

# Social Consequences of the Chronic Renal Failure Patients in the Therapy Process in Slovakia

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## Introduction

This work provides information about the results of monitoring the client's social consequences related to chronic renal failure and its healing process. This is the first such monitoring in Slovakia. The study is descriptive and points out the non-medical impacts of a serious illness. The patient's health and social problems overlap. The disease is not an isolated phenomenon; it has and will always have social connections, consequences and causes.

10% of the population worldwide is affected by chronic kidney disease (CKD), and millions die each year because they do not have access to affordable treatment [1].

According to the 2010 Global Burden of Disease study, chronic kidney disease was ranked 27<sup>th</sup> in the list of causes of total number of deaths worldwide in 1990, but rose to 18<sup>th</sup> in 2010. This degree of movement up the list was second to that of HIV and AIDS [2].

Over 2 million people worldwide currently receive dialysis treatment or a kidney transplant to stay alive, yet this number may only represent 10% of people who actually need the treatment to live.

Of the 2 million people who receive the treatment for kidney failure, the majority are treated in only five countries-the United States, Japan, Germany, Brazil, and Italy. These five countries represent only 12% of the world population. Only 20% are treated in about 100 developing countries that make up over 50% of the world population.

More than 80% of all patients who receive the treatment for kidney failure are in affluent countries with universal access to health care and a large elderly population. It is estimated that the number of cases of kidney failure will increase disproportionately in developing countries, such as China and India, where the number of elderly people is increasing [2].

In middle-income countries, dialysis treatment or kidney transplantation creates a huge financial burden for the majority of the

people who need it. In another 112 countries, many people cannot afford treatment at all, resulting in the death of over 1 million people annually from untreated kidney failure [3-5].

In Slovakia, dialysis treatment is fully covered by the Health Insurance. At present, transformational changes are taking place in our society, many of which are essential for the direction of health and social spheres. Chronic kidney disease seriously changes the life of an individual as it is incurable. In the final stage of the kidney disease, the patient is dependent on the help of medical personnel and devices. Since renal failure is a life-threatening condition, long-term dialysis is a necessary solution for the patient. As a result, the care of persons who are included in the dialysis process should be viewed comprehensively, i.e., through health and social care, psychological and spiritual assistance. The aim of this work is to identify and analyze the most important areas of social consequences of chronic kidney failure on a client in the treatment process. As we have mentioned, we are not aware of a similar research, so we decided to identify individual social phenomena, processes and look at them from several research perspectives. Our intention is to identify the specificities of health and social issues and take a holistic approach.

## Research Hypothesis

H1: The longer the patient is dialyzed, the greater the degree of social isolation.

H2: The older the people with CKD, the higher their spending on medicine.

H3: The older the people with CKD; there is thus a greater the reliance and assistance.

H4: The older the people with CKD, the more reliance on help related to provide meals.

H5: We assume that female CKD patients have a lower income than male CKD patients do.

H6: The lower the financial income of patients, the greater the likelihood of reducing food intake.

H7: The lower the financial income of patients, the greater the likelihood of a reduction in heat and water consumption.

### Population Studied

This research involved participants with the medical diagnosis of chronic kidney failure, treated with dialysis. The youngest participant was nineteen, the oldest ninety-two. In total, twenty-three participants from seventeen centers participated in the research. The contact person we approached for research purposes to cooperate with the distribution and learning about the questionnaire was the head nurse of each dialysis center.

### Our statistical file consists of two units

- Dialysis patients: 358
- Dialysis centers: 17

Calculation of sample within B Braun Avitum dialysis centers:

We chose mechanical selection; we chose 10% selection, 10 elements from each group.

Standard deviation of sample average: 171.4.

Minimum: 13 in group

Maximum: 54 in group

We have calculated the standard range parameters of our sample by the standard deviation of the sample average of 171.4 in the groups. This is the number of questionnaires that we have distributed. We chose randomized criterion of an alphabetical order of patients, from which we then drew lots. We returned numbers after each draw.

### Data collection tool was a questionnaire

Questionnaire of our own provenance entailing of 26 questions. The participant also expressed their opinion in writing, circling the selection from the scale, numerical expressions. We used Microsoft Excel spreadsheet program to organize and collect questionnaire data. For analysis we used statistical software R. Data was analyzed using SPSS Statistics 17.0. For testing of individual hypotheses we used the following methods: Spearman correlation coefficient, Calculation of linear regression, Calculation of binomial regression, Chi-square test.

