**Supplementary Material**

**Impacts of Overweight and Obesity in Older Age on the Risk of Dementia: A Systematic Literature Review and a Meta-Analysis**

**Supplementary Table 1. Characteristics and fi****ndings of cohort studies for the systematic literature review of obesity in older adults and dementia risk**

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| **First Author (publication year), study place** | **Participants’ recruitment and characteristics** | **Sample size and follow up** | **Baseline measure of overweight and obesity** | **Endpoint outcomes: Dementia cases and diagnosis criteria** | **Data analysis and adjustment for confounders** | **Findings** |
| **Yoshitake (1995), Japan** [1] | Age≥65 years, with mean age of 74 and 73 years for women and men, respectively. Recruited Japanese residing in the community within Hisayama town in Kyushu with 60% being females.  | Sample size 828. Females 494 and men 334. Followed from 1985-1992. The total follow-up was 7 years; with 2 yearly monitoring. Two people were lost in follow up. | BMI based on measurements and used as continuous variable. | 103 dementia cases (65 females, 38 males). There were 42 AD, 50 VaD, 2 mixed cases, and 9 Others. Diagnosis based on DSM-III-R for dementia. AD and VaD diagnosed mainly by NINCDS-ADARDA and NINCDS-AIREN, respectively. | AD and VaD risks estimated using cox proportionate hazard analysis. Adjusted covariate was age. | The HR for AD and VaD were 0.75 (0.54-1.03) and 1.31 (0.98-1.74) respectively in relation to continuous BMI. |
| **Borenstein Graves (2001), USA** [2] | Japanese Americans aged ≥ 65 years with mean age 72.6 (SD 6.1) were recruited in King County, WA (of which 96% were 100% Japanese descent) Ni-Hon-Sea Project. | Sample size 1,869. Follow up from 1992-1996 with mean of 3.8 years.  |  BMI calculated based on measured weight and heights and Continuous BMI used in the study. | AD cases were 59. Diagnosis based on DSM-IV and NINCDS-ADRDA criteria . | Cox proportionate hazard regression models were used with age as time axis and adjustments for sex, education, height, verbal IQ scores, head circumference. For analysis stratified by sex, adjusted for head circumference and APOE ε4 alleles. | The fully adjusted HR was 1.06 (0.90-1.25) for continuous BMI and AD. The HR in women was 1.06 (0.87-1.31) and in men it was 1.05 (0.82-1.34). |
| **Gustafson (2003), Sweden** [3] | Age≥70 years. Recruited 392 individuals (166 men, and 226 women). Response rate 85%. Ten demented at baseline were excluded from study. | Sample size 382; Follow up≥ 18 years. Total risk-years 4,194.8 (2,705.6 in women and 1,489.2 | Measured body weight and heights. BMI used as continuous variable. | 93 dementia cases (women 59 and men 34). Diagnosis based on DSM-III. AD and VaD diagnosed mainly by NINCDS-ADARDA and NINCDS-AIREN, respectively. | Dementia, AD, and VaD risks in women were estimated using cox proportionate hazard regression analysis. Controlled covariates included diastolic blood pressure, cardiovascular diseases, socioeconomic status, cigarette smoking, and treatments for hypertension.  | After all adjustments, the HR (95%CI) for dementia was 1.13 (1.04-1.24), 1.13 (1.04-1.24), and 1.15 (1.05-1.26) for BMI at ages of 70, 75, and 79, respectively. The AD risk was 1.36 (1.16-1.59), 1.35 (1.19-1.53), and 1.23 (1.10-1.37) for BMI at ages of 70, 75, and 79 years, respectively. For VaD, it was 1.01 (0.88-1.15), 1.07 (1.02-1.12), and 1.00 (0.89-1.13) respectively for BMI at ages of 70, 75, and 79 years. The calculated time at risk for dementia was 962.2 risk years.  |
