# CORRECTION

**Open Access** 

# Correction: Efficacy of antihyperglycemic therapies on cardiovascular and heart failure outcomes: an updated meta-analysis and meta-regression analysis of 35 randomized cardiovascular outcome trials

Masashi Hasebe<sup>1†</sup>, Satoshi Yoshiji<sup>1,2,3,4\*†</sup>, Yamato Keidai<sup>1,2†</sup>, Hiroto Minamino<sup>2</sup>, Takaaki Murakami<sup>2</sup>, Daisuke Tanaka<sup>2</sup>, Yoshihito Fujita<sup>2</sup>, Norio Harada<sup>2</sup>, Akihiro Hamasaki<sup>1</sup> and Nobuya Inagaki<sup>1,2\*</sup>

## Correction: Cardiovascular Diabetology (2023) 22:62 https://doi.org/10.1186/s12933-023-01773-z

Following the publication of the original article [1], the authors identified errors in Fig. 2 introduced during the final production phase. Specifically, the sample size numbers in the rows for 'Look AHEAD,' 'ADOPT,' 'BARI2D,' 'RECORD,' 'TOSCA.IT,' and 'Total' were garbled. The

<sup>†</sup>Masashi Hasebe, Satoshi Yoshiji and Yamato Keidai have contributed equally to this work as co-first authors

The original article can be found online at https://doi.org/10.1186/s12933-023-01773-z.

\*Correspondence: Satoshi Yoshiji yoshijis@kuhp.kyoto-u.ac.jp Nobuya Inagaki inagaki@kuhp.kyoto-u.ac.jp <sup>1</sup> Department of Diabetes and Endocrinology, Medical Research Institute KITANO HOSPITAL, PIIF Tazuke-Kofukai, Osaka, Japan

<sup>2</sup> Department of Diabetes, Endocrinology and Nutrition, Kyoto University Graduate School of Medicine, 54 Kawahara-cho, Shogoin, Sakyo-ku,

Kyoto 606-8507, Japan

<sup>3</sup> Department of Human Genetics, McGill University, Montreal, QC, Canada

<sup>4</sup> Kyoto-McGill International Collaborative Program in Genomic Medicine, Graduate School of Medicine, Kyoto University, Kyoto, Japan



© The Author(s) 2023. Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/. The Creative Commons Public Domain Dedication waiver (http://creativeco mmons.org/publicdomain/zero/1.0/) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

results were not affected. The corrected Fig. 2 has been provided with this correction.

The original article has been updated.

