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Association between SARS-CoV-2 infection and new-onset atrial fibrillation

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ABSTRACT

Background: Atrial fibrillation (AF) is associated with substantial morbidity and mortality. New-onset AF (NOAF) has been related recently to SARS-CoV-2 infection; however, the evidence supporting this link is still scarce. We aimed to examine the association between SARS-CoV-2 infection and NOAF.
Methods: We conducted a nested-case control study in a cohort of 2,931,046 adults from the largest healthcare provider in Israel. Subjects were followed from March 1st, 2020, until June 30th, 2022, for the occurrence of NOAF. Ten randomly selected controls were matched to each case of NOAF on age, sex, and duration of follow-up. Exposure to SARS-CoV-2 infection in the prior 30 days was assessed in cases and controls. To account for surveillance bias we performed a lag-time analysis and assessed the association with a negative control exposure (low back pain). Data was analyzed using conditional logistic regression.
Results: During the follow-up 18,981 patients developed NOAF and were matched to 189,810 controls. The mean age of cases and matched controls was 73.8 ± 13 years, and 51.1% of them were women. Multivariable analysis showed that SARS-CoV-2 infection was associated with an increased risk of NOAF; adjusted-OR, 4.24 (95% CI, 3.89–4.62). The association remained significant on lag-time analysis; however, the strength of the association was gradually attenuated with increasing lag-time but stabilized around a lag-time of 20 days. The negative control exposure (low back pain) was associated only with small increased risk of NOAF; adjusted-OR of 1.13 (95% CI, 1.02–1.26).
Conclusion: SARS-CoV-2 infection appears to be associated with increased risk of NOAF.

1. Introduction

The Corona virus disease of 2019 (COVID-19) pandemic has significantly affected public health. Although typically presenting with mild symptoms, it may further present as viral pneumonia with significant inflammation and cytokine storm affecting different organ systems [1,2]. The main extra-pulmonary site involved in COVID-19 is the cardiovascular system, which mostly manifests as acute myocardial injury, venous and arterial thrombosis, cardiomyopathies and arrythmias [3].

Atrial fibrillation (AF) is the most common type of cardiac arrhythmia and is associated with substantial morbidity and mortality. AF incidence and prevalence have increased over the last fifty years, reaching a scale of cardiovascular epidemic [4].

Sepsis has been linked to increased risk of new-onset AF (NOAF) that most likely occurs with pneumonia followed by urinary tract infection (UTI) [5]. The incidence of NOAF among hospitalized COVID-19 patients ranged between 5% and 36% [6–13]. The incidence of NOAF in hospitalized COVID-19 patients was similar to the incidence of NOAF among hospitalized patients with influenza, and was associated with increased inflammation in both infections, suggesting that NOAF is not specific to COVID-19, but is rather a generalized response to the systemic inflammation of severe viral illnesses [6]. A cohort study aiming to assess the long-term cardiovascular outcomes in COVID-19 found 2.4 folds risk of NOAF among COVID-19 survivors compared to non-COVID-

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Cardiovascular Diabetology

RESEARCH Open Access

Smoking behavior change and risk of cardiovascular disease incidence and mortality in patients with type 2 diabetes mellitus

Su-Min Jeong[1,2,3], Jung Eun Yoo[2,4], Junhee Park[5], Wonyoung Jung[6], Kyu Na Lee[7], Kyungdo Han[7], Cheol Min Lee[4,8], Ki-Woong Nam[9], Seung-Pyo Lee[10] and Dong Wook Shin[5,11*]

Abstract

Background We aimed to examine the association between smoking behavior change and risk of cardiovascular disease (CVD) incidence and mortality in patients with type 2 diabetes mellitus (T2DM).

Methods This study used nationwide data from the Korean National Health Insurance System and included 349,137 T2DM patients who smoked. Smoking behavior changes were defined with five groups: quitters, reducers I (≥ 50% reduction), reducers II (20–50% reduction), sustainers (± 20%), and increasers (≥ 20% increase) from the number of cigarettes/day at the baseline.

Results During a median follow-up of 5.1 years, 6,514 cases of myocardial infarction (MI) (1.9%), 7,837 cases of ischemic stroke (IS) (2.2%), and 14,932 deaths (4.3%) were identified. Quitters had a significantly decreased risk of MI (adjusted hazard ratio (aHR) 0.80, 95% CI 0.75–0.86) and IS (aHR 0.80, 95% CI 0.75–0.85) compared to sustainers, whereas reducers did not have a significant association with the risk of MI (aHR 1.03, 95% CI 0.94–1.13) and IS (aHR 1.00, 95% CI 0.92–1.08) in reducer I. Quitters also had a lower all-cause and CVD mortality than sustainers.

Conclusions Smoking cessation was associated with decreased CVD incidence, and all-cause and CVD mortality among T2DM patients. However, smoking reduction was not associated with decreased risks for these.

Keywords Smoking cessation, Smoking reduction, Cardiovascular disease, Mortality, Diabetes mellitus

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Effect of prior anticoagulation therapy on stroke severity and in-hospital outcomes in patients with acute ischemic stroke and atrial fibrillation☆

Lue Zhou[a,b,c], Yapeng Li[a,b,c], Xin Yang[d,e], Hongqiu Gu[d,e], Yanran Duan[f], Hang Fu[f], Anran Wang[a,b,c], Kai Liu[a,b,c], Yuan Gao[a,b,c], Bo Song[a,b,c], Yusheng Li[a,b,c], Yingyu Jiang[d,e], Jing Zhang[d,e], Chunjuan Wang[d,e], Meng Wang[d,e], Zixiao Li[a,b,g,h,**], Yuming Xu[a,b,c,***], Chengzeng Wang[f,i,*], Yongjun Wang[a,c,g,j,k,**]

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ARTICLE INFO

Keywords:
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ABSTRACT

Background: We aimed to assess the prevalence of prior anticoagulation therapy (warfarin or non-vitamin K antagonist oral anticoagulants [NOACs]) among patients with acute ischemic stroke (AIS) and atrial fibrillation (AF) in China and investigate the associations between prior anticoagulation therapy and initial stroke severity and in-hospital outcomes.
Methods: We included consecutive patients with AIS and known history of AF admitted to hospitals in the China Stroke Center Alliance (CSCA) program from January 2019 to July 2019. Multivariate logistic regression analyses were performed to determine the associations between prior anticoagulation therapy and initial stroke severity and in-hospital outcomes.
Results: Of 7181 patients (median [IQR] age, 75.0 [68.0–81.0] years; 46.7% men), 700 (9.7%), 129 (1.8%), and 255 (3.6%) patients received prior subtherapeutic warfarin (international normalized ratio [INR] <2.0), therapeutic warfarin (INR ≥2.0), and NOACs therapy, respectively. A total of 6499 patients had a preadmission CHA_2DS_2-VASc score ≥ 2, among whom 94.0% were not adequately anticoagulated. Compared with no prior anticoagulation therapy, prior NOACs therapy was associated with reduced risk of moderate or severe stroke at admission (odds ratio [95% CI], 0.64 [0.43–0.94], $P = 0.023$) and in-hospital mortality or discharge against medical advice (DAMA) (0.46 [0.24–0.86], $P = 0.015$). However, no significant association was observed between prior therapeutic warfarin therapy and stroke severity or in-hospital mortality or DAMA.

☆ All authors take responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussed interpretation.

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Association of Serum Uric Acid With All-Cause and Cardiovascular Mortality in Diabetes

https://doi.org/10.2337/dc22-1339

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OBJECTIVE

To investigate whether serum uric acid (SUA) level is associated with all-cause and cardiovascular disease (CVD) mortality among individuals with diabetes.

RESEARCH DESIGN AND METHODS

In this prospective cohort study, we included patients with diabetes from the U.S. National Health and Nutritional Examination Survey (NHANES) 1999–2018. Mortality and underlying causes of death were ascertained by linkage to national death records through 31 December 2019. Weighted Cox proportional hazards regression models were used to evaluate hazard ratios (HRs) and 95% CIs for all-cause and CVD mortality. We also performed a meta-analysis of available cohort studies to combine the association between SUA level and mortality in diabetes.

RESULTS

Among the 7,101 patients with diabetes from NHANES 1999–2018, the weighted mean of SUA level was 5.7 mg/dL. During 57,926 person-years of follow-up, 1,900 deaths (*n* = 674 deaths from CVD) occurred. In the fully adjusted model, when compared with patients with diabetes in the lowest SUA quintile, those in the highest SUA quintile had the HRs (95% CIs) of 1.28 (1.03, 1.58) for all-cause mortality and 1.41 (1.03, 1.94) for CVD mortality. We included 13 cohort studies in the meta-analysis and found that the pooled HRs (95% CIs) were 1.08 (1.05, 1.11) for all-cause mortality and 1.05 (1.03, 1.06) for CVD mortality per 1 mg/dL increment of SUA level in patients with diabetes.

CONCLUSIONS

This study indicated that higher SUA levels were associated with increased risks of all-cause and CVD mortality in diabetes. Interventional studies are needed to elucidate the health effect of treatments to lower SUA levels.

The prevalence of diabetes is escalating worldwide. There were 537 million people with diabetes globally in 2021, and the number of patients is estimated to reach 783 million by 2045 (1). Cardiovascular disease (CVD) represents the most common cause of death among individuals with diabetes (2). Exploring modifiable risk factors for diabetes favors avoiding premature death and promoting long-term health benefits.

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Introducción

- **FA** ⇨ ↑ morbi-mortalidad.
- Recientemente se ha relacionado FA de nueva aparición ≈ SARS-CoV-2.

  ↳ Sin embargo, las pruebas que apoyan esta relación aún son escasas.

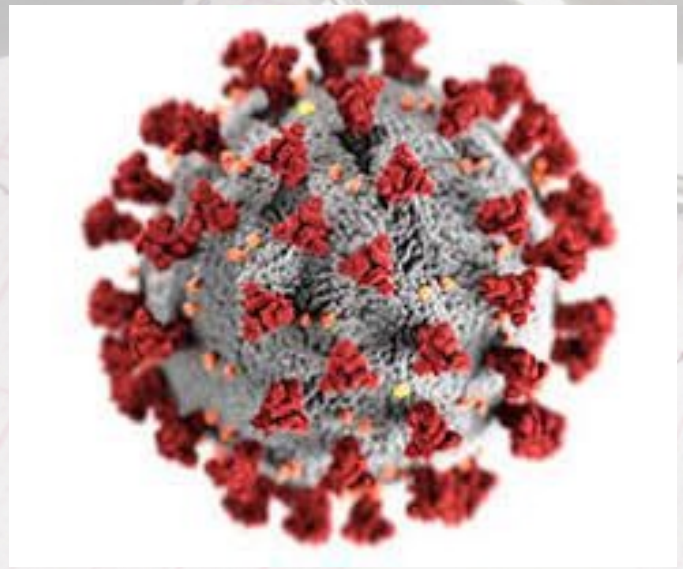
Objetivo: examinar la asociación entre la infección por SARS-CoV-2 y la FA de nueva aparición.

Material y métodos

- Estudio de **casos** y **controles**.
- Población de 2.931.046 adultos, en Israel.
- Seguimiento desde el 1 de marzo de 2.020 hasta el 30 de junio de 2.022 para detectar la aparición de **FA de novo**.
- Por cada caso de FA, se seleccionaron diez controles en RS, emparejados por edad, sexo y duración del seguimiento.

Material y métodos

- Se evaluó la **exposición** a la infección por **SARS-CoV-2** **en los 30 días previos**.
- Los datos se analizaron mediante regresión logística.



