

Inverse relationship between creatinine-to-body weight (Cre/BW) ratio and incident diabetes in a multiethnic cohort.

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INTRODUCTION

Emerging evidence suggests that the creatinine-to-body weight (Cre/BW) ratio is a predictor for incident diabetes in the Asian population

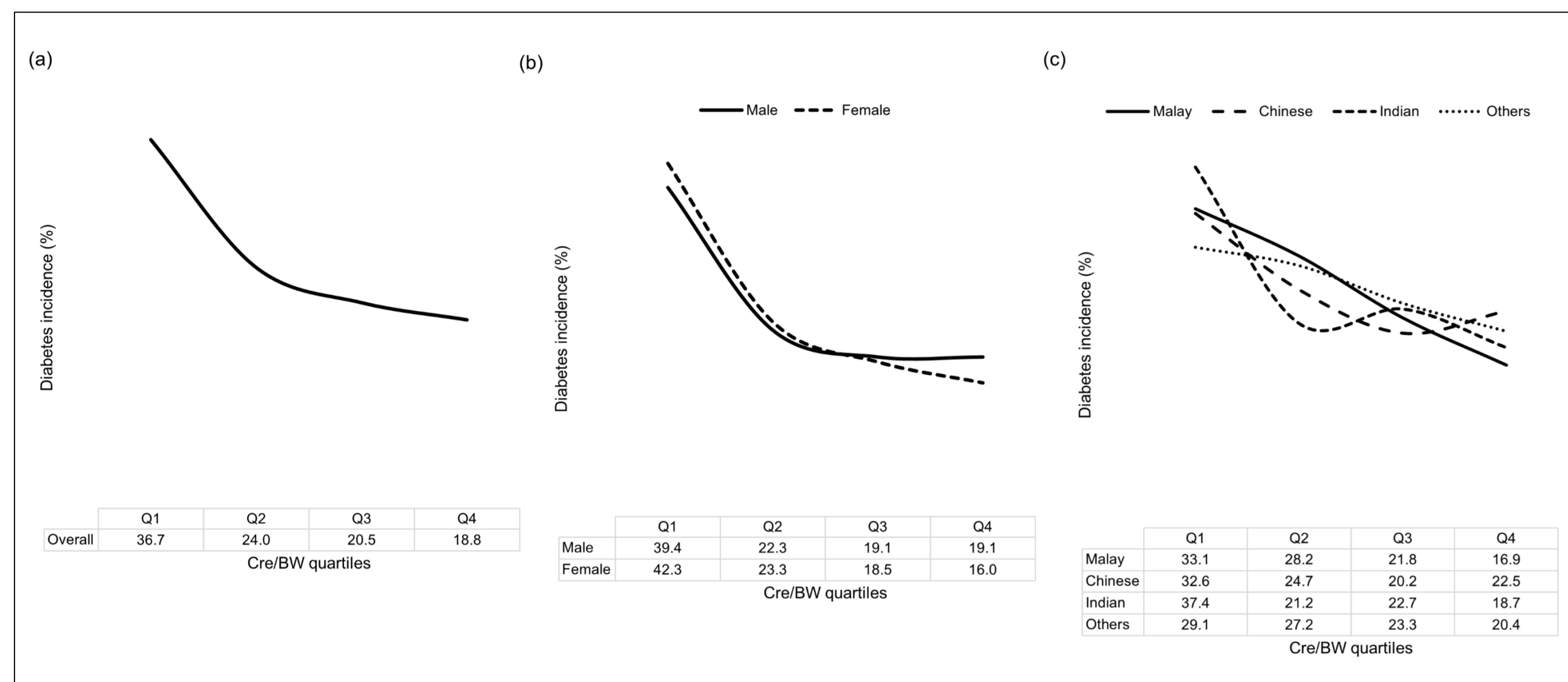


Figure 1: The (a) inverse relationship between Cre/BW quartiles and incident diabetes, further stratified by (b) gender or (c) ethnicity.

STUDY AIM

We aimed to explore the association between the Cre/BW ratio and incident diabetes in a multiethnic Malaysian cohort as well as to correlate the Cre/BW ratio to body fat mass.

