Long-Term Risk of Colorectal Cancer in Patients With Prediabetes : A Systematic Review and Meta-Analysis

Praneeth Reddy Keesari, MBBS[1]; Yashwitha Sai Pulakurthi, MBBS[2]; Sreeram Pannala, MBBS[3]; Jnana Pramod Valluri, MBBS[4]; Nikhilendhar Nag Mopuru, MBBS[5]; Adhvithi Pingili, MBBS[6]; Manasa Ginjupalli, MBBS[7]; Sahas Reddy Jitta, MBBS[8]; Rishi Devaraja Vattikuti, MBBS[9]; Ummul Asfeen, DO[10]; Rupak Desai, MBBS[11]

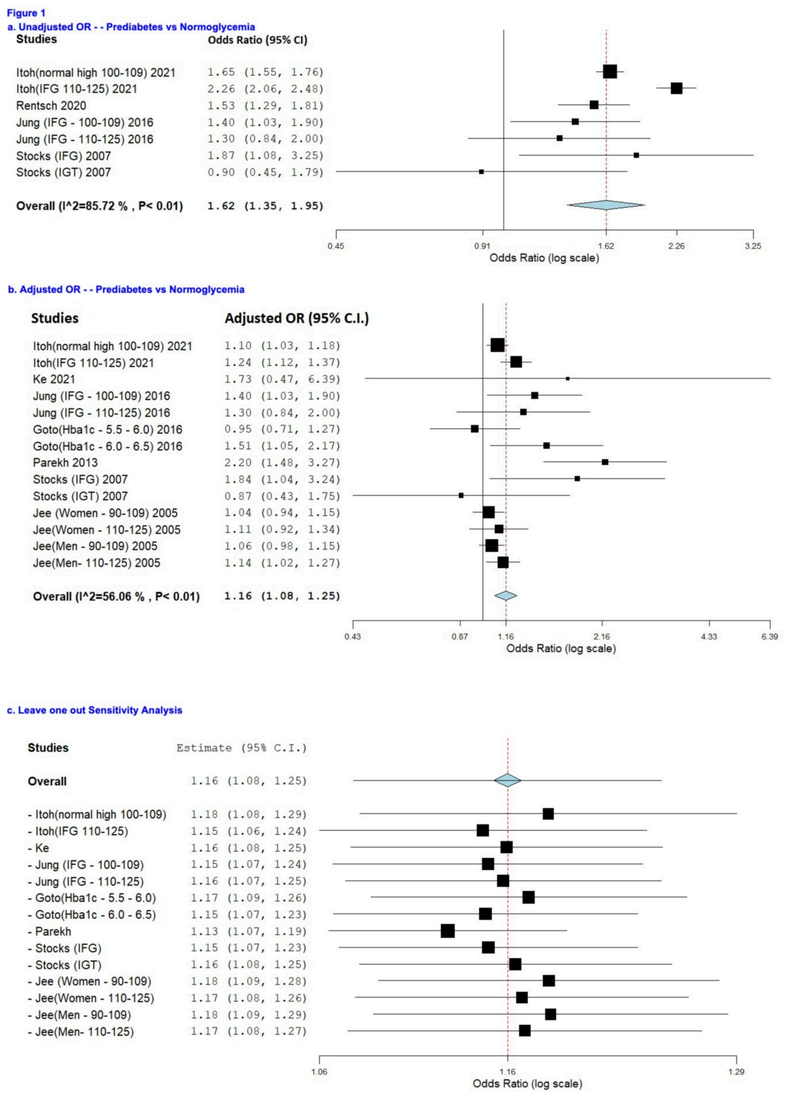
[1]Staten Island University Hospital, [2,10]New York Medical College – Saint Michael's medical Center, [3,4,6,9]Kamineni Academy of Medical Sciences and Research Centre, [6]Medstar health, [7,8]Osmania Medical College , [11]Independent researcher

Introduction

Prediabetes is often underdiagnosed and underreported due to its asymptomatic state in over 80% of individuals. Considering its role in promoting cancer incidence and limited evidence linking prediabetes and colorectal cancer (CRC), we conducted a meta-analysis to evaluate the incidence of colorectal cancer in people with prediabetes.

Methods and Materials

A comprehensive search through PubMed/Medline, Embase, Scopus, and Google Scholar was performed until June 1, 2022, to screen for studies reporting colorectal cancer incidence/risk in prediabetics. Binary random-effects models were used to perform meta-analysis and subgroup analyses. Sensitivity analysis was done using leave-one-out method.



Results

Seven prospective and one retrospective study comprising 15 cohorts and a pooled number of 854876 cases and 2190511 controls were included in the analysis (2 Japan, 2 Korea, 1 Sweden, 1 UK, 1 China, and 1 USA). After combining all the studies the forest plots for adjusted analysis shows a significant increase in odds of having CRC with prediabetes - (OR 1.16; 1.08–1.25, p< 0.01) (fig 1b) and unadjusted analysis also shows a significant increase in odds of having CRC with prediabetes (OR 1.62; 1.35–1.95, p< 0.01) (fig 1a). Sensitivity analysis using the Leave-one-out method did confirm equivalent results (fig 1c). Heterogeneity analysis for adjusted OR had moderate heterogeneity with an overall I^2 of 56.06% with a p value < 0.01 and for unadjusted OR had considerable heterogeneity with an overall I^2 of 85.72% with a p value less than 0.01. Subgroup analysis based on type of study, the odds of developing colorectal cancer was higher in prospective studies (OR 1.175; 1.065-1.298)(p 0.001) than retrospective studies(OR 1.162; 1.033- 1.306)(p 0.012) .The odds of developing cancer was not significantly higher in ages >60(OR 1.446; 0.887-2.356)(p 0.139) compared to less than 60 years. The strongest association b/w Prediabetes and CRC was found on a median 5-10 years(aOR 1.257; 1.029-1.534)(p 0.025) follow-up compared to < 5 years and 10 years and higher.

Discussion

This study showed nearly 16% higher long-term risk of colorectal cancer in patients with prediabetes. Lifestyle modifications like weight loss, proper diet, and exercise are essential to control prediabetes. This study further warrants a specific prediabetes screening for patients already at high risk of colorectal cancer with other risk factors. These strides would help subsequently lower the disease burden, and associated morbidity/mortality.