### Summary of the Most Important Research Results

#### H1: The longer the patient is dialyzed, the greater the degree of social isolation

Average age of a patient with CKD and dialyzed in Slovakia was 63.3 years old and the average survival time with dialysis is 5.3 years. As we can see on the chart, the disease is considered to be the most serious intervention in one's personal life. They must learn to accept a lifestyle change, organize their time, and respect the fundamental dietary restrictions. They suffer from a loss of employment-only 6.5% still work. There are several reasons-the length and frequency of dialysis, employers' unwillingness, and the impossibility to perform work before the disease. Loss of work and social contact results in mood swings and mental state of low self-esteem. Communication in the family was worse; relationships sometimes end as the partner leave. On the basis of the above, we can state that the help of the family and its surroundings is significant for the participants. In Slovakia, the least studied health factor is the social contact of a person with his/her surroundings, family, friends, colleagues, community and so

on. Feeling connected with other people is extremely important for physical and mental health. Numerous foreign studies have confirmed that people with limited or missing social contacts (loners) have several times higher morbidity during their lives. People who are lonely and socially isolated are more likely to have health problems, which can have serious financial consequences (Figure 1).

#### H2: In the older the people with CKD, the higher their spending is medicine

Most dialysis patients are over 60 years of age. In addition to the underlying disease, they have other diseases that require treatment. This is also closely related to medicine expenditures. To address our hypothesis, we used a linear regression of drug expenditure with respect to the patient's age. The significance level is 5%. Here we see that the dependence is significant ( $p=0.028$ ). The coefficient is positive ( $B=0.44$ ), it is a direct proportional relationship. The hypothesis was confirmed (Table 1).

The health insurance company partially guarantees the reimbursement of medicines over 25 Euros but only from selected groups, which many patients cannot benefit from. The average amount of medicine surcharge in Slovakia in 2017 was 9,2 Euro, according to the Statistical Office of Slovakia.

#### Social consequence of deteriorated health

We also focused on issues of self-sufficiency, reliance on helping others to meet their basic life needs. In addition to the underlying kidney disease, physical disability, which is often also associated with clients? The results of our research showed that 42 (35.2%) participants most often suffer from physical disability, 34 (27.6%) visual impairment and 20 (16.3%) suffer from hearing impairment. We suppose that these results are influenced mainly by the higher age of the participants, but their influence is important especially in the process of integration, whether in the conditions of dialysis, at home, at work, etc. Dialysis treatment causes energy loss, fatigue, altered mobility and changes in the self-care area. 58 (47.2%) participants are partially dependent on aid and 7 (5.6 %) are not self-sufficient. Self-care deficits are related to activities such as shopping, cooking, cleaning, hygiene aid.

#### H3: The older the people with CKD, the greater reliance and assistance (Figure 2)

#### H4: The older the people with CKD, the more reliance on help related to provide meals (Figure 3)

The economic impact of chronic kidney disease was determined

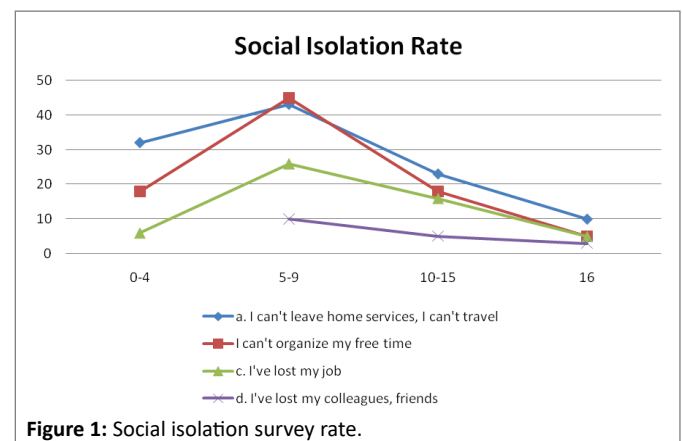


Figure 1: Social isolation survey rate.

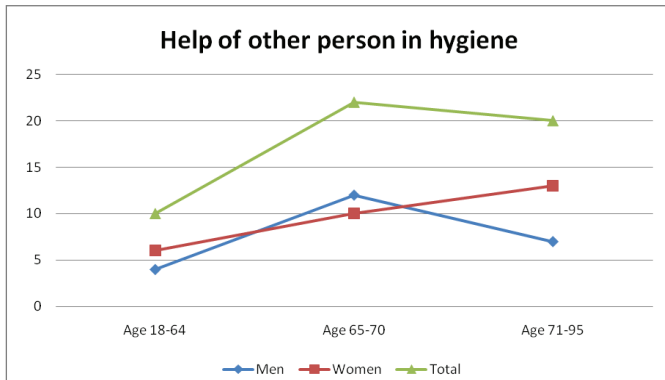


Figure 2: Interest in providing hygiene aid in dialysis patients in relation to age.

