A Validation Study of Employment Status in Late-Stage CKD

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In the United States, standardized collection of employment status as of 6 months prior and current occurs for all patients within 45 days after the start of dialysis. These data (reported in a national registry) showed a marked decline in employment (defined as full time, part time, and student) from 6 months prior to current among patients ages 18–54 years old who started dialysis between 1996 and 2013 (1). Employment status should be relatively easy to ascertain by a dialysis social worker, but no independent validation has been conducted of the registry employment status indicators (1). In a cohort of patients on incident dialysis, we compared national registry and patient report to examine (1) concordance of employed (full time, part time, and student) versus not employed status reported for 6 months prior and current; (2) concordance of full-time versus part-time employment reported for 6 months prior and current; and (3) concordance of medical leave of absence versus other nonemployment current status.

Patients on incident dialysis were recruited in 1996 and 1997 from 26 clinics serving the Atlanta, Georgia 23-county area for a prospective study of health behaviors and health-related quality of life (2). Patients were directly approached by a research team member. All patients ages ≥20 years old initiating dialysis in the past 2 months were considered eligible, except those with documented cognitive impairment and those who could not be interviewed in English or Spanish. Of 304 identified eligible patients, 226 were enrolled and participated; they did not differ significantly from nonparticipants in age, race, or nurse-rated Karnofsky functional status, but participants were more likely to be men. In the subset ages 20–54 years old (n=95), median (interquartile range) age was 43 (34–49) years old. Women were 47% of the participants, blacks were 58% of the participants, non-Hispanic whites were 35% of the participants, and Hispanic/Asian/other was 7% of the participants. In total, 49 started treatment on hemodialysis, and 46 started treatment on peritoneal dialysis. Participants provided informed consent, including access to medical records, and the study was approved by the Emory University Institutional Review Board.

Dialysis facilities report new patients’ employment status (1) 6 months prior and (2) current using one of the following response options: employed full time, employed part time, homemaker, retired (age/preference), retired (disability), medical leave of absence, student, and unemployed. We included these employment indicators in patient interviews conducted 67.3±19.5 days after dialysis start at a nondialysis facility location convenient for the patient. Patients were also asked to specify hours per week worked. After combining the retired categories (due to small numbers), we determined the proportion of patients in each employment status category at both time points and the proportions of overall employment (full time, part time, and student) as defined by Erickson et al. (1). Sensitivity and specificity of overall employment were calculated using patient report as the reference for the full cohort and black/Hispanic patients (n=57) separately. Concordance of registry and patient report using the κ statistic was calculated for overall employment versus nonemployment, full-time versus part-time employment, and medical leave of absence versus other nonemployment current status, with separate estimates for black/Hispanic patients.

Overall employment prevalence rates by registry and patient report were 63% and 67%, respectively, for status 6 months prior, and they were 35% and 30%, respectively, for current status (Table 1). For both time points, registry sensitivity and specificity for overall employment were high for the total cohort as well as when restricted to black/Hispanic patients, and κ statistics indicated good agreement between registry and patient report of overall employment for the total cohort and black/Hispanic patients specifically (Table 1). When classification as employed full time versus employed part time was considered, however, agreement between registry and patient report was much lower (κ=0.23 for 6 months prior status and κ=0.28 for current status); for black/Hispanic patients, κ=0.14 for 6 months prior, and κ=0.44 for current status. Agreement between registry and patient report was moderate for medical leave of absence versus other nonemployment current status (κ=0.54 for total cohort and κ=0.55 for black/Hispanic patients).

In summary, compared with patient report, we observed good registry validity for employment defined as employed full time, employed part time, and student (1), but there was less agreement between registry and patient report for the designation employed part time (versus full time), especially for black/Hispanic patients. Agreement between registry

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and patient report for the designation medical leave of absence as current status was moderate. On the basis of patient interviews, these categories may provide transitional employment status options during a period of adjusting to dialysis. In a national sample of patients starting dialysis in 2005–2007, computer-assisted telephone interviews conducted 4 months after dialysis start indicated that 40% of patients ages 18–65 years old who were still working for pay were employed part time (3). In-person interviews and focused examination of employment status, including hours per week worked, are strengths of our research, but sample size was limited. The nature of employment changes in late CKD and at dialysis start and potential implications for employment-preserving strategies merit continued study (3–5).

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Disclosures
Dr. Kutner and Ms. Zhang have nothing to disclose.

Table 1. Employment of 95 patients on incident dialysis ages 20–54: National registry and patient report

<table>
<thead>
<tr>
<th>Employment Field</th>
<th>Prevalence, 6 mo Prior</th>
<th>Prevalence, Current</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Registry N (%) Patient N (%)</td>
<td>Registry N (%) Patient N (%)</td>
</tr>
<tr>
<td>Employed full time</td>
<td>53 (56) 44 (46)</td>
<td>31 (33) 19 (20)</td>
</tr>
<tr>
<td>Employed part time</td>
<td>6 (6) 18 (19)</td>
<td>1 (1) 6 (6) \textsuperscript{c}</td>
</tr>
<tr>
<td>Student</td>
<td>1 (1) 2 (2)</td>
<td></td>
</tr>
<tr>
<td>Total employed</td>
<td>60 (63) 64 (67)</td>
<td>33 (35) 28 (30)</td>
</tr>
<tr>
<td>Medical leave of absence</td>
<td>1 (1) 2 (2)</td>
<td>14 (15) 17 (18)</td>
</tr>
<tr>
<td>Homemaker</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Retired (disability or preference)</td>
<td>6 (6) 5 (5)</td>
<td>10 (10) 4 (4)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>28 (29) 24 (25)</td>
<td>37 (39) 46 (48)</td>
</tr>
</tbody>
</table>

In the United States, a national registry report for the Centers for Medicare and Medicaid Services that includes employment status must be completed within 45 days after the first date of a regular course of prescribed dialysis. We collected employment status during in-person interviews in 1996 and 1997 with patients on incident dialysis that were conducted 67.3±19.5 days after dialysis start. \(\textsuperscript{a}\)The \(\kappa\) statistics indicate the agreement of registry data with patient report of full-time versus part-time employment status for patients in these two categories. When restricted to black and Hispanic patients, \(\kappa=0.14\) for 6 months before and \(\kappa=0.44\) for current status. In our study, we defined full time \(\leq 35\) h/wk worked and part time \(< 35\) h/wk worked. \(\textsuperscript{b}\)Patient had switched from employed full time (6 months prior) to employed part time (current status). \(\textsuperscript{c}\)Five of these six patients had switched from employed full time (6 months prior) to employed part time (current status). \(\textsuperscript{d}\)Erickson et al. (1) combined three registry categories (employed full time, employed part time, and student) to define employment. Applying this definition in our study, compared with patient report for status 6 months prior, registry sensitivity =0.88, and specificity =0.87 (sensitivity =0.85 and specificity =0.94 when restricted to black and Hispanic patients; \(\kappa=0.72\)). Compared with patient report for current status, registry sensitivity =0.86, and specificity =0.87 (sensitivity =0.88 and specificity =0.90 when restricted to black and Hispanic patients; \(\kappa=0.76\)). \(\textsuperscript{e}\)The \(\kappa\) statistic for current status indicates the agreement of registry data with patient report of medical leave of absence versus other “nonlabor force” categories (i.e., homemaker, retired, or unemployed). When restricted to black and Hispanic patients, \(\kappa=0.55\). (Medical leave of absence was infrequently cited for status 6 months before dialysis.)

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References

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