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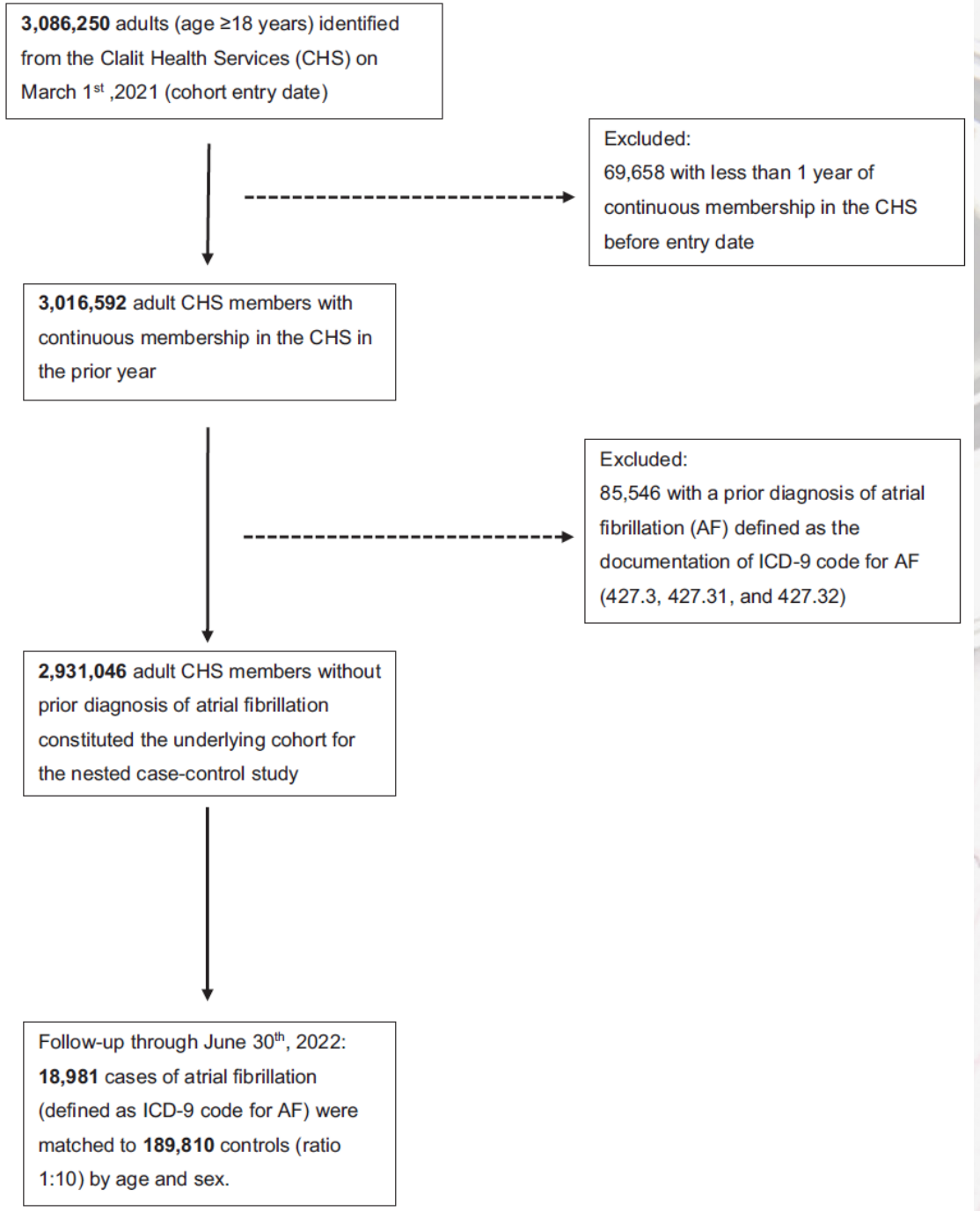
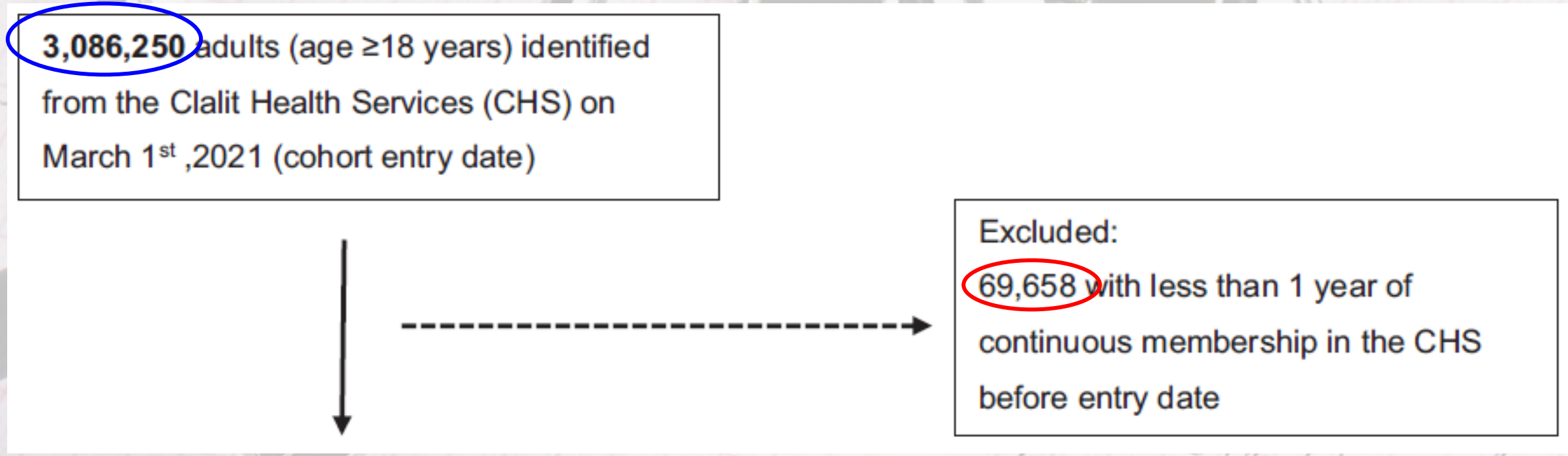
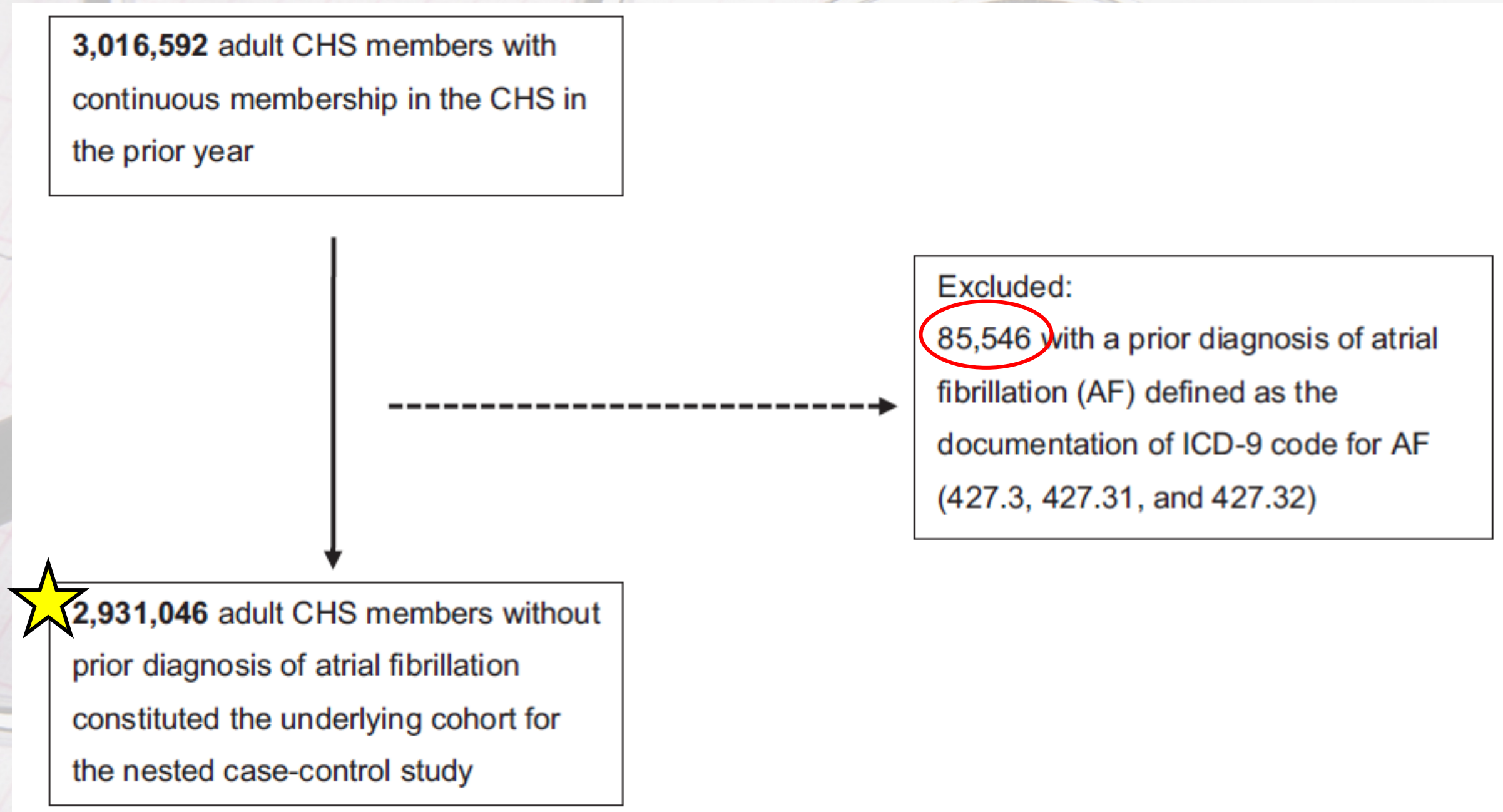


Fig. 1. Flowchart displaying selection of the study population for the nested case-control study.


3,086,250 adults (age ≥18 years) identified from the Clalit Health Services (CHS) on March 1st ,2021 (cohort entry date)
Excluded:
69,658 with less than 1 year of continuous membership in the CHS before entry date


3,016,592 adult CHS members with continuous membership in the CHS in the prior year
Excluded:
85,546 with a prior diagnosis of atrial fibrillation (AF) defined as the documentation of ICD-9 code for AF (427.3, 427.31, and 427.32)
2,931,046 adult CHS members without prior diagnosis of atrial fibrillation constituted the underlying cohort for the nested case-control study

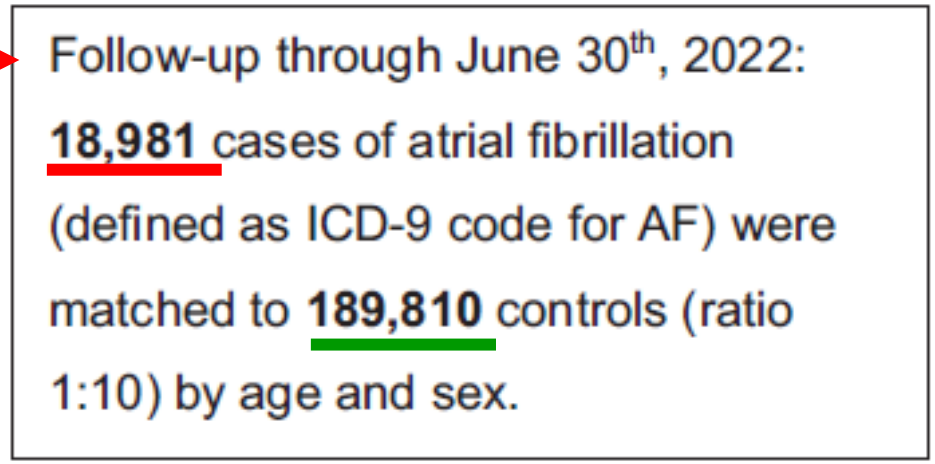


Fig. 1. Flowchart displaying selection of the study population for the nested case-control study.