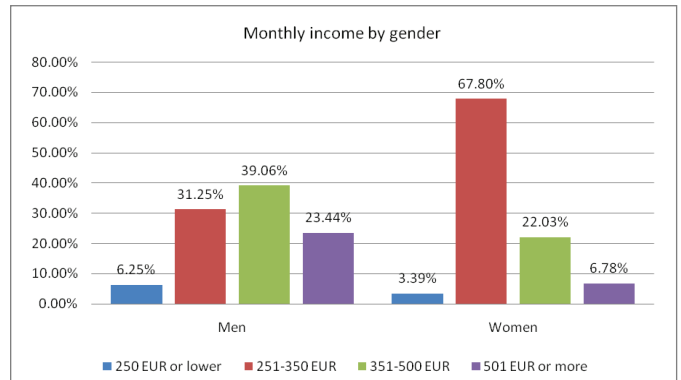


Figure 4: Monthly income of dialysis patients according to gender.

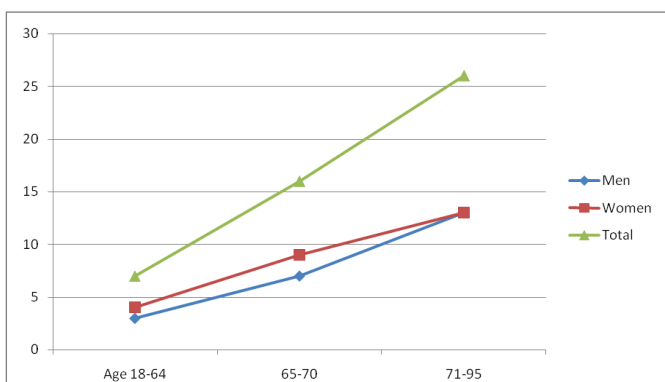


Figure 3: Interest in providing help to eat in dialysis patients in relation to age.

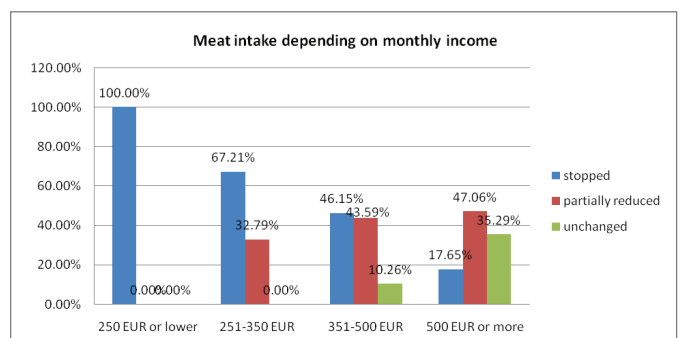


Figure 5: Meat intake in dialysis patients depending on monthly income.

by selecting participants from the range offered, then checking one option (Table 2).

**H5: We assume that female CKD patients have a lower income than male CKD patients**

Income of respondents (Table 3).

The income of the household is important for the household budget. In the case of our respondents, the highest part of incomes is disability pensions 47.5%, old-age pensions 45%, and work income (Figure 4).

The risk of poverty in terms of income appears to be higher in women than in men. The amount of pensions is also related to education. Among women in our research, we found primary education in 57 people (46.3%). According to the Statistical Office of the EU SILC 2017, 12.4% of Slovakia's population was endangered by the risk of poverty, which equals approximately 650 thousand people. In the case of one-person households, the risk of poverty is at EUR 360 per month. The household of an individual with a monthly income below the amount indicated is in the at-risk-of-poverty zone. The results of our research showed that 66 participants (53.7%) have an income per individual below 350 Euros. There are 30 people living alone is 24.5%. Alone people are a particular group at risk, as it is financially difficult for them to cover household and medicine costs. They cannot afford to buy new clothes, shoes. They face extraordinary costs: electricity, water, repairs and the purchase of electrical appliances. The transition

from full health to dialysis treatment in working-age patients is a major financial burden, in the case of incapacity to work, which can take a long time. Not only patients but also their families are at risk, especially if the patient is the breadwinner. Three (2.5%) said they were using a family support service. Expenses for medicines and health care represent a big financial burden for the chronically ill. The elderly appear to be at risk from a higher age-related expenditure on medicine. To the disadvantage of seniors in society contribute to the risk from higher age-related specificities of disease in older age group with chronic diseases.

