respectively. Patients of DM possessed greater prevalence of HF with variation from 19-26%.[3] Furthermore, role of epigenetics inclusive of DNA methylation;, histone post-translational modifications, histone acetylation, miRNAs circRNA, lnc RNAs histone HDAC1-6; cardiac remodelling, cardiac fibrosis, cardiac hypertrophy, LV hypertrophy, modes of cell demise likecardiomyocytes apoptosis, autophagy, pyroptosis and PI3K&other various signalling pathways. Recently we further updated therapy inclusive of Sodium Glucose Transporter 2 SGLT hampering agents, glucagon like peptide 1(GLP-1)-1 receptor agonist(GLP-1RA), as innovative mechanistic modes for the avoidance of HFpEF by utilization of GLP-1RA in case of patients with obesity, or metabolic syndrome(MetS) or obese diabetic patients particularly tackling the sequelae of obesity on the heart in addition to on HFpEF, the countercontrolling Renin-Angiotensin system(RAS) andavoidance of cardiovascular injury in such a backdrop. Lastly, GLP-1 axis is detailed asanti diabetic, anti obesity along with anti cardiac remodeling pathway. Moreover, previously we have outlined part of escalated TG's and diminished HDL-C in the formation of IR as well as MetS, emphasized significance triglyceride-glucose (TyG) indices for instance triglyceride-glucose body mass index (TyG-BMI)], triglyceride-glucose waist circumference (TyG-WC) &triglyceride-glucose waistto-height ratio (KeyWords; TyG-WHtR) marker for evaluating IR in contrast to the euglycemic-hyperinsulinaemic clamp test. Here we further detail how TyG might be a meaningful anticipator of HFpEF prognosis in this short communication''.

KEYWORDS: Heart failure with preserved ejection fraction (HFpEF), triglyceride-glucose (TyG) indices; prognosis.

INTRODUCTION

Earlier we had detailedthe association amongst abdominal obesity(AO) as well as type2 diabetes mellitus(T2DM), Heart failure with preserved ejection fraction (HFpEF), in addition to role of adipose tissue (AT) impairment on liberation of adipocytokines, the secretome of adipocytes and extracellular vesicles(ECV's), that shift a wide variety of regulating molecules which portray coding in addition to non coding RNA that possess a key role in the intraorgan crosstalk amongst AT as well as CVS, adipocytokines inclusive of adiponectin, leptin, r esistin, visfatin, omentin, angiopoietin like protein, zinc—α-2glycoprotein, glypican 4, lipocalin 2, secreted frizzled – related protein(SFRP), retinol binding protein-4, TNFα, IL-6 as well as IL-18,. Additionally, Diabetic cardiomyopathy (DbCM) represents a cardiovascular disease (CVD). As per the Framingham Heart Study men along with women which have DM possessed 2.4 as well as 5 fold greater incidence of Heart failure(HF) respectively. Patients of DM possessed greater prevalence of HF with variation from 19-26%.[3]

Furthermore, role of epigenetics inclusive of DNA methylation; histone post-translational modifications, histone acetylation, miRNAs circRNA,; lnc RNAs histone HDAC1-6; cardiac remodelling, cardiac fibrosis, cardiac hypertrophy, LV hypertrophy, modes of cell demise for instance cardiomyocytes apoptosis, autophagy, pyroptosis and PI3K&other various signalling pathways. Recently we further updated therapy inclusive of Sodium Glucose Transporter 2 SGLT hampering agents, glucagon like peptide 1(GLP-1)-1 receptor agonist(GLP-1RA), as innovative mechanistic modes for the avoidance of HFpEF by utilization of GLP-1RA in case of patients with obesity, or metabolic syndrome(MetS) or obese diabetic patients particularly tackling the sequelae of obesity on the heart in addition to on HFpEF, the countercontrolling Renin-Angiotensin system(RAS) along with avoidance of cardiovascular injury in such a backdrop. Lastly, GLP-1 axis is detailed in the form of anti diabetic, anti obesity along with anti cardiac remodeling pathway. Moreover, previously we have outlined part of escalated TG's and diminished HDL-C in the formation of IR as well as MetS, emphasized significance triglyceride-glucose(TyG) indices for instance triglyceride-glucose body mass index (TyG-BMI)], triglyceride-glucose waist circumference (TyG-WC) in addition to triglyceride-glucose waistto-height ratio (TyG-WHtR) marker for evaluating IR in contrast to the euglycemic-hyperinsulinaemic clamp test. Here we further detail how TyG might be a meaningful anticipator of HFpEF prognosis.[1-7]

HF with preserved (≥50%) ejection fraction(HFpF) is a prevalent as well as bothersome clinical syndrome which possesses properties of diastolic dysfunction in addition to escalated filling pressures.[8] Although advancements in treatment have taken place, patients with HFpEF persist to witness escalated mortality rates along with common rehospitalization, resulting in considerable health care problems.[9] Isolation of innovative novel risk factors correlated with inimical sequelae in HFpEF is imperative for improvementof patient care as well as prognosis.