Table 1
Sociodemographic and clinical characteristics of patients with new onset atrial fibrillation and their matched controls.

	Cases (*n* = *18,981*)	Controls (*n* = *189,810*)
Age	74.4 ± 13.0	73.8 ± 13.0
Female	9511 (51.1%)	95,110 (51.1%)
Ethnicity		
Jews	16,255 (85.6%)	167,304 (88.1%)
Arabs	2726 (14.4%)	22,506 (11.9%)
Socioeconomic status		
Low	6500 (34.2%)	58,020 (30.6%)
Medium	8534 (45.0%)	86,031 (45.3%)
High	3917 (20.6%)	45,386 (23.9%)
Missing	30 (0.2%)	373 (0.2%)
Cancer	4012 (21.1%)	34,582 (18.2%)
Chronic obstructive pulmonary disease	1960 (10.3%)	14,317 (7.5%)
Obesity	8373 (44.1%)	60,903 (32.1%)
Diabetes	7637 (40.2%)	61,707 (32.5%)
Smoking	7731 (40.7%)	72,435 (38.2%)
Congestive heart failure	1633 (8.6%)	8433 (4.4%)
Ischemic heart disease	5385 (28.4%)	39,097 (20.6%)
Hypertension	13,300 (70.1%)	106,789 (56.3%)
Stroke	2556 (13.5%)	18,884 (9%)
Vascular disease	2443 (12.9%)	17,067 (9.0%)

Table 2

Association between SARS-CoV-2 infection and atrial fibrillation *within 30 days*

La **fuerza de la asociación** se atenuó gradualmente conforme se *incrementaba el intervalo de tiempo* entre la exposición al virus y el desarrollo de FA, estabilizándose en torno a un tiempo de retraso de **20 días**.

None	18,106 (95.4%)	187,537 (98.8%)	Reference	Reference
Yes	875 (4.6%)	2273 (1.2%)	4.38 (4.03–4.76)	4.24 (3.89–4.62)
COVID-19 severity				
– No infection	18,106 (95.4%)	187,537 (98.8%)	Reference	Reference
– Not hospitalized	720 (3.8%)	2110 (1.1%)	3.88 (3.55–4.25)	3.82 (3.48–4.18)
– Mild				
– Moderate				
– Severe				

- CASOS QUE PRECISARON HOSPITALIZACIÓN
  - * Ligeros: síntomas de COVID sin neumonía
  - * Moderados: Neumonia
  - * Severos: Sat < 94% o PAFI < 300 o FR > 30/min.

Resultados

- Fisiopatología: (hipótesis posibles)

- La patogénesis de la **FA** en contexto de la infección por **SARS-CoV-2** podría tener relación con las <u>siguientes vías</u>:

- Remodelado anatómico del miocardio auricular.
- Fibrosis miocárdica.
- Inflamación.
- Estrés oxidativo (formación de radicales libres de Oxígeno).
- Tormenta citoquínica.
- Daño endotelial.
- Activación del Sistema Nervioso Simpático.

Limitaciones

- Carácter retrospectivo y observacional del estudio.

Conclusiones

- La **infección por SARS-CoV-2** está relacionada con un **mayor riesgo de FA** de nueva aparición.

- Este estudio sugiere la necesidad de realizar un **seguimiento más estrecho** en pacientes infectados por SARS-CoV-2, con la intención de detectar precozmente los episodios de FA que puedan aparecer.

- Se necesitan *nuevos estudios* que confirmen los hallazgos descritos y evalúen el grado de persistencia y recurrencia de la FA en esta población.

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Abstract

Background We aimed to examine the association between smoking behavior change and risk of cardiovascular disease (CVD) incidence and mortality in patients with type 2 diabetes mellitus (T2DM).

Methods This study used nationwide data from the Korean National Health Insurance System and included 349,137 T2DM patients who smoked. Smoking behavior changes were defined with five groups: quitters, reducers I (≥ 50% reduction), reducers II (20–50% reduction), sustainers (± 20%), and increasers (≥ 20% increase) from the number of cigarettes/day at the baseline.

Results During a median follow-up of 5.1 years, 6,514 cases of myocardial infarction (MI) (1.9%), 7,837 cases of ischemic stroke (IS) (2.2%), and 14,932 deaths (4.3%) were identified. Quitters had a significantly decreased risk of MI (adjusted hazard ratio [aHR] 0.80, 95% CI 0.75–0.86) and IS (aHR 0.80, 95% CI 0.75–0.85) compared to sustainers, whereas reducers did not have a significant association with the risk of MI (aHR 1.03, 95% CI 0.94–1.13) and IS (aHR 1.00, 95% CI 0.92–1.08) in reducer I. Quitters also had a lower all-cause and CVD mortality than sustainers.

Conclusions Smoking cessation was associated with decreased CVD incidence, and all-cause and CVD mortality among T2DM patients. However, smoking reduction was not associated with decreased risks for these.

Keywords Smoking cessation, Smoking reduction, Cardiovascular disease, Mortality, Diabetes mellitus

Introducción

- Aumento de la prevalencia global de la DM-2

  536 millones en 2019 → 783 millones en 2045

- Los diabéticos pueden sufrir complicaciones macro y microvasculares.

- Para disminuir esas complicaciones hay que controlar los FR modificables, entre los que está el **tabaco**.

Introducción

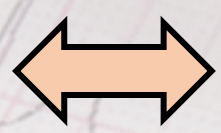
- Estudios sobre la reducción del tabaco sin el cese del mismo mostraron resultados “dispares” en la población general.

Un reciente metaanálisis muestra que la reducción en consumo de cigarrillos disminuye el riesgo de Ca pulmón pero no de incidencia de ECV o de mortalidad por todas las causas.

Material y métodos

- El **objetivo** fue examinar la **asociación** entre:

Cambio en la conducta de fumar.



Riesgo de mortalidad por cualquier causa o de desarrollo de patología CV (IAM o ictus).

En pacientes con diabetes mellitus tipo 2 (DM-2).

Material y métodos

- Este estudio utilizó datos nacionales del Sistema Nacional de Seguros de Salud de Corea del Sur.

- Incluyó a 349.137 pacientes con DM-2 que fumaban.

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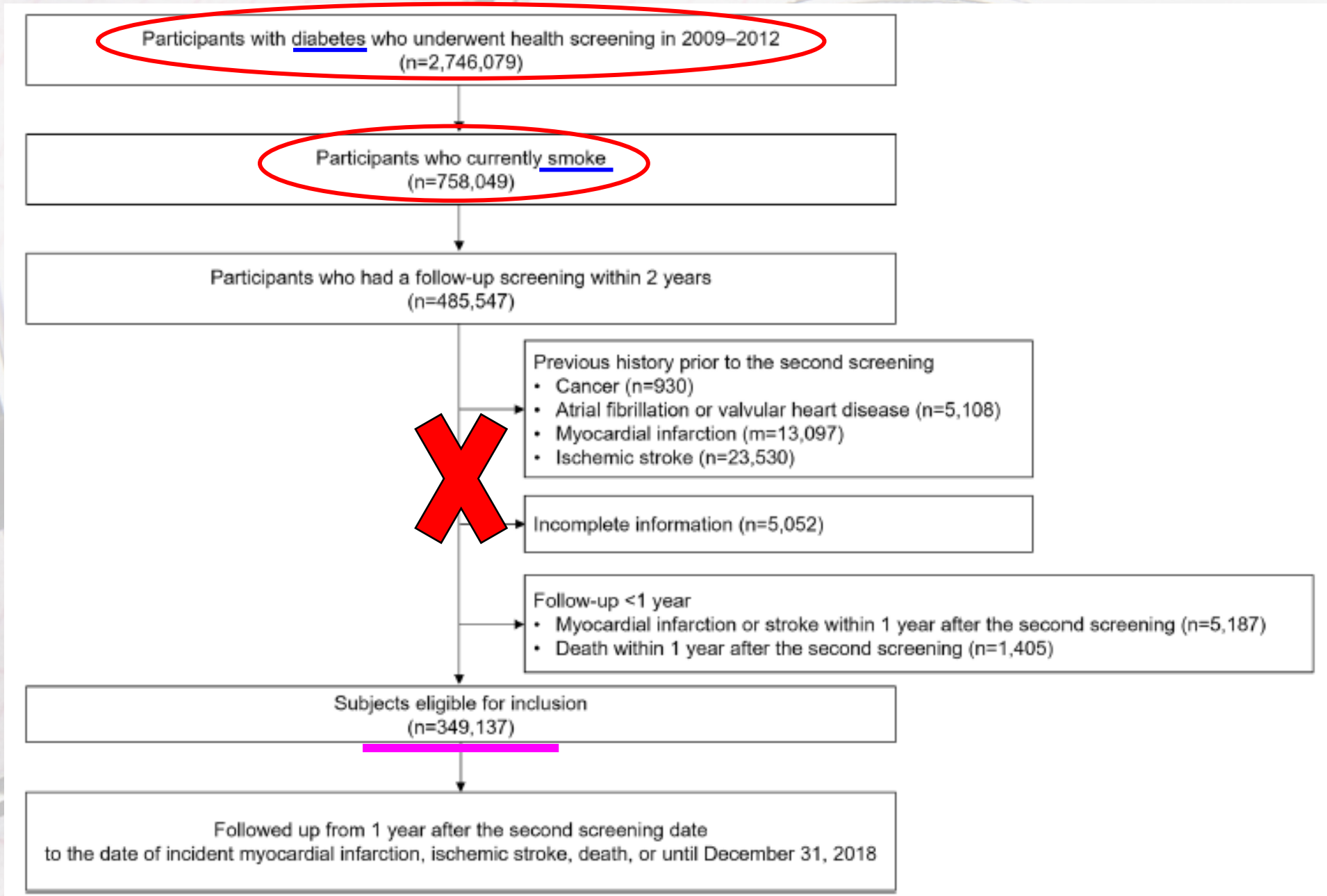

Fig. 1 Flow chart of the study population

Los cambios en la conducta de fumar se definieron en **cinco grupos**:

Los que **dejaron** de fumar.

Los **reductores I** (≥ 50% de reducción).

Los **reductores II** (20-50% de reducción).

Los que **mantuvieron** el hábito (± 20%).

Y los que lo **incrementaron** (≥ 20% de aumento)

…respecto al número de cigarrillos/día al inicio del estudio.

