

SUPPLEMENTARY DATA

**Type 2 diabetes as a risk factor for dementia in women compared with men: a pooled analysis of 2.3 million people and more than 100,000 cases of dementia**

SUPPLEMENTARY APPENDIX

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### Supplementary Methods. Newcastle - Ottawa Quality Assessment Scale

Modified from reference 13

#### **Selection**

##### S1) Representativeness of the exposed cohort

- a) truly representative of the general population\*
- b) somewhat representative of the general population
- c) selected group of users e.g. nurses, volunteers
- d) no description of the derivation of the cohort

##### S2) Selection of the non exposed cohort

- a) drawn from the same community as the exposed cohort\*
- b) drawn from a different source
- c) no description of the derivation of the non exposed cohort

##### S3) Ascertainment of exposure

- a) secure record (measured diabetes only)\*
- b) secure record or written self report
- c) written self report
- d) no description

##### S4) Demonstration that outcome of interest was not present at start of study

- a) yes\*
- b) no

#### **Comparability**

##### C1) Comparability of cohorts on the basis of the design or analysis

- a) study controls for age\*
- b) study also controls for systolic blood pressure, smoking, body mass index, and total cholesterol\*

#### **Outcome**

##### O1) Assessment of outcome

- a) independent blind assessment of dementia and subtypes\*
- b) record linkage of dementia and subtypes\*
- c) self report
- d) no description

##### O2) Was follow-up long enough for outcomes to occur

- a) yes (at least 10 years)\*
- b) no

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### O3) Adequacy of follow up of cohorts

- a) complete follow up - all subjects accounted for\*
- b) subjects lost to follow up unlikely to introduce bias - > 10% follow up, or description provided of those lost\*
- c) follow up rate < 90% and no description of those lost
- d) no statement

**Studies get a point for each\***

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### Supplementary References

Note: In italics are the references to studies that had multiple reports from the same study.

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14. Tyas SL, Manfreda J, Strain LA, Montgomery PR. Risk factors for Alzheimer's disease: a population-based, longitudinal study in Manitoba, Canada. *Int J Epidemiol* 2001; 30: 590–597.
  15. Sonnen JA, Larson EB, Brickell K, Crane PK, Woltjer R, Montine TJ, Craft S. Different patterns of cerebral injury in dementia with or without diabetes. *Arch Neurol.* 2009 Mar;66(3):315-22.
  16. Haroon NN, Austin PC, Shah BR, Wu J, Gill SS, Booth GL. Risk of dementia in seniors with newly diagnosed diabetes: a population-based study. *Diabetes Care* 2015; 38: 1868-1875.
  17. Neuropathology Group. Medical Research Council Cognitive Function and Aging Study. Pathological correlates of late-onset dementia in a multicentre, community-based population in England and Wales. *Lancet.* 2001 Jan 20;357(9251):169-75.
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**Supplementary Table 1. Quality assessment of the included studies**

Study	S1	S2	S3	S4	C1	O1	O2	O3		Sum
ACT Study	1	1	1	1	1	1	0	1		7
ARIC Study	1	1	0	1	1	1	1	1		7
CCMS	1	1	0	1	1	1	0	1		6
English and Scottish Health Surveys	1	1	0	1	2	1	0	0		6
Framingham Study	1	1	1	1	2	1	1	1		9
Hisayama Study	1	1	1	1	2	1	1	1		9
Kame Project	1	1	0	1	1	1	0	1		6
Kungsholmen Project	1	1	0	1	1	1	0	1		6
MHAS	1	1	0	1	1	1	0	1		6
NHI, Taiwan	1	1	1	1	1	1	0	1		7
NHIC, Korea	1	1	1	1	1	1	1	1		8
Norwegian Counties Study	1	1	0	1	2	1	1	1		8
OCTO-Twin Study	0	1	1	1	2	1	0	1		7
SALSA	1	1	0	1	2	1	1	1		8

A description of the items for quality assessment is provided in the Supplementary methods