| **Nourhashémi (2003), France** [4] | Recruited 3,777 elderly subjects aged ≥65 years that were part of the longitudinal PAQUID study. 3,636 (response rate 96.3%) were involved in the study. | Sample size used was 3,557. Follow up was 8 years with different time point at 1, 3, 5, and 8 years. Loss in follow-up was 89 (2.4%). | Self-reported weight and heights. Mini-Nutritional assessment cut offs for BMI were used; underweight BMI<21, normal BMI 21-22, overweight BMI 23-26 and Obese BMI ≥27. | Incident dementia cases after 8 years was 4.4% (66), at 5 years 2.6% (52), at 3 years 3.7% (85), and 1 year (1% (18). Diagnosis involved MMSE and by DSM-III-R criteria. | Cox proportional hazard models used with adjustments for sex, age, and education. Initial analysis used all incident dementia cases (Model 1) and followed by exclusion of diagnosed cases at 1 and 3 years’ follow-up (model 2). Logistic regression estimated evolution of dementia risk over time with adjustments for sex, age, age-sex interaction, educational level, alcohol, and tobacco consumption. | The RR (95%CI) for dementia in those with BMI<21 compared to those with BMI 23-26 was 1.483 (1.078-2.040) and 1.185 (0.716-1.960) for model 1 and 2. The RR for BMI 21-22 was 1.072 (0.759-1.514 and 0,709 (0.401-1.254) for model 1 and 2. For BMI ≥27 they were 0.833 (0.589-1.178) and 0.716 (0.429-1.195), respectively. The OR at 3, 5, and 8 years’ assessments was 1.56 (0.85—2.86), 1.24 (0.61-2.54) and 1.05 (0.51-2.26), respectively, for BMI<21. |
| **Buchman (2005), USA** [5] | Data from the Religious Orders Study of older Catholic clergy (≥65 years; mean age 80.2) that were recruited from 40 groups across the USA.  | Sample size 820. Study from 1994-2003. The mean follow up was 5.6 years. | Measured heights and weights were used. Continuous BMI was used (mean baseline BMI 27.4Kg/m²). | 151 AD cases. Diagnoses involved neurological assessment and 20 tests of cognitive function and NINCDS/ADRDA. | Cox proportionate hazard regression model was used and adjusted for age, sex, and education and chronic diseases | The adjusted HR was 0.94 (0.91-0.98) for baseline continuous BMI and AD; and for annual change in BMI it was 0.73 (0.63-0.85). |
| **Hayden (2006), USA** [6] | 5,092 aged ≥ 65 years were recruited (response rate 85.5%). 355 excluded for having dementia after baseline. assessment. | Sample size 3, 264. Follow up 3.2 years. Loss in follow up was 1,429 (30.2%). Reasons for loss in follow-up; 626 died and 803 refusals or no trace.  | Self- or proxy reported height and weight were employed. BMI assessed as obese (BMI≥ 30) or not obese (BMI<30). | Dementia 141 (AD=104, VaD=37). 44 other types (Lewy body, parkinsonism and others). Dementia diagnosis involved MMSE, IQ-code, and using DSM-III-R criteria and NINCDS-ADRDA criteria used for AD. VaD was classified by the NINDS-AIRLN criteria.  | Discrete-time survival models used with control for possible confounders. HRs for AD and VaD stratified by sex were calculated with adjustments for current age, sex, education and number of APOE ε4 alleles.  | The fully adjusted dementia, AD and VaD risks for BMI≥30 as compared to BMI<30 were 1.76 (1.03-2.88), 1.93 (1.05-3.36) and 1.16 (0.37-3.12). The risks of AD for males and females was 1.48 (0.41-4.18) and 2.23 (1.09-4.30) respectively. For VaD, it was 0.71 (0.04-4.31) and 1.30 (0.32-4.29) for males and females, respectively. |