Table 1 Baseline characteristics of the study population

Variables	Total (N = 349,137)	Smoking behavior change					P value
		Quitter (N = 63,694)	Reducer I (N = 26,516)	Reducer II (N = 45,832)	Sustainer (N = 156,329)	Increaser (N = 56,766)	
Age (years)	51.6 ± 10.9	54.0 ± 11.1	52.9 ± 11.5	50.7 ± 10.8	51.1 ± 10.6	50.8 ± 11.0	< 0.001
Sex (men)	332,461 (95.2)	58,025 (91.1)	24,828 (93.6)	44,289 (96.6)	151,401 (96.8)	53,918 (95.0)	< 0.001
Income							< 0.001
Q1(lowest)	63,355 (18.2)	11,556(18.1)	5,567 (21.0)	8,054 (17.6)	27,633 (17.7)	10,545 (18.6)	
Q2	67,593 (19.4)	12,150(19.1)	5,472 (20.6)	8,843 (19.3)	29,613 (18.9)	11,515 (20.3)	
Q3	103,559 (29.7)	17,453(27.4)	7,493 (28.3)	13,890 (30.3)	47,481 (30.4)	17,242 (30.4)	
Q4(highest)	114,630 (32.8)	22,535(35.4)	7,984 (30.1)	15,045 (32.8)	51,602 (33.0)	17,464 (30.8)	
Alcohol consumption							< 0.001
Non	97,091 (27.8)	25,781 (40.5)	7,729 (29.2)	11,307 (24.7)	38,030 (24.3)	14,244 (25.1)	
Mild	111,621 (32.0)	19,429 (30.5)	9,931 (37.5)	15,773 (34.4)	49,237 (31.5)	17,251 (30.4)	
Moderate	77,095 (22.1)	10,428 (16.4)	5,352 (20.2)	10,686 (23.3)	37,757 (24.2)	12,872 (22.7)	
Heavy	63,330 (18.1)	8,056 (12.7)	3,504 (13.2)	8,066 (17.6)	31,305 (20.0)	12,399 (21.8)	
Smoking status							< 0.001
Light, < 10 cigarettes/day	32,551 (9.3)	11,463 (18.0)	1,057 (4.0)	2,348 (5.1)	5,561 (3.7)	12,122 (21.4)	
Moderate, 10–19 cigarettes/day	127,032 (36.4)	24,789 (38.9)	5,276 (19.9)	15,046 (32.8)	50,140 (32.1)	31,781 (56.0)	
Heavy, ≥ 20 cigarettes/day	189,554 (54.3)	27,442 (43.1)	20,183 (76.1)	28,438 (62.1)	100,628 (64.4)	12,863 (22.7)	
Duration of smoking (years)							< 0.001
<5	10,090 (2.9)	3,575 (5.6)	655 (2.47)	845 (1.8)	2,790 (1.8)	2,225 (3.9)	
5–9y	13,828 (4.0)	3,499 (5.5)	1,101 (4.15)	1,518 (3.3)	4,862 (3.1)	2,848 (5.0)	
10–19	81,273 (23.3)	14,165 (22.2)	5,780 (21.8)	10,864 (23.7)	35,359 (22.6)	15,105 (26.6)	
20–29	116,486 (33.4)	18,894 (29.7)	8,205 (30.94)	15,788 (34.5)	55,080 (35.2)	18,519 (32.6)	
≥30	127,460 (36.5)	23,561 (37.0)	10,775 (40.64)	16,817 (36.7)	58,238 (37.3)	18,069 (31.8)	
Pack-years of smoking							< 0.001
<10	74,821 (21.4)	19,913 (31.3)	3,738 (14.1)	6,555 (14.3)	23,688 (15.2)	20,927 (36.9)	
10–20	97,025 (27.8)	16,790 (26.4)	5,925 (22.3)	11,924 (26.0)	42,754 (27.4)	19,632 (34.6)	
20–30	79,295 (22.7)	12,053 (18.9)	6,090 (23.0)	10,169 (22.2)	42,092 (26.9)	8,891 (15.7)	
≥30	97,996 (28.1)	14,938 (23.5)	10,763 (40.6)	17,184 (37.5)	47,795 (30.6)	7,316 (12.9)	

Resultados

- Durante una mediana de seguimiento de **5,1 años**.

- Se identificaron **6.514** casos de infarto de miocardio (IM) (**1,9%**),

- **7.837** casos de ictus isquémico (IS) (**2,2%**)

- y **14.932** muertes (**4,3%**).

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Resultados

- Los que dejaron de fumar tuvieron un riesgo significativamente menor de IM (HR ajustado = 0,80; IC95% 0,75-0,86) e IS (HRa = 0,80; IC95% 0,75-0,85) en comparación con los que mantuvieron el hábito.

- Mientras que los reductores **NO** tuvieron una asociación significativa con el riesgo de IM (HRa = 1,03; IC95% 0,94-1,13) e IS (HRa = 1,00; IC95% 0,92-1,08) en el reductor I.

- La mortalidad por todas las causas y por ECV también fue inferior en los que dejaron de fumar respecto a los que mantuvieron el hábito.

Table 2 Hazard ratios and 95% confidence intervals for the incidence of myocardial infarction, ischemic stroke, and mortality according to smoking behavior change

Smoking behavior change	Event (n)	Duration (person-years)	IR	Hazard ratio (95% confidence interval)			5-year absolute risk (%) (95% CI)	Risk difference (95% CI)	No. Needed to Treat
				Model 1	Model 2	Model 3			
Cardiovascular disease events									
Myocardial infarction									
Quitter	1,171	314,614.7	3.7	1.00 (0.93–1.07)	**0.81 (0.76–0.87)**	**0.80 (0.75–0.86)**	1.54 (1.45, 1.63)	**-0.38 (-0.49, -0.27)**	2.6
Reducer I	573	129,894.0	4.4	**1.19 (1.08–1.30)**	1.04 (0.95–1.14)	1.03 (0.94–1.13)	1.98 (1.81, 2.14)	0.06 (-0.12, 0.24)	16.7
Reducer II	823	226,066.8	3.6	0.98 (0.91–1.06)	0.99 (0.92–1.07)	0.99 (0.92–1.07)	1.90 (1.77, 2.03)	-0.02 (-0.16, 0.12)	50
Sustainer	2,856	768,275.4	3.7	1 (Ref.)	1 (Ref.)	1 (Ref.)	1.92 (1.84, 1.99)	Ref.	Ref.
Increaser	1,091	277,276.4	3.9	1.06 (0.99–1.14)	1.06 (0.99–1.14)	1.05 (0.98–1.13)	2.02 (1.90, 2.14)	0.10 (-0.03, 0.23)	10
P value				0.001	< 0.001	< 0.001			
Ischemic stroke									
Quitter	1,420	313,782.0	4.5	1.00 (0.94–1.06)	**0.82 (0.77–0.87)**	**0.80 (0.75–0.85)**	1.90 (1.80, 2.00)	**-0.46 (-0.59, -0.33)**	2.2
Reducer I	699	129,406.0	5.4	**1.19 (1.10–1.30)**	1.01 (0.93–1.09)	1.00 (0.92–1.08)	2.35 (2.18, 2.52)	-0.01 (-0.20, 0.18)	100
Reducer II	948	225,652.8	4.2	0.93 (0.86–1.00)	0.95 (0.89–1.02)	0.95 (0.89–1.02)	2.25 (2.11, 2.39)	-0.11 (-0.27, 0.05)	9.1
Sustainer	3,466	766,293.8	4.5	1 (Ref.)	1 (Ref.)	1 (Ref.)	2.36 (2.28, 2.44)	Ref.	Ref.
Increaser	1,304	276,608.2	4.7	1.04 (0.98–1.11)	1.05 (0.98–1.11)	1.04 (0.97–1.10)	2.44 (2.31, 2.57)	0.08 (-0.07, 0.23)	12.5
P value				< 0.001	< 0.001	< 0.001			

Table 2 Hazard ratios and 95% confidence intervals for the incidence of myocardial infarction, ischemic stroke, and mortality according to smoking behavior change

Smoking behavior change	Event (n)	Duration (person-years)	IR	Hazard ratio (95% confidence interval)			5-year absolute risk (%) (95% CI)	Risk difference (95% CI)	No. Needed to Treat
				Model 1	Model 2	Model 3			
Mortality									
All-cause mortality									
Quitter	2,881	316,956.8	9.1	**1.11 (1.07–1.16)**	**0.92 (0.88–0.96)**	**0.90 (0.86–0.94)**	3.63 (3.50, 3.77)	**-0.40 (-0.56, -0.24)**	2.5
Reducer I	1,520	131,023.4	11.6	**1.43 (1.35–1.51)**	**1.15 (1.09–1.22)**	**1.14 (1.08–1.21)**	4.55 (4.34, 4.77)	0.52 (0.29, 0.75)	2.0
Reducer II	1,832	227,806.9	8.0	0.99 (0.94–1.04)	1.02 (0.97–1.07)	1.02 (0.97–1.07)	4.10 (3.93, 4.28)	0.07 (-0.13, 0.27)	14.3
Sustainer	6,294	774,303.1	8.1	1 (Ref.)	1 (Ref.)	1 (Ref.)	4.03 (3.94, 4.13)	Ref.	Ref.
Increaser	2,405	279,628.3	8.6	**1.06 (1.01–1.11)**	**1.07 (1.02–1.12)**	**1.06 (1.01–1.11)**	4.24 (4.08, 4.40)	0.21 (0.02, 0.40)	4.8

Table 2 Hazard ratios and 95% confidence intervals for the incidence of myocardial infarction, ischemic stroke, and mortality according to smoking behavior change

Smoking behavior change	Event (n)	Duration (person-years)	IR	Hazard ratio (95% confidence interval)			5-year absolute risk (%) (95% CI)	Risk difference (95% CI)	No. Needed to Treat
				Model 1	Model 2	Model 3			
Cardiovascular disease events									
Mortality									
Myocardial infarction mortality									
Quitter	122	316,956.8	0.4	1.08 (0.87–1.33)	0.81 (0.65–1.00)	**0.79 (0.64–0.98)**	0.15 (0.12, 0.18)	**-0.04 (-0.08, 0.00)**	25
Reducer I	69	131,023.4	0.5	**1.48 (1.13–1.92)**	1.18 (0.90–1.54)	1.16 (0.89–1.51)	0.22 (0.17, 0.27)	0.03 (-0.03, 0.09)	33.3
Reducer II	76	227,806.9	0.3	0.94 (0.73–1.21)	0.94 (0.73–1.21)	0.94 (0.73–1.21)	0.18 (0.14, 0.22)	-0.01 (-0.06, 0.04)	100
Sustainer	276	774,303.1	0.4	1 (Ref.)	1 (Ref.)	1 (Ref.)	0.19 (0.17, 0.21)	Ref.	Ref.
Increaser	104	279,628.3	0.4	1.05 (0.83–1.31)	1.06 (0.84–1.33)	1.05 (0.84–1.32)	0.20 (0.16, 0.24)	0.01 (-0.04, 0.06)	100
P value				0.046	0.099	0.084			
Ischemic stroke mortality									
Quitter	46	316,956.8	0.1	1.04 (0.73–1.46)	**0.69 (0.48–0.98)**	**0.67 (0.47–0.95)**	0.05 (0.04, 0.07)	**-0.03 (-0.05, -0.01)**	33.3
Reducer I	25	131,023.4	0.2	1.37 (0.88–2.11)	0.91 (0.59–1.41)	0.89 (0.58–1.39)	0.07 (0.04, 0.10)	-0.01 (-0.04, 0.02)	100
Reducer II	31	227,806.9	0.1	0.97 (0.65–1.45)	0.98 (0.65–1.46)	0.98 (0.66–1.46)	0.08 (0.05, 0.11)	0.00 (-0.03, 0.03)	NA
Sustainer	108	774,303.1	0.1	1 (Ref.)	1 (Ref.)	1 (Ref.)	0.08 (0.06, 0.10)	Ref.	Ref.
Increaser	43	279,628.3	0.2	1.11 (0.78–1.57)	1.02 (0.71–1.45)	1.01 (0.71–1.44)	0.08 (0.06, 0.10)	0.00 (-0.03, 0.03)	NA
P value				0.684	0.291	0.222			

