

Electronic supplementary material

Association between dietary patterns and prediabetes, undetected diabetes or clinically diagnosed diabetes: results from the KORA FF4 study

Authors: Giulia Pestoni^{1,2}, Anna Riedl^{2,3}, Taylor A. Breuninger^{2,3}, Nina Wawro^{2,3}, Jean-Philippe Krieger¹, Christa Meisinger^{2,3}, Wolfgang Rathmann^{4,5}, Barbara Thorand^{5,6}, Carla Harris^{6,7}, Annette Peters^{5,6}, Sabine Rohrmann¹, Jakob Linseisen^{2,3}

Affiliations:

¹Division of Chronic Disease Epidemiology, Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Zurich, Switzerland

²Independent Research Group Clinical Epidemiology, Helmholtz Zentrum München, German Research Center for Environmental Health, Neuherberg, Germany

³Ludwig-Maximilians-Universität München, Chair of Epidemiology, UNIKA-T Augsburg, Augsburg, Germany

⁴Institute for Biometrics and Epidemiology, German Diabetes Center, Leibniz Center for Diabetes Research at Heinrich Heine University Düsseldorf, Düsseldorf, Germany

⁵German Center for Diabetes Research (DZD e.V.), Neuherberg, Germany

⁶Institute of Epidemiology, Helmholtz Zentrum München, German Research Center for Environmental Health (GmbH), Neuherberg, Germany

⁷Division of Metabolic and Nutritional Medicine, Dr. von Hauner Children's Hospital, University of Munich Medical Center, Munich, Germany

Corresponding author:

Jakob Linseisen; Independent Research Group Clinical Epidemiology, Helmholtz Zentrum München, German Research Center for Environmental Health (GmbH), Ingolstädter Landstr. 1, 85764, Neuherberg, Germany; j.linseisen@helmholtz-muenchen.de; Tel. +49 89 3187-3202

Table S1: Characteristics of the participants with and without dietary information (after exclusions[#])

| | Participants with dietary information (<i>n</i> = 1305) | Participants without dietary information (<i>n</i> = 524) |
|--|--|--|
| Glucose tolerance status, <i>n</i> (%) | | |
| Normal glucose tolerance | 53.5 | 50.4 |
| Prediabetes | 35.2 | 35.3 |
| Undetected diabetes | 3.8 | 4.4 |
| Prevalent diabetes | 7.6 | 9.9 |
| Sex, <i>n</i> (%) | | |
| Males | 46.5 | 49.0 |
| Females | 53.5 | 51.0 |
| Age (years) | 58.4 (11.6) | 59.6 (12.6) |
| Marital status, <i>n</i> (%) | | |
| Single | 9.1 | 12.4 |
| Married | 73.3 | 67.9 |
| Divorced | 10.7 | 9.9 |
| Widowed | 6.9 | 9.7 |
| Education, <i>n</i> (%) | | |
| < 10 years | 5.3 | 9.8 |
| 10-12 years | 56.9 | 59.2 |
| ≥ 13 years | 37.8 | 31.0 |
| BMI (kg/m ²) | 27.5 (4.9) | 28.3 (5.2) |
| Waist circumference (cm) | 95.7 (14.3) | 97.9 (13.8) |
| Physical activity level, <i>n</i> (%) | | |
| Inactive | 37.9 | 48.9 |
| Active | 62.1 | 51.1 |
| Smoking status, <i>n</i> (%) | | |
| Never | 42.9 | 41.8 |
| Former | 42.8 | 38.2 |
| Current | 14.3 | 20.0 |
| Hypertension, <i>n</i> (%) | | |
| No | 64.5 | 65.3 |
| Yes | 35.5 | 34.7 |

Continuous variables are expressed as mean (SD); categorical variables are expressed as *n* (%)

The number of participants with dietary information was obtained by applying all exclusion criteria used in the main analyses (i.e., number corresponds to participants eventually included in the study);

The number of participants with missing dietary information was obtained after applying all exclusion criteria used in the main analyses

