INTRODUCTION
Hemodialysis (HD) and peritoneal dialysis (PD) are important renal replacement treatment in end stage renal disease (ESRD), but the influence of CCI on QOL in both modalities in Romania is lacking. Various instruments have been used in the studies involving dialysis patients: including the Charlson Comorbidity Index (CCI), a generic index developed from a general medical inpatient population; the Index of Coexistent Diseases (ICED), a generic tool modified for dialysis patients; and the Davies and Wright-Khan indices, both developed specifically for dialysis populations. A measure of comorbidity in dialysis patients must not only predict outcomes but also be reproducible and easy to obtain.

MATERIAL AND METHODS
This was a prospective cross-sectional observational study performed in a single dialysis unit, B.Braun Avitum Botosani, Romania, in October 2015, that included a total of 254 hemodynamically stable patients (divided into two groups: 243 patients on HD therapy and 11 patients on PD therapy) following the inclusion criteria: 1) regular HD therapy for more than three months; 2) age > 18 years; 3) no hospitalization or acute illness in the preceding 3 months; 4) no psychiatric disorders (like mental retard or dementia). Informed consent was obtained from all the study participants before enrolment in the study. All patients completed the SF-36 questionnaire.

Quality of life questionnaire was measured using a RAND Short Form 36-Items Health Survey (version 1.0) which includes eight health concepts: 1) Physical Functioning (PF), 2) Role Limitation due to Physical Functioning (RP), 3) Bodily Pain (BP), 4) General Health Perception (GH); 5) Vitality (VT); 6) Social Functioning (SF); 7) Role Limitation due to Emotional problems (RE); 8) Mental Health. Raw score of each concept is an assigned weight from 1 to 6. The Charlson Index score is the sum of the weights for all concurrent diseases aside from the primary disease of interest. A score of zero indicates that no comorbidities were found. The higher the score, the more likely the predicted outcome will result in mortality or higher resource use.

Results
CCI group Pearson’s correlation between CCI scores and SF-36 items in both groups

<table>
<thead>
<tr>
<th>CCI group</th>
<th>PF</th>
<th>RP</th>
<th>REP</th>
<th>VT</th>
<th>MH</th>
<th>SF</th>
<th>BF</th>
<th>GH</th>
<th>QoL</th>
</tr>
</thead>
</table>

Fig. 1. Comparative data of Charlson Comorbidity Index between both groups

AIDS, acquired immune deficiency syndrome; HIV, human immunodeficiency virus.
Table no 3. Kruskal-Wallis test results for comparative data of SF-36 items with CCI scores in HD group

<table>
<thead>
<tr>
<th>SF-36 item</th>
<th>Chi-square</th>
<th>p</th>
<th>SF-36 item</th>
<th>Chi-square</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF</td>
<td>24.604</td>
<td>0.001</td>
<td>MH</td>
<td>13.355</td>
<td>0.064</td>
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<tr>
<td>RPF</td>
<td>21.524</td>
<td>0.003</td>
<td>SF</td>
<td>16.900</td>
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<td>REP</td>
<td>10.864</td>
<td>0.145</td>
<td>BP</td>
<td>15.096</td>
<td>0.035</td>
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<tr>
<td>VT</td>
<td>18.273</td>
<td>0.011</td>
<td>GH</td>
<td>23.441</td>
<td>0.001</td>
</tr>
<tr>
<td>QOL</td>
<td>26.409</td>
<td>0.000</td>
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<td></td>
</tr>
</tbody>
</table>

CCI- Charlson comorbidity index; HD group - hemodialysed group; PD group - peritoneal dialysed group; PF- physical functioning; RPF- role limitation due to physical functioning; REP- role limitation due to emotional problems; VT- vitality; MH – mental health; SF- social functioning; BP- bodily pain; GH- general health.

Figure 2. a) - f). Mean comparative scores of SF-36 dimensions for CCI scores 1 to 6 in HD patients
Figure 3. a) – c) Mean comparative scores of SF-36 dimensions for CCI scores 2 to 4 in PD patients

DISCUSSION

Damage or loss of function in an organ, which is not directly caused by the primary disease, can be referred to as a comorbidity. Up until the late 1980s, the effects of comorbidities were largely unquantifiable and subjective. As a result, certain beliefs and attitudes in clinical practice were based mostly on anecdotal data rather than on appropriate evidence-based information. The most extensively studied and most commonly used comorbidity scoring scheme in medicine is the Charlson Index score. Overall, 254 patients were included in the analyses. Mean age was 57.79 ± 14.30 years old and mean dialysis vintage was 64.78 ± 47.72 months. 55.1% from study sample were males. Regarding the modality of dialysis, 95.7% of patients were on hemodialysis. Our study has found a Charlson Comorbidity Index in a range of 2-9 (fig. 1). We did not find a significant difference between HD and DP group (Chi-square = 8.604, p = 0.282). We showed in HD group that almost a half (45%) recorded a CCI score equal with 2, 28.1% CCI score equal with 3 and 11.2% of the HD group had a CCI score of 4 (fig. 1). One possible explanation for this preponderance is that younger patients with chronic kidney disease may have a low rates of multiple comorbid conditions. In DP group the highest CCI score registered was 4. We identified that the more chronic diseases the patient had, the more likely he/she was to have poor HRQOL scores (tab. 2). In HD group high CCI scores recorded a significant negative impact on physical domain of QoL (physical functioning and role due too physical functioning), VT, BP and MH (tab. 3, fig. 2. a)-f)). Also HD group followed a significant inverse correlation between SF and GH dimensions and CCI score (tab. 3, fig. 2. a)-f)). The best values of PF item were recorded in group of patients with CCI score 2 (62.10 ± 35.08), respectively 3 (53.45 ± 37.47); Similar trend was identified by VT and BP dimensions with CCI. PD group showed a non-systematic variations of SF 36 domaines, so the statistical analysis did not return faithful results (fig. 3 a) – c)). In terms of prognosis, Van Manen and colleagues acknowledged in a large Dutch prospective multicenter study (Netherlands Co-operative Study on the Adequacy of Dialysis-2), which included 1205 new patients with ESRD, that Charlson index had the best discriminating features with a concordance c statistic of 0.71. Di Iorio et al. reported that the crude mortality rate increased by approximately 60% of patient-years across incident hemodialysis patients when the CCI score was 3 in contrast to when the CCI score was 6. They also found that in addition to CCI, days of hospitalization were an important independent predictor of mortality. Rattanasompakkul et al. found in a 6 years cohort of 893 maintenance HD patients that the mCCI (without the criteria of age) is still a strong predictor factor of mortality.

CONCLUSIONS

Even if we underestimated the prevalence of comorbidities, the CCI system provided a good predictive value. The CCI scores recorded a significant negative impact on QoL in patients undergoing maintenance HD. There is very limited data in this aspect in our PD patients, so a multicentric study must be performed to assess the comorbid condition and QoL among this group of patients.

REFERENCES