Social factors and ethnicity in CKD

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Vilnius, 25/9/15

Projected CKD prevalence worldwide

Jha, 2013

Patients receiving RRT in 2010

Liyanage, Lancet, 2015

Number of patients receiving RRT according to income level

Liyanage, Lancet, 2015

Dialysis centers in USA

Rodriguez, JN, 2013

Dialysis centers in Alaska

Rodriguez, JN, 2013
Estimated number of patients undergoing RRT by region

Liyanage, Lancet, 2015

Changes in employment status after dialysis inception

Nakayama, 2015

Changes in annual individual incomes by dialysis modality

Nakayama, 2015

Poverty increases the burden of disease

Biological factors
- Low birth weight
- Genetic predisposition
- Cumulative biological risk profiles
- Inadequate nutrition

Environmental factors
- Increased exposure to pollutants
- Increased exposure to communicable disease
- Lack of clean water and sanitation

Health behavior
- Lack of information on preventive behaviors
- Lack of knowledge on how best to respond to an episode of illness
- Health beliefs and unhealthy behaviors

Access to health care
- Lack of access to health care
- Greater distance from health-care providers
- Lack of out-of-pocket resources

Socioeconomic Class and Values of Key Determinants of Health

Poor region vs. capital city

Nicholas, 2015

Obrador, Kidney Int., 2010
Screening for CKD in homeless

- 260 homeless individuals in the state of Jalisco, Mexico
- 3.5% knew they were hypertensive but 31% had systolic blood pressure greater than or equal to 140 mm Hg
- 5.8% knew they had diabetes, but 19% had fasting blood sugar >126 mg/dl
- CKD was more prevalent than among the poor Jalisco population 22% vs. 15.8%

García-García, 2013

Conceptual model of relationship between socioeconomic deprivation and CKD

García-García, 2013

Progression from prematurity to chronic kidney disease

Nicholas, 2015

Mediators of the Association Between Low SES and CKD

Varti, 2014

Education level: CKD and mortality

Choi, AJKD, 2011

Social deprivation and access to kidney transplant

Udaya, 2010
Kidney and infection

<table>
<thead>
<tr>
<th>Countries</th>
<th>IgA %</th>
<th>MCD %</th>
<th>MPGN %</th>
<th>GNP US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria (N = 41)</td>
<td>-</td>
<td>9</td>
<td>51</td>
<td>770</td>
</tr>
<tr>
<td>Peru (N = 1263)</td>
<td>1</td>
<td>5</td>
<td>23</td>
<td>4480</td>
</tr>
<tr>
<td>Paraguay (N = 676)</td>
<td>3</td>
<td>1</td>
<td>25</td>
<td>4380</td>
</tr>
<tr>
<td>South Africa (N = 104)</td>
<td>5</td>
<td>1</td>
<td>22</td>
<td>8710</td>
</tr>
<tr>
<td>Japan (N = 1850)</td>
<td>30</td>
<td>26</td>
<td>7</td>
<td>25,170</td>
</tr>
<tr>
<td>Spain (N = 7016)</td>
<td>17</td>
<td>19</td>
<td>4.3</td>
<td>17,850</td>
</tr>
<tr>
<td>France (N = 1900)</td>
<td>36</td>
<td>10.7</td>
<td>2.3</td>
<td>23,020</td>
</tr>
<tr>
<td>Italy (N = 13,815)</td>
<td>37</td>
<td>7</td>
<td>6.3</td>
<td>22,000</td>
</tr>
<tr>
<td>Australia (N = 2030)</td>
<td>34</td>
<td>4.4</td>
<td>2.2</td>
<td>23,850</td>
</tr>
<tr>
<td>United States (N = 2000)</td>
<td>9</td>
<td>15</td>
<td>2</td>
<td>31,910</td>
</tr>
</tbody>
</table>

