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CORRECTION

Correction to: Role of anemia and proteinuria in the development of subsequent renal function deterioration in a general population with preserved glomerular filtration rate: a community-based cohort study

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After the online first publication of their research, the authors realized they made several mistakes in the data conversion process from the original data of health check-up at the Center for Preventive Medicine at The University of Tokyo Hospital to the datasheet which was used for the statistical analysis by SPSS. Particularly, the prevalence of hypertension, diabetes mellitus, and hypercholesterolemia was not appropriately analyzed. Therefore, the authors re-analyzed the data according to the corrected database.

Methods and results in the Abstract should read as it follows:

Among 3217 subjects who underwent repeated health check-ups, we excluded 478 subjects with eGFR < 60 mL/min/1.73 m^2 and examined 2739 subjects. EGFR decline rate was calculated from the difference in eGFR between the first and last visits. EGFR decline, which was defined as a drop in GFR accompanied by a 25% or greater drop in eGFR from baseline and/or a sustained decline of more than 5 mL/min/1.73 m^2/year, was observed in 209 subjects (7.6%).

Anemia according to the WHO definition (16.7% vs. 11.7%, p = 0.03), and proteinuria (3.3% vs. 0.8%, p = 0.001) at baseline were more commonly observed in subjects with eGFR decline. Multivariable logistic regression analysis showed that anemia and proteinuria were independently associated with eGFR decline.

In the "Methods" section the sub-heading "Measurement of covariates" should begin with

At baseline, general information and prior medical history were recorded by a standard interview. Body mass index was calculated in kg/m^2. Hypertension was defined as a blood pressure ≥ 140/90 mmHg or use of antihypertensive medications. Diabetes mellitus (DM) was defined by fasting glucose ≥ 126 mg/dL or use of insulin or oral antidiabetic medications. Hypercholesterolemia was defined by total cholesterol > 240 mg/dL or use of antihypercholesterolemic medications.

In the "Results" section under the sub-heading "Baseline characteristics"

Anemia was more common in the eGFR decline group than in the eGFR non-decline group (11.7% vs. 16.7%; p = 0.03). EGFR at baseline was significantly higher in the eGFR decline group (76.9 ± 11.7 mL/min/1.73 m^2 vs. 85.4 ± 21.4 mL/min/1.73 m^2; p < 0.001), eGFR at the last visit was significantly higher in the eGFR non-decline group (75.2 ± 12.6 mL/min/1.73 m^2 vs. 71.5 ± 20.4 mL/min/1.73 m^2; p = 0.011)

the last sentence should read as it follows:

Proteinuria was more commonly observed in the eGFR decline group (3.3% vs. 0.8%, p = 0.001).

In the "Results" section under the sub-heading "Determinants of eGFR decline"

Multivariable logistic regression analysis including gender, age (≥ 60 years old), body mass index (> 25 kg/

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Table 1 Baseline clinical characteristics

