

SUPPLEMENTARY MATERIAL

Self-reported physical activity, quality of life, and psychological status in relation to plasma 25-hydroxyvitamin D concentration in patients treated with hemodialysis

**Alicja E. Grzegorzewska¹, Agnieszka Izdebska², Leszek Niepolski³, Wojciech Warchol⁴,
Pawel P. Jagodziński⁵**

¹ Department of Nephrology, Transplantology and Internal Diseases, Poznan University of Medical Sciences, Poznań, Poland

² Institute of Psychology, Adam Mickiewicz University, Poznań, Poland

³ B.Braun Avitum Poland, Dialysis Center, Nowy Tomyśl, Poland

⁴ Department of Biophysics, Poznan University of Medical Sciences, Poznań, Poland

⁵ Department of Biochemistry and Molecular Biology, Poznan University of Medical Sciences, Poznań, Poland

Supplementary Methods

The officially approved Polish version of IPAQ-L was used as a self-description measure of the physical activity [1]. The questionnaire was completed by the interviewer according to the patients' reports on the time spent performing various physical activities during the previous 7 days across four domains: work-related, transport-related, domestic and gardening, and leisure-time activity. The amount of time spent sitting during the week was also determined. A metabolic equivalent task (MET) value was calculated for each domain separately and for the total weekly physical activity. Additionally, the energy expenditure obtained from various forms of physical activity (walking, moderate-intensity and vigorous-intensity) was calculated.

Total weekly physical activity level was finally classified as low, moderate, or high, in accordance with the official IPAQ guidelines [2]: (1) Low – the lowest level of physical activity describing individuals who do not meet criteria for categories 2 or 3; (2) Moderate – any one of the following 3 criteria: a) 3 or more days of vigorous activity of at least 20 minutes per day or, b) 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day or, c) 5 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 600 MET-min/week; (3) High – any one of the following 2 criteria: a) vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET-minutes/week or, b) 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum of at least 3000 MET-minutes/week. MET values were also reported in kcal/week [1,2].

QLI-D [3-5], GHQ-28 [6,7], and PANAS [8,9] were used to assess the quality of life and associated mental health.

QLI is a self-description measure which provides an overall score and four subscale scores for: 1) health and functioning, 2) social and economic, 3) psychological/spiritual, and 4) family domains. QLI-D consists of the 68 items (including 64 items from the core version and additional 4 that are devoted to the issue of kidney failure and the possibility of a kidney transplant). QLI is divided into 2 parts. The first part refers to the satisfaction with various aspects of life and the second part refers to the importance of the same aspects. Both satisfaction and importance are assessed on a 6-point Likert-type scale ranging from *very dissatisfied/unimportant* to *very satisfied/important*. The satisfaction scores are weighted according to the importance scores to determine an overall quality of life score and four subscale scores. Possible range for the overall and each subscale score is 0 to 30, with higher scores indicating a better quality of life [3].

GHQ-28 is a self-description measure of general health, developed by Goldberg and Hillier [6], and widely used to screen non-psychotic mental disorders. The 28-item version used in the study provides an overall score and four subscale scores for: 1) somatic symptoms, 2) anxiety/insomnia, 3) social dysfunction, and 4) severe depression. Every item was reported on a Likert scale from 0 to 3 and an overall score and four subscale scores were then calculated. Higher scores indicate a worse general mental health status [6,7].

PANAS, developed by Watson et al. [8], is a brief self-description measure of both positive and negative affectivity. The version used in the study consists of 30 items divided into two 15-item scales: 1) the positive affect scale covering positive mood states like enthusiasm, activity, determination, and 2) the negative affect scale covering aversive mood states, including guilt, fear, nervousness. Each item was rated by participants on the 5-point Likert-type scale on the basis of their current mood (ranging from *very slightly or not at all* to *extremely*). The total scores were calculated separately for each scale where higher scores indicate a higher level of the relevant affect's intensity [8,9].

References to Supplementary Methods

1. Biernat E: International Physical Activity Questionnaire – Polish long version. *Medycyna Sportowa (Medsportpress)* 2013;29:1-15.
2. Guidelines for Data Processing and Analysis of the International Physical activity Questionnaire (IPAQ) – Short and Long Forms. www.ipaq.ki.se. Accessed 7 Jul 2016.
3. Ferrans CE, Powers MJ: Quality of life index: Development and psychometric properties. *ANS Adv Nurs Sci* 1985;8:15-24.
4. Ferrans and Powers Quality of Life Index (QLI). <http://qli.org.uic.edu>. Accessed 7 Jul 2016.
5. Ferrans CE, Powers MJ: Quality of life of hemodialysis patients. *ANNA Journal* 1993;20:575-581.
6. Goldberg DP, Hillier VF: A scaled version of the General Health Questionnaire. *Psychol Med* 1979;9:139-145.
7. Makowska Z, Merecz D: Polish adaptation of David Goldberg's General Health Questionnaires: GHQ-12 and GHQ-28; in Dudek B (ed): *Mental health assessment on a research basis by David Goldberg Questionnaires. The GHQ-12 and GHQ-28 questionnaires user's guide [Polish]*. Instytut Medycyny Pracy im. prof. J. Nofera. Łódź, Poland, 2001, pp 191-264.
8. Watson D, Clark LA, Tellegen A: Development and validation of brief measures of positive and negative affect: The PANAS scales. *J Pers Soc Psychol* 1988;54:1063-1070.
9. Brzozowski P: Positive and Negative Affect Schedule. Polish adaptation of PANAS by Dawid Watson and Lee Anna Clark [Polish]. *Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego*. Warszawa, Poland, 2010, pp 34-113.

Supplementary Results

Table S1. Associations of metrical age with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|--------------------|---------|----------------------|----------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -85.6 \pm 28.0 | 0.003 | -0.364 | 0.0001 |
| Total domestic and gardening physical activity, MET-minutes/week | -89.5 \pm 60.2 | 0.140 | -0.347 | 0.0002 |
| Total leisure-time physical activity, MET-minutes/week | -2.5 \pm 34.2 | 0.943 | -0.165 | 0.083 |
| Total walking, MET-minutes/week | -99.4 \pm 36.7 | 0.008 | -0.367 | 0.0001 |
| Total moderate-intensity activities, MET-minutes/week | -78.2 \pm 69.0 | 0.260 | -0.311 | 0.001 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -177.6 \pm 87.7 | 0.045 | -0.423 | 0.000004 |
| Total physical activity, MET-kcal/week | -216.7 \pm 113.1 | 0.058 | -0.425 | 0.000003 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 17.7 \pm 12.6 | 0.163 | 0.112 | 0.242 |
| Total physical activity level scores | -0.10 \pm 0.05 | 0.027 | -0.233 | 0.014 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.24 \pm 0.24 | 0.324 | 0.072 | 0.452 |
| Social and economic subscale | 0.84 \pm 0.28 | 0.003 | 0.237 | 0.012 |
| Psychological/spiritual subscale | 0.66 \pm 0.34 | 0.058 | 0.166 | 0.081 |
| Family subscale | 0.37 \pm 0.32 | 0.252 | 0.076 | 0.428 |
| Overall quality of life score | 0.50 \pm 0.22 | 0.026 | 0.166 | 0.081 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.30 \pm 0.26 | 0.255 | -0.098 | 0.306 |
| Anxiety/insomnia | -0.44 \pm 0.24 | 0.073 | -0.069 | 0.473 |
| Social dysfunction | 0.34 \pm 0.19 | 0.069 | 0.118 | 0.215 |
| Severe depression | -0.54 \pm 0.24 | 0.025 | -0.165 | 0.082 |
| Total score | -0.93 \pm 0.69 | 0.181 | -0.058 | 0.546 |
| Affects by PANAS | | | | |
| Positive affect | -1.43 \pm 0.79 | 0.073 | -0.237 | 0.012 |
| Negative affect | 0.45 \pm 0.68 | 0.511 | 0.153 | 0.106 |