**H6: The lower the financial income of patients, the greater the likelihood of reducing food intake**

WHO has devoted great attention to the nutrition of the population, risk groups, the issue of hunger caused by poverty? The patients' health is also closely related to good nutrition. Economic income significantly affects the diet and living conditions of our patients. Especially low-income groups of the population tend to consume unbalanced food. Patients with an income of less than 350 Euros limit the intake of meat, fruit, and vegetables. They are at great risk of malnutrition, cachexia, infection, poor health. In the case of Slovakia, dialysis cachexia is the cause of death of dialyzed patients in fourth place (Table 4).

The World Health Organization's Committee on Social Determinants of Health has found that poor health of low-income people is directly related to social health trends (Table 5).

We tested the distribution of respondents according to the amount of meat intake and the average monthly intake achieved at

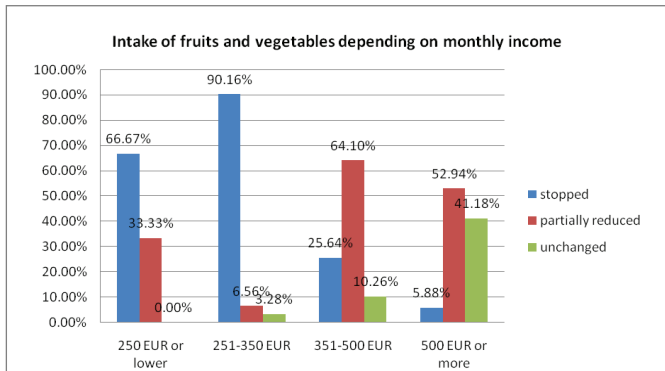


Figure 6: Intake of fruits and vegetables in dialysis patients depending on monthly income.

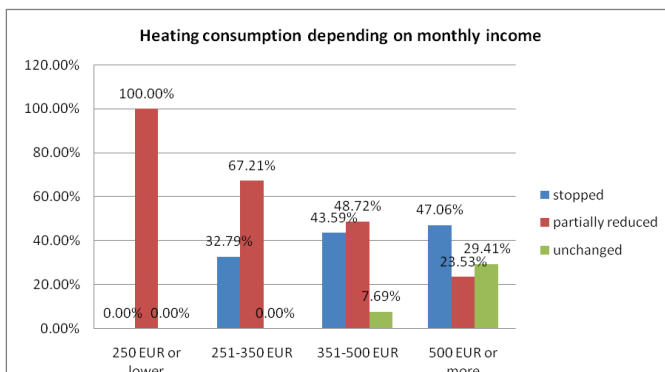


Figure 7: Heating consumption in dialysis patients in relation to monthly income.

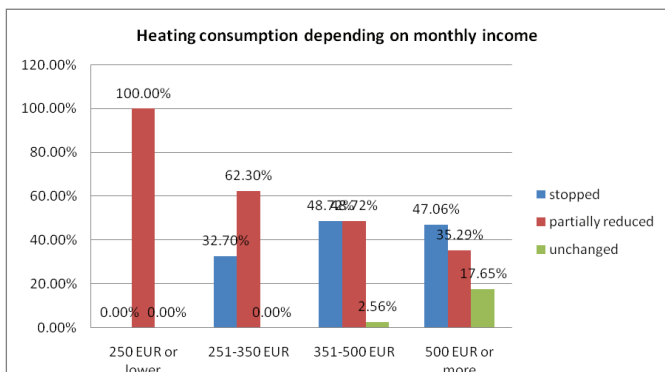


Figure 8: Water consumption in dialysis patients in relation to monthly income.

the significance level of 0.05 (Figure 5). The test criterion value is  $\chi^2=17.277$ . Since the calculated p-value of the chi-square test is equal to  $p=0.1484$ , we do not reject the hypothesis that the volume of meat intake is the same in terms of statistical income in terms of statistical significance (Table 6).

At the significance level of 0.05, we tested the distribution of respondents according to the restriction of vegetable and fruit intake based on the achieved average monthly income (Table 7). The test criterion value is  $\chi^2=71.992$ . Since the calculated p-value of the chi-square test is equal to  $p=0.0005$ , we hypothesize that the intake of

Table 1: Medicine expenditure [EUR].

	44 or younger	45-59 years	60-74 years	75 or older	premier
Medicine expenditure /EUR	20	36,11	47,77	53,33	39,3

Table 2: Cost of living indices of pensioners-economic statistics of Slovakia 2017.