Metabolic aberrations, inclusive of insulin resistance (IR), dyslipidemia, as well as aberrant fatty acid metabolism, have been held responsible in HFpEF pathogenesis in addition to propagation.[10,11] The triglyceride-glucose (TyG) index, a surrogate marker of IR, has emerged as a plausible predictor of inimical cardiovascular (CV) results in variable populations.[12–16] The TyG index is calculated in the form of the logarithm of the multiplication of fasting plasma triglyceride (TG) along with fasting plasma glucose (FPG) quantities, pointing to the crosstalk amongst lipid as well as glucose metabolisms.[12]

Whereas earlier studies have explored the relationship amongst the TyG index in addition to CV results in variable populations, regarding itsrestricted accessibility as well as long-term prognosis gets influenced, particularly in persons with HFpEF. Additionally, examining the relationship amongst the TyG index along with HFpEF risk scores, for instance the HFA-PEFF[17] as well as H2FPEF scores[18], are capable of yielding significant understanding into the prognostic usefulness of such metabolic marker amongst the risk examination parameters.

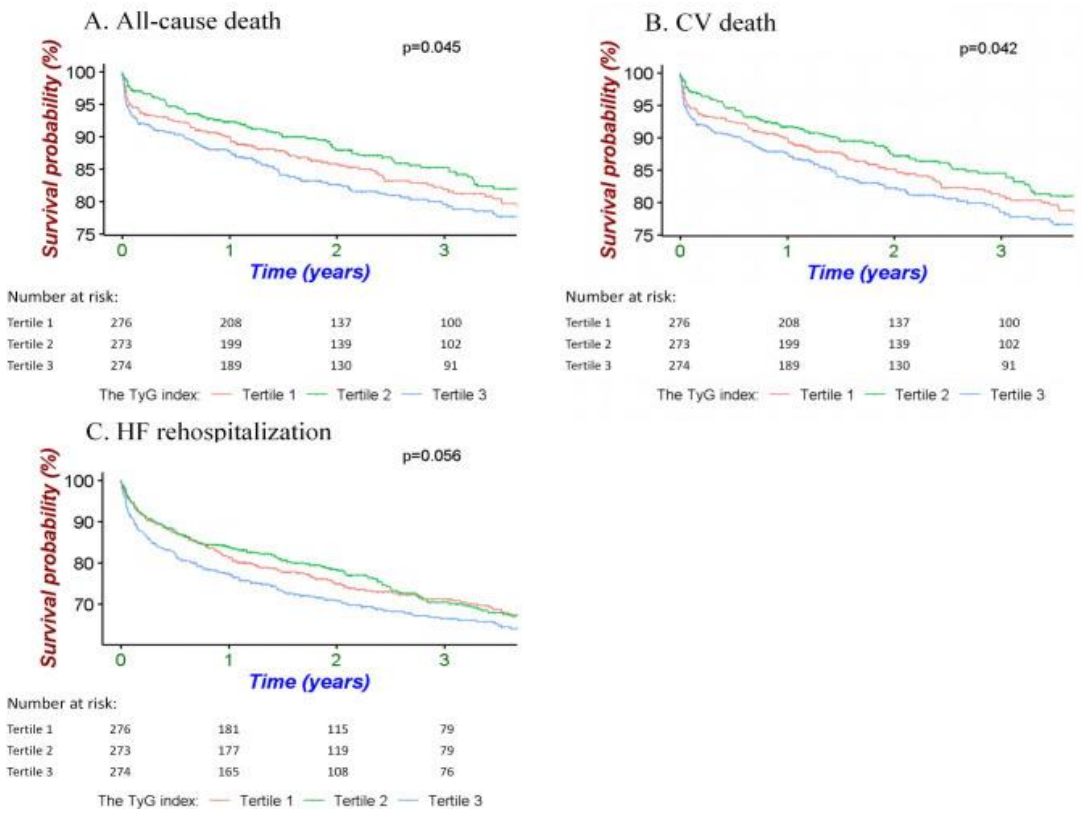
Thereby, objective of this cohort study was to explore the influence of the TyG index on the mortality along with rehospitalization rates in patients diagnosed with HFpEF over a 3-year follow-up period. Furthermore, Zhouetal. evaluated the association amongst TyG index across as well as HFA-PEFF in addition to, H2FPEF scores to yield significant understanding into the plausible usefulness of the TyG index in the form of as a risk-stratification gadget, hospitalization rates in patients diagnosed with HFpEF.