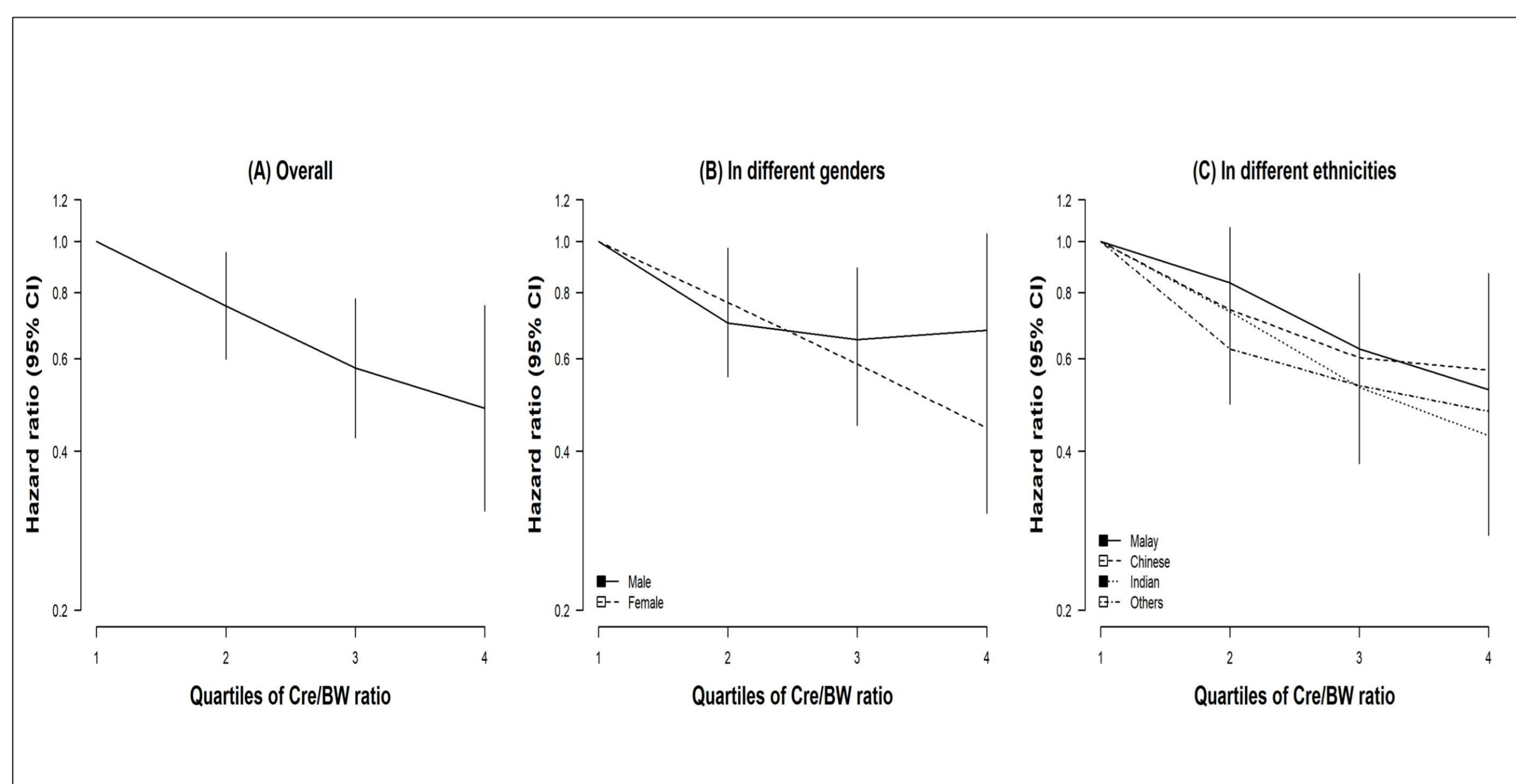


Figure 2. The relationship between Cre/BW ratio and incident diabetes in adjusted proportional hazards model 3, stratified based on gender and ethnicities. Additional information for both unadjusted and adjusted models that can be found in Table S2.

(A) The overall model is adjusted for age, gender, ethnicity, waist-to-hip ratio (WHR), high-density lipoprotein cholesterol (HDL-C), triglycerides (TG), and systolic blood pressure (SBP). (B) For males, the model is adjusted for age, ethnicity, WHR, TG, fasting plasma glucose (FPG), and body mass index (BMI). For females, the model is adjusted for age, ethnicity, TG, and SBP.

(C) Across different ethnicities, all models were adjusted for age, gender, HDL-C, and diastolic blood pressure (DBP). Additionally, models for Malays and other ethnicities include an extra adjustment for waist circumference (WC).

CI, confidence interval

METHODS

A total of 13,047 eligible participants were selected from 119,560 The Malaysian Cohort participants. Of these 13,047 participants, 750 who developed diabetes during the follow-up, while 3,750 controls were chosen randomly from the healthy participants. The participants were stratified into four groups based on the Cre/BW ratio quartiles. The Cox proportional hazards model was used to evaluate the effect of the Cre/BW ratio on developing incident diabetes. The association between the Cre/BW ratio to body composition was later assessed using the Pearson correlation coefficient.