^a β coefficient and SE values can be interpreted as: for a 10 year change in age, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S2. Associations of female gender with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|--------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 30.8 \pm 78.2 | 0.694 | 0.006 | 0.947 |
| Total domestic and gardening physical activity, MET-minutes/week | -58.0 \pm 163.3 | 0.723 | 0.031 | 0.751 |
| Total leisure-time physical activity, MET-minutes/week | -42.1 \pm 91.7 | 0.647 | -0.004 | 0.968 |
| Total walking, MET-minutes/week | 118.7 \pm 101.1 | 0.243 | 0.081 | 0.398 |
| Total moderate-intensity activities, MET-minutes/week | -188.1 \pm 185.6 | 0.313 | -0.071 | 0.461 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -69.3 \pm 239.9 | 0.773 | -0.004 | 0.966 |
| Total physical activity, MET-kcal/week | -162.2 \pm 308.3 | 0.600 | -0.041 | 0.669 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -38.8 \pm 33.8 | 0.254 | -0.137 | 0.153 |
| Total physical activity level scores | -0.01 \pm 0.12 | 0.967 | 0.011 | 0.907 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.89 \pm 0.66 | 0.184 | 0.120 | 0.206 |
| Social and economic subscale | -0.89 \pm 0.66 | 0.184 | -0.106 | 0.266 |
| Psychological/spiritual subscale | -0.36 \pm 0.97 | 0.714 | 0.129 | 0.174 |
| Family subscale | -0.12 \pm 0.90 | 0.898 | 0.006 | 0.949 |
| Overall quality of life score | -0.22 \pm 0.63 | 0.731 | 0.069 | 0.470 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.08 \pm 0.72 | 0.917 | -0.036 | 0.709 |
| Anxiety/insomnia | -0.43 \pm 0.68 | 0.531 | 0.071 | 0.455 |
| Social dysfunction | 0.07 \pm 0.52 | 0.900 | -0.069 | 0.470 |
| Severe depression | 0.21 \pm 0.67 | 0.749 | 0.023 | 0.808 |
| Total score | -0.07 \pm 1.93 | 0.971 | 0.006 | 0.954 |
| Affects by PANAS | | | | |
| Positive affect | 2.86 \pm 2.20 | 0.195 | -0.114 | 0.232 |
| Negative affect | -0.45 \pm 0.18 | 0.017 | 0.206 | 0.029 |

^a β coefficient and SE values can be interpreted as: for women against man, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S3. Associations of renal replacement therapy vintage with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -12.2 \pm 10.2 | 0.235 | -0.107 | 0.264 |
| Total domestic and gardening physical activity, MET-minutes/week | -17.6 \pm 21.3 | 0.411 | 0.082 | 0.393 |
| Total leisure-time physical activity, MET-minutes/week | 14.6 \pm 11.9 | 0.225 | 0.072 | 0.450 |
| Total walking, MET-minutes/week | -13.1 \pm 13.3 | 0.325 | -0.024 | 0.799 |
| Total moderate-intensity activities, MET-minutes/week | -2.10 \pm 24.4 | 0.933 | 0.079 | 0.412 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -15.2 \pm 31.4 | 0.630 | -0.054 | 0.572 |
| Total physical activity, MET-kcal/week | -29.3 \pm 40.3 | 0.469 | -0.086 | 0.369 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 3.3 \pm 4.4 | 0.455 | 0.158 | 0.097 |
| Total physical activity level scores | 0.00 \pm 0.02 | 0.872 | -0.032 | 0.736 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.10 \pm 0.09 | 0.257 | -0.139 | 0.145 |
| Social and economic subscale | -0.11 \pm 0.10 | 0.285 | -0.133 | 0.163 |
| Psychological/spiritual subscale | -0.03 \pm 0.13 | 0.810 | 0.040 | 0.676 |
| Family subscale | -0.09 \pm 0.12 | 0.469 | 0.002 | 0.981 |
| Overall quality of life score | -0.07 \pm 0.08 | 0.405 | -0.088 | 0.354 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.13 \pm 0.09 | 0.184 | 0.082 | 0.389 |
| Anxiety/insomnia | 0.10 \pm 0.09 | 0.274 | 0.114 | 0.232 |
| Social dysfunction | -0.03 \pm 0.07 | 0.683 | -0.026 | 0.788 |
| Severe depression | 0.21 \pm 0.09 | 0.017 | 0.137 | 0.150 |
| Total score | 0.40 \pm 0.25 | 0.110 | 0.117 | 0.220 |
| Affects by PANAS | | | | |
| Positive affect | -0.06 \pm 0.29 | 0.834 | -0.032 | 0.738 |
| Negative affect | 0.08 \pm 0.25 | 0.757 | 0.094 | 0.323 |

^a β coefficient and SE values can be interpreted as: for 1 year of RRT vintage, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S4. Associations of type 2 diabetic nephropathy as a cause of end-stage renal disease with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|--------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -52.4 \pm 85.3 | 0.540 | -0.133 | 0.163 |
| Total domestic and gardening physical activity, MET-minutes/week | -171.7 \pm 177.6 | 0.336 | -0.139 | 0.145 |
| Total leisure-time physical activity, MET-minutes/week | 67.1 \pm 100.0 | 0.504 | -0.143 | 0.134 |
| Total walking, MET-minutes/week | -79.6 \pm 110.8 | 0.474 | -0.168 | 0.078 |
| Total moderate-intensity activities, MET-minutes/week | -77.4 \pm 203.5 | 0.704 | -0.162 | 0.090 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -157.0 \pm 261.6 | 0.550 | -0.167 | 0.080 |
| Total physical activity, MET-kcal/week | -198.4 \pm 336.5 | 0.557 | -0.160 | 0.094 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 15.5 \pm 37.1 | 0.678 | 0.005 | 0.956 |
| Total physical activity level scores | -0.03 \pm 0.14 | 0.803 | -0.057 | 0.551 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -1.59 \pm 0.71 | 0.027 | -0.248 | 0.008 |
| Social and economic subscale | -0.33 \pm 0.86 | 0.707 | -0.005 | 0.955 |
| Psychological/spiritual subscale | -2.60 \pm 1.02 | 0.013 | -0.263 | 0.005 |
| Family subscale | -0.89 \pm 0.98 | 0.364 | -0.071 | 0.456 |
| Overall quality of life score | -1.38 \pm 0.67 | 0.042 | -0.214 | 0.023 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 1.32 \pm 0.77 | 0.092 | 0.123 | 0.195 |
| Anxiety/insomnia | 1.68 \pm 0.72 | 0.021 | 0.247 | 0.009 |
| Social dysfunction | 0.50 \pm 0.56 | 0.381 | 0.100 | 0.296 |
| Severe depression | 0.40 \pm 0.72 | 0.583 | 0.130 | 0.172 |
| Total score | 3.89 \pm 2.06 | 0.061 | 0.205 | 0.030 |
| Affects by PANAS | | | | |
| Positive affect | -2.78 \pm 2.38 | 0.246 | -0.115 | 0.227 |
| Negative affect | 4.60 \pm 2.00 | 0.023 | 0.085 | 0.374 |