Hurtado, Kidney Int, 2005

Renal biopsy data in Lithuania 1994-2012

Bradzute, 2015

Agriculture and CKD

- CKD of unknown origin, prevalence 17.9%–21.1%
- Central America, Egypt, India and Sri Lanka
- Agricultural communities
- Higher in male farmworkers aged 20–50 years
- Varied by community economic activity and altitude
- Agrochemical exposure, dehydration, hypertension, homemade alcohol use, family history

Almaguer, MEDICC Rev, 2014

http://www.globalpost.com
Mesoamerican nephropathy

- Prevalent in the Pacific ocean coastal low lands: Mexico, Guatemala, El Salvador, Nicaragua, Honduras and Costa Rica
- Colloquially called creatinine
- Presents as a tubular-interstitial disease with rapid progression to ESRD
- Sugarcane workers, strenuous work in the high temperatures of the coastlands
- Town of Chichigalpa - “Island of Widows”
Barriers in access to high-quality CKD care

GDP per capita according to purchasing power standards

People at risk of poverty or social exclusion

Case report: traveller

• Tonigh, 81 yr. male
• Scabies, homeless
• 10th visit to ER this year
• Collapse after discharging from a hospice
• Knows hypertension from 2013
• MI in 2000, 2011, 2013
• Creatinine 418 mkmol/l (AKI!), hgb 10,1 g/l

SES, ethnicity and CKD

Social factors and CKD stage 3-5

Twenty-four studies in the pre-dialysis population and 34 in the dialysis population representing 8.9 million people from 10 countries

Crews, AJKD, 2010

Morton, NDT, 2015
Differences in death rates among participants with CKD, KEEP, 2000 - 2009

Ethnicity and ESDR due to DM

Ethnicity and individual glomerular volume

Prevalence of CKD, by eGFR and First Nations status

Ethnicity and access to kidney transplant

CKD in different Asia countries
Incidence of RRT in Australia

McDonald, CN, 2010

Ethnicity in Lithuania (1)


Ethnicity in Lithuania (2)

Lietuvos statistikos departamento duomenys

Lietuvos statistikos departamento duomenys
**Case report: periodic fever**
- 33 yrs, female, Armenian
- Periodic disease, treated with colchicine
- Amyloid in salivary gland
- HD from 2007 via central line
- Fever attack in 2009, later on underwent transplantation
- Dead because of infectious complications

**Case report: rare HLA**
- 60 yr. male, Kazakh
- Many years has diagnosis of MN
- 2 years on CAPD from 2012, then changed to HD because of abdomen wall abscess
- Waiting for transplantation
- Never as a first candidate

**Fear in society**

**Field hospitals in Syria: dialysis**

**People health in Syria**

**ESRD epidemiology in Syria**
- Aleppo city – 550 patients on HD (total 2,132,100)
- Mean age 44.7 yr.
- Rates relatively low due to the high cost of treatment, high mortality rate and low kidney transplantation rate
- Causes: HTN 21.1%, GN 20.5%, DM 19.45%
CKD epidemiology in Roma people

- Cross-sectional epidemiological HepaMeta study conducted in Slovakia in 2011
- 452 Roma and 403 non-Roma respondents
- Roma females had OR of 1.56 for having nephropathy over non-Roma females
- Roma females had a significantly lower GFR (mean difference 3.4 ml/min, t = -3.58, p < 0.001); all female female patients with proteinuria were Roma

Rosenberger, Cent Eur J Public Health, 2014

Roma and risk of ESRD

<table>
<thead>
<tr>
<th>Age group</th>
<th>Majority population</th>
<th>Roma population</th>
<th>RR for ESRD (standardized 95% confidence interval)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>618 (17)</td>
<td>21</td>
<td>1.4 (1.0-2.2)</td>
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<tr>
<td>15-20</td>
<td>880 (24)</td>
<td>41</td>
<td>1.2 (1.0-1.3)</td>
</tr>
<tr>
<td>21-40</td>
<td>1,042 (28)</td>
<td>58</td>
<td>1.1 (1.0-1.3)</td>
</tr>
<tr>
<td>41-65</td>
<td>1,042 (28)</td>
<td>59</td>
<td>1.1 (1.0-1.3)</td>
</tr>
<tr>
<td>65+</td>
<td>845 (23)</td>
<td>34</td>
<td>1.1 (1.0-1.3)</td>
</tr>
<tr>
<td>Total</td>
<td>5,398 (148)</td>
<td>180</td>
<td>1.1 (1.0-1.3)</td>
</tr>
</tbody>
</table>