Zhouetal.[19], recruited 823 full patient numbers with HFpEF in their study. The TyG index got estimated by utilization of the formula ln(fasting triglycerides [mg/dL] × fasting glucose [mg/dL]/2). The primary endpoint being all cause mortality as well as the secondary endpoints being cardiovascular (CV) demise in addition to rehospitalization in the cases of heart failure (HF). Restricted cubic spline, multivariate Cox proportional hazard models, along with competing risk models utilization was done for evaluation.

The results observed at the time of median follow-up duration of 3.16 years were as following, i) 147 (17.8%) all cause mortality, 139 (16.8%) CV demise, as well as 222 (27.0%) HF rehospitalizations took place. Restricted cubic spline analysis displayed a ii) J-shaped correlation amongst the TyG index in addition to the deaths along with rates of rehospitalization(see Figure1 and Figure2).

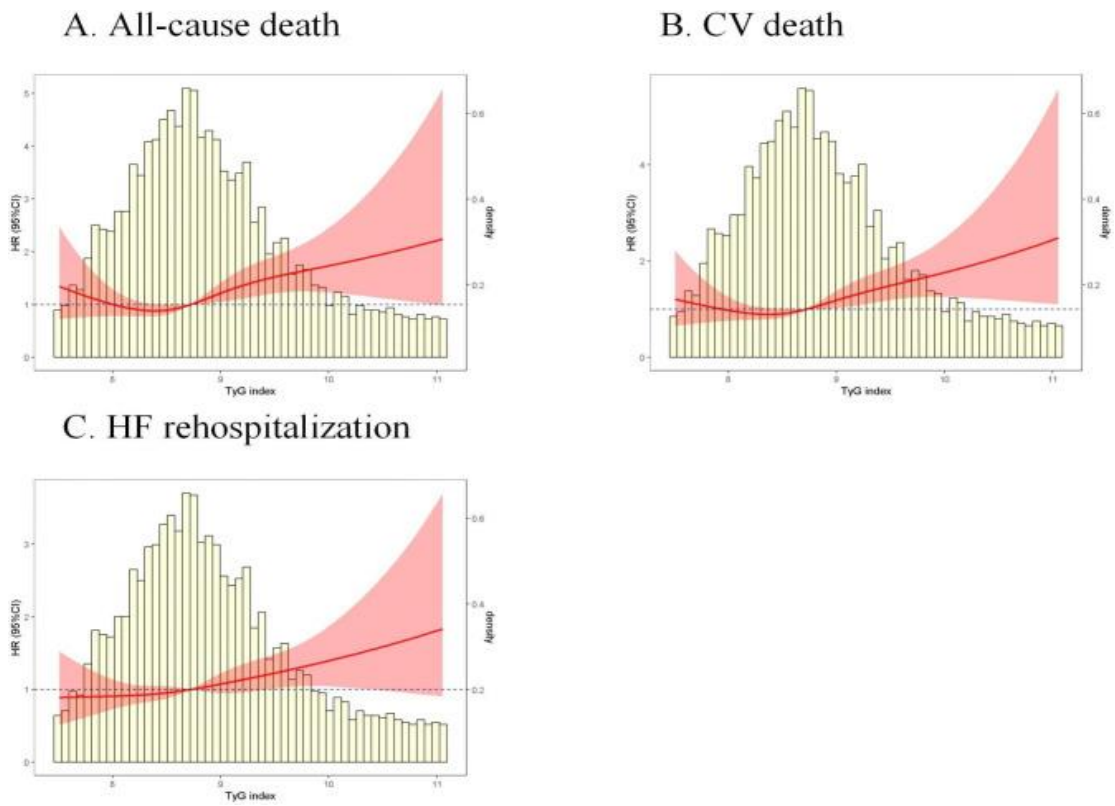
CONCLUSION

Thereby conclusion drawn were that escalated TyG index correlated with escalated mortality risk as well as rates of rehospitalization in case of patients with HFpEF.



Legend for Figure1.

Courtesy ref no-19-Kaplan–Meier analyses for different endpoints among the TyG index tertiles. A: all-cause death. B: CV death. C: HF rehospitalization. TyG, triglyceride-glucose; CV, cardiovascular; HF, heart failure.



Legendfor Figure2.

Courtesy ref no-19-Nonlinear associations of the TyG index with different outcomes in the HFpEF patients. A: all-cause death. B: CV death. C: HF rehospitalization. TyG, triglyceride-glucose; HFpEF, heart failure with preserved ejection fraction; CV, cardiovascular; HF, heart failure.

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