^a β coefficient and SE values can be interpreted as: for diabetic nephropathy, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S5. Associations of chronic glomerulonephritis as a cause of end-stage renal disease with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 83.4 \pm 99.4 | 0.404 | 0.239 | 0.011 |
| Total domestic and gardening physical activity, MET-minutes/week | 370.5 \pm 205.1 | 0.074 | 0.231 | 0.015 |
| Total leisure-time physical activity, MET-minutes/week | -1.0 \pm 116.9 | 0.993 | 0.147 | 0.124 |
| Total walking, MET-minutes/week | 111.9 \pm 129.2 | 0.388 | 0.286 | 0.002 |
| Total moderate-intensity activities, MET-minutes/week | 341.0 \pm 235.4 | 0.150 | 0.243 | 0.010 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 452.8 \pm 302.7 | 0.138 | 0.298 | 0.001 |
| Total physical activity, MET-kcal/week | 422.1 \pm 391.2 | 0.283 | 0.274 | 0.004 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -53.8 \pm 43.1 | 0.214 | -0.113 | 0.238 |
| Total physical activity level scores | 0.17 \pm 0.16 | 0.287 | 0.126 | 0.187 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.99 \pm 0.85 | 0.246 | -0.053 | 0.576 |
| Social and economic subscale | -1.41 \pm 1.01 | 0.165 | -0.143 | 0.132 |
| Psychological/spiritual subscale | -0.15 \pm 1.24 | 0.907 | -0.008 | 0.929 |
| Family subscale | -0.76 \pm 1.15 | 0.509 | -0.077 | 0.420 |
| Overall quality of life score | -1.02 \pm 0.80 | 0.205 | -0.084 | 0.377 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.89 \pm 0.92 | 0.335 | 0.130 | 0.173 |
| Anxiety/insomnia | -1.23 \pm 0.86 | 0.154 | -0.101 | 0.288 |
| Social dysfunction | 0.27 \pm 0.67 | 0.681 | 0.026 | 0.782 |
| Severe depression | 0.98 \pm 0.85 | 0.252 | 0.047 | 0.626 |
| Total score | 0.91 \pm 2.46 | 0.712 | 0.040 | 0.672 |
| Affects by PANAS | | | | |
| Positive affect | 1.51 \pm 2.82 | 0.593 | 0.079 | 0.408 |
| Negative affect | -2.59 \pm 2.40 | 0.284 | -0.094 | 0.325 |

^a β coefficient and SE values can be interpreted as: for chronic glomerulonephritis, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S6. Associations of chronic tubulointerstitial nephritis as a cause of end-stage renal disease with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|--------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -217.3 \pm 149.6 | 0.149 | -0.213 | 0.025 |
| Total domestic and gardening physical activity, MET-minutes/week | -214.2 \pm 314.6 | 0.498 | 0.003 | 0.975 |
| Total leisure-time physical activity, MET-minutes/week | -184.2 \pm 176.2 | 0.298 | -0.181 | 0.057 |
| Total walking, MET-minutes/week | -261.3 \pm 194.7 | 0.182 | -0.217 | 0.022 |
| Total moderate-intensity activities, MET-minutes/week | -354.4 \pm 358.3 | 0.325 | -0.086 | 0.369 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -615.6 \pm 459.4 | 0.183 | -0.214 | 0.024 |
| Total physical activity, MET-kcal/week | -791.6 \pm 590.8 | 0.183 | -0.213 | 0.025 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 27.9 \pm 65.6 | 0.672 | 0.024 | 0.803 |
| Total physical activity level scores | -0.42 \pm 0.24 | 0.080 | -0.179 | 0.060 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.24 \pm 1.30 | 0.853 | -0.017 | 0.862 |
| Social and economic subscale | -1.62 \pm 1.54 | 0.295 | -0.092 | 0.333 |
| Psychological/spiritual subscale | 0.93 \pm 1.88 | 0.621 | 0.080 | 0.399 |
| Family subscale | 0.82 \pm 1.75 | 0.641 | 0.023 | 0.812 |
| Overall quality of life score | 1.03 \pm 1.21 | 0.396 | 0.023 | 0.809 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 1.78 \pm 1.39 | 0.203 | 0.096 | 0.312 |
| Anxiety/insomnia | 1.65 \pm 1.30 | 0.207 | 0.065 | 0.493 |
| Social dysfunction | 0.89 \pm 1.01 | 0.376 | 0.061 | 0.520 |
| Severe depression | 1.20 \pm 1.29 | 0.353 | -0.013 | 0.891 |
| Total score | 5.53 \pm 3.69 | 0.137 | 0.055 | 0.562 |
| Affects by PANAS | | | | |
| Positive affect | 0.47 \pm 4.28 | 0.913 | 0.003 | 0.978 |
| Negative affect | -2.17 \pm 3.65 | 0.553 | -0.013 | 0.894 |

^a β coefficient and SE values can be interpreted as: for chronic tubulointerstitial nephritis, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S7. Associations of hypertensive nephropathy as a cause of end-stage renal disease with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 149.1 \pm 95.3 | 0.121 | 0.090 | 0.347 |
| Total domestic and gardening physical activity, MET-minutes/week | 67.3 \pm 201.1 | 0.738 | -0.039 | 0.688 |
| Total leisure-time physical activity, MET-minutes/week | 76.3 \pm 112.8 | 0.500 | 0.115 | 0.229 |
| Total walking, MET-minutes/week | 266.1 \pm 122.6 | 0.032 | 0.117 | 0.223 |
| Total moderate-intensity activities, MET-minutes/week | 26.6 \pm 229.6 | 0.908 | -0.021 | 0.824 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 292.7 \pm 294.2 | 0.322 | 0.019 | 0.839 |
| Total physical activity, MET-kcal/week | 514.1 \pm 376.8 | 0.175 | 0.038 | 0.696 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -10.4 \pm 41.9 | 0.805 | 0.026 | 0.789 |
| Total physical activity level scores | 0.06 \pm 0.15 | 0.696 | 0.020 | 0.832 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 1.24 \pm 0.82 | 0.132 | 0.137 | 0.151 |
| Social and economic subscale | 0.27 \pm 0.98 | 0.788 | 0.011 | 0.909 |
| Psychological/spiritual subscale | -0.18 \pm 1.20 | 0.883 | -0.002 | 0.980 |
| Family subscale | -0.13 \pm 1.12 | 0.909 | -0.015 | 0.874 |
| Overall quality of life score | 0.55 \pm 0.77 | 0.482 | 0.034 | 0.723 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.96 \pm 0.89 | 0.283 | -0.028 | 0.771 |
| Anxiety/insomnia | 0.20 \pm 0.84 | 0.816 | -0.010 | 0.920 |
| Social dysfunction | -0.28 \pm 0.64 | 0.662 | -0.051 | 0.596 |
| Severe depression | -0.25 \pm 0.82 | 0.762 | 0.060 | 0.533 |
| Total score | -1.30 \pm 2.38 | 0.587 | -0.018 | 0.847 |
| Affects by PANAS | | | | |
| Positive affect | 2.24 \pm 2.72 | 0.413 | 0.075 | 0.434 |
| Negative affect | -1.19 \pm 2.33 | 0.612 | -0.046 | 0.628 |