Variable	Overall (n = 2739)	eGFR non-decline group (n = 2530)	eGFR decline group (n = 209)	p value
Gender (male)	1519 (55.5)	1410 (55.7)	109 (52.2)	0.32
Age (year)	58.9 ± 11.8	58.9 ± 11.8	58.5 ± 11.5	0.67
Follow-up period (day)	1233 ± 494	1278 ± 472	686 ± 414	< 0.001
BMI	22.9 ± 3.4	22.9 ± 3.4	22.6 ± 3.2	0.16
Systolic blood pressure (mmHg)	118.6 ± 15.4	118.8 ± 15.5	116.7 ± 14.4	0.06
Diastolic blood pressure (mmHg)	74.9 ± 10.0	75.0 ± 9.9	73.6 ± 11.2	0.06
Pulse rate (bpm)	72.7 ± 10.7	72.7 ± 10.8	72.7 ± 10.5	0.99
Lifestyle				
History of smoking				
Current	323/2727 (11.8)	293/2518 (11.6)	30 (14.4)	0.24
Former	726/2727 (26.6)	674/2518 (26.8)	52 (24.9)	0.55
Never	1678/2727 (61.5)	1551/2518 (61.6)	127 (60.8)	0.81
Comorbidities				
Hypertension	769 (28.1)	721 (28.5)	48 (23.0)	0.09
Diabetes mellitus	190 (6.9)	174 (6.9)	16 (7.7)	0.67
Hypercholesterolemia	834 (30.4)	782 (30.9)	52 (24.9)	0.07
Fatty liver	338 (12.3)	320 (12.6)	18 (8.6)	0.09
Gout	145 (5.3)	137 (5.4)	8 (3.8)	0.33
Metabolic syndrome	336 (12.3)	315 (12.5)	21 (10.0)	0.31
Atrial fibrillation	19 (0.7)	19 (0.8)	0 (0)	0.21
Anemia	330 (12.0)	295 (11.7)	35 (16.7)	0.03
Previous CVD	102 (3.7)	93 (3.7)	9 (4.3)	0.64
Laboratory data				
Hemoglobin (g/dL)	14.1 ± 1.4	14.2 ± 1.3	13.8 ± 1.5	< 0.001
BUN (mg/dL)	14.1 ± 3.4	14.2 ± 3.4	13.6 ± 3.8	0.02
Creatinine (mg/dL)	0.73 ± 0.14	0.74 ± 0.14	0.67 ± 0.14	< 0.001
eGFR (mL/min/1.73 m^2)	77.5 ± 12.9	76.9 ± 11.7	85.4 ± 21.4	< 0.001
eGFR (last visit), (mL/min/1.73 m^2)	74.9 ± 13.4	75.2 ± 12.6	71.5 ± 20.4	0.011
ΔeGFR change (mL/min/1.73 m^2 year)	− 0.83 ± 3.63	− 0.21 ± 2.79	− 8.41 ± 4.0	< 0.001
HbA1c (%)	5.7 ± 0.5	5.7 ± 0.5	5.7 ± 0.7	0.07
Total cholesterol (mg/dL)	206.0 ± 34.0	206.5 ± 33.9	199.6 ± 35.2	0.005
LDL-C (mg/dL)	125.5 ± 30.5	126.0 ± 30.4	120.2 ± 32.2	0.01
HDL-C (mg/dL)	67.6 ± 18.4	67.8 ± 18.4	66.0 ± 18.5	0.18
Uric acid (mg/dL)	5.5 ± 1.3	5.5 ± 1.3	5.4 ± 1.4	0.78
CRP (mg/dL)	0.11 ± 0.45	0.10 ± 0.34	0.21 ± 1.10	0.155
Urine test				
Proteinuria	28/2727 (1.0)	21/2518 (0.8)	7 (3.3)	0.001

Data are expressed as mean ± standard deviation or number (%)

eGFR estimated glomerular filtration rate, *BMI* body mass index, *CVD* cardiovascular disease, *BUN* blood urea nitrogen, *LDL-C* low density lipoprotein cholesterol, *HDL-C* high density lipoprotein cholesterol, *CRP* C-reactive protein

Table 2 Determinants of eGFR decline

Variable	p value	Odds ratio	95% CI
Male gender	0.26	0.84	0.62–1.14
Age ≥ 60 years old	0.55	0.92	0.69–1.22
Body mass index > 25 kg/m^2	0.96	0.99	0.70–1.42
Hypertension	0.09	0.73	0.51–1.05
Diabetes mellitus	0.45	1.24	0.71–2.16
Hypercholesterolemia	0.17	0.79	0.56–1.11
Gout	0.62	0.83	0.39–1.75
History of smoking	0.51	1.11	0.82–1.50
eGFR at baseline > 75 mL/min/1.73 m^2	< 0.001	1.86	1.38–2.52
CRP > 0.3 mg/dL	0.17	1.48	0.85–2.59
Anemia	0.03	1.56	1.04–2.35
Proteinuria	0.001	5.22	2.04–13.34

CI confidence interval, *eGFR* estimated glomerular filtration rate, *CRP* C-reactive protein

m^2), hypertension, DM, hypercholesterolemia, hyperuricemia, history of smoking, eGFR at baseline (> 75 mL/min/1.73 m^2), CRP (> 0.3 mg/dL), anemia, and proteinuria showed that higher eGFR [odds ratio (OR), 1.86; p < 0.001], anemia (OR 1.56; p = 0.03) and proteinuria (OR 5.22; p = 0.001) were independent predictors of eGFR decline