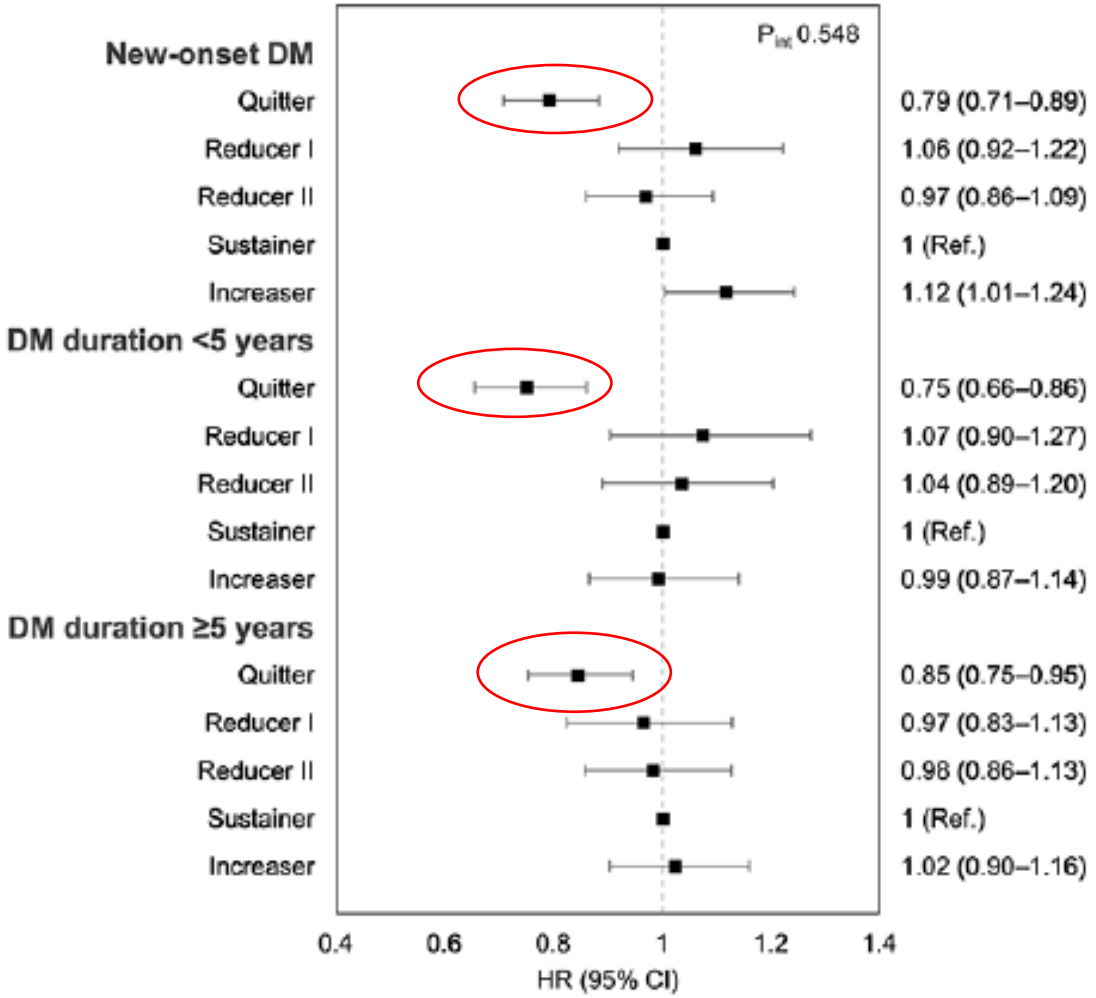
IR, incidence rate per 1,000 person-years

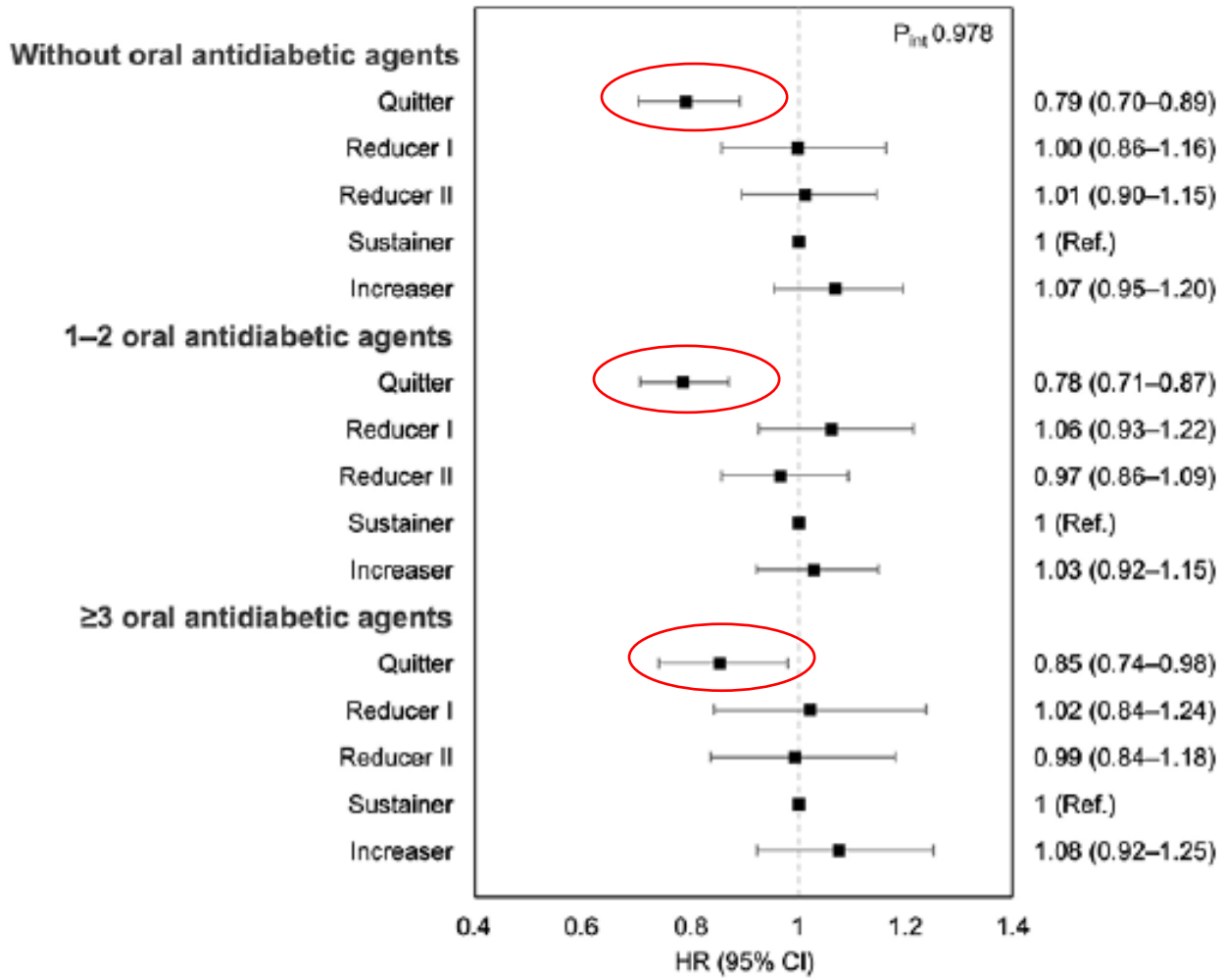
Model 1: Unadjusted

Mode 2: Adjusted for age, sex, income, area of residence, alcohol consumption, duration of smoking, physical activity, body mass index, and comorbidities (hypertension, dyslipidemia, chronic kidney disease, and chronic obstructive pulmonary disease)

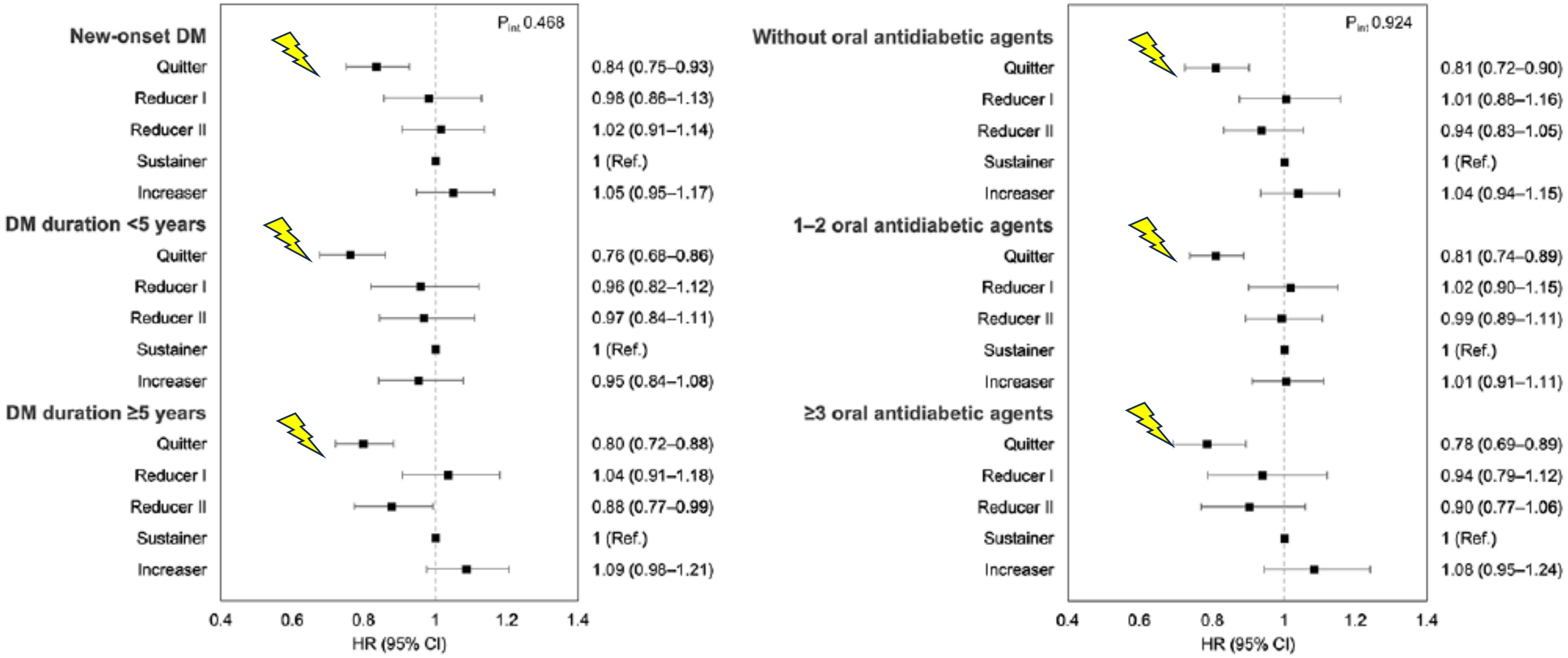
Mode 3: Model 2 + adjusted for fasting glucose, duration of diabetes, and use of insulin

A. Myocardial infarction





B. Ischemic stroke



Conclusiones

- El **abandono del hábito tabáquico** en diabéticos se asocia con:

  20% menos de riesgo de IAM y de incidencia de ictus isquémico,

  10% menos de mortalidad por todas las causas,

  21% menos de mortalidad por IAM,

  y 34% menos de mortalidad por ictus.

- La **reducción del consumo** de tabaco **NO** se asoció a una disminución del riesgo de estas enfermedades.

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Effect of prior anticoagulation therapy on stroke severity and in-hospital outcomes in patients with acute ischemic stroke and atrial fibrillation☆

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Introducción

- La fibrilación auricular (FA) constituye uno de los principales factores de riesgo para desarrollar un ictus.

De hecho, el riesgo de ictus en pacientes con FA es **4–5 veces superior** respecto al de aquellos que no presentan la arritmia.

- Además, el ictus relacionado con FA muestra un peor pronóstico y una mayor letalidad.

Introducción

- La anticoagulación con fármacos anti-vitamina K (AVK) o con anticoagulantes de acción directa (ACODs) reduce significativamente el riesgo de eventos embólicos en pacientes con FA.

- A pesar de las recomendaciones de las principales Guías de Práctica Clínica, existen regiones donde la anticoagulación está claramente infrautilizada.

Material y métodos

- El OBJETIVO PRINCIPAL del estudio:

  Analizar la prevalencia del tratamiento anticoagulante previo (tanto warfarina como ACODs) en los pacientes ya diagnosticados de FA y que debutan con un ictus isquémico agudo, a partir de una base de datos nacional de China.

- OBJETIVOS SECUNDARIOS:

  Analizar la relación entre el tratamiento anticoagulante previo y la gravedad del ictus y los resultados intrahospitalarios.

Material y métodos

- Se realizó un estudio incluyendo pacientes consecutivos con ictus y antecedentes conocidos de FA, ingresados en varios hospitales de China desde Enero hasta Julio de 2.019.