^a β coefficient and SE values can be interpreted as: for hypertensive nephropathy, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S8. Associations of coronary artery disease with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -54.3 \pm 85.3 | 0.525 | -0.185 | 0.052 |
| Total domestic and gardening physical activity, MET-minutes/week | -76.4 \pm 178.2 | 0.669 | -0.049 | 0.612 |
| Total leisure-time physical activity, MET-minutes/week | 167.8 \pm 98.9 | 0.093 | 0.090 | 0.349 |
| Total walking, MET-minutes/week | -34.8 \pm 111.0 | 0.755 | -0.138 | 0.149 |
| Total moderate-intensity activities, MET-minutes/week | 71.8 \pm 203.5 | 0.725 | -0.009 | 0.922 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 37.0 \pm 262.0 | 0.888 | -0.117 | 0.222 |
| Total physical activity, MET-kcal/week | 119.4 \pm 336.8 | 0.724 | -0.080 | 0.404 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -6.6 \pm 37.2 | 0.859 | -0.029 | 0.765 |
| Total physical activity level scores | -0.08 \pm 0.14 | 0.571 | -0.070 | 0.467 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.43 \pm 0.73 | 0.561 | 0.096 | 0.314 |
| Social and economic subscale | 0.77 \pm 0.87 | 0.380 | 0.072 | 0.448 |
| Psychological/spiritual subscale | 0.14 \pm 1.06 | 0.895 | 0.019 | 0.839 |
| Family subscale | 0.34 \pm 0.99 | 0.732 | 0.048 | 0.616 |
| Overall quality of life score | 0.34 \pm 0.69 | 0.617 | 0.071 | 0.456 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -1.68 \pm 0.77 | 0.033 | -0.202 | 0.033 |
| Anxiety/insomnia | -0.37 \pm 0.74 | 0.620 | 0.027 | 0.776 |
| Social dysfunction | -0.06 \pm 0.57 | 0.919 | 0.007 | 0.943 |
| Severe depression | -0.64 \pm 0.73 | 0.381 | -0.007 | 0.938 |
| Total score | -2.74 \pm 2.09 | 0.192 | -0.081 | 0.397 |
| Affects by PANAS | | | | |
| Positive affect | 1.79 \pm 2.41 | 0.461 | 0.032 | 0.741 |
| Negative affect | -1.43 \pm 2.06 | 0.489 | -0.141 | 0.137 |

^a β coefficient and SE values can be interpreted as: coronary artery disease, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S9. Associations of myocardial infarction with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|--------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 12.0 \pm 117.6 | 0.919 | -0.175 | 0.066 |
| Total domestic and gardening physical activity, MET-minutes/week | 1.3 \pm 245.6 | 0.996 | -0.120 | 0.210 |
| Total leisure-time physical activity, MET-minutes/week | -1.0 \pm 137.9 | 0.994 | -0.009 | 0.923 |
| Total walking, MET-minutes/week | 127.2 \pm 152.4 | 0.406 | -0.118 | 0.216 |
| Total moderate-intensity activities, MET-minutes/week | -114.9 \pm 280.1 | 0.682 | -0.112 | 0.243 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 12.2 \pm 360.8 | 0.973 | -0.186 | 0.050 |
| Total physical activity, MET-kcal/week | 70.2 \pm 463.9 | 0.880 | -0.172 | 0.071 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 21.2 \pm 51.1 | 0.679 | 0.046 | 0.630 |
| Total physical activity level scores | -0.28 \pm 0.18 | 0.132 | -0.173 | 0.069 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.04 \pm 1.01 | 0.971 | 0.060 | 0.529 |
| Social and economic subscale | -0.12 \pm 1.20 | 0.919 | -0.031 | 0.743 |
| Psychological/spiritual subscale | -0.02 \pm 1.46 | 0.991 | 0.033 | 0.727 |
| Family subscale | 1.72 \pm 1.35 | 0.205 | 0.114 | 0.233 |
| Overall quality of life score | 0.40 \pm 0.95 | 0.676 | 0.068 | 0.476 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -1.70 \pm 1.08 | 0.117 | -0.088 | 0.358 |
| Anxiety/insomnia | -0.57 \pm 1.02 | 0.577 | 0.023 | 0.812 |
| Social dysfunction | -0.23 \pm 0.79 | 0.766 | -0.026 | 0.789 |
| Severe depression | -0.56 \pm 1.01 | 0.578 | 0.013 | 0.890 |
| Total score | -3.07 \pm 2.89 | 0.290 | -0.031 | 0.749 |
| Affects by PANAS | | | | |
| Positive affect | -1.81 \pm 3.33 | 0.589 | -0.064 | 0.503 |
| Negative affect | -1.78 \pm 2.84 | 0.534 | -0.074 | 0.440 |

^a β coefficient and SE values can be interpreted as: for myocardial infarction, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S10. Associations of serum calcium concentration with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -12.8 \pm 49.5 | 0.796 | -0.026 | 0.790 |
| Total domestic and gardening physical activity, MET-minutes/week | -6.6 \pm 103.3 | 0.949 | -0.158 | 0.097 |
| Total leisure-time physical activity, MET-minutes/week | 50.6 \pm 57.8 | 0.383 | 0.091 | 0.345 |
| Total walking, MET-minutes/week | 12.0 \pm 64.3 | 0.852 | 0.021 | 0.825 |
| Total moderate-intensity activities, MET-minutes/week | 19.2 \pm 117.9 | 0.871 | -0.084 | 0.382 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 31.2 \pm 151.7 | 0.837 | 0.002 | 0.984 |
| Total physical activity, MET-kcal/week | 63.5 \pm 195 | 0.745 | 0.007 | 0.941 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -14.8 \pm 21.5 | 0.493 | -0.066 | 0.493 |
| Total physical activity level scores | -0.04 \pm 0.08 | 0.655 | -0.021 | 0.829 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.43 \pm 0.42 | 0.316 | 0.055 | 0.568 |
| Social and economic subscale | 0.96 \pm 0.50 | 0.058 | 0.118 | 0.218 |
| Psychological/spiritual subscale | 0.32 \pm 0.62 | 0.607 | -0.098 | 0.304 |
| Family subscale | -0.32 \pm 0.57 | 0.574 | -0.108 | 0.259 |
| Overall quality of life score | 0.38 \pm 0.4 | 0.341 | 0.010 | 0.919 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.49 \pm 0.46 | 0.283 | -0.028 | 0.772 |
| Anxiety/insomnia | -0.14 \pm 0.42 | 0.737 | 0.034 | 0.721 |
| Social dysfunction | -0.02 \pm 0.33 | 0.948 | 0.047 | 0.624 |
| Severe depression | -0.36 \pm 0.42 | 0.391 | -0.021 | 0.824 |
| Total score | -1.02 \pm 1.22 | 0.406 | -0.015 | 0.877 |
| Affects by PANAS | | | | |
| Positive affect | -1.31 \pm 1.40 | 0.350 | -0.048 | 0.615 |
| Negative affect | 0.26 \pm 1.20 | 0.831 | 0.090 | 0.349 |

^a β coefficient and SE values can be interpreted as: for 1 mg/dL change in serum calcium concentration, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S11. Associations of serum phosphorus concentration with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -8.9 \pm 29.3 | 0.761 | 0.035 | 0.718 |
| Total domestic and gardening physical activity, MET-minutes/week | -77.7 \pm 60.7 | 0.203 | 0.024 | 0.803 |
| Total leisure-time physical activity, MET-minutes/week | 37.9 \pm 34.1 | 0.269 | 0.085 | 0.377 |
| Total walking, MET-minutes/week | 8.2 \pm 38.1 | 0.830 | 0.140 | 0.144 |
| Total moderate-intensity activities, MET-minutes/week | -56.8 \pm 69.6 | 0.416 | -0.018 | 0.848 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -48.6 \pm 89.7 | 0.589 | 0.084 | 0.379 |
| Total physical activity, MET-kcal/week | -63.3 \pm 115.3 | 0.584 | 0.080 | 0.404 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 6.1 \pm 12.7 | 0.632 | -0.007 | 0.940 |
| Total physical activity level scores | 0.01 \pm 0.05 | 0.834 | 0.068 | 0.479 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.37 \pm 0.25 | 0.137 | -0.142 | 0.138 |
| Social and economic subscale | -0.14 \pm 0.3 | 0.632 | -0.005 | 0.956 |
| Psychological/spiritual subscale | -0.23 \pm 0.36 | 0.526 | -0.086 | 0.367 |
| Family subscale | -0.24 \pm 0.34 | 0.472 | -0.112 | 0.243 |
| Overall quality of life score | -0.34 \pm 0.23 | 0.156 | -0.111 | 0.245 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.11 \pm 0.27 | 0.682 | -0.077 | 0.421 |
| Anxiety/insomnia | 0.29 \pm 0.25 | 0.242 | 0.032 | 0.740 |
| Social dysfunction | -0.25 \pm 0.19 | 0.194 | -0.081 | 0.398 |
| Severe depression | 0.23 \pm 0.25 | 0.358 | 0.066 | 0.490 |
| Total score | 0.16 \pm 0.73 | 0.826 | -0.080 | 0.403 |
| Affects by PANAS | | | | |
| Positive affect | -0.10 \pm 0.83 | 0.900 | 0.045 | 0.642 |
| Negative affect | 1.02 \pm 0.70 | 0.150 | -0.028 | 0.770 |