Table S2: Description of food items included in the 23 food categories used to identify dietary patterns

| Food categories | Included food items |
|---------------------|--|
| Vegetables | Leafy, fruiting, root, cruciferous, cabbages, mushrooms, onions, garlic, stalk vegetables, sprouts, mixed salads and vegetables, legumes (peas, chickpeas, lentils, beans) Except: vegetable juices, olives, soy products |
| Fruits | Fresh fruits, dried fruits, stewed fruits, mixed fruits, olives Except: fruit juices |
| Nuts | Nuts (including nut spreads), seeds |
| Dairy products | Milk, milk beverages, cream desserts, puddings (milk-based), cream, milk for coffee and creamers |
| Yogurt | Nature yogurt, fruit yogurt, kefir |
| Cheese | Hard cheese, fresh cheese, soft cheese, cottage cheese, quark, mozzarella, feta cheese |
| Whole grains | Whole-grain bread, whole-grain toast, muesli |
| Refined grains | Flour, flakes, starches, semolina, pasta, rice, other grains, refined bread, crisp bread, rusks, breakfast cereals, salty biscuits, aperitif biscuits, crackers, dough and pastry (puff, shortcrust, pizza) |
| Starchy | Potatoes, potato products |
| Red meat | Fresh meat and offal (beef, veal, pork, lamb/mutton, horse, goat), game |
| Processed meat | Sausages, smoked and cured meat, meat spreads; from red or white meat |
| White meat | Poultry |
| Fish | Fish, fish products, crustaceans, molluscs |
| Eggs | Eggs, egg products |
| Added fats | Vegetable oils, butter, margarines, baking and deep frying fats |
| Sugars & chocolate | Sugar, jam, marmalade, honey, syrup, chocolate and chocolate products, candy bars, paste, confetti, flocks, non-chocolate confectionery, nougat, cereal bars, ice cream, sorbet |
| Cakes | Cakes, pies, pastries, waffles, dry cakes, biscuits |
| SSB | Carbonated/soft/isotonic drinks, diluted syrups, fruit and vegetable juices, nectars |
| Coffee | Coffee |
| Alcoholic beverages | Beer, cider, wine, spirits, brandy, liqueurs, cocktails, punches |
| Sauces & seasoning | Tomato sauces, dressing sauces, mayonnaises and similar, condiments |
| Soups | Soups, bouillon |
| Others | Other unclassified products, soy products |