- Se realizó análisis de regresión logística multivariante para determinar las asociaciones entre la terapia anticoagulante previa y la gravedad inicial del ACV.

Resultados

- De los 7.181 pacientes incluidos (mediana de edad 75,0 años; rango intercuartílico [RI] 68,0–81,0; 48,7% varones):

  - 700 (9,7%) estaban recibiendo Warfarina a dosis subterapéuticas (con un índice internacional normalizado [INR] <2,0),

  - 29 (1,8%) estaban siendo tratados con Warfarina a dosis terapéuticas (INR >2,0)

  - y 255 (3,6%) recibían tratamiento con ACODs.

  - El resto sin anticoagular.

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Resultados

6.499 pacientes ⇨ puntuación CHA2DS2-VASc ≥2 en el momento del ingreso.

De ellos, el ***94,6% no estaban anticoagulados*** de forma correcta.

Table 2
Associations between prior anticoagulation therapy and initial stroke severity and in-hospital outcomes.

Variables	Prior anticoagulation therapy			
	None	Warfarin, INR <2.0	Warfarin, INR ≥2.0	NOACs
Moderate or severe stroke				
No./Total No.	1158/6097	107/700	17/129	31/255
% (95% CI)	19.01 (18.03–20.00)	15.29 (12.61–17.96)	13.18 (7.26–19.09)	12.16 (8.12–16.19)
Adjusted OR (95% CI) [a]	1.00 (Reference)	0.83 (0.67–1.04)	0.77 (0.45–1.30)	0.64 (0.43–0.94)
In-hospital mortality or DAMA				
No./Total No.	684/6070	70/699	9/129	11/253
% (95% CI)	11.27 (10.47–12.06)	10.01 (7.78–12.24)	6.98 (2.52–11.43)	4.35 (1.82–6.88)
Adjusted OR (95% CI) [b]	1.00 (Reference)	0.97 (0.73–1.28)	0.76 (0.37–1.58)	0.46 (0.24–0.86)
In-hospital mortality				
No./Total No.	102/6073	10/699	2/129	2/253
% (95% CI)	1.68 (1.36–2.00)	1.43 (0.55–2.31)	1.55 (−0.61–3.71)	0.79 (−0.31–1.89)
Adjusted OR (95% CI) [b]	1.00 (Reference)	0.92 (0.45–1.85)	1.22 (0.27–5.57)	0.67 (0.16–2.87)
DAMA				
No./Total No.	582/5968	60/689	7/127	9/251
% (95% CI)	9.75 (9.00–10.50)	8.71 (6.60–10.82)	5.51 (1.49–9.54)	3.59(1.27–5.90)
Adjusted OR (95% CI) [b]	1.00 (Reference)	0.97 (0.72–1.31)	0.67 (0.30–1.51)	0.43 (0.21–0.86)
Functional outcomes at discharge				
mRS score of 0–2				
No./Total No.	2819/5968	363/689	77/127	122/251
% (95% CI)	47.24 (45.97–48.50)	52.69 (48.95–56.42)	60.63 (52.02–69.24)	48.61 (42.38–54.83)
Adjusted OR (95% CI) [b]	1.00 (Reference)	1.05 (0.87–1.27)	1.30 (0.84–2.01)	0.87 (0.65–1.17)

Abbreviations: INR, international normalized ratio; NOACs, non-vitamin K antagonist oral anticoagulants; DAMA, discharge against medical advice; OR, odds ratio; CI, confidence interval.

[a] Adjusted for baseline demographic variables (age, sex, medical insurance, education level), smoking status, medical history (hypertension, dyslipidemia, diabetes, prior stroke/TIA, prior CHD/MI, heart failure, and PVD), and medications prior to admission (antihypertensive, cholesterol-lowering, antidiabetic, and antiplatelet drugs).

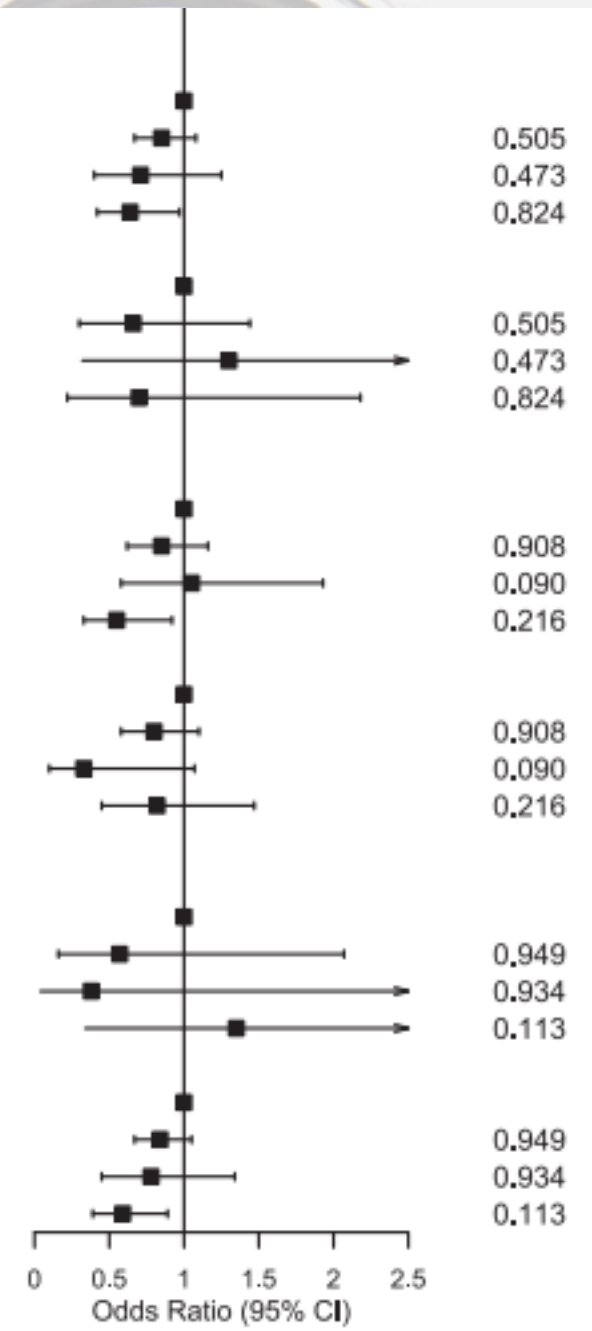
[b] Adjusted for baseline demographic variables (age, sex, medical insurance, education level), smoking status, medical history (hypertension, dyslipidemia, diabetes, prior stroke/TIA, prior CHD/MI, heart failure, and PVD), medications prior to admission (antihypertensive, cholesterol-lowering, antidiabetic, and antiplatelet drugs), systolic blood pressure, NIHSS score at admission, in-hospital treatment (IV-tPA, arterial catheter reperfusion, and arterial embolectomy), and hospital characteristics (geographical region and hospital level).

Associations between prior anticoagulation therapy and stroke severity

Prior Anticoagulation Therapy	No. of Patients with in-hospital mortality or DAMA/Total No. (%)	Adjusted OR (95% CI)	P for Interaction
Age, years			
≥75			
None	455/3303 (13.78)	1.00 (reference)	
Warfarin, INR <2.0	29/265 (10.94)	0.84 (0.55–1.29)	0.285
Warfarin, INR ≥2.0	0/41 (0)	–	0.963
NOACs	5/123 (4.07)	0.37 (0.15–0.93)	0.327
<75			
None	229/2767 (8.28)	1.00 (reference)	
Warfarin, INR <2.0	41/434 (9.45)	1.02 (0.70–1.51)	0.285
Warfarin, INR ≥2.0	9/88 (10.23)	1.34 (0.62–2.89)	0.963
NOACs	6/130 (4.62)	0.60 (0.25–1.41)	0.327
Gender			
Men			
None	311/3101 (10.03)	1.00 (reference)	
Warfarin, INR <2.0	28/351 (7.98)	0.92 (0.59–1.42)	0.614
Warfarin, INR ≥2.0	6/74 (8.11)	1.18 (0.48–2.91)	0.295
NOACs	8/145 (5.52)	0.74 (0.35–1.59)	0.102
Women			
None	373/2969 (12.56)	1.00 (reference)	
Warfarin, INR <2.0	42/348 (12.07)	1.04 (0.71–1.51)	0.614
Warfarin, INR ≥2.0	3/55 (5.45)	0.45 (0.13–1.55)	0.295
NOACs	3/108 (2.78)	0.22 (0.07–0.70)	0.102
Education level*			
Middle school or lower			
None	143/1555 (9.20)	1.00 (Reference)	
Warfarin, INR <2.0	15/201 (7.46)	0.95 (0.53–1.68)	0.908
Warfarin, INR ≥2.0	3/51 (5.88)	0.86 (0.26–2.87)	0.457
NOACs	6/83 (7.23)	0.79 (0.32–1.93)	0.665
High school or above			
None	268/2149 (12.47)	1.00 (Reference)	
Warfarin, INR <2.0	25/239 (10.46)	0.91 (0.58–1.43)	0.908
Warfarin, INR ≥2.0	1/33 (3.03)	0.27 (0.04–2.04)	0.457
NOACs	4/64 (6.25)	0.52 (0.18–1.47)	0.665

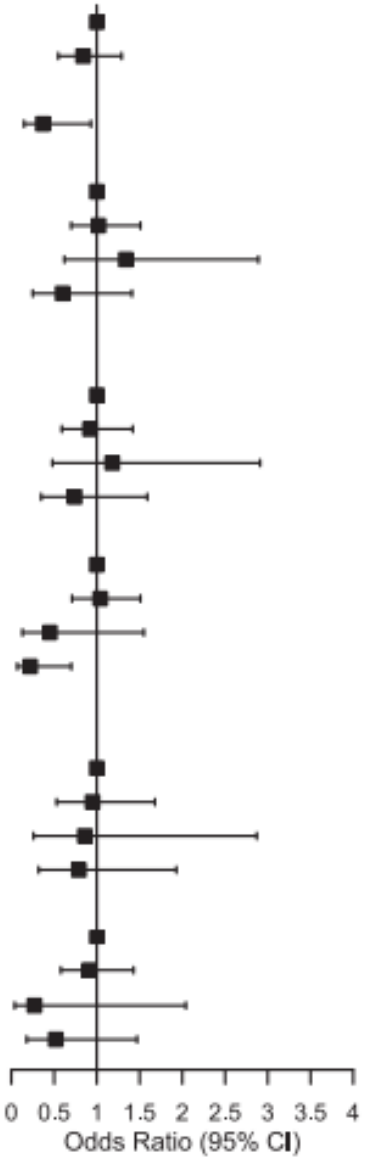
Associations between prior anticoagulation therapy and stroke severity