| **Lunchsinger (2007), USA** [7] | Age ≥65 years (mean 77). 2,126 randomly selected Medicare participants were recruited for study. | Sample sizes for analysis of BMI 893, WC 907, and weight change 709. At first follow-up 1,484 had anthropometric data. 255 excluded for baseline dementia with 1,372 remaining. The lost to follow-up rate was 30.2% over a mean period of 5.1 years. | Weight, height, and WC were measured. BMI quartiles used; 1st BMI <23.4, 2nd BMI 23.4-26.2, 3rd BMI 26.3-29.6, 4th BMI >29.6. WC quartiles used; 1st ≤83cm, 2nd 84-90cm, 3rd, 91-97cm, 4th >97cm. Yearly weight change categorized into 3 groups: weight loss (>1 kg), stable weight (1kg of loss to 1kg of gain), and weight gain (>1 kg). | 181 dementia, 112 AD, and 53 DAS. Dementia diagnosis by agreement from committee of neurologists, psychiatrists, and neuropsychologists using the DSM-IV criteria for dementia, NINCDS-ADRDA for AD. VaD was established if it started within 3 months of stroke diagnosis. | The Cox proportional hazard regression model was used to estimate HR with adjustments for age, sex, education years, ethnic group, and APOE 4 status. Secondary analysis was used to adjust for diabetes mellitus, hypertension, low density lipoprotein level, heart disease, stroke, and current smoking. | In a fully adjusted model, the risk of dementia, AD and DAS were 0.9 (0.9-1.0), 0.9 (0.9-1.0), and 1.1 (0.9-1.3), respectively for continuous BMI. For the second BMI quartile compared to the first, it was 0.7 (0.5-1.0), 0.9 (0.5-1.4) and 0.4 (0.2-1.0) respectively. For the third quartile it was 0.6 (0.4-0.9), 0.5 (0.2-0.9), and 0.9 (0.4-1.8). For the fourth quartile it was 0.8 (0.5-1.2), 0.9 (0.5-1.6), and 0.8 (0.4-1.7) respectively. In those <76 years the risk for dementia was 0.4 (0.2-0.9), 0.3 (0.1-0.8), and 1.0 (0.4-2.1) for the second, third, and fourth quartiles (reflecting U-shape). In ≥76 years, relationship is inverse, with risk of 0.6 (0.4-1.1) for the fourth quartile. The fully adjusted risk of dementia for the 3rd (91-97cm) and 4th WC quartile (>97cm) was 0.94 (0.6-1.4) and 1.1 (0.7-1.8). In those <76 years it was 2.3 (0.9-5.8) and 5.1, 1.0-26.4) for dementia and AD but in those >76 years, it was 1.0 (0.6-1.7) and 0.8 (0.4-1.8). |
| **Atti (2008), Sweden** [8] | Age 75 years. 1,810 were recruited (Response rate 80.2%). 1435 left after taking out; 110 (dropped out or died prior to clinical stage), 225 (demented), 40 (very old ≥95 years, MMSE score<20 or educational level unknown). | Sample size 1,255 (87.5%) with BMI data. The lost to follow-up rate was 12.5% over the 9 years period. | Weight and height were measured. BMI based on standard cut-offs of ≥30 for obese, 25-29.9 for overweight and 20-24.9 for normal. The underweight threshold was set at 20, because few participants had very low BMI. BMI change was assessed as decrease (>10% or 5-10%), stable (±5%) or increase (5-10% or >10%).  | 189 dementia cases. Dementia status was established using the DSM-III-R criteria using a double step approach and also from Medical records and death certificates. | A Cox-regression hazard models was used to estimate the HR for dementia at different periods and adjusted for age, sex, education, baseline MMSE, depressive symptoms, chronic disease, and impairment in activities of daily living. | After full adjustments; the risk was 0.98 (0.94-1.00) for continuous BMI. It was 0.97 (0.71-1.34) and 0.75(0.59-0.96) for BMI<20 and ≥25 when compared to 20-24.9 after 9 years follow up. For dementia at 3-9 years only, the risk was 0.96 (0.92-1.01), 0.91(0.59-1.40) and 0.72(0.52-1.02) for continuous BMI and for BMI<20 and ≥25. For dementia at 6-9 years, the risk was 0.97 (0.91-1.04), 0.74 (0.36-1.53), and 0.66 (0.40-1.07), respectively. The risk for overweight male and females was 0.62 (0.36-1.08) and 0.73 (0.55-0.95), respectively. The risk of AD was reduced for overweight (RR 0.66, 0.50-0.88). For the overweight APOE ε4 carriers and non-carriers it was 0.83 (0.54-1.30) and 0.66 (0.47-0.91). The risk for BMI decrease of >10% was 1.58 (1.02-2.46) and 2.18 (1.27-3.74) after 6 and 3 years, respectively. No significant associations for other BMI changes. |