^a β coefficient and SE values can be interpreted as: for 1 mg/dL change in serum phosphorus concentration, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S12. Associations of serum parathyroid hormone concentration with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -9.4 \pm 8.5 | 0.273 | -0.029 | 0.763 |
| Total domestic and gardening physical activity, MET-minutes/week | -23.7 \pm 17.7 | 0.183 | 0.021 | 0.831 |
| Total leisure-time physical activity, MET-minutes/week | -1.4 \pm 10.0 | 0.890 | -0.139 | 0.145 |
| Total walking, MET-minutes/week | -16.2 \pm 11.0 | 0.143 | -0.109 | 0.256 |
| Total moderate-intensity activities, MET-minutes/week | -18.2 \pm 20.3 | 0.371 | 0.014 | 0.885 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -34.5 \pm 26.0 | 0.188 | -0.075 | 0.432 |
| Total physical activity, MET-kcal/week | -45.6 \pm 33.5 | 0.175 | -0.085 | 0.374 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 8.6 \pm 3.6 | 0.020 | 0.219 | 0.021 |
| Total physical activity level scores | -0.02 \pm 0.01 | 0.137 | -0.099 | 0.300 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.13 \pm 0.07 | 0.081 | -0.136 | 0.155 |
| Social and economic subscale | -0.03 \pm 0.09 | 0.725 | -0.027 | 0.779 |
| Psychological/spiritual subscale | -0.13 \pm 0.11 | 0.229 | -0.081 | 0.399 |
| Family subscale | -0.07 \pm 0.10 | 0.458 | -0.029 | 0.760 |
| Overall quality of life score | -0.12 \pm 0.07 | 0.072 | -0.137 | 0.152 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.14 \pm 0.08 | 0.078 | 0.230 | 0.015 |
| Anxiety/insomnia | 0.10 \pm 0.07 | 0.154 | 0.133 | 0.163 |
| Social dysfunction | 0.01 \pm 0.06 | 0.872 | 0.101 | 0.292 |
| Severe depression | 0.21 \pm 0.07 | 0.003 | 0.304 | 0.001 |
| Total score | 0.46 \pm 0.21 | 0.028 | 0.279 | 0.003 |
| Affects by PANAS | | | | |
| Positive affect | -0.27 \pm 0.24 | 0.260 | -0.081 | 0.400 |
| Negative affect | 0.07 \pm 0.21 | 0.730 | 0.050 | 0.600 |

^a β coefficient and SE values can be interpreted as: for a 100 pg/mL change in serum parathyroid hormone concentration, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S13. Associations of treatment with HF-HD with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 35.7 \pm 79.2 | 0.653 | -0.007 | 0.938 |
| Total domestic and gardening physical activity, MET-minutes/week | 24.8 \pm 165.5 | 0.881 | -0.124 | 0.196 |
| Total leisure-time physical activity, MET-minutes/week | 64.4 \pm 92.8 | 0.489 | -0.023 | 0.807 |
| Total walking, MET-minutes/week | 165.9 \pm 101.8 | 0.106 | 0.080 | 0.403 |
| Total moderate-intensity activities, MET-minutes/week | -41.1 \pm 188.9 | 0.828 | -0.200 | 0.036 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 124.9 \pm 242.8 | 0.608 | -0.108 | 0.258 |
| Total physical activity, MET-kcal/week | 207.9 \pm 312.0 | 0.507 | -0.091 | 0.340 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -29.0 \pm 34.4 | 0.400 | -0.088 | 0.361 |
| Total physical activity level scores | -0.08 \pm 0.13 | 0.520 | -0.082 | 0.393 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.59 \pm 0.68 | 0.389 | 0.010 | 0.914 |
| Social and economic subscale | 0.65 \pm 0.81 | 0.425 | -0.009 | 0.923 |
| Psychological/spiritual subscale | 0.28 \pm 0.98 | 0.776 | 0.034 | 0.721 |
| Family subscale | -1.78 \pm 0.90 | 0.051 | -0.188 | 0.047 |
| Overall quality of life score | -0.04 \pm 0.64 | 0.950 | -0.013 | 0.895 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.88 \pm 0.73 | 0.227 | -0.070 | 0.461 |
| Anxiety/insomnia | -0.15 \pm 0.69 | 0.824 | -0.008 | 0.932 |
| Social dysfunction | 0.23 \pm 0.53 | 0.660 | -0.008 | 0.935 |
| Severe depression | -0.33 \pm 0.68 | 0.631 | -0.172 | 0.069 |
| Total score | -1.13 \pm 1.95 | 0.563 | -0.066 | 0.488 |
| Affects by PANAS | | | | |
| Positive affect | -2.43 \pm 2.23 | 0.278 | -0.069 | 0.472 |
| Negative affect | 0.49 \pm 1.91 | 0.798 | 0.020 | 0.832 |

^a β coefficient and SE values can be interpreted as: for a treatment with HF-HD, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S14. Associations of dry body weight with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -3.8 \pm 23.7 | 0.872 | -0.042 | 0.663 |
| Total domestic and gardening physical activity, MET-minutes/week | 9.3 \pm 49.4 | 0.850 | 0.025 | 0.797 |
| Total leisure-time physical activity, MET-minutes/week | 11.3 \pm 27.7 | 0.684 | 0.023 | 0.808 |
| Total walking, MET-minutes/week | -5.6 \pm 30.8 | 0.855 | -0.049 | 0.608 |
| Total moderate-intensity activities, MET-minutes/week | 22.5 \pm 56.4 | 0.691 | 0.074 | 0.440 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 16.8 \pm 72.6 | 0.817 | 0.026 | 0.785 |
| Total physical activity, MET-kcal/week | 88.8 \pm 93 | 0.342 | 0.107 | 0.263 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 0.0 \pm 10.3 | 0.999 | -0.030 | 0.756 |
| Total physical activity level scores | 0.00 \pm 0.04 | 0.926 | 0.010 | 0.918 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.01 \pm 0.20 | 0.974 | 0.022 | 0.820 |
| Social and economic subscale | 0.05 \pm 0.24 | 0.835 | -0.029 | 0.764 |
| Psychological/spiritual subscale | -0.28 \pm 0.29 | 0.337 | -0.136 | 0.154 |
| Family subscale | -0.21 \pm 0.27 | 0.440 | -0.034 | 0.721 |
| Overall quality of life score | -0.06 \pm 0.19 | 0.749 | -0.082 | 0.389 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.17 \pm 0.22 | 0.428 | 0.017 | 0.860 |
| Anxiety/insomnia | 0.14 \pm 0.20 | 0.488 | 0.104 | 0.276 |
| Social dysfunction | 0.13 \pm 0.16 | 0.412 | 0.048 | 0.618 |
| Severe depression | 0.20 \pm 0.20 | 0.316 | 0.112 | 0.241 |
| Total score | 0.65 \pm 0.58 | 0.266 | 0.077 | 0.418 |
| Affects by PANAS | | | | |
| Positive affect | 1.23 \pm 0.66 | 0.063 | 0.169 | 0.075 |
| Negative affect | -0.85 \pm 0.56 | 0.137 | -0.103 | 0.279 |

