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SUPPLEMENT

Content **Page**

Supplemental Table 1. Correlation between biochemical and clinical markers and 7-point SGA

	Spearman's rank correlation coefficient, r_s	**P-value**
BMI kg/m²[1268]	0.27	<0.001
Waist circumference cm, [1200]	0.24	<0.001
Abdominal obesity [1200]	0.18	<0.001
GFR, mL/min/1.73 m²	0.004	0.86
Hemoglobin g/dL [1316]	0.10	<0.001
Sodium mmol/L [1308]	0.12	<0.001
Potassium mmol/L [1322]	0.01	0.64
Calcium mmol/L [1289]	-0.01	0.68
Phosphate mmol/L [1270]	-0.05	0.09
Urea mmol/L [1294]	-0.04	0.19
Albumin g/L [1223]	0.12	<0.001
Cholesterol mmol/L [1029]	0.02	0.43
PTH pmol/L, [1101]	-0.03	0.30
Standardbicarbonate mmol/L [989]	-0.03	0.32
U-Creatinine appearence mmol/24h [633]	0.30	<0.001
U-Urea appearance mmol/24h [558]	0.23	<0.001
nPCR g/kg/bw [548]	0.24	<0.001

Supplemental Table 2.

Prevalence and risk of muscle wasting according to age-classes and sex

	Muscle wasting n=451	**Odds Ratio (OR)**	**95% Confidence interval**
Age classes, years			
65-69.9 **n=292**	75 (25.7)	1.00	
70-74.9 **n= 314**	104 (33.1)	1.43	1.01-2.04
75-79.9 **n= 336**	107 (31.8)	1.35	0.95-1.91
≥80 **n= 389**	165 (42.4)	2.13	1.53-2.97
Men **n= 871**	273 (31.3)	1.00	
Women **n= 460**	178 (38.7)	1.35	1.06-1.71

Supplemental Table 3

Prevalence and risk of subcutaneous fat loss according to age-classes and sex

	Fat loss n= 375	**Odds Ratio (OR)**	**95% Confidence Interval**
Age classes, years			
65-69.9 **n=292**	56 (19.2)	1.00	
70-74.9 **n= 314**	83 (26.5)	1.52	1.03-2.23
75-79.9 **n= 336**	90 (26.5)	1.52	1.04-2.22
≥80 **n= 389**	146 (37.5)	2.53	1.77-3.61
Men **n= 871**	239 (27.4)	1.00	
Women **n= 460**	136 (29.6)	1.07	0.83-1.38

Supplemental Table 4

Prevalence and risk of gastrointestinal symptoms according to age-classes and sex

	GI Symptoms n= 312	**Odds Ratio (OR)**	**95% Confidence Interval**
Age classes, years			
65-69.9 **n=292**	54 (18.5)	1.00	
70-74.9 **n= 314**	82 (26.1)	1.56	1.06-2.30
75-79.9 **n= 336**	74 (21.9)	1.23	0.83-1.83
≥80 **n= 389**	102 (26.2)	1.57	1.08-2.28
Men **n= 871**	171 (19.6)	1.00	
Women **n= 460**	141 (30.6)	1.82	1.40-2.36

Supplemental Table 5

Prevalence and risk of weight change according to age-classes and sex.

	Weight change n= 278	**Odds Ratio (OR)**	**95% Confidence Interval**
Age classes, yrs			
65-69.9 **n=292**	51 (17.5)	1.00	
70-74.9 **n= 314**	66 (21.0)	1.25	0.83-1.88
75-79.9 **n= 336**	70 (20.7)	1.23	0.82-1.83
≥80 **n= 389**	91 (23.4)	1.44	0.98-2.11
Men **n= 871**	176 (20.2)	1.00	
Women **n= 460**	102 (22.2)	1.11	0.84-1.47