SSB: sugar-sweetened beverages

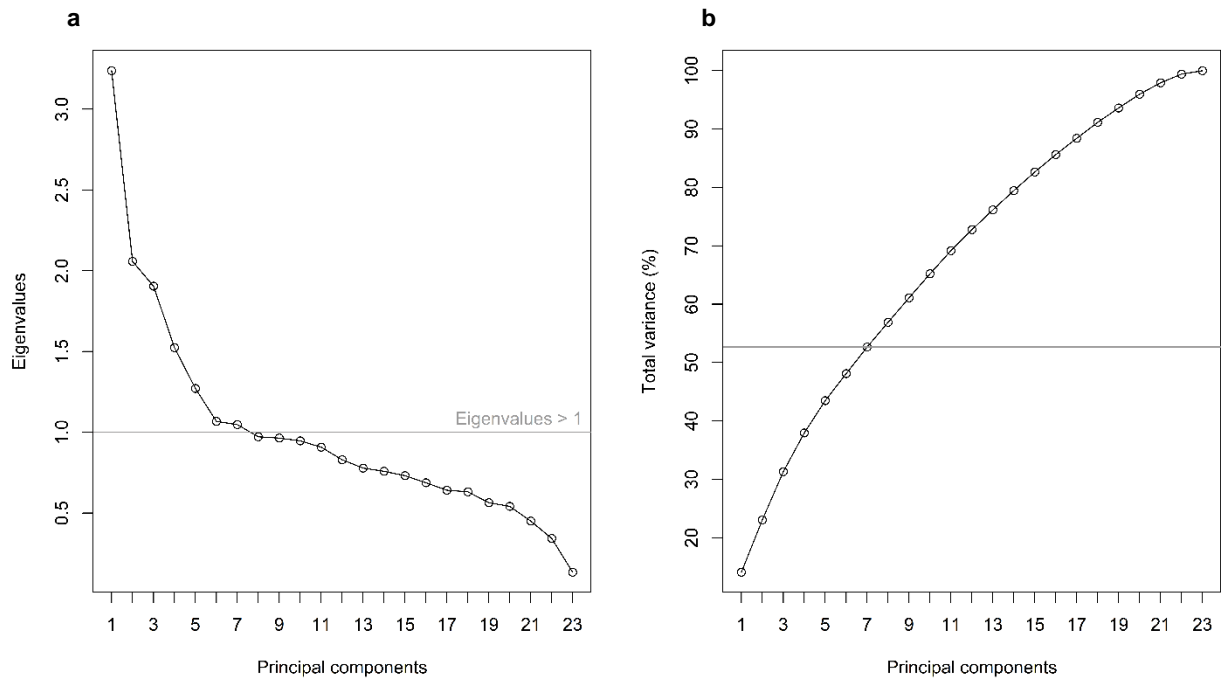


Fig. S1: Criteria used to determine the number of principal components to retain in principal component analysis. (a) Scree-plot, (b) Cumulative variance

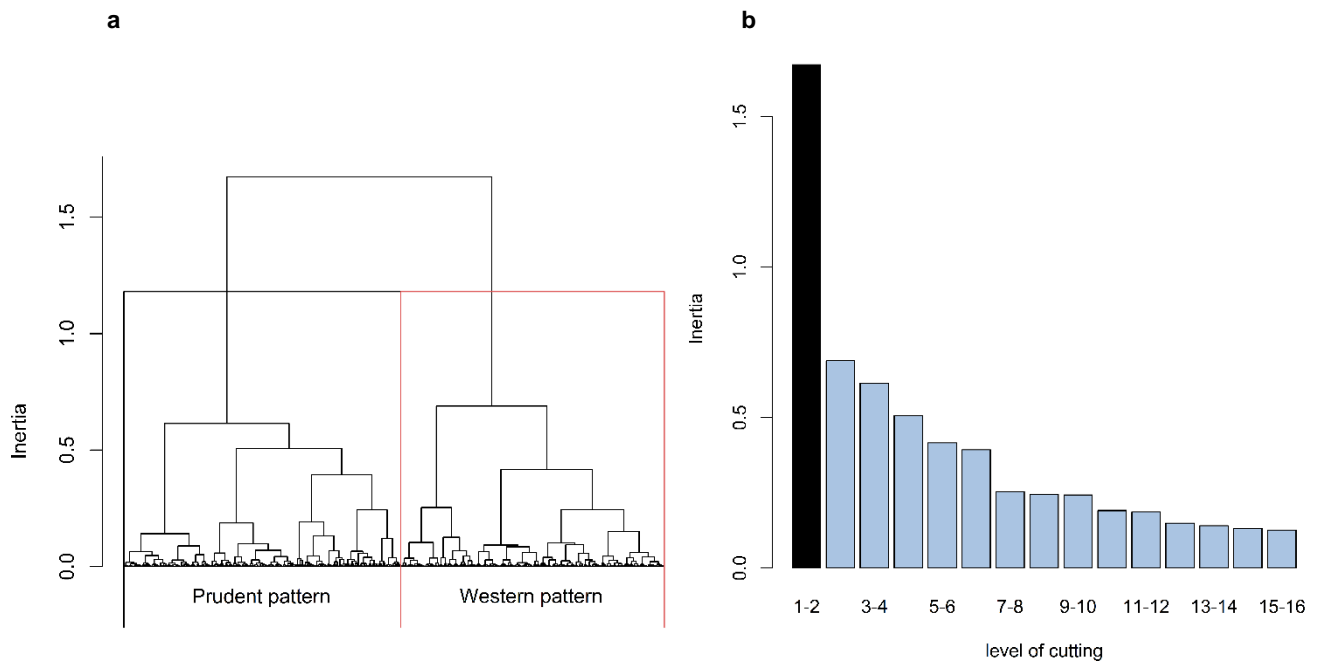


Fig. S2: Changes in inter-cluster inertia in hierarchical clustering. (a) Cluster dendrogram by hierarchical clustering on the seven principal components obtained after principal component analysis, (b) Changes in inter-cluster inertia between partitions containing n or n+1 clusters