Medical Insurance Type			
UEBMI/URBMI/NRCMS			
None	1049/5599 (18.74)	1.00 (Reference)	
Warfarin, INR <2.0	98/640 (15.31)	0.85 (0.67–1.08)	0.505
Warfarin, INR ≥2.0	14/117 (11.97)	0.71 (0.40–1.25)	0.473
NOACs	27/222 (12.16)	0.64 (0.42–0.97)	0.824
Self-pay/Others			
None	109/491 (22.20)	1.00 (Reference)	
Warfarin, INR <2.0	9/60 (15.00)	0.66 (0.30–1.44)	0.505
Warfarin, INR ≥2.0	3/12 (25.00)	1.30 (0.32–5.30)	0.473
NOACs	4/33 (12.12)	0.70 (0.22–2.18)	0.824
History of prior stroke/TIA			
Yes			
None	472/2454 (19.23)	1.00 (reference)	
Warfarin, INR <2.0	56/369 (15.18)	0.85 (0.62–1.16)	0.908
Warfarin, INR ≥2.0	14/82 (17.07)	1.05 (0.58–1.93)	0.090
NOACs	17/166 (10.24)	0.55 (0.33–0.92)	0.216
No			
None	686/3636 (18.87)	1.00 (reference)	
Warfarin, INR <2.0	51/331 (15.41)	0.80 (0.58–1.10)	0.908
Warfarin, INR ≥2.0	3/47 (6.38)	0.33 (0.10–1.07)	0.090
NOACs	14/89 (15.73)	0.82 (0.45–1.47)	0.216
History of prior CHD/MI			
Yes			
None	51/221 (23.08)	1.00 (reference)	
Warfarin, INR <2.0	4/23 (17.39)	0.57 (0.16–2.07)	0.949
Warfarin, INR ≥2.0	1/8 (12.50)	0.38 (0.04–3.82)	0.934
NOACs	4/14 (28.57)	1.35 (0.34–5.44)	0.113
No			
None	1107/5869 (18.86)	1.00 (reference)	
Warfarin, INR <2.0	103/677 (15.21)	0.84 (0.67–1.05)	0.949
Warfarin, INR ≥2.0	16/121 (13.22)	0.78 (0.45–1.34)	0.934
NOACs	27/241 (11.20)	0.59 (0.39–0.89)	0.113



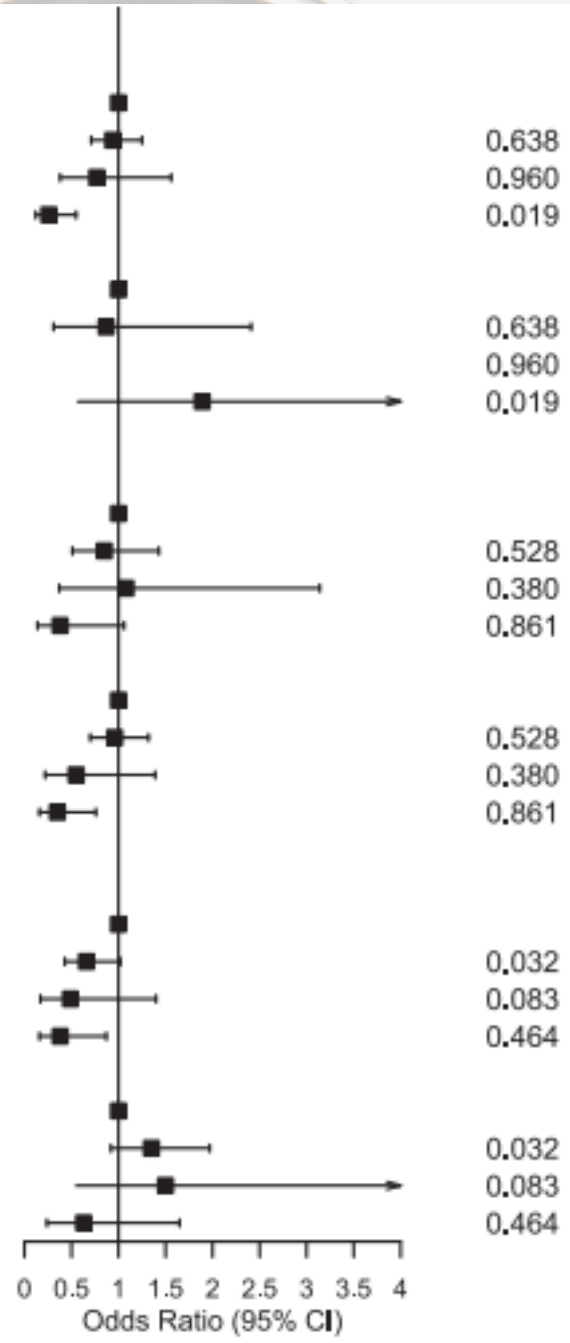
Association between prior anticoagulation therapy and in-hospital mortality or DAMA

Prior Anticoagulation Therapy	No. of Patients with in-hospital mortality or DAMA/Total No. (%)	Adjusted OR (95% CI)	P for Interaction
Age, years			
≥75			
None	455/3303 (13.78)	1.00 (reference)	
Warfarin, INR <2.0	29/265 (10.94)	0.84 (0.55–1.29)	0.285
Warfarin, INR ≥2.0	0/41 (0)	–	0.963
NOACs	5/123 (4.07)	0.37 (0.15–0.93)	0.327
<75			
None	229/2767 (8.28)	1.00 (reference)	
Warfarin, INR <2.0	41/434 (9.45)	1.02 (0.70–1.51)	0.285
Warfarin, INR ≥2.0	9/88 (10.23)	1.34 (0.62–2.89)	0.963
NOACs	6/130 (4.62)	0.60 (0.25–1.41)	0.327
Gender			
Men			
None	311/3101 (10.03)	1.00 (reference)	
Warfarin, INR <2.0	28/351 (7.98)	0.92 (0.59–1.42)	0.614
Warfarin, INR ≥2.0	6/74 (8.11)	1.18 (0.48–2.91)	0.295
NOACs	8/145 (5.52)	0.74 (0.35–1.59)	0.102
Women			
None	373/2969 (12.56)	1.00 (reference)	
Warfarin, INR <2.0	42/348 (12.07)	1.04 (0.71–1.51)	0.614
Warfarin, INR ≥2.0	3/55 (5.45)	0.45 (0.13–1.55)	0.295
NOACs	3/108 (2.78)	0.22 (0.07–0.70)	0.102
Education level*			
Middle school or lower			
None	143/1555 (9.20)	1.00 (Reference)	
Warfarin, INR <2.0	15/201 (7.46)	0.95 (0.53–1.68)	0.908
Warfarin, INR ≥2.0	3/51 (5.88)	0.86 (0.26–2.87)	0.457
NOACs	6/83 (7.23)	0.79 (0.32–1.93)	0.665
High school or above			
None	268/2149 (12.47)	1.00 (Reference)	
Warfarin, INR <2.0	25/239 (10.46)	0.91 (0.58–1.43)	0.908
Warfarin, INR ≥2.0	1/33 (3.03)	0.27 (0.04–2.04)	0.457
NOACs	4/64 (6.25)	0.52 (0.18–1.47)	0.665



Association between prior anticoagulation therapy and in-hospital mortality or DAMA

Medical Insurance Type			
UEBMI/URBMI/NRCMS			
None	629/5580 (11.27)	1.00 (Reference)	
Warfarin, INR <2.0	65/639 (10.17)	0.94 (0.71–1.25)	0.638
Warfarin, INR ≥2.0	9/117 (7.69)	0.77 (0.38–1.56)	0.960
NOACs	7/221 (3.17)	0.26 (0.12–0.55)	0.019
Self-pay/Others			
None	55/490 (11.22)	1.00 (Reference)	
Warfarin, INR <2.0	5/60 (8.33)	0.87 (0.31–2.41)	0.638
Warfarin, INR ≥2.0	0/12 (0.00)	–	0.960
NOACs	4/32 (12.50)	1.89 (0.57–6.22)	0.019
Hospital level			
Secondary			
None	268/2457 (10.91)	1.00 (Reference)	
Warfarin, INR <2.0	18/214 (8.41)	0.85 (0.51–1.43)	0.528
Warfarin, INR ≥2.0	4/42 (9.52)	1.08 (0.37–3.14)	0.380
NOACs	4/87 (4.60)	0.38 (0.14–1.06)	0.861
Tertiary			
None	416/3613 (11.51)	1.00 (Reference)	
Warfarin, INR <2.0	52/485 (10.72)	0.96 (0.70–1.32)	0.528
Warfarin, INR ≥2.0	5/87 (5.75)	0.55 (0.22–1.39)	0.380
NOACs	7/166 (4.22)	0.35 (0.16–0.76)	0.861
History of prior stroke/TIA			
Yes			
None	288/2446 (11.77)	1.00 (reference)	
Warfarin, INR <2.0	28/368 (7.61)	0.66 (0.43–1.02)	0.032
Warfarin, INR ≥2.0	4/82 (4.88)	0.49 (0.17–1.40)	0.083
NOACs	6/164 (3.66)	0.38 (0.16–0.87)	0.464
No			
None	396/3624 (10.93)	1.00 (reference)	
Warfarin, INR <2.0	42/331 (12.69)	1.35 (0.92–1.97)	0.032
Warfarin, INR ≥2.0	5/47 (10.64)	1.50 (0.55–4.11)	0.083
NOACs	5/89 (5.62)	0.63 (0.24–1.65)	0.464



Limitaciones

- Carácter retrospectivo y observacional del estudio.
- Presencia de un posible sesgo de selección al incluir únicamente pacientes hospitalizados por ictus o accidente isquémico transitorio.
- Y la ausencia de datos acerca de las dosis de ACODs empleadas.

Conclusiones

- El estudio demuestra que existen regiones donde la proporción de pacientes con FA y anticoagulación inadecuada es sustancialmente elevada.

- Un porcentaje elevado de pacientes están anticoagulados con fármacos a dosis inapropiadas.

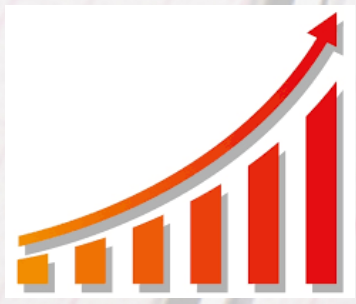
- El tratamiento previo con ACODs se asocia a menor gravedad del ictus y a menor mortalidad hospitalaria.

Association of Serum Uric Acid With All-Cause and Cardiovascular Mortality in Diabetes

Benchao Li,[1] Liangkai Chen,[2] Xueting Hu,[2] Ting Tan,[1] Jiajia Yang,[1] Wei Bao,[3] and Shuang Rong[1]

https://doi.org/10.2337/dc22-1339

ANTECEDENTES:



- Prevalencia DM

- En **2.021** ⇨ 537 millones de personas con DM
- Se estima 783 millones de habitantes con DM en **2.045**.

- DM: **patologías cardiovasculares, principal causa de mortalidad**.

- Estudios previos sugieren que *los niveles elevados de ácido úrico plasmático favorecen el desarrollo de complicaciones micro y macrovasculares*.

- Se desconoce qué valores de ácido úrico son óptimos en DM.

OBJETIVO DEL ESTUDIO:

- Determinar si el **nivel sérico de ácido úrico** se relaciona con **mortalidad por cualquier causa** o con el **desarrollo de enfermedades CV**, en DM.

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MATERIAL Y MÉTODOS: Se realizaron **2 estudios** diferentes.

1) Estudio **prospectivo**, de **cohortes**, en **Estados Unidos**.

- *Inclusión*: pacientes DM **desde 1.999 hasta 2.018**.

- *Seguimiento*: hasta el 31-Dic-2.019.

- *Evaluación*: **eventos CV adversos**, **mortalidad** y sus *causas*.

2) **Meta-análisis** de estudios de cohortes con datos acerca de la relación entre los valores de ácido úrico y la mortalidad en pacientes diabéticos.

RESULTADOS: 1) Estudio prospectivo de Cohortes

- **7.101 pacientes diabéticos** incluidos.
- **Valor medio de ácido úrico**: **5,7 mg/dL**.