^a β coefficient and SE values can be interpreted as: for a 10 kg change in dry body weight, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S15. Associations of body mass index with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -1.3 \pm 7.2 | 0.862 | -0.038 | 0.689 |
| Total domestic and gardening physical activity, MET-minutes/week | -6.7 \pm 15.1 | 0.659 | -0.028 | 0.771 |
| Total leisure-time physical activity, MET-minutes/week | 1.8 \pm 8.5 | 0.831 | -0.035 | 0.717 |
| Total walking, MET-minutes/week | -1.5 \pm 9.4 | 0.876 | -0.046 | 0.633 |
| Total moderate-intensity activities, MET-minutes/week | -4.6 \pm 17.2 | 0.788 | -0.014 | 0.881 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -6.1 \pm 22.2 | 0.783 | -0.024 | 0.804 |
| Total physical activity, MET-kcal/week | 8.6 \pm 28.5 | 0.763 | 0.047 | 0.627 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -0.5 \pm 3.1 | 0.873 | -0.097 | 0.309 |
| Total physical activity level scores | 0.0 \pm 0.01 | 0.667 | -0.040 | 0.679 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 0.00 \pm 0.06 | 0.993 | 0.030 | 0.753 |
| Social and economic subscale | -0.04 \pm 0.07 | 0.595 | -0.073 | 0.445 |
| Psychological/spiritual subscale | -0.13 \pm 0.09 | 0.152 | -0.134 | 0.159 |
| Family subscale | -0.12 \pm 0.08 | 0.158 | -0.076 | 0.424 |
| Overall quality of life score | -0.05 \pm 0.06 | 0.344 | -0.111 | 0.246 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.08 \pm 0.07 | 0.245 | 0.102 | 0.283 |
| Anxiety/insomnia | 0.06 \pm 0.06 | 0.332 | 0.156 | 0.101 |
| Social dysfunction | 0.05 \pm 0.05 | 0.260 | 0.072 | 0.453 |
| Severe depression | 0.26 \pm 0.18 | 0.142 | 0.127 | 0.181 |
| Total score | 0.07 \pm 0.06 | 0.270 | 0.161 | 0.089 |
| Affects by PANAS | | | | |
| Positive affect | 0.20 \pm 0.20 | 0.318 | 0.075 | 0.433 |
| Negative affect | -0.08 \pm 0.17 | 0.654 | -0.014 | 0.884 |

^a β coefficient and SE values can be interpreted as: for a 1 kg/m² change in body mass index, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S16. Associations of serum albumin concentration with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 115.2 \pm 104.2 | 0.271 | 0.103 | 0.283 |
| Total domestic and gardening physical activity, MET-minutes/week | 62.9 \pm 218.6 | 0.774 | 0.085 | 0.376 |
| Total leisure-time physical activity, MET-minutes/week | 36.6 \pm 122.8 | 0.766 | 0.003 | 0.979 |
| Total walking, MET-minutes/week | 143.5 \pm 135.5 | 0.292 | 0.126 | 0.188 |
| Total moderate-intensity activities, MET-minutes/week | 71.1 \pm 249.5 | 0.776 | 0.062 | 0.518 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 214.6 \pm 320.6 | 0.505 | 0.086 | 0.371 |
| Total physical activity, MET-kcal/week | 452.2 \pm 410.9 | 0.274 | 0.118 | 0.216 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -111.8 \pm 44.3 | 0.013 | -0.253 | 0.007 |
| Total physical activity level scores | 0.04 \pm 0.17 | 0.812 | 0.014 | 0.885 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 1.40 \pm 0.88 | 0.117 | 0.138 | 0.148 |
| Social and economic subscale | -0.44 \pm 1.07 | 0.682 | -0.076 | 0.428 |
| Psychological/spiritual subscale | 0.90 \pm 1.29 | 0.486 | -0.004 | 0.967 |
| Family subscale | -0.58 \pm 1.21 | 0.633 | 0.025 | 0.795 |
| Overall quality of life score | 0.76 \pm 0.84 | 0.367 | 0.059 | 0.533 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -1.44 \pm 0.96 | 0.134 | -0.037 | 0.698 |
| Anxiety/insomnia | -1.38 \pm 0.9 | 0.126 | -0.013 | 0.892 |
| Social dysfunction | -0.60 \pm 0.69 | 0.389 | -0.113 | 0.237 |
| Severe depression | -2.72 \pm 0.85 | 0.002 | -0.196 | 0.039 |
| Total score | -6.15 \pm 2.51 | 0.016 | -0.089 | 0.349 |
| Affects by PANAS | | | | |
| Positive affect | 0.62 \pm 2.96 | 0.833 | 0.013 | 0.889 |
| Negative affect | -5.27 \pm 2.47 | 0.035 | -0.166 | 0.081 |

^a β coefficient and SE values can be interpreted as: for 1g/dL change in serum albumin concentration, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S17. Associations of “college education or more” with physical activity, quality of life, and psychiatric functioning of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -22.9 \pm 88.9 | 0.797 | 0.061 | 0.525 |
| Total domestic and gardening physical activity, MET-minutes/week | -9.4 \pm 185.6 | 0.960 | -0.007 | 0.941 |
| Total leisure-time physical activity, MET-minutes/week | -31.3 \pm 104.2 | 0.765 | -0.024 | 0.803 |
| Total walking, MET-minutes/week | -16.3 \pm 115.5 | 0.888 | 0.065 | 0.496 |
| Total moderate-intensity activities, MET-minutes/week | -47.4 \pm 211.8 | 0.823 | -0.073 | 0.446 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -63.6 \pm 272.6 | 0.816 | 0.006 | 0.947 |
| Total physical activity, MET-kcal/week | -69.4 \pm 350.6 | 0.843 | 0.011 | 0.906 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 32.6 \pm 38.5 | 0.399 | 0.078 | 0.416 |
| Total physical activity level scores | 0.04 \pm 0.14 | 0.800 | 0.020 | 0.832 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -0.95 \pm 0.75 | 0.209 | -0.091 | 0.340 |
| Social and economic subscale | 1.18 \pm 0.89 | 0.187 | 0.105 | 0.272 |
| Psychological/spiritual subscale | -0.96 \pm 1.09 | 0.379 | -0.116 | 0.222 |
| Family subscale | -0.15 \pm 1.02 | 0.886 | -0.038 | 0.693 |
| Overall quality of life score | -0.11 \pm 0.71 | 0.872 | -0.023 | 0.807 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.43 \pm 0.81 | 0.598 | 0.008 | 0.931 |
| Anxiety/insomnia | 0.89 \pm 0.76 | 0.243 | 0.132 | 0.164 |
| Social dysfunction | 0.20 \pm 0.59 | 0.733 | 0.042 | 0.660 |
| Severe depression | 0.27 \pm 0.75 | 0.718 | 0.042 | 0.659 |
| Total score | 0.93 \pm 2.17 | 0.667 | 0.119 | 0.211 |
| Affects by PANAS | | | | |
| Positive affect | -0.51 \pm 2.49 | 0.839 | -0.046 | 0.633 |
| Negative affect | 0.91 \pm 2.13 | 0.670 | 0.032 | 0.737 |

