Can Faith Protect From Emotional Distress After Stroke?

Salvatore Giaquinto, MD; Cristiana Spiridigliozzi, MSc; Barbara Caracciolo, MSc

**Background and Purpose**—Emotional distress is common in the aftermath of stroke and can impact negatively on the outcome. The study was aimed at evaluating whether religious beliefs can protect from emotional distress.

**Methods**—Data were collected from 132 consecutive inpatients who were hospitalized for stroke rehabilitation and met the research requirements. At admission all study participants received a semi-structured interview on religious beliefs (Royal Free Interview for religious and spiritual beliefs) and were assessed on their mood with the Hospital Anxiety and Depression Scale. The relationship between religious beliefs and mood was explored, adjusting for possible confounders.

**Results**—Subjects with over-threshold Hospital Anxiety and Depression Scale scores had significantly lower Royal Free Interview scores (odds ratio, 0.95; CI, 92 to 98). The direction and magnitude of the association did not change after adjusting for possible confounders (odds ratio, 0.95; CI, 91 to 98). The same pattern was observed when analyzing separately Hospital Anxiety and Depression Scale anxiety and depression subscales. The other significant variable was functional dependence.

**Conclusions**—The strength of religious beliefs influences the ability to cope after a stroke event, with stronger religious beliefs acting as a possible protective factor against emotional distress. (*Stroke. 2007;38:993-997.*)

Key Words: rehabilitation ■ stroke

Emotional distress is a relatively frequent complication after stroke. In particular, poststroke depression has been the topic of many studies. The pooled estimate is 33% (95% CI, 29% to 36%). Differences in the case mix, inclusion criteria, and methods of assessment can make results different across studies.1,2 A recent Italian study found poststroke depression in 36% of stroke survivors.3 The small population size which is usual in this strand of literature does not allow reliable models and only stroke severity is associated with depression.2,4,5 However, female gender and previous cerebrovascular or depressive episodes, but not site, were also associated variables.3 According to the Swedish national quality assessment register Risk-Stroke, antidepressant medication is used by 22.5% of men and 28.1% of women who experienced a stroke.6

Poststroke depression negatively affects outcome either during hospitalization or after discharge.7,8,9 Therefore, this issue is important in rehabilitation and deserves a deeper insight. So far, physical variables as well as health history were considered in the literature, whereas faith has never been studied. Faith is an overall concept. Spirituality and religiosity are more focused concepts, but they are not synonymous. Spirituality is concerned with the transcendent with addressing ultimate questions about life’s meaning, assuming that there is more than what can be seen or understood.10 The concept is generally taken to mean believing, valuing, or being devoted to some high power outside the corporeal world. By contrast, religiosity involves a doctrinaire system that is shared by other people. Religious participation rather than spirituality may account for beneficial effects on health and survival, because religiousness is linked to a group of worshippers sharing doctrine, communication, control, and habits. Therefore, social participation, rules, style of life, dietary restrictions, and moderation can explain the benefits.

Regarding inpatients after stroke, there have been no systematic investigations and no studies of managed care networks. Yet religious experience is not only part of multiculturalism but also consistent with the overall direction of postmodern culture.11 It is surprising that only a few articles on stroke are found,12 mainly addressing the question of benefit mechanisms of attending religious services. Yet some articles already outlined the role of religion and spiritual beliefs in rehabilitation units.10,13 According to the authors, spiritual and religious beliefs are probably important to many rehabilitation patients because life satisfaction and quality of life can be positively influenced.

When a patient is referred to a rehabilitation center, a stressful occurrence takes place, ie, an event or a series of events or life conditions that demand adjustment. The complex of stimuli, perception, and reactions to internal and external demands challenge the organism’s adaptation resources. In Pargament’s model,14 people appraise stress-producing events using primary appraisal (“Is the event...
potentially harmful?”) and secondary appraisal (“Can I cope with it?”). A stress reaction may ensue depending on various mediators such as social support, personal hardness, and problem-solving style. Empirical research on the role of religion in counseling has increased considerably. Religious and nonreligious people tend to experience the same amount of stress, but religion may help people deal better with negative life events and the attendant stress. Religious community is like a shelter where prevention, promotion, and mutual collaboration foster coping strategies against negative events of life.

More than 40% of hospitalized medically ill elderly people spontaneously reported that the religious faith was the most important factor that enabled them to cope. Recent articles have emphasized the importance in medicine of religion and spiritual involvement in better health outcome, including greater longevity and coping skills even during terminal illness, and anxiety, depression, and suicide attempts decrease. The results endorse the view in the field of mental health that religion has a positive role. Although religiosity appeared to be unrelated to stress among caregivers of patients with dementia, one stressor, namely feelings of role overload, was correlated with greater levels of self-perceived religiosity. Spirituality positively influenced recovery after acute myocardial infarction and improved survival in women with breast cancer.