	SUA levels, mg/dL (*N* = 7,101)				
	Q1	Q2	Q3	Q4	Q5
Characteristic	<4.4	4.4–5.1	5.2–5.9	6.0–6.9	>6.9
Participants, *n*	1,340	1,398	1,473	1,467	1,414

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Table 1—Baseline demographic, lifestyle, and medical characteristics of patients with diabetes in the NHANES 1999–2018 cohort

Characteristic	<4.4	4.4–5.1	5.2–5.9	6.0–6.9	>6.9	*P*
Age, years	54.67 (0.48)	57.33 (0.44)	57.51 (0.52)	58.89 (0.45)	60.56 (0.53)	<0.001
Sex, % (SE)						
Male	35.39 (1.81)	47.8 (2.05)	53.36 (1.76)	56.74 (1.94)	64.07 (1.73)	<0.001
Female	64.61 (1.81)	52.2 (2.05)	46.64 (1.76)	43.26 (1.94)	35.93 (1.73)	
BMI, kg/m^2						
<25.0	19 (1.66)	15.92 (1.47)	10.76 (0.98)	6.81 (0.79)	6.91 (1.08)	<0.001
25.0–29.9	30.22 (1.65)	28.68 (1.64)	27.55 (1.68)	24.51 (1.55)	21.25 (1.32)	
≥30.0	49.01 (2.2)	53.46 (1.99)	59.52 (1.91)	66.17 (1.71)	67.57 (1.85)	
Missing data	1.77 (0.38)	1.93 (0.43)	2.18 (0.45)	2.51 (0.56)	4.26 (0.8)	
Diabetes duration, years	8.74 (0.39)	8.36 (0.48)	7.86 (0.38)	7.62 (0.42)	8.21 (0.34)	0.002
Allopurinol therapy, % (SE)	3 (0.63)	3.14 (0.58)	2.09 (0.42)	2.4 (0.48)	2.6 (0.49)	0.582
Oral hypoglycemic drugs, % (SE)	52.62 (1.87)	51.86 (2.06)	54.4 (1.86)	53.12 (1.94)	52.07 (1.69)	0.887
Insulin therapy, % (SE)	26.49 (1.72)	17.53 (1.3)	17.38 (1.37)	14.75 (1.2)	22.79 (1.49)	<0.001
Hypertension, % (SE)	63.13 (1.86)	67.58 (1.86)	72.25 (1.7)	74.04 (1.69)	82.41 (1.45)	<0.001
Dyslipidemia, % (SE)	67.81 (1.68)	75.03 (1.63)	75.33 (1.46)	78.52 (1.37)	80.86 (1.46)	<0.001
eGFR, mL/min/1.73 m^2	97.52 (0.69)	90.55 (0.83)	86.73 (0.80)	82.04 (0.77)	72.24 (0.92)	<0.001
Albuminuria, % (SE)	23.31 (1.49)	22.79 (1.4)	25.23 (1.33)	28.11 (1.79)	35.17 (1.86)	<0.001
CVD, % (SE)	15.71 (1.34)	20.85 (1.69)	21.68 (1.35)	22 (1.53)	33.2 (1.85)	<0.001

Values are weighted mean (SE) for continuous variables or numbers (weighted %) for categorical variables. TEI, total energy intake.

RESULTADOS: 1) Estudio prospectivo de Cohortes

- Seguimiento: **mediana de 8,2 años**.

- **1.900 fallecimientos** en total.

  ↳ **674** se corresponden con **muertes por Enfermedad CV**.

- Comparación del quintil ***más alto*** frente al ***más bajo*** de ácido úrico:

  ↳ **HR de 1,28** (IC95% 1,03–1,58) **para mortalidad por cualquier causa.**

  ↳ **HR de 1,41** (IC95% 1,03–1,94) **para mortalidad por ECV.**

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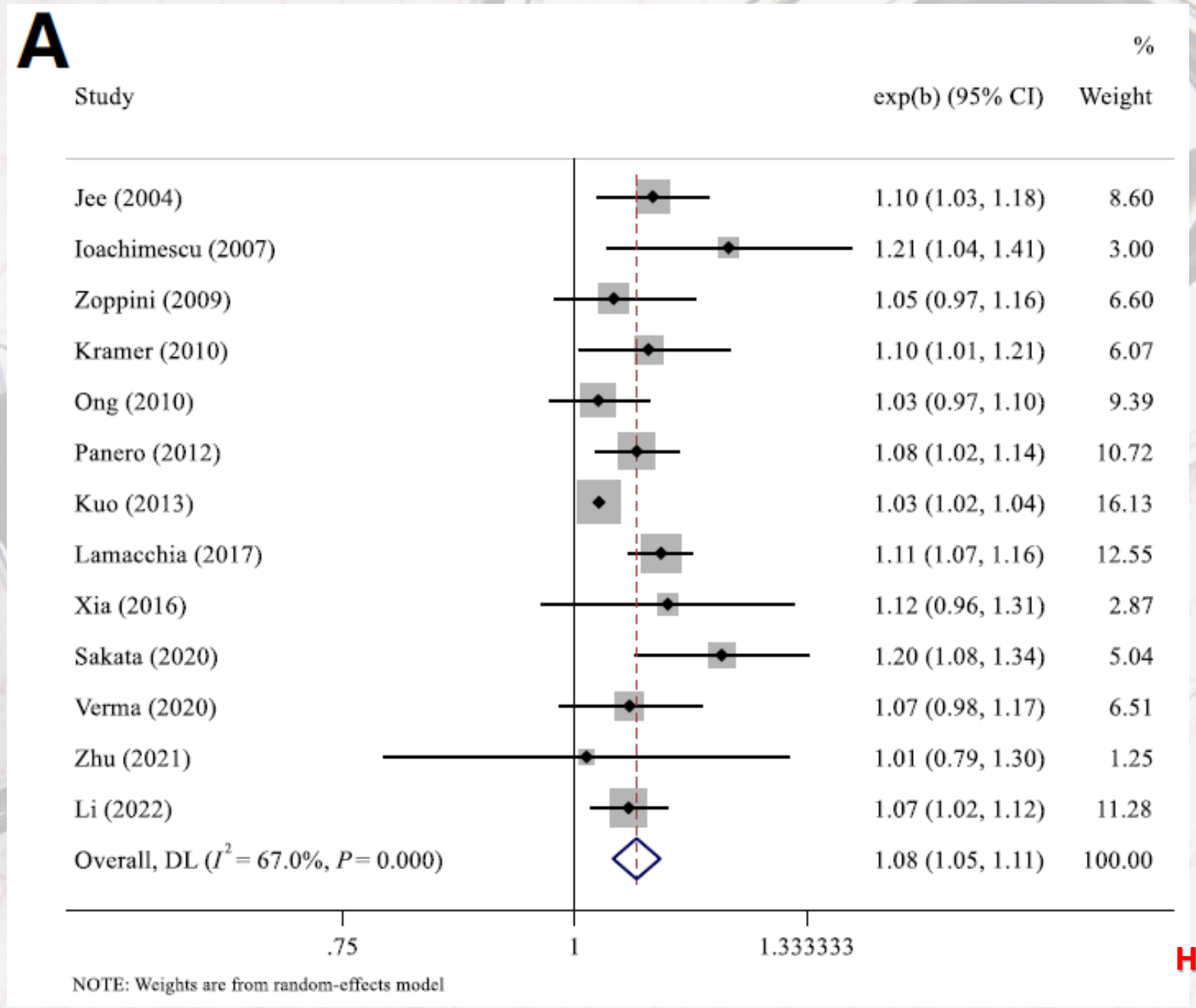
RESULTADOS: 2) Meta-análisis

- **13 estudios de cohortes** en pacientes diabéticos.

- **Por cada incremento de 1 mg/dL de ácido úrico en sangre:**

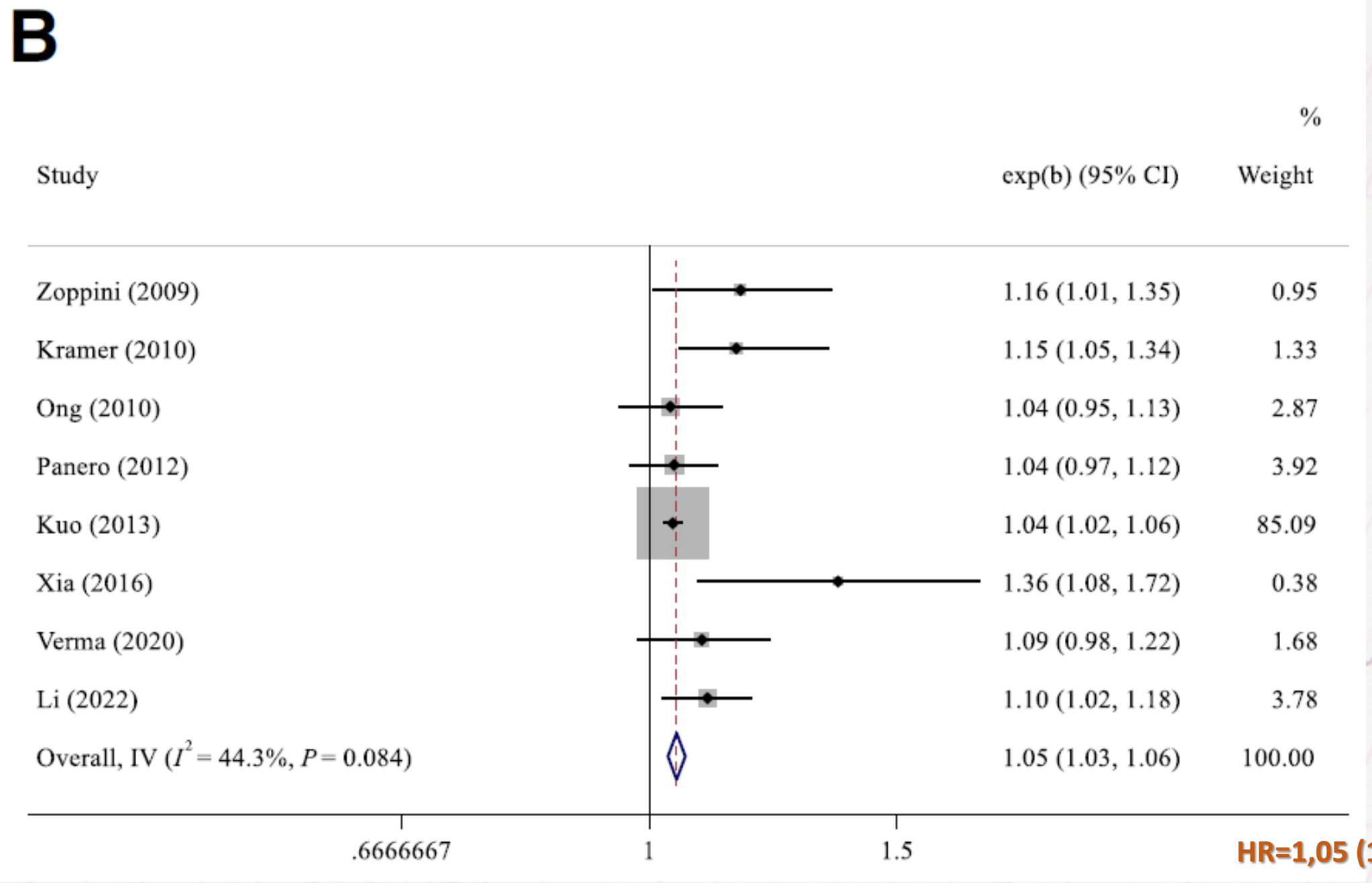
  - **HR de 1,08** (IC95% 1,05– 1,11) para **mortalidad por cualquier causa.**
  - **HR de 1,05** (IC95% 1,03–1,06) para la **mortalidad por ECV.**

A) Mortalidad por Cualquier causa *(incremento del riesgo por cada 1 mg/dL de aumento del ácido úrico plasmático)*



HR=1,08 (IC95% 1,05– 1,11)

B) Mortalidad por causa CV *(incremento del riesgo por cada 1 mg/dL de aumento del ácido úrico plasmático)*



HR=1,05 (1,03–1,06)

Conclusiones

- ✓ El estudio demuestra la existencia de una **asociación entre los niveles más altos de ácido úrico y** un **mayor riesgo de mortalidad por cualquier causa** o de desarrollar **Enfermedad CV** en pacientes diabéticos.

- ✓ Se necesitan estudios intervencionistas que determinen si la reducción de los niveles de ácido úrico en esta población permite disminuir el riesgo de eventos adversos, incluida la mortalidad.

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