^a β coefficient and SE values can be interpreted as: for “college education or more”, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S18. Associations of GG genotype of *GC* rs7041 with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|-------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | 172.8 \pm 80.6 | 0.034 | 0.165 | 0.087 |
| Total domestic and gardening physical activity, MET-minutes/week | 11.4 \pm 172.2 | 0.947 | 0.015 | 0.877 |
| Total leisure-time physical activity, MET-minutes/week | -51.5 \pm 96.5 | 0.595 | -0.024 | 0.808 |
| Total walking, MET-minutes/week | 167.1 \pm 105.8 | 0.117 | 0.109 | 0.259 |
| Total moderate-intensity activities, MET-minutes/week | -34.4 \pm 196.4 | 0.861 | 0.024 | 0.803 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | 132.8 \pm 252.2 | 0.600 | 0.088 | 0.364 |
| Total physical activity, MET-kcal/week | 246.9 \pm 323.9 | 0.448 | 0.106 | 0.272 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | 4.6 \pm 35.5 | 0.897 | 0.009 | 0.928 |
| Total physical activity level scores | 0.09 \pm 0.13 | 0.502 | 0.074 | 0.443 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | 1.7 \pm 0.7 | 0.016 | 0.235 | 0.014 |
| Social and economic subscale | 0.2 \pm 0.8 | 0.835 | -0.020 | 0.839 |
| Psychological/spiritual subscale | 0.8 \pm 1.0 | 0.434 | 0.104 | 0.277 |
| Family subscale | 0.1 \pm 0.9 | 0.944 | -0.034 | 0.725 |
| Overall quality of life score | 1.4 \pm 0.6 | 0.032 | 0.195 | 0.041 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | 0.3 \pm 0.8 | 0.679 | 0.016 | 0.866 |
| Anxiety/insomnia | -1.0 \pm 0.7 | 0.170 | -0.063 | 0.513 |
| Social dysfunction | -0.1 \pm 0.5 | 0.861 | -0.111 | 0.248 |
| Severe depression | -1.0 \pm 0.7 | 0.137 | -0.050 | 0.603 |
| Total score | -1.8 \pm 2.2 | 0.374 | -0.100 | 0.299 |
| Affects by PANAS | | | | |
| Positive affect | 2.1 \pm 2.3 | 0.358 | 0.111 | 0.247 |
| Negative affect | -2.8 \pm 2.0 | 0.160 | -0.157 | 0.102 |

^a β coefficient and SE values can be interpreted as: for GG genotype of *GC* rs7041, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S19. Associations of CC genotype of *GC* rs1155563 with physical activity, quality of life, psychiatric functioning, and affects of the HD patients

| Parameter | Unadjusted | | Spearman correlation | |
|--|--------------------|---------|----------------------|---------|
| | $\beta^a \pm SE$ | P value | R value | P value |
| Self-reported physical activity by IPAQ | | | | |
| Total work-related physical activity, MET-minutes/week | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | -55.9 \pm 111.5 | 0.617 | 0.027 | 0.781 |
| Total domestic and gardening physical activity, MET-minutes/week | -45.4 \pm 233.3 | 0.846 | 0.024 | 0.807 |
| Total leisure-time physical activity, MET-minutes/week | -25.3 \pm 131.0 | 0.847 | 0.092 | 0.340 |
| Total walking, MET-minutes/week | -5.1 \pm 145.2 | 0.972 | 0.115 | 0.233 |
| Total moderate-intensity activities, MET-minutes/week | -121.5 \pm 266.0 | 0.649 | -0.027 | 0.781 |
| Total vigorous-intensity activities, MET-minutes/week | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | -126.6 \pm 342.3 | 0.712 | 0.039 | 0.687 |
| Total physical activity, MET-kcal/week | -267.9 \pm 439.7 | 0.544 | 0.010 | 0.916 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | -25.4 \pm 48.1 | 0.598 | -0.052 | 0.586 |
| Total physical activity level scores | 0.05 \pm 0.18 | 0.758 | 0.053 | 0.582 |
| Quality of life by QLI-D | | | | |
| Health and functioning subscale | -1.1 \pm 0.9 | 0.246 | -0.112 | 0.243 |
| Social and economic subscale | -0.3 \pm 1.1 | 0.772 | -0.016 | 0.864 |
| Psychological/spiritual subscale | -0.1 \pm 1.4 | 0.922 | 0.073 | 0.447 |
| Family subscale | 1.5 \pm 1.3 | 0.242 | 0.144 | 0.132 |
| Overall quality of life score | -0.4 \pm 0.9 | 0.644 | -0.007 | 0.943 |
| Psychiatric functioning by GHQ-28 | | | | |
| Somatic symptoms | -0.7 \pm 1.0 | 0.481 | -0.042 | 0.663 |
| Anxiety/insomnia | -0.4 \pm 1.0 | 0.708 | 0.009 | 0.926 |
| Social dysfunction | 0.3 \pm 0.7 | 0.685 | 0.072 | 0.451 |
| Severe depression | 1.7 \pm 0.9 | 0.070 | 0.051 | 0.598 |
| Total score | 0.9 \pm 2.7 | 0.734 | -0.003 | 0.973 |
| Affects by PANAS | | | | |
| Positive affect | 1.8 \pm 3.1 | 0.566 | 0.020 | 0.831 |
| Negative affect | -2.1 \pm 2.7 | 0.448 | -0.036 | 0.705 |

^a β coefficient and SE values can be interpreted as: for CC genotype of *GC* rs1155563, the predicted psychological variable would change by $\beta \pm SE$

NA – not applicable

Table S20. Demographic, clinical and laboratory parameters significantly correlating with self-reported physical activity in the HD patients

| Self-reported physical activity by IPAQ-L | Patient characteristics | Unadjusted | | Spearman correlation | |
|--|--------------------------------------|--------------------|---------|----------------------|----------|
| | | $\beta \pm SE$ | P value | R value | P value |
| Total work-related physical activity, MET-minutes/week | | NA | NA | NA | NA |
| Total transport-related physical activity, MET-minutes/week | Metrical age | -85.6 \pm 28.0 | 0.003 | -0.364 | 0.0001 |
| | Chronic glomerulonephritis | 83.4 \pm 99.4 | 0.404 | 0.239 | 0.011 |
| | Chronic tubulointerstitial nephritis | -217.3 \pm 149.6 | 0.149 | -0.213 | 0.025 |
| | GG genotype of <i>GC</i> rs7041 | 172.8 \pm 80.6 | 0.034 | 0.165 | 0.087 |
| Total domestic and gardening physical activity, MET-minutes/week | Metrical age | -89.5 \pm 60.2 | 0.140 | -0.347 | 0.0002 |
| | Chronic glomerulonephritis | 370.5 \pm 205.1 | 0.074 | 0.231 | 0.015 |
| Total leisure-time physical activity, MET-minutes/week | | - | - | - | - |
| Total walking, MET-minutes/week | Metrical age | -99.4 \pm 36.7 | 0.008 | -0.367 | 0.0001 |
| | Chronic glomerulonephritis | 111.9 \pm 129.2 | 0.388 | 0.286 | 0.002 |
| | Chronic tubulointerstitial nephritis | -261.3 \pm 194.7 | 0.182 | -0.217 | 0.022 |
| | Hypertensive nephropathy | 266.1 \pm 122.6 | 0.032 | 0.117 | 0.223 |
| Total moderate-intensity activities, MET-minutes/week | Metrical age | -78.2 \pm 69.0 | 0.260 | -0.311 | 0.001 |
| | Chronic glomerulonephritis | 341.0 \pm 235.4 | 0.150 | 0.243 | 0.010 |
| | Treatment with HF-HD | -41.1 \pm 188.9 | 0.828 | -0.200 | 0.036 |
| Total vigorous-intensity activities, MET-minutes/week | | NA | NA | NA | NA |
| Total physical activity, MET-minutes/week | Metrical age | -177.6 \pm 87.7 | 0.045 | -0.423 | 0.000004 |
| | Chronic glomerulonephritis | 452.8 \pm 302.7 | 0.138 | 0.298 | 0.001 |
| | Chronic tubulointerstitial nephritis | -615.6 \pm 459.4 | 0.183 | -0.214 | 0.024 |
| Total physical activity, MET-kcal/week | Metrical age | -216.7 \pm 113.1 | 0.058 | -0.425 | 0.000003 |
| | Chronic glomerulonephritis | 422.1 \pm 391.2 | 0.283 | 0.274 | 0.004 |
| | Chronic tubulointerstitial nephritis | -791.6 \pm 590.8 | 0.183 | -0.213 | 0.025 |
| The average time spent sitting (without time spent on HD session and on transportation), minutes/day | Serum PTH concentration | 8.6 \pm 3.6 | 0.020 | 0.219 | 0.021 |
| | Serum albumin concentration | -111.8 \pm 44.3 | 0.013 | -0.253 | 0.007 |
| Total physical activity level scores | Metrical age | -0.10 \pm 0.05 | 0.027 | -0.233 | 0.014 |