| **Dahl (2008), Finland** [9] | Age 65-92 years. Recruited 1,196 (response rate 93.2%). After 8 years, 419 died (35%), 33 moved on (2.8%) leaving 744. A further 126 refused participation with 618 (87%) left. | Sample size 605 left for analysis from 618 (83%) due to refusal, missed clinical examination and baseline dementia diagnoses. The loss to follow-up rate was about 17% over the 8 years period. | Measured weight and height. BMI categorized as ≥30 for obese, 25-29.9 for overweight and 18.5-24.9 for normal weight, <18.5 for underweight. | 86 cases of dementia. Dementia status was established using the DSM-IV criteria and all the information collected from laboratory test, medical records, and caregiver/nursing staff data and based on agreement between two physicians and a geriatrician. | A 3-step Cox-regression hazard models was performed to estimate the HR for dementia and adjusted for age, sex, education, diabetes mellitus, CVD (stroke CHD, hypertension, and atrial fibrillation), smoking, and alcohol use. | In a fully adjusted model, the HR and 95%CI for continuous BMI was 0.92, 95% CI 0.87-0.97). After exclusion of dementia within 4 years after baseline, the risk was 0.93 (0.86-0.99). The risk for women and men (with low BMI scores) was 0.90 (0.84-0.96 and 0.94 (0.84-1.07), respectively. The dementia risk for continuous BMI were 0.90 (0.84-0.96) and 0.95 (0.84-1.07), respectively, for women and men. The risk for older age (71-92 at baseline) was 0.92 (0.86-0.98), and younger age group (65-70 at baseline) was 0.91 (0.82-1.03). |
| **Hughes (2009), USA** [10] | 1,985 Japanese Americans (males and females) aged ≥65 years (mean 71.8 years) were recruited. Of this, 149 had dementia and were excluded with 1,836 dementia free left. | Sample size 1,478. Follow up was biennially (2, 4, 6, 8 years) with total of 8 years. The lost to follow-up rate was 19.5%. Reasons: No anthropometric data 221 lacked other follow-up data 137. | Height, weight, WC, and hip circumference measured. After follow-up, only weight measured. BMI base on International Obesity Taskforce cut-offs for Asians; Obese≥25.0, Overweight 23.0-24.9, normal 18.5-22.9, and underweight <18.5 while WC (inches) and WHR used as secondary measures of adiposity.  | 129 dementia, 71 AD, and 22 VaD cases. Dementia and its subtypes diagnosis confirmed by committee of experts according to the DSM-IV criteria for dementia, the NINCDS-ADRDA for AD, and several criteria for VaD among which is NINCDS-ADDTC. | Cox regression hazard models was used to calculate HR for continuous baseline BMI, WC, and WHR and continuous BMI change adjusting for age, sex education, smoking, alcohol intake, regular exercise, hypertension, hypercholesterolemia, angina pectoris, diabetes, heart attack, TIA, stroke, APOE genotype status. | After full adjustments, the risk of dementia, AD and VaD were 0.80 (0.38-1.68), 0.68 (0.31-1.51), and 0.40 (0.06-2.51), respectively, for baseline BMI. In the fully adjusted model, for BMI change, the risk of dementia, AD, and VaD are 0.31 (0.09-1.02), 0.21 (0.06-0.80), and 0.43 (0.02-10.60). No association was found between the risk of dementia, AD, and VaD with baseline WC and WHR (result not reported by authors). |