COICOP	2012	2013	2014	2015	2016
Medical and pharmaceutical products, therapeutic appliances	211,3	216,1	217,9	218,6	222,6
Non-hospital medical and paramedical services	243,8	248,2	251,8	255,8	249,1
Hospital services	137,4	138,7	139,6	140	140,9

Table 3: Compare monthly income by gender.

	Value of test statistics ( $\chi^2$ )	P
Pearson's Chi-square test	28.51	0.0004998

fruits and vegetables is the same on the basis of different financial incomes (Figure 6).

Why address the issue of housing in connection with CKD? The WHO's recommendations on housing conditions make it clear that housing quality has a major impact on human health. Poor housing is associated with a wide range of health problems.

Material deprivation rate is defined as the percentage of population with an enforced lack of at least three or at least four out of nine material deprivation items, that a household cannot afford: a) to face unexpected financial expenses, b) to go for one week's annual holiday, away from home, c) to pay arrears on mortgage or rent payments, utility bills, hire purchase installments or other loan payments, d) to eat every second day a meal with meat, chicken, fish, e) to keep home their adequately warm or although the household would like to have but it cannot afford: f) washing machine, g) color TV, h) telephone or i) car (Table 8).

### H7: The lower the financial income of patients, the greater the likelihood of a reduction in heat and water consumption

At the significance level of 0.05 we tested the distribution of respondents according to the reduction of heating consumption based on the achieved average monthly income.

The test criterion value is  $\chi^2=28.51$ . Since the calculated p value of the Chi-square test is equal to  $p=0.0005$ , we reject the hypothesis that the heating limitation is the same on the basis of different financial incomes (Table 9).

We also tested the distribution of respondents according to the reduction in water consumption based on the average monthly income at the significance level of 0.05 (Figure 7).

The test criterion value is  $\chi^2=20.603$ . Since the calculated p-value of the Chi-square test is equal to  $p=0.009$ , we reject the hypothesis that the reduction in water consumption is the same due to different financial income (Table 10).

**Table 4:** Overview of PDL patient deaths by disease.

	Deaths total	Cardiovascular disease	Pericarditis	Infection	Dialysis cachexia	Malignancy
Slovakia	623	377	4	108	18	98

**Table 5:** Comparison of meat intake depending on monthly income.

	Value of test statistics ( $\chi^2$ )	P
Pearson's Chi-square test	33.246	0.000499

**Table 6:** Meat intake in dialysis patients depending on monthly income.

At the significance level of 0.05 we tested the distribution of respondents according to the restriction of meat intake.	Value of test statistics ( $\chi^2$ )	P
Pearson's Chi-squared test	17.277	0.1484

**Table 7:** Comparison of fruit and vegetable intake in relation to monthly income.

	Value of test statistics ( $\chi^2$ )	P
Pearson's Chi-square test	71.992	0.000499

**Table 8:** Selected cross-sectional indicators based on the sectional component of EU-SILC.

Indicator	2012	2013	2014	2015	2016
Material deprivation rate (at least 4 items)					
from 0 to 17	11,9	13	12,1	11,2	9,7
from 18 to 64	10,1	9,7	9,4	8,4	7,9
65 and more	10,8	9,2	9,2	9,2	8
Material deprivation rate by selected material deprivation items					
Capacity to face unexpected financial expenses	36,1	39,5	38,9	36,7	37,9
Eat every second day a meal with meat, chicken or fish	23,3	23,7	21,5	20,1	17
Keeping home adequately warm	5,5	5,4	6,1	5,8	5,1

Water consumption of dialysis patients in relation to monthly intake (Figure 8).

Insufficient hygiene, hepatitis, respiratory complaints, gastrointestinal complaints, diarrhea, lice parasite infections, fleas, especially in the low-income groups, threatens the dialyzed patient.

**Table 9:** Comparison of heating consumption in relation to monthly income.

	Value of test statistics ( $\chi^2$ )	P
Pearson's Chi-square test	28.51	0.0004998

**Table 10:** Comparison of water consumption in relation to monthly income.

	Value of test statistics ( $\chi^2$ )	P
Pearson's Chi-square test	20.603	0.008996

## Conclusion

Basic understanding of the causes of the vulnerability of disadvantaged population should aim to adapt and take the necessary political and strategic steps to support the treatment and production of preventive guidelines. A special group in terms of social risk is the lonely person. In connection with low income, which they cannot change because of their illness, the problem seems to be the issue of inadequate diet, hygiene and housing, which aggravates a person's health. In terms of age, clients at the age of 70 and over are in a risk group in terms of social assistance. The transition from full health to dialysis treatment in patients of working age poses the risk of social exclusion, a high financial burden in the case of their incapacity for work that can last for a long time.

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