Table S21. Demographic, clinical and laboratory parameters significantly correlating with quality of life, psychiatric functioning, and affects

| Quality of life by QLI-D | Patient characteristics | Unadjusted | | Spearman correlation | |
|-----------------------------------|---------------------------------|------------------|---------|----------------------|---------|
| | | $\beta \pm SE$ | P value | R value | P value |
| Health and functioning subscale | GG genotype of <i>GC</i> rs7041 | 1.70 \pm 0.70 | 0.016 | 0.235 | 0.014 |
| | type 2 diabetic nephropathy | -1.59 \pm 0.71 | 0.027 | -0.248 | 0.008 |
| Social and economic subscale | metrical age | 0.84 \pm 0.28 | 0.003 | 0.237 | 0.012 |
| Psychological/spiritual subscale | type 2 diabetic nephropathy | -2.60 \pm 1.02 | 0.013 | -0.263 | 0.005 |
| Family subscale | HF-HD | -1.78 \pm 0.90 | 0.051 | -0.188 | 0.047 |
| Overall quality of life score | metrical age | 0.50 \pm 0.22 | 0.026 | 0.166 | 0.081 |
| | GG genotype of <i>GC</i> rs7041 | 1.40 \pm 0.60 | 0.032 | 0.195 | 0.041 |
| | type 2 diabetic nephropathy | -1.38 \pm 0.67 | 0.042 | -0.214 | 0.023 |
| Psychiatric functioning by GHQ-28 | Patient characteristics | Unadjusted | | Spearman correlation | |
| | | $\beta \pm SE$ | P value | R value | P value |
| Somatic symptoms | coronary artery disease | -1.68 \pm 0.77 | 0.033 | -0.202 | 0.033 |
| | serum PTH concentration | 0.14 \pm 0.08 | 0.078 | 0.230 | 0.015 |
| Anxiety/insomnia | type 2 diabetic nephropathy | 1.68 \pm 0.72 | 0.021 | 0.247 | 0.009 |
| Social dysfunction | | | | | |
| Severe depression | metrical age | -0.54 \pm 0.24 | 0.025 | -0.165 | 0.082 |
| | RRT vintage | -0.54 \pm 0.24 | 0.025 | 0.137 | 0.150 |
| | serum PTH concentration | 0.21 \pm 0.07 | 0.003 | 0.304 | 0.001 |
| | serum albumin concentration | -2.72 \pm 0.85 | 0.002 | -0.196 | 0.039 |
| | serum PTH concentration | 0.46 \pm 0.21 | 0.028 | 0.279 | 0.003 |
| | serum albumin concentration | -6.15 \pm 2.51 | 0.016 | -0.089 | 0.349 |
| Affects by PANAS | Patient characteristics | Unadjusted | | Spearman correlation | |
| | | $\beta \pm SE$ | P value | R value | P value |
| Positive affect | metrical age | -1.43 \pm 0.79 | 0.073 | -0.237 | 0.012 |
| Negative affect | female gender | -0.45 \pm 0.18 | 0.017 | 0.206 | 0.029 |
| | type 2 diabetic nephropathy | 4.60 \pm 2.00 | 0.023 | 0.085 | 0.374 |
| | serum albumin concentration | -5.27 \pm 2.47 | 0.035 | -0.166 | 0.081 |

Table S22. Demographic, genetic, clinical and laboratory parameters in HD women and men

| Characteristics | Women, n = 52 | Men, n = 60 | P value |
|--|--|---|---|
| Age, years | 69.7, 29.0 - 91.5 | 67.2, 29.6 - 90.1 | 0.295 ^a |
| RRT vintage, years | 5.25, 2.03 – 21.0 | 4.4, 1.96 - 17.9 | 0.291 ^a |
| College education or more, n (%) | 10 (19.2) | 20 (33.3) | 0.142 ^b |
| Genotypes of <i>GC</i> rs7041, n (%) ^c | GG 18 (34.6), GT 22 (42.3), TT 12 (23.1) | GG 22 (37.9), GT 26 (44.8), T 10 (17.3) | P _{genotype} = 0.745 P _{trend} = 0.513 |
| Genotypes of <i>GC</i> rs1155563, n (%) ^d | TT 22 (42.3), CT 24 (46.2), CC 6 (11.5) ^e | TT 23 (39.0), CT 26 (44.1), CC 10 (16.9) ^e | P _{genotype} = 0.718 P _{trend} = 0.438 |
| HF-HD vs LF-HD, n (%) | 31 (59.6) | 34 (56.7) | 0.903 ^b |
| Dry body mass, kg | 67.75, 43.0 – 96.0 | 81.8, 5.7 – 135.0 | 0.00001 ^a |
| BMI, kg/m ² | 26.8, 16.3 - 39.5 | 26.9, 20.0 - 47.4 | 0.288 |
| Type 2 diabetic nephropathy, n (%) | 13 (25.0) | 21 (35.0) | 0.346 ^b |
| Chronic glomerulonephritis, n (%) | 10 (19.2) | 11 (18.3) | 0.903 ^b |
| Chronic tubulointerstitial nephritis, n (%) | 4 (7.7) | 4 (6.7) | 0.874 ^b |
| Hypertensive nephropathy, n (%) | 11 (21.2) | 12 (20.0) | 0.933 ^b |
| Coronary artery disease, n (%) | 11 (21.2) | 22 (36.7) | 0.112 ^b |
| Myocardial infarction, n (%) | 5 (9.6) | 9 (15.0) | 0.567 ^b |
| A habit of sunbathe^d | 3 (5.8) | 2 (3.3) | 0.869 ^b |
| 25(OH)D, ng/ml | 12.85, 7.6 - 18.9 | 16.6, 5.7 - 24.3 | 0.0001 ^a |
| Total calcium, mg/dl | 8.89, 6.65 - 12.8 | 8.77, 6.8 - 10.2 | 0.220 ^a |
| Phosphorus, mg/dl | 4.99, 2.68 - 8.48 | 4.59, 2.63 - 8.73 | 0.623 ^a |
| Parathyroid hormone, pg/ml | 400.9, 30 - 2186 | 470.8, 32.5 - 2397.7 | 0.369 ^a |
| Albumin, g/dl | 3.8, 2.8 - 4.4 | 3.9, 2.78 - 4.7 | 0.363 ^a |

^a Mann-Whitney U test

^b Chi square test with Yates correction

^c available in 110 patients

^d available in 111 patients

^e the genotype distribution is consistent with HWE

Abbreviations: BMI – body mass index, *GC* - the group-specific component gene, HD – haemodialysis, HF-HD - high flux haemodialysis, HWE – Hardy-Weinberg equilibrium, LF-HD - low flux haemodialysis, RRT - renal replacement therapy

Conversion factors to SI units are as follows: for albumin, 10.0; for calcium, 0.2495; for 25-hydroxyvitamin D, 2.496; for parathyroid hormone, 0.1061; and for phosphorus, 0.3229