| **Fitzpatrick (2009), USA** [11] | Age 65 -97 years (mean age 74.7 years). 3,602 were recruited for the Cardiovascular Health Cognition Study after completing cranial MRI and MMSE in1992/94. | Sample size 2,798. Follow up 5.4 years. Exclusions before final sample: Prevalent dementia 277, and mild cognitive impairment 577. | Measured weight (kg), standing height (m) and waist/hip circumference (cm) at Late life. Weight for midlife was self-reported but height measured. The BMI was categorized into 4 groups using >30 for obese, >25-30 for overweight, 25-30 for normal weight, and <20 for underweight. WHR calculated as ratio of waist to hip circumference. | 480 dementia cases, 245 AD, 62 VaD. 151 both AD and VaD (mixed dementia). Dementia diagnosis by team of psychiatrists and neurologists using Cranial MRI. For dementia subtypes classification, the NINCDS-ADRDA and NINCDS-ADDTC were used for AD and VaD, respectively. | A Cox-proportional hazard regression models was used to estimate the HR for dementia with adjustment for age, sex, race, education, CVD risk factors (smoking, diabetes mellitus, coronary heart disease, hypertension history, total cholesterol, ankle-arm blood pressure, C-reactive protein, Interleukin-6, kilocalories consumed /week, APOE genotype).  | The fully adjusted risk for Late life Continuous BMI and dementia was 0.95 (0.92-0.98). For BMI<20, BMI>25-30 and BMI>30 the risks were 1.62 (1.02-2.64), 0.90 (0.70-1.16), and 0.63 (0.44-0.91) when compared to BMI 20-25. The risks of AD were 1.42 (0.74-2.70), 0.74 (0.52-1.05), and 0.58 (0.36-0.96); and for VaD they were 2.15 (1.11-4.19), 1.20 (0.83-1.76), and 0.72 (0.41-1.27), respectively, for BMI<20, BMI 25-30 and BMI>30 as compared to BMI 20-25. The fully adjusted risk for midlife continuous BMI and dementia was 0.01 (0.98-1.04). For BMI<20, BMI>25-30 and BMI>30 the risks were 1.20 (0.66-2.17), 1.01 (0.83-1.35), and 1.36 (0.94-1.95). The risks of AD were 1.47 (0.70-3.09), 1.04 (0.74-1.47), and 1.25 (0.74-2.11); and for VaD they were 0.87 (0.31-2.40), 1.00 (0.70-1.44), and 1.33 (0.78-2.29), respectively, for BMI<20, BMI 25-30 and BMI>30 as compared to BMI 20-25. |
| **Scarmeas (2009), USA** [12] | Participants aged ≥65 years were Medicare beneficiaries from 2 cohorts recruited via Washington Heights-Inwood Columbia Aging project (WHICAP). | Sample sizes 1,880. They were followed from 1992-2006. The Follow-up duration was 5.4 years (SD 3.3). | BMI from measured heights and weights were used as continuous variable. | 282 AD cases Diagnosis by DSM-III-R and NINCDS-ADRDA criteria.  | Cox regression models controlled for age, sex, ethnicity, education, APOE status, calorie intake, smoking, depression, leisure activities, comorbidity index, baseline clinical dementia rating score, time between first dietary score and physical activity assessment. | After all adjustments the HR was 0.96 (0.93-0.99) for continuous BMI and AD. |
