Letters to the Editor

Stroke welcomes Letters to the Editor and will publish them, if suitable, as space permits. They should not exceed 750 words (including references) and may be subject to editing or abridgment. Please submit letters in duplicate, typed double-spaced. Include a fax number for the corresponding author and a completed copyright transfer agreement form (published in every issue).

Long-Term Outcome After Stroke Evaluating Health-Related Quality of Life Using Utility Measurement

To the Editor:

We read with great interest the article by Haacke et al1 published in Stroke. Recently, we performed a similar study on an Italian stroke survivors sample, and we believe we can give a further contribution to this important topic.

As Haacke underlined, the factors that contribute to the reduced quality of life (QoL) were not systematically investigated in long-term follow-up stroke survivors and only few studies have used measures to assess QoL.

We performed a multidimensional study through traditional parameters and validated QoL measurements. Our study included all chronic stroke patients who were admitted for physical rehabilitation at the Don C. Gnocchi Foundation of Rome, between January 2002 and September 2004. A total of 72 patients were evaluated through: (1) clinical assessment, using the European Stroke Scale (ESS), (2) self-administered questionnaire for general health (SF-36), and (3) standardized disability measurements (Barthel Index and modified Rankin Scale). SF-36 consists of 36 questions that inquire about the general health status of patients.

Before examination, we acquired personal data for each patient: code of patient, age, sex, educational level, job, living conditions (if the patient lived alone or with family), duration of disease and concomitant cardiovascular disease. Both patients, living alone and living with family, were aided by a caregiver for their daily activity.

The complete protocol was performed before (admission, T0) and after rehabilitation (discharge, T1). A 2-month follow-up from the discharge was performed by phone administration of SF-36. The rehabilitation program consisted of 6-times per-week exercise periods (each 50 minutes long).

We focused our attention on the influence of chronic stroke–patient living conditions (namely if the patient lived alone or with family) on clinical, QoL, and disability measurements.

Statistical analysis was performed by using the statistical Package for Social Science (SPSS), release 6.0 and Microsoft Excel for Windows 98. Descriptive results are presented as means±SD, median or proportions, and comparisons between groups were assessed using parametric and nonparametric test (t test and Wilcoxon test) as appropriate.

Living conditions as independent predictor of previously described QoL–dependent variables were assessed both by univariate (Spearman rank correlation) and multivariate correlation including the potential confounding factors age, gender, educational level, job, duration of disease and concomitant cardiovascular diseases.

In the Table demographic and clinical, QoL and disability findings of the whole sample and separately of the 2 groups (living alone and living with family group) are reported. No difference was identified between the 2 groups but in the school level higher in living with family group. In the Figure, the mean rank of parameters showing a significant difference among groups at admission (Panel a) and discharge (Panel b) time are reported. At admission time, role emotional and physical functioning are significantly higher in living-alone subjects, whereas vitality shows higher values in living with family subjects. At discharge time, social function, mental health and mental composite score show significantly higher rank in living with family subjects. No significant differences among groups can be detected at the follow-up. Similar results were obtained by univariate and multivariate correlation analysis.

### Demographic and Clinical Characteristic of the Sample at Admission in the Study

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Subjects (n=72)</th>
<th>Living-Alone Subjects (n=27)</th>
<th>Living-With-Family Subjects (n=45)</th>
<th>Statistical Significance (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean±SD)</td>
<td>68±9</td>
<td>71±10</td>
<td>68±8</td>
<td>NS</td>
</tr>
<tr>
<td>Sex (Female/Male)</td>
<td>32/40</td>
<td>8/6</td>
<td>24/34</td>
<td>NS</td>
</tr>
<tr>
<td>Disease Duration (mean±SD)</td>
<td>3.19±1.84</td>
<td>3.7±1.8</td>
<td>3.1±1.8</td>
<td>NS</td>
</tr>
<tr>
<td>Cardiac Diseases (no/yes)</td>
<td>12/60</td>
<td>4/10</td>
<td>8/50</td>
<td>NS</td>
</tr>
<tr>
<td>Diabetes (no/yes)</td>
<td>60/12</td>
<td>12/2</td>
<td>48/10</td>
<td>NS</td>
</tr>
<tr>
<td>School level (lower/higher than high school)</td>
<td>56/16</td>
<td>8/6</td>
<td>48/10</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>European Stroke Scale (median)</td>
<td>59</td>
<td>70</td>
<td>57</td>
<td>NS</td>
</tr>
<tr>
<td>Barthel Index (median)</td>
<td>55</td>
<td>65</td>
<td>55</td>
<td>NS</td>
</tr>
<tr>
<td>Modified Ranking Scale (median)</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
<td>NS</td>
</tr>
<tr>
<td>Mental Composite Score (median)</td>
<td>35</td>
<td>31</td>
<td>46</td>
<td>NS</td>
</tr>
<tr>
<td>Physical Composite Score (median)</td>
<td>30</td>
<td>35</td>
<td>29</td>
<td>NS</td>
</tr>
</tbody>
</table>

(Stroke, 2006;37:2218-2219.)
© 2006 American Heart Association, Inc.

Stroke is available at http://www.strokeaha.org

DOI: 10.1161/01.STR.0000237142.71578.8b
Our study shows the influence of living conditions on QoL of chronic stroke patients and on effects of rehabilitation treatment in these patients. Before the rehabilitation treatment the patients living alone had a lower vitality but a higher physical function and role emotional than living with family patients. One hypothesis is that the living-alone patients adapt themselves for necessity and they better exploit their remaining physical ability or, more likely, the other hypothesis, is that patients with lower disability are able to live alone. After rehabilitation, which allowed to reduce the functional deficit with appropriate program (oriented toward functional tasks such as transfers, walking, self-care, and feeding), no differences in physical function were observed between the 2 groups but the living-with-family group showed a higher score in mental aspects of QoL and in social activity.

The results from Haacke et al’s study and ours, obtained using different QoL measures, underlined that the rehabilitation treatment in chronic stroke patients should be multiperspective focusing not only on physical impairment but also on other aspects that influenced the QoL of patients. Considering our data, it is needed to pay attention to living conditions of the patients, to prompt the family to take care of patients and to make more available and to fasten economics and social aids by Public Health to stroke patients’ family.

Irene Aprile, MD, PhD  
Department of Physical Medicine and Rehabilitation  
Fondazione Don C Gnocchi  
Università Cattolica  
Rome, Italy

Enrico Di Stasio, MD  
Institute of Biochemistry and Clinical Biochemistry  
Università Cattolica  
Rome, Italy

Pietro Tonali, MD  
Luca Padua, MD, PhD  
Department of Neurology  
Fondazione Don C Gnocchi  
Università Cattolica  
Rome, Italy

Diana B. Piazzini, MD  
Carlo Bertolini, MD  
Department of Physical Medicine and Rehabilitation  
Università Cattolica  
Rome, Italy

Long-Term Outcome After Stroke Evaluating Health-Related Quality of Life Using Utility Measurement
Irene Aprile, Enrico Di Stasio, Pietro Tonali, Luca Padua, Diana B. Piazzini and Carlo Bertolini

Stroke. 2006;37:2218-2219; originally published online August 3, 2006; doi: 10.1161/01.STR.0000237142.71578.8b

Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2006 American Heart Association, Inc. All rights reserved.
Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/37/9/2218