In the "Results" section under the sub-heading "Subgroup analysis"

Study subjects were divided into two groups based on the presence of DM. The baseline characteristics in each group are shown in Appendix tables A/B. eGFR decline was seen in 16 of 190 subjects with DM (8.4%) and in 193 of 2549 subjects without DM (7.6%). In subjects with DM, anemia was not observed in subjects with eGFR decline, and therefore, OR of anemia for eGFR decline could not be calculated. Proteinuria tended to be associated with eGFR decline (OR 7.18; p = 0.09). In subjects without DM, anemia (OR 1.63; p = 0.02) and proteinuria (OR 4.44; p = 0.007) were associated with eGFR decline.

The corrected tables are given below. The conclusions of the published article are not affected.

Table 3 Multivariable analysis (subgroup analysis)

Variable	Diabetes mellitus absent		Diabetes mellitus present	
	Adjusted OR (95% CI)	p value	Adjusted OR (95% CI)	p value
Anemia	1.63 (1.08–2.46)	0.02	– (–)	–
Proteinuria	4.44 (1.51–13.1)	0.007	7.18 (0.76–68.2)	0.09

Adjusted for male, age ≥ 60 years, BMI > 25 kg/m^2, hypertension, hypercholesterolemia, gout, history of smoking, eGFR at baseline > 75 mL/min/1.73 m^2, CRP > 0.3 mg/dL

CI confidence interval, *OR* odds ratio

Appendix Table A: Subgroup analysis (DM present)

Variable	Overall (n = 190)	eGFR non-decline group (n = 174)	eGFR decline group (n = 16)	p value
Gender (male)	107 (56.3)	99 (56.9)	8 (50.0)	0.60
Age (year)	59.1 ± 12.2	59.4 ± 12.5	56.1 ± 8.2	0.29
eGFR (mL/min/1.73 m^2)	78.5 ± 15.2	78.5 ± 15.2	79.0 ± 15.2	0.89
eGFR (last visit), (mL/min/1.73 m^2)	77.0 ± 17.3	78.2 ± 17.1	64.3 ± 13.7	0.001
ΔeGFR change (mL/min/1.73 m^2 year)	− 0.05 ± 4.20	0.60 ± 3.68	− 7.15 ± 2.73	< 0.001
Hemoglobin (g/dL)	14.5 ± 1.2	14.6 ± 1.3	14.3 ± 1.2	0.47
Anemia	9 (4.7)	9 (5.2)	0 (0.0)	0.35
Proteinuria	6/188 (3.2)	4/172 (2.3)	2 (12.5)	0.03

Data are expressed as mean ± standard deviation or number (%)

DM diabetes mellitus, *eGFR* estimated glomerular filtration rate

Appendix Table B: Subgroup analysis (DM Absent)

Variable	Overall (n = 2549)	eGFR non-decline group (n = 2356)	eGFR decline group (n = 193)	p value
Gender (male)	1412 (55.4)	1311 (55.6)	101 (52.3)	0.37
Age (year)	58.8 ± 11.7	58.9 ± 11.7	58.7 ± 11.7	0.89
eGFR (mL/min/1.73 m^2)	77.4 ± 12.8	76.7 ± 11.4	86.0 ± 21.7	< 0.001
eGFR (last visit), (mL/min/1.73 m^2)	74.7 ± 13.1	74.9 ± 12.2	72.1 ± 20.8	0.003
ΔeGFR change (mL/min/1.73 m^2 year)	− 0.89 ± 3.58	− 0.27 ± 2.71	− 8.51 ± 4.09	< 0.001
Hemoglobin (g/dL)	14.1 ± 1.4	14.1 ± 1.3	13.7 ± 1.5	< 0.001
Anemia	321 (12.6)	286 (12.1)	35 (18.1)	0.02
Proteinuria	22/2539 (0.9)	17/2346 (0.7)	5 (2.6)	0.007

Data are expressed as mean ± standard deviation or number (%)

DM diabetes mellitus, *eGFR* estimated glomerular filtration rate