| **Power (2011), Australia** [13] | 12,203 of age 64-84 years (mean 72.1) were recruited by the aid of the copy of electoral roll for the Health in Men Study (Response rate 63%). | Sample size 12,047. Mean follow up 9.7 years. Exclusions prior to sample size included; underweight 87, baseline dementia 32 and Substance abuse or HIV 37. | Measured weight, height and WC. BMI according to WHO; Normal 18.5≤BMI<25, overweight 25≤BMI<30), obese and (BMI≥30). Mild central obesity 94 cm ≤ WC<102 cm Marked central obesity WC ≥102 cm. Also, a WHR with ≥0.9 signify obesity. | 1,271 incident dementia. Diagnosis based on data from Western Australia Data Linkage System (WADLS) using ICD-9 and ICD-10 codes from the international classification of disease.  | Cox regression models calculated crude and adjusted HR of dementia for each adiposity marker, controlling for age, marital status, educational level, alcohol intake, physical activity, diabetes prevalent, dyslipidemia, CHD, and fat intake from milk. Repeated analysis (sensitivity) excluded first 2 years dementia cases or deaths. | The fully adjusted dementia risk HR (95%CI) for BMI 25-<30 and ≥30 was 0.82(0.70-0.95) and 0.82 (0.67-1.01) respectively as compared to BMI<25. The risk for WC 94-<102cm and ≥102 was 1.02 (0.87-1.20) and 0.88 (0.74-1.04) as compared to WC<94. The risk for WHR≥9.0 compared to <9.0 was 0.82 (0.69-0.98). Sensitivity analysis showed fully adjusted risk of 0.82 (0.70-0.95), and 0.84 (0.69-1.03) for BMI 25-<30 and ≥30. No change for WC (result not reported by authors) while for WHR≥9 it was 0.81 (0.68-0.98).  |
| **Lucca (2012), Italy** [14] | Recruited 2,813 aged ≥80 years in the Monzino-80-plus study. Data available for 2,504 individuals (Lucca et al., 2015 [17]). For the study, 1,110 were involved. | Sample size 1,035. Total followed-up period was 5.5 years. Loss in follow up 6.8%. | Self- or caregiver reported weight and heights used. BMI assessed as continuous or categorical. Underweight BMI<18.5kg/m², normal BMI 18.5-24.9 kg/m² and Overweight-obesity ≥25kg/m². | 373 dementia cases. Dementia diagnosis by DSM-IV criteria | Logistic and cox-regression models used with adjustments for age, sex, education, current smoking, alcohol consumption, physical activity, depression, diabetes, hypertension, heart failure, atrial fibrillation, myocardial infarction, ictus and COPD. | The fully adjusted incident dementia risk for continuous BMI was 0.966 (0.934-0.997), p=0.0328. For BMI<18.5Kg/m² and BMI≥25Kg/m². They were 0.62 (0.41-0.97) and 0.73 (0.55-0.97), respectively, when compared to BMI18.5-24.9Kg/m².  |
| **Tolppanen (2014), Finland** [15] | Recruited 1,511 aged 65-79 years (Response rate 75.6%). 1,304 (38.9% males, 61.1% females) had complete data for midlife (mean age 50.2 SD 6.0) and late life study (mean age 71.2 SD 4.0). | Sample sizes 1,262 and 1,256 for dementia and AD for late life study. Sample sizes 1,304 and 1,289 for dementia and AD midlife study. Follow-up duration was 10 years for late life and 26 years for midlife. | Measured BMI were used as continuous and/or categorical BMI. Cut offs included <25 kg/m² for Normal BMI, 25-30kg/m² for overweight and 30kg/m² for obesity. Change in BMI (BMI baseline-BMI 1998) was used. | 42 dementia out of which 33 was AD for late life study. There were 141 MCI cases. Dementia diagnosis by 3 steps approach based on MMSE, and DSM-IV criteria. The probable and possible AD was based on the NINCDS-ADRDA criteria. The modified Mayo Clinic AD research Centre criteria was used for MCI diagnosis.  | Cox regression models used. Fully adjusted model includes age, gender, APOE status and region of residence, smoking and socioeconomic factors, likely mediators, serum cholesterol levels, systolic blood pressures, cardio-and cerebrovascular diseases and diabetes. | The fully adjusted dementia risk for late life continuous BMI was 0.94 (0.86-1.03). The risk was 0.51 (0.25-1.04) and 0.55 (0.23-1.34) for BMI<25-30 Kg/m² and ≥30Kg/m² respectively when compared to BMI<25Kg/m². The AD risk was 0.89(0.81-0.98) for continuous BMI; and it was 0.57 (0.27-1.19) and 0.40 (0.15-1.08) for BMI 25-29Kg/m² and BMI ≥30Kg/m² respectively. The dementia risk for Midlife continuous BMI was 1.07 (1.00-1.14); and it was 1.04 (0.58-1.87) and 1.81 (0.91-3.57) for BMI<25-30 Kg/m² and ≥30Kg/m². For AD, it was 0.89 (0.47-1.68) and 1.57 (0.75-3.29) for BMI<25-30 Kg/m² and ≥30Kg/m² respectively. The dementia and AD risks for decrease in BMI were 1.14 (1.03-1.25) and 1.20 (1.09-1.33), respectively. |