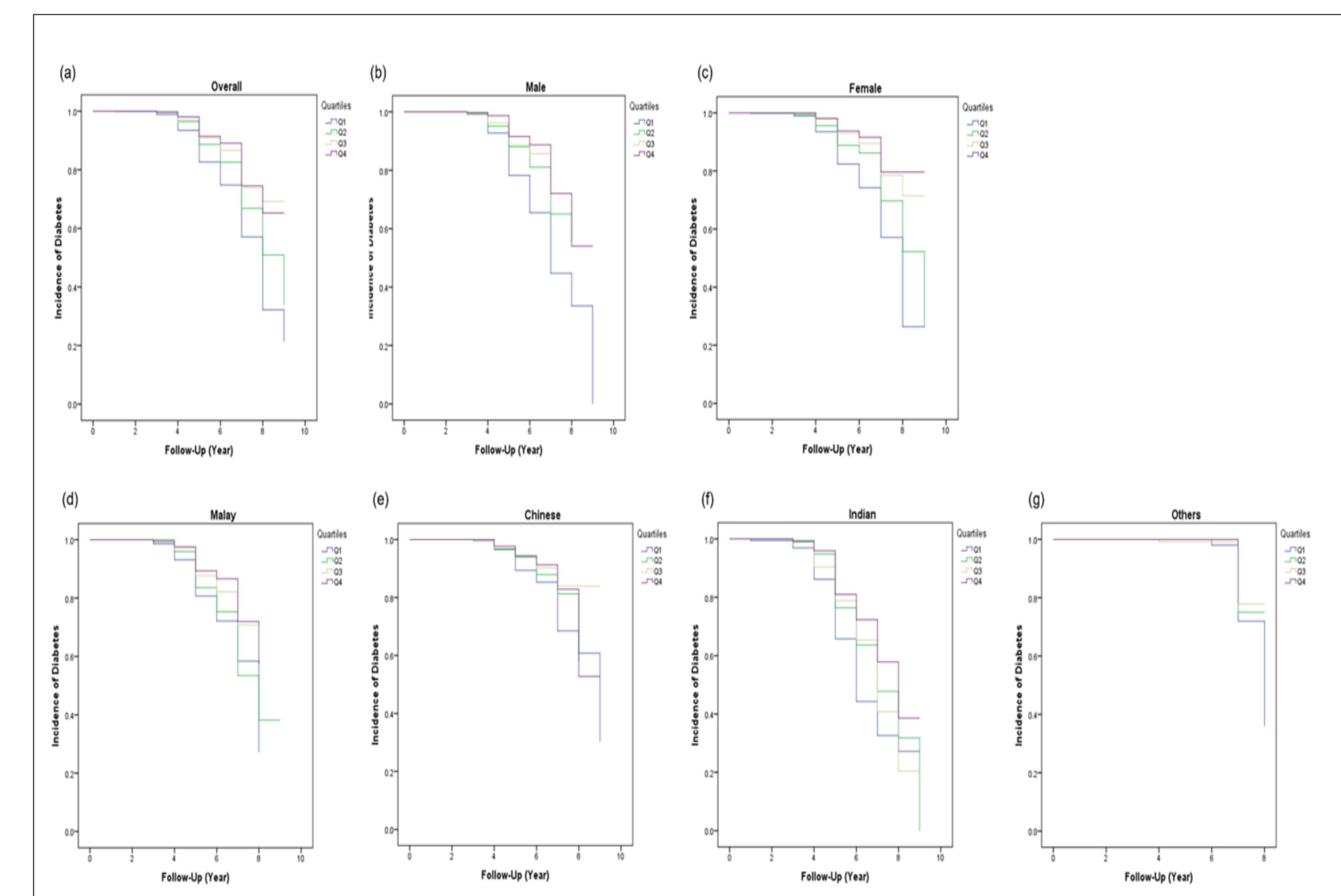


Figure 3. Kaplan-Meier analysis of diabetes risk based on Cre/BW ratio. Kaplan-Meier analysis for incident diabetes (a) as a whole, in (b) male and (c) female, as well as in different ethnicities like (d) Malay, (e) Chinese, (f) Indian, and (g) other races in Malaysia. The log-rank test has shown significant ($P < 0.001$) differences for cumulative risk of incident diabetes across Cre/BW ratio quartiles, irrespective of gender and ethnicity.

RESULTS

Of the 13,047 participants who were successfully followed up over 5 years without missing data, 5.75% ($n = 750$) developed diabetes. The diabetes incidence decreases with increasing Cre/BW ratios. After adjusting for covariates, the Cox regression analysis reveals that Cre/BW was inversely correlated with diabetes risk (HR: 0.403, 95% CI: 0.315-0.515, $P < 0.001$). In addition, males and Indians have a higher risk of developing incident diabetes than their counterparts. A correlation was also observed between Cre/BW ratio and body fat mass.

CONCLUSION

This study indicated an inverse association between the Cre/BW ratio and incident diabetes. It also found a significant moderate correlation between the Cre/BW ratio and body fat mass.

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