Outcomes of transplantation in Roma

- Cumulative incidence of transplant in Roma compared to Caucasians

Molnar, Int Urol Nephrol, 2012

Case report: medicine is evil

- 31 yr., Roma woman
- ADKD from 17 yr. old
- Father died being on HD
- No compliance with RRT
- AVF after long persuasion
- Refuses all medication
- Not wait-listed for transplant, needs nephrectomy

Perceived attributes and benefits of peer support

- Informal Sharing
  - Mutual support
  - Information
  - Nurturing, affection
  - tailor-made strategies
  - shared power
  - Reflection
  - More control
  - Better communication

- Emotional Sharing
  - Empathy
  - Confidence
  - Encouragement

- Appraisal Sharing
  - Mutual identification
  - Emotional support

Dennis, 2003
Proposed CKD Quality Metrics (1)

- Prevention and screening
  - Assessment of smoking status and cessation advice
  - Avoidance of NSAID prescription
  - Pneumovax and hepatitis B vaccine
- Monitoring and treatment
  - Use of ACEi/ARB in patients with hypertension, proteinuria, and diabetes
  - Lipid profile and statin prescription
  - Assessment of anemia and iron studies
  - Assessment of metabolic bone disorder parameters
  - Delivery of pre-ESRD education

Tuot, 2015

Proposed CKD Quality Metrics (2)

- Experience of care
  - Patient care coordination perception
  - Patient satisfaction surveys
- Access to specialty care
  - Time to next new nephrology appointment
  - Availability of virtual nephrology consultation or comanagement
  - Electronic referral and consultation system

Tuot, 2015

Social network score and renal endpoint

6972 ONTARGET patients with diabetes without macroalbuminuria were studied

Dunkler, 2015

Monitoring at home: CARRE platform

- FP7-ICT-2013-611140
- Consortium: 6 partners – 4 EU countries
- Budget: 3,210,470€

Monitoring at home: CARRE platform

- Dynamic CRS model of comorbidities
- Data aggregators
- Interactive visualization
- Decision support system
- Patient empowerment
- Shared decision support service

Monitoring at home: CARRE platform

- Interim monitoring devices
  - 1. Weight, kg
  - 2. Blood pressure, mmHg
  - 3. Daily proteinuria, mg
  - 4. Sodium, mmol/L
  - 5. Blood glucose, mmol/L
  - 6. Hemoglobin, mmol/L

- Carefree monitoring devices
  - 1. Temperature, °C
  - 2. Distance traveled, km
  - 3. Calories, kcal
  - 4. Heart rate, BPM
  - 5. Blood pressure, mmHg
  - 6. Full-body weight, kg

- 7. Mobile phone, iPhone

- 22 parameters

Monitoring at home: CARRE platform

- Interactive visualization
- Decision support system
- Patient empowerment
- Shared decision support service
Conceptual model of socioeconomics influencing epigenetic changes

SOCIOECONOMIC DEPRAVITY

- Increased Psychological Stress
- Increased Physical & Environmental Stress

EPIGENETIC CHANGES

- Influence downstream signaling of oxidative stress/inflammatory and other CKD specific & CKD risk factor related pathways
- Influence expression of CKD specific (e.g. methylation of pro-fibrotic gene enhancer regions) & CKD risk factor related genes

• ACCELERATED DECLINE IN RENAL FUNCTION
• INCREASED CVD COMPLICATIONS

Martin Luther King, Jr.

Take home message

- Roma – bubreszka
- Tatars - büjer, büjräk
- Karaim - bögrek, bivrek
- Armenians – yerikam (ԵՐԻԿԱՄ)
- Georgians – t’irkmeli (თირკმელი)
- Arabs - الكلم

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