Supplemental Table 6

Baseline characteristics according to BMI class

	BMI ≤ 22 n= 110	BMI 23-24.9 n=254	BMI 25-29.9 n= 469	BMI ≥ 30 n= 435	p value
Age group, years					<0.001
65-69.9	19 (6.8)	45 (16.2)	107 (38.5)	107 (38.5)	
70-74.9	20 (6.7)	62 (20.7)	103 (34.5)	114 (38.1)	
75-79.9	28 (8.6)	58 (17.8)	121 (37.1)	119 (36.5)	
≥80	43 (11.8)	89 (24.4)	138 (37.8)	95 (26.0)	
Male	55 (6.6)	174 (20.9)	341 (40.9)	264 (31.7)	<0.001
Female	55 (12.7)	80 (18.4)	128 (29.5)	171 (39.4)	
Country					
Germany	6 (5.2)	20 (17.4)	38 (33.0)	51 (44.4)	0.002
Italy	38 (12.8)	67 (22.9)	111 (38.0)	76 (26.0)	
Netherlands	9 (7.3)	24 (21.4)	41 (36.6)	38 (33.9)	
Poland	2 (11.8)	4 (23.5)	8 (47.1)	3 (17.6)	
Sweden	24 (8.0)	67 (22.4)	125 (41.8)	83 (27.8)	
United Kingdom	31 (6.4)	72 (16.6)	146 (33.72)	184 (42.5)	
Primary renal diagnosis					<0.001
Glomerular disease	15 (14.0)	19 (17.8)	36 (33.6)	37 (34.5)	
Tubulointerst. Disease/ heredity	22 (15.1)	31 (21.2)	62 (42.5)	31 (21.2)	
Hypertension/ atherosclerosis	45 (9.4)	112 (23.5)	191 (40.0)	129 (27.0)	

Diabetes	8 (3.10)	26 (10.1)	87 (33.7)	137 (53.1)	
Miscellaneous	4 (9.3)	11 (25.6)	13 (30.2))	15 (34.9)	
Unknown	12 (6.6)	42 (23.0)	64 (35.0)	65 (35.5)	
Median nPCR (g/kg bodyweight) (IQR)	0.71 (0.54-0.89)	0.81 (0.63-0.99)	0.91 (0.73-1.11)	1.08 (0.87-1.35)	<0.001

Values expressed as numbers and (percentage). Differences between groups were tested by Kruskall-Wallis equality of populations rank test

Supplemental Table 7. Baseline variables in the group classified with obesity (BMI ≥30)

	SGA 6-7 n= 352	**SGA ≤ 5 n= 77**	**p value**
Hemoglobin g/dL	11.7 (1.5)	11.3 (1.4)	0.02
Sodium mmol/L	140.4 (3.2)	139.6 (3.0)	0.02
Potassium mmol/L	4.7 (0.6)	4.6 (0.7)	0.17
Calcium mmol/L	2.3 (0.2)	2.3 (0.2)	0.21
Phosphate mmol/L	1.3 (0.3)	1.3 (0.5)	0.62
Urea mmol/L	20.8 (8.9)	22.1 (14.3)	0.86
Albumin g/L	37.9 (5.7)	35.9 (7.7)	0.02
Cholesterol mmol/L	4.5 (1.3)	4.4 (1.1)	0.59
PTH pmol/L	17.0 (15.9)	17.4 (18.0)	0.91
Uric acid µmol/L	432.9 (150.4)	444.4 (203.5)	0.55
U-Creatinine appearance mmol/24h	10.0 (4.3)	9.8 (6.3)	0.18
U-Urea appearance mmol/24h	311.0 (144.4)	286.2 (179.2)	0.19
Standardbicarbonate mmol/L	23.4 (3.8)	24.5 (4.2)	0.02
Median nPCR g/kg/bw (IQR)	1.10 (0.89-1.35)	0.95 (0.70-1.35)	0.23

Values expressed as mean and (standard deviation), or median (interquartile range).
Differences between groups were tested by Kruskall-Wallis equality of populations rank test

Supplemental Table 8

Risk factors for SGA≤5~~PEW overall~~ and protein wasting among obese individuals