Published online: 24 April 2023



ntensive control Lifestyle	UKPDS 33 ACCORD ADVANCE VADT	387/2,729 (14%) 352/5,128 (7%) 557/5,571 (10%)	186/1,138 (16%) 371/5,123 (7%)		2.6%	0.84 (0.71-1.00)
ntensive control Lifestyle	ADVANCE	, , ,	371/5,123 (7%)		2.24	
Lifestyle		557/5.571 (10%)		-	3.3%	0.90 (0.78-1.04)
Lifestyle	VADT		590/5,569 (11%)		4.3%	0.94 (0.84-1.06)
		64/892 (7%)	78/899 (9%)		0.8%	0.82 (0.59-1.14)
neulin aleraine	Look AHEAD	267/2,570 (10%)	283/2,575 (11%)		2.7%	0.93 (0.79-1.10)
nsunn giai gine	ORIGIN	1,041/6,264 (17%)	1,013/6,273 (16%)		5.9%	1.02 (0.94-1.11)
α-GI	ACE	285/3,272 (9%)	299/3,250 (9%)		2.9%	0.95 (0.81-1.11)
PPAR agonists	PROactive	301/2,605 (12%)	358/2,633 (14%)		3.0%	0.84 (0.72-0.98)
	ADOPT	27/1,456 (2%)	41/2,895 (1%)		0.4%	1.31 (0.81-2.12)
	DREAM	32/2,635 (1%)	23/2,634 (1%)		0.3%	1.39 (0.81-2.37)
	BARI 2D	261/1,183 (22%)	288/1,185 (24%)		3.1%	0.91 (0.78-1.05)
	RECORD	154/2,220 (7%)	165/2,227 (7%)	_ <u>i</u>	1.7%	0.93 (0.75-1.16)
	AleCardio	344/3,616 (9%)	360/3,610 (10%)		3.2%	0.96 (0.83-1.11)
	IRIS	175/1,939 (9%)	228/1,937 (15%)		2.0%	0.76 (0.62-0.93)
	TOSCA.IT	105/1,535 (7%)	108/1,493 (7%)		1.2%	0.96 (0.74-1.26)
DPP-4i	EXAMINE	305/2,701 (11%)	316/2,679 (12%)		2.1%	0.96 (0.79-1.16)
	SAVOR-TIMI 53	613/8,280 (7%)	609/8,212 (7%)	÷	4.3%	1.00 (0.89-1.12)
	TECOS	745/7,332 (10%)	746/7,339 (10%)	<u>i</u>	4.7%	0.99 (0.89-1.10)
	OMNEON	114/2,092 (5%)	114/2,100 (5%)		1.3%	1.00 (0.77-1.29)
	CARMELINA	434/3,494 (12%)	420/3,485 (12%)	÷	3.5%	1.02 (0.89-1.17)
GLP-1RA	ELIXA	406/3,034 (13%)	392/3,034 (13%)		3.5%	1.02 (0.89–1.17)
	LEADER	608/4,668 (13%)	694/4,672 (15%)		4.6%	0.87 (0.78-0.97)
	SUSTAIN-6	108/1,648 (7%)	146/1,649 (9%)		1.4%	0.74 (0.58-0.95)
	EXSCEL	839/7,356 (11%)	905/7,396 (12%)	÷.	5.4%	0.91 (0.83-1.00)
	Harmony Outcomes	338/4,731 (7%)	428/4,732 (9%)		3.4%	0.78 (0.68-0.90)
	REWIND	594/4,949 (12%)	663/4,952 (13%)	<del></del>	4.4%	0.88 (0.79-0.99)
	PIONEER 6	61/1,591 (4%)	76/1,592 (5%)		0.8%	0.79 (0.57-1.11)
	AMPLITUDE-O	189/2,717 (7%)	125/1,359 (9%)		1.6%	0.73 (0.58-0.92)
	FREEDOM-CVO	85/2,075 (4%)	69/2,081 (3%)		0.9%	1.24 (0.90-1.70)
SGLT2i	EMPA-REG OUTCOME	490/4,687 (10%)	282/2,333 (12%)		3.2%	0.86 (0.74-0.99)
	CANVAS Program	585/5,795 (10%)	426/4,347 (10%)		3.8%	0.86 (0.75-9.97)
	DECLARE-TIMI 58	756/8,582 (9%)	803/8,578 (9%)		4.9%	0.93 (0.84-1.03)
	CREDENCE	217/2,202 (10%)	269/2,199 (12%)		2.5%	0.80 (0.67-0.95)
	VERTIS CV	653/5,493 (12%)	327/2,745 (12%)	· · · ·	3.6%	0.97 (0.85-1.11)
	SCORED	343/5,292 (6%)	442/5,292 (8%)		2.6%	0.77 (0.65-0.91)
	Total	12,825/132,334 (10%)	12,650/124,217 (10%)		100.0%	0.91 (0.88-0.94)
			12,030/124,217 (1076)	Ň N	100.0 %	P <0.001
	Heterogeneity: $I^2 = 36.5\%$ ( <i>P</i> =0.017)			0.25 0.5 1 2	4	P <0.001

**Fig. 2** Efficacy of antihyperglycemic drugs on the risk of major adverse cardiovascular events (MACE). UKPDS 33, ACCORD, ADVANCE, VADT: trials comparing an intensive glycemic control strategy with standard care; Look AHEAD: a trial comparing intensive lifestyle intervention for weight loss with standard care; ORIGIN: a trial comparing insulin glargine with standard care; ACE: a trial comparing acarbose (α-glucosidase inhibitor [α-GI]) with placebo; PROactive, ADOPT, DREAM, BARI 2D, RECORD, AleCardio, IRIS, TOSCA.IT: trials comparing peroxisome proliferation-activated receptor (PPAR) agonists with placebo or active control drug; EXAMINE, SAVOR-TIMI 53, TECOS, OMNEON, CARMELINA: trials comparing dipeptidyl-peptidase-4 inhibitors (DPP-4i) with placebo; ELIXA, LEADER, SUSTAIN-6, EXSCEL, Harmony Outcomes, REWIND, PIONEER 6, AMPLITUDE-O, FREEDOM-CVO: trials comparing glucagon-like peptide-1 receptor agonists (GLP-1RA) with placebo; EMPAREG-OUTCOME, CANVAS-Program, DECLARE-TIMI 58, CREDENCE, VERTIS CV, SCORED: trials comparing sodium-glucose cotransporter-2 inhibitors (SGLT2i) with placebo

#### Reference

 Hasebe M, Yoshiji S, Keidai Y, Minamino H, Murakami T, Tanaka D, Fujita Y, Harada N, Hamasaki A, Inagaki N. Efficacy of antihyperglycemic therapies on cardiovascular and heart failure outcomes: an updated meta-analysis and meta-regression analysis of 35 randomized cardiovascular outcome trials. Cardiovasc Diabetol. 2023;22:62.

### **Publisher's Note**

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.