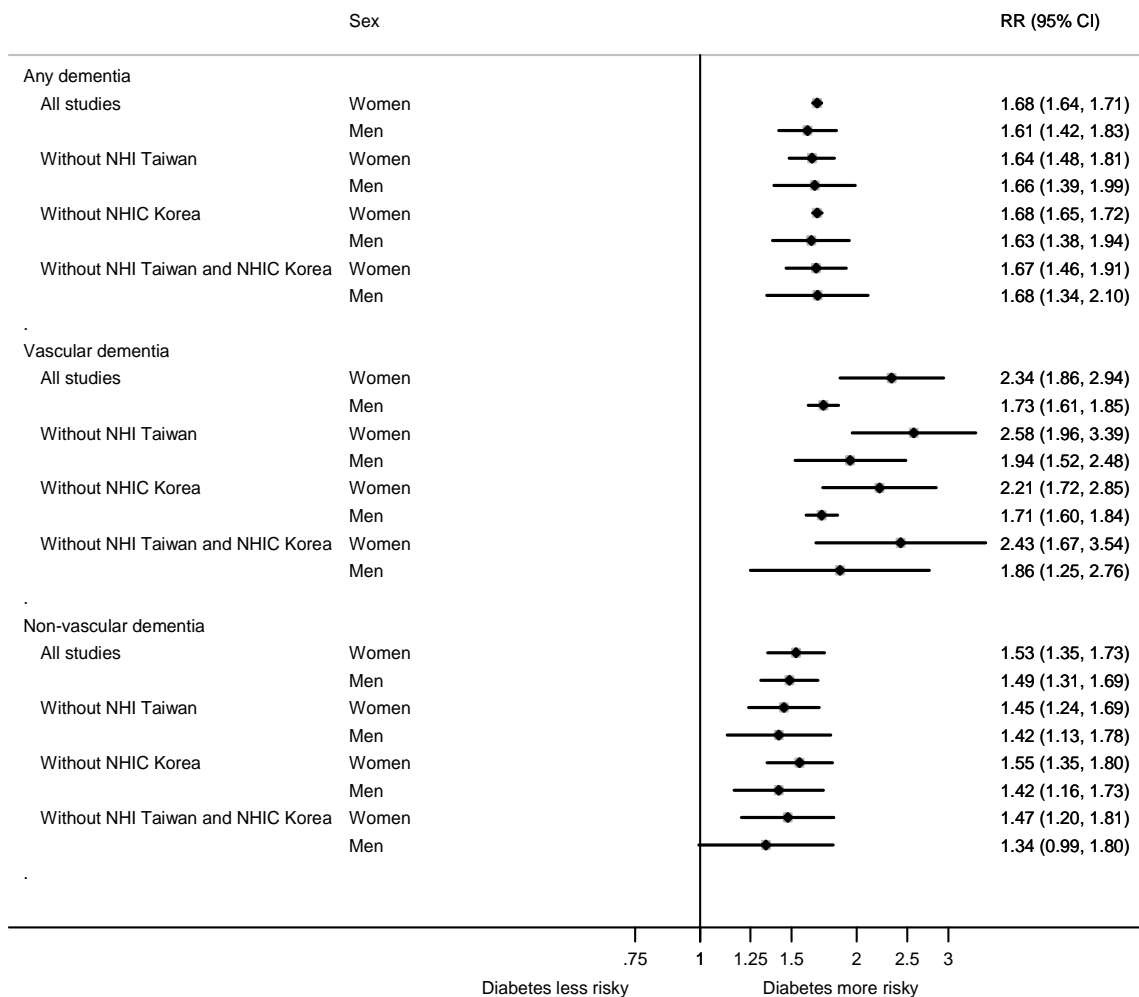
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**Supplementary Table 2. Incidence of dementia per 1000 person years by sex and diabetes status**

	Women		Men		Differences		
	Diabetes	No diabetes	Diabetes	No diabetes	Women	Men	Women-Men
<b>Any dementia</b>							
ACT Study	34.75	36.38	39.63	32.4	-1.63	7.23	-8.86
ARIC	3.5	1.12	3.37	1.17	2.38	2.2	0.18
CCMS	17.22	12.14	11.75	6.53	5.08	5.22	-0.14
English and Scottish Health surveys	1.69	0.85	1.19	0.66	0.84	0.53	0.31
Framingham Study	17.53	11.28	11.25	10.46	6.25	0.79	5.46
Hisayama Study	29	21.32	23.46	15.3	7.68	8.16	-0.48
Kame project	22.76	13.03	17.03	11.39	9.73	5.64	4.09
Kungsholmen Project	104.3	65.61	51.65	46.11	38.69	5.54	33.15
MHAS	7.39	24.26	5.21	19.26	-16.87	-14.05	-2.82
NHI, Taiwan	13.38	8.71	10.97	7.52	4.67	3.45	1.22
NHIC Korea	NA	NA	NA	NA	NA	NA	NA
Norwegian Counties Study	0.705	0.326	0.683	0.319	0.379	0.364	0.015
OCTO-Twin Study	91.46	49.84	47.24	46.13	41.62	1.11	40.51
SALSA Study	13.74	10.34	11.99	5.44	3.4	6.55	-3.15
<b>Vascular dementia</b>							
ACT Study	5.21	4.45	8.16	3.75	0.76	4.41	-3.65
CCMS	10.6	2.23	2.94	2.18	8.37	0.76	7.61
Framingham Study	2.63	2.59	3.52	2.06	0.04	1.46	-1.42
Hisayama Study	8.12	4.33	7.33	6.56	3.79	0.77	3.02
Kame project	9.37	3.75	7.61	3.33	5.62	4.28	1.34
Kungsholmen Project	18.63	7.66	10.33	9.99	10.97	0.34	10.63
NHI, Taiwan	1.23	0.56	1.19	0.61	0.67	0.58	0.09
NHIC Korea	NA	NA	NA	NA	NA	NA	NA
OCTO-Twin Study	30.49	8.65	27.56	14	21.84	13.56	8.28
SALSA Study	1.06	0.82	2.77	NA	0.24	NA	NA
<b>Non-vascular dementia</b>							
ACT Study	29.54	31.93	31.47	28.65	-2.39	2.82	-5.21
CCMS	6.62	9.91	8.81	4.36	-3.29	4.45	-7.74
Framingham Study	14.9	8.69	7.74	8.39	6.21	-0.65	6.86
Hisayama Study	20.88	16.99	16.13	8.74	3.89	7.39	-3.5
Kame project	17.4	11.45	10.88	8.62	5.95	2.26	3.69
Kungsholmen Project	85.68	57.95	41.32	36.12	27.73	5.2	22.53
NHI, Taiwan	12.15	8.15	9.78	6.91	4	2.87	1.13
OCTO-Twin Study	61.02	39.13	19.69	32.13	21.89	-12.44	34.33
SALSA Study	11.63	8.43	6.92	4.6	3.2	2.32	0.88

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**Supplementary Figure 1.** Pooled multiple-adjusted relative risk for any dementia, vascular dementia and non-vascular dementia, comparing individuals with diabetes to those without diabetes, with and without exclusion of NHI Taiwan and NHIC Korea





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**Supplementary Figure 2.** Pooled multiple-adjusted women to men ratio of relative risk for any dementia, vascular dementia and non-vascular dementia, comparing individuals with diabetes to those without diabetes, with and without exclusion of NHI Taiwan and NHIC Korea