| **Neergaard (2016), Denmark** [16] | 5,855 post-menopausal Danish women of mean age 70.1 were recruited.  | Sample size 5,512; after excluding pre-existing dementia (15) and those with missing data (328). The follow-up was 15 years (Mean 11.9 ±3.9). | Measured heights and weights were used. Underweight BMI<18.5, Normal weight BMI≥18.5-<25, Overweight BMI ≥25-<30 and obese BMI≥30 | 592 dementia cases. These included AD (250), VaD (43) and Other/unspecified dementia (299). ICD-10 was used to classify dementia diagnosis. Also from data of the National Danish Patient Registry and the National Danish Causes of Death Registry. | Cox proportionate hazard regression model was used and adjusted for age, education, smoking, alcohol consumption, physical activity, history of depression, cerebral embolism/hemorrhage, systolic blood pressure, fasting glucose levels and cholesterol levels. | The fully adjusted dementia risk was 0.88 (0.45-1.72), 0.75 (0.62-0.89), and 0.79 (0.62-1.01) for BMI<18.5, BMI ≥25-<30 and BMI≥30, respectively, when compared to BMI≥18.5-<25. The AD risk was 0.92 (0.34-2.51), 0.72 (0.54-0.96), and 0.74 (0.51-1.09) for BMI<18.5, BMI ≥25-<30 and BMI≥30, respectively. For VaD, the risk was 0.68 (0.33-1.40) and 1.28 (0.57-2.86) for BMI ≥25-<30 and BMI≥30, respectively (no data for BMI<18.5). The risk for Other/unspecified dementia it was 0.93 (0.38-2.28), 0.75 (0.58-0.98), and 0.75 (0.52-1.06) for BMI<18.5, BMI ≥25-<30 and BMI≥30, respectively. |

AD, Alzheimer’s disease; ADDTC, Alzheimer’s Disease Diagnostic and Treatment Center criteria; APOE, Apolipoprotein E; BMI, body mass index; CHD, coronary heart disease; COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease; DAS, dementia-associated with stroke; DSM, Diagnostic and Statistical Manual of Mental; HR, hazard ratio; ICD, International Classification of Diseases; IQ-code, Informant Questionnaire on Cognitive Decline in the Elderly; MCI, mild cognitive impairment; MMSE, Mini-Mental State Examination; MRI, magnetic resonance imaging; NINCDS-ADARDA, National Institute of Neurological and Communicative Diseases and Stroke Alzheimer’s Disease and Related Disorders Association; NINCDS-AIREN, National Institute of Neurological Disorders and Stroke and Association Internationale pour la Recherché et l'Enseignement en Neurosciences; OR, odds ratio; RR, relative risk; TIA, transient ischemic attack; VaD, vascular dementia; WC, waist circumference; WHR, waist-to-hip-ratio

**Supplementary Figure 1. Funnel plot assessing publication bias**



**Supplementary Figure 2. Linear/Large BMI and dementia risk (short term versus long term follows up)**

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**Supplementary Figure 3. Linear/categorical BMI and Alzheimer’s disease risk (short term versus long term follow up)**



**Supplementary Figure 4. Linear/Large BMI and Alzheimer’s disease and vascular dementia risk**



**Supplementary Figure 5. Alzheimer’s disease risk in relation to continuous, obese and overweight BMI**



**Supplementary Figure 6. Obesity and vascular dementia risk**



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