

Triglyceride-Glucose (TyG) Index as a Non-Invasive Screening Tool for Early Diagnosis of Metabolic Dysfunction-Associated Steatohepatitis (MASH) among Adults

Dhanya Ravintharan, Leeynesh Sooriyapiragasam, Kye Mon Min Swe, Jayandri Senara Kottearachchi

Faculty of Medical Sciences, Newcastle University Medicine Malaysia (NUMed Malaysia) No. 1 Jalan Sarjana 1 Kota Ilmu, EduCity@Iskandar, 79200 Johor, Malaysia

Track: Diseases of Skin / Other NCDs

Theme: Prevention, Screening and Early Detection

ABSTRACT

Introduction: Metabolic dysfunction-associated steatohepatitis (MASH) is a progressive liver disease increasingly diagnosed among adults, largely due to the rising prevalence of obesity and metabolic syndrome in Malaysia. While liver biopsy remains the diagnostic gold standard for MASH, it is invasive and impractical for routine screening. Triglyceride-glucose (TyG) index, an insulin-resistance indicator has shown promising results as a reliable, non-invasive and cost-effective screening tool for early detection of MASH among adults especially in resource-limited settings. **Objective:** Evaluate the association between TyG index with MASH and assess the predictive and diagnostic accuracy for MASH risk stratification. **Materials and Methods:** A narrative synthesis review was adopted to extract relevant 11 peer-reviewed studies published between 2019 and 2025, and a rapid literature search was conducted in PubMed using the terms: ("triglyceride glucose index" OR "TyG index") AND ("nonalcoholic fatty liver disease" OR "NAFLD" OR "NASH" OR "MASH" OR "MASLD" OR "metabolic dysfunction associated steatohepatitis") AND ("adult" OR adults OR "middle aged" OR "older adults"). **Results:** Multiple literatures highlight a strong association between the TyG index and MASH, suggesting its value as a non-invasive screening tool. TyG-related parameters such as TyG BMI and TyG-ALT show superior predictive performance than the TyG index alone. A non linear, positive relationship between elevated TyG-derived indices and MASH risk has been observed, indicating that higher baseline values significantly increase disease susceptibility together with persistent insulin resistance while guiding early intervention strategies. **Conclusion:** Higher baseline TyG index is strongly associated with an increased risk of MASH, supporting its potential as an affordable, non-invasive biomarker which is essential for early identification, risk stratification and diagnosis. Although further research is needed to establish standardization and validate its use across Malaysia, current evidence from global studies recommends its integration into local routine screening protocols as early as in primary care settings.

Keywords: Triglyceride-glucose Index, Early Diagnosis, Metabolic Dysfunction-associated Steatohepatitis, MASH, Nonalcoholic Fatty Liver Disease