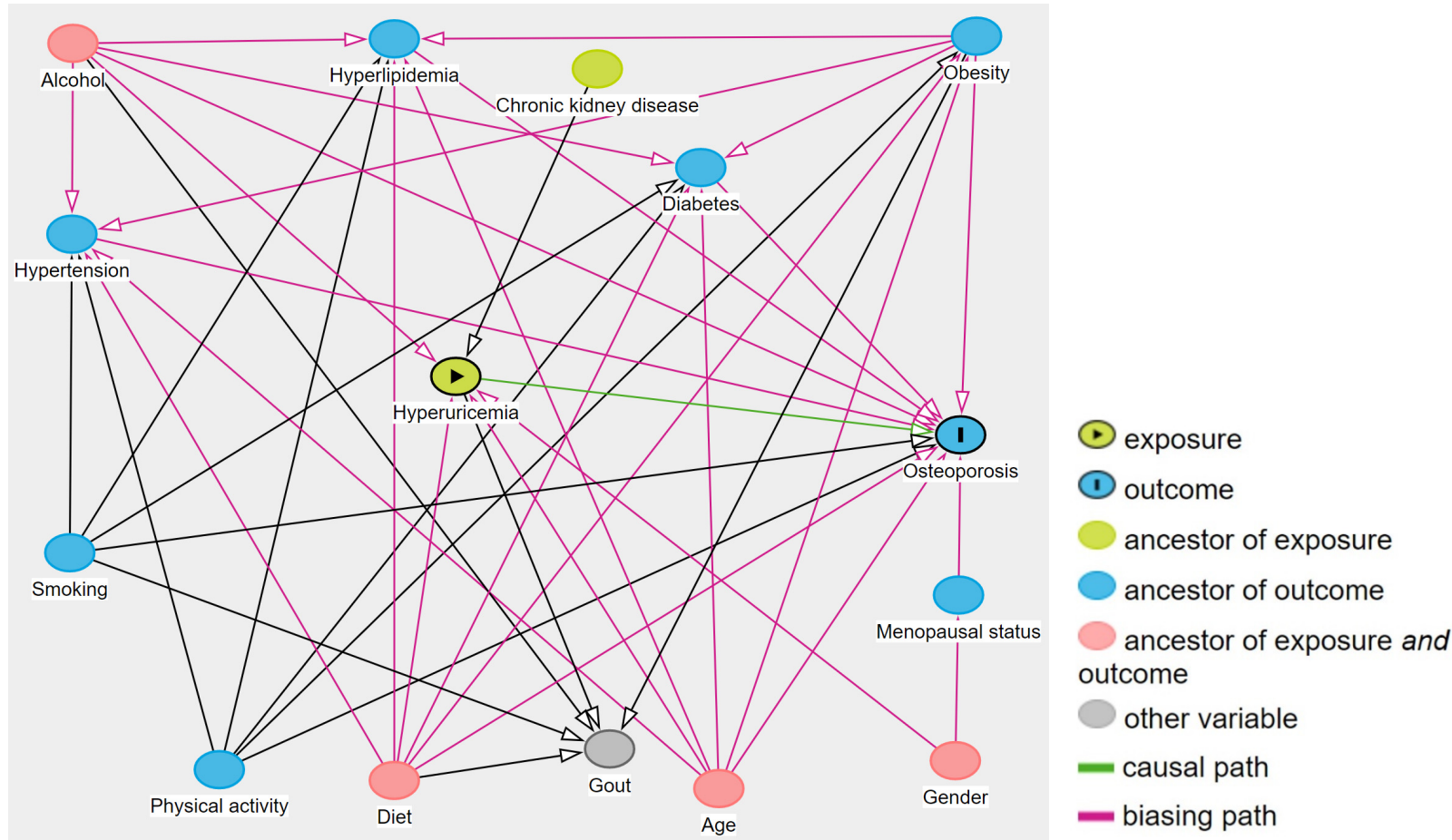


**Supplementary Figure S1.** Directed acyclic graph showing the implicitly assumed causal relationship (between hyperuricemia and osteoporosis) underlying our adjusted models. We identified possible covariates through a literature search for common risk factors for osteoporosis and hyperuricemia. We also considered risk factors common to osteoporosis and hyperuricemia as possible covariates.



**Supplementary Table S1.** The association between serum uric acid (mg/dL) and estimated bone mineral density (g/cm<sup>2</sup>) in all participants and in subgroup analyses by using a multivariable linear regression.

|   | Adjusted $\beta$ (95% CI) | <i>p</i> |
|---|---------------------------|----------|
| Serum uric acid                                       | 0.015 (0.009 to 0.025)    | <0.001   |
| Stratified by age and gender                          |                           |          |
| Gender, female, > 65 years old (N = 4,757)            | 0.072 (0.045 to 0.117)    | 0.020    |
| Gender, female, $\leq$ 65 years old (N = 71,556)      | 0.015 (0.012 to 0.035)    | <0.001   |
| Gender, male, > 65 years old (N = 3,763)              | 0.010 (-0.025 to 0.044)   | 0.580    |
| Gender, male, $\leq$ 65 years old (N = 38,961)        | 0.010 (-0.001 to 0.022)   | 0.064    |
| Stratified by the presence of hyperuricemia           |                           |          |
| Hyperuricemia (-), control group in the present study | 0.020 (0.022 to 0.046)    | <0.001   |
| Hyperuricemia (+)                                     | -0.017 (-0.050 to -0.003) | 0.029    |
| Stratified by the presence of diabetes mellitus       |                           |          |
| Diabetes mellitus (-)                                 | 0.015 (0.009 to 0.025)    | <0.001   |
| Diabetes mellitus (+)                                 | 0.006 (-0.021 to 0.034)   | 0.647    |
| Stratified by body mass index                         |                           |          |
| Body mass index < 30 kg/m <sup>2</sup>                | 0.011 (0.005 to 0.021)    | 0.002    |
| Body mass index $\geq$ 30 kg/m <sup>2</sup>           | 0.019 (-0.003 to 0.046)   | 0.087    |

CI = Confidence interval.

Multivariable model: adjustment for age, gender, body mass index, smoke status, alcohol status, regular physical activity, presence of menopause, systolic blood pressure, diastolic blood pressure, history of hypertension, history of diabetes mellitus, history of dyslipidemia, history of gout, fasting glucose, cholesterol, triglyceride, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, serum albumin and creatinine.