	Odds Ratio for overall SGA≤5~~PEW~~*	**Odds Ratio for protein wasting***
Age category		
65-69.9	1.00	1.00
70-74.9	1.61 (0.86-3.02)	1.85 (1.01-3.37)
75-79.9	1.17 (0.61-2.23)	1.41 (0.77-2.60)
≥80	1.97 (1.05-3.68)	1.87 (1.01-3.43)
Men	1.00	1.00
Women	1.29 (0.84-1.99)	1.57 (1.04-2.39)
Country		
United Kingdom	1.00	1.00
Sweden	0.48 (0.25-0.93)	0.88 (0.49-3.59)
Germany	0.57 (0.27-1.22)	0.62 (0.29-1.29)
Italy	0.52 (0.27-0.98)	0.92 (0.52-1.62)
Netherlands	0.43 (0.18-1.00)	0.42 (0.18-0.98)
Poland	na	na
Primary renal disease		
Glomerular disease	1.00	1.00
Tubuloint/ heredity	0.65 (0.23-1.88)	0.65 (0.24-1.76)
Hypertension /arterioscleros	0.67 (0.30-1.50)	0.57 (0.26-1.24)
Diabetes	0.82 (0.37-1.82)	0.81 (0.38-1.73)
Miscellaneus	1.07 (0.31-3.71)	0.82 (0.24-2.80)
Unknown	0.71 (0.29-1.73)	0.59 (0.25-1.39)
eGFR (per unit change)	1.04 (1.01-1.08)	1.03 (0.99-1.07)
Referral >5 years		
1 year – 5 years	0.91 (0.66-1.24)	0.76 (0.44-1.29)
< 1 year	1.29 (0.95-1.76)	0.87 (0.51-1.50)
Comorbidity		
Diabetes	1.00 (0.65-1.54)	1.06 (0.70-1.61)
Myocardial infarction	0.76 (0.47-1.21)	0.70 (0.44-1.09)

Peripheral arterial disease	1.28 (0.70-2.34)	0.63 (0.32-1.23)
Pulmonary Disease	1.85 (1.08-3.18)	1.31 (0.76-2.24)
Cerebrovasc disease	1.39 (0.78-2.49)	1.99 (1.15-3.42)
Heart failure	1.35 (0.79-2.29)	1.47 (0.89-2.44)
Depression/ dementia	4.94 (2.33-10.48)	1.65 (0.76-3.60)
Cancer	1.43 (0.86-2.38)	1.38 (0.85-2.26)
Charlson Comorbidity score per unit increase in score	1.17 (0.95-1.43)	1.14 (0.94-1.38)
Protein intake (per 0.1g/kg bw/day increase)	0.97 (0.86-1.10)	0.91 (0.80-1.03)

*Adjusted for age and sex, Na – not applicable due to few individuals.

EQUAL Centre selection and patient recruitment

Sweden: Centres were included in two phases. In the first phase the national coordinator invited centres which were geographically close, large enough to provide a substantial number of patients, and who had delivered good quality data to the national CKD registry. In the second round, the national investigator expanded the invitation to centres from other regions who were large enough and who had provided good quality data to the CKD registry. Three centres in all declined participation. All centres in the first phase were invited to one national meeting where the study protocol was reviewed and one where SGA training was performed (by R Visser, research nurse from Dianet Dialysis Centres in Amsterdam). Centres in the second phase were given individual training by the national study centre. Centres were instructed to screen all eligible patients. Reasons for exclusions were noted.

Germany: All dialysis centres (n=1256) were invited in an e-mail to participate in the study. Those centres from which the study team got a positive answer were included in the study. All eligible patients were screened. The study nurses received training in SGA during an investigators meeting by R Visser. Centres who participated in the study received an initiation visit where the study nurse trained the study personal.

The Netherlands: Study centres were invited by the national EQUAL study investigators and most agreed to participate. Help and instruction was offered to the centres to screen patient records for patients who met the inclusion criteria. Centres were instructed to screen all eligible patients. Centres that were unfamiliar with SGA were offered an individual training program.

United Kingdom: The study was accepted into the NIHR portfolio which will have made the study open to all sites to participate. The aim was to get representation from all four countries of the UK, so some sites were also approached in some countries if expressions of interest had not been received. Due to its research infrastructure, we were advised to open the study to all renal units in Northern Ireland. Although sites in Wales wishes to take part, the initial research ethics opinion was that significan changes needed to be made to the study, so it was decided not to include any Welsh sites. All sites were asked to screen all eligible patients. All centres were offered on-site training, which included SGA.

Italy: During the pilot phase of the study Italian nephrology centers were invited to participate (both by mail and via Italian Society of Nephrology website). Collaborators were asked to enroll up to 30 patients per center. Patients already followed up at participating centers were screened and those fulfilling the inclusion criteria were included in the study. If centers were able to continue the enrollment, incidents patients were screened for participation. The number of patients fulfilling inclusions criteria refusing to participate was low. All centre coordinators were invited to participate in a kick-off meeting in which Ronald Visser trained all for SGA Assessment.

Poland: Study centres were invited by the national EQUAL study investigators and most agreed to participate. Help and instruction was offered to the centres to screen patient records for patients who met the inclusion criteria. Centres were instructed to screen all eligible patients. Reasons for exclusions were noted. Centres that were unfamiliar with SGA were offered an individual training program.

Study investigators

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