People who attended church once per week presented a 32% reduction in the risk of mortality as compared with those who never attended religious services. Successful aging is also considered to be influenced by positive spirituality, the so-called forgotten factor, and leaders in gerontology are criticized when they fail to consider its growing evidence.

The previous research leads to conclude that faith has a positive influence in several fields of medicine. However, the issue of poststroke emotional distress was never considered. Thus, our research was aimed at verifying whether emotional distress is less in people with strong religious and spiritual beliefs.

**Materials and Methods**

**Subjects**

One hundred sixty-two consecutive Italian patients were enrolled after their first stroke in the time period 2004 to 2005. They were referred to the rehabilitation center from district hospitals. The mean interval between the stroke and the admission was 9 days (SD, 2.3). General and neurological examination, routine tests, CT scan, and/or MRI were executed in all patients to confirm diagnosis before the rehabilitation program. Exclusion criteria were: (1) a previous stroke, but a previous transient ischemic attack was accepted; (2) subarachnoid hemorrhage; (3) admission for rehabilitation >3 weeks after stroke; (4) severe comorbidity; (5) mental impairment; and (6) comprehension impairment. The patients were treated only with those drugs that were strictly necessary. No psychoactive drugs were used. Data were collected from eligible 132 inpatients, with 60 men (57.5%) and 72 women (42.5%). Mean age was 70.0 years (SD, 10.3). The mean education was 7.6 years (SD, 3.9). The stroke was ischemic in 108 cases (81.8%) and hemorrhagic in the others. The lesion site was in the right hemisphere in 72 patients and in the left in 44. Patients with language comprehension were not included. The instrument is brief, simple, and can be administered even in the acute stage. Scoring is adjusted for age and education on the basis of values obtained from 103 control subjects.

**Scales**

The Mini Mental State Examination was used to measure cognition. Subjects scoring at least 24/30 were considered nondeteriorated and therefore were enrolled in the study.

Comorbidity was assessed by means of the Cumulative Illness Rating Scale, which is an ordinal scale, in which each item is scored from 1 (normal) to 5 (life-threatening situation). Patients scoring >3 in any item and those having a comorbidity index > 3 were not included.

Dependence was assessed by means of the Functional Independence Measure scale. The worst disability is scored 18, whereas a score is 126. We applied no cut-off score for selection. Table 1 shows the distribution in our population sample.

With regard to aphasia, we used a scale adapted to the Italian population. According to this scale, patients scoring <18 in auditory comprehension were not enrolled. The instrument is brief, simple, and can be administered even in the acute stage. Scoring is adjusted for age and education on the basis of values obtained from 103 control subjects.

**Variables**

For all analysis, HADS total score and anxiety and depression subscores were dichotomized according to the recommended cutoffs. RFI score was entered as a continuous variable, with higher scores indicating higher levels of reported religious beliefs and engagement in religious activities. Variables considered as possible confounders were: age (attained years), education (number of years of formal education completed), marital status (married versus not or no longer married), living conditions (living alone versus living with another person), and history of depression, in case of patients with linguistic impairment.

**TABLE 1. Patient Sociodemographic Characteristics and Baseline Scores on FIM, CIRS, and MMSE**

<table>
<thead>
<tr>
<th>Scales</th>
<th>Median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>72</td>
<td>15</td>
</tr>
<tr>
<td>Education</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>FIM</td>
<td>62</td>
<td>30</td>
</tr>
<tr>
<td>CIRS</td>
<td>1.57</td>
<td>0.23</td>
</tr>
<tr>
<td>MMSE</td>
<td>27</td>
<td>4</td>
</tr>
</tbody>
</table>

CIRS indicates Cumulative Illness Rating Scale; FIM, Functional Independence Measure; IQR, interquartile range; MMSE, Mini Mental State Examination.
TABLE 2. Distribution of Scores on RFI Among Patients With Over-Threshold and Under-Threshold HAD Scores

<table>
<thead>
<tr>
<th>RFI</th>
<th>Median</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAD ≥10</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>HAD &lt;10</td>
<td>32</td>
<td>15</td>
</tr>
</tbody>
</table>

HAD indicates Hospital Anxiety and Depression; RFI, Royal Free Interview.

someone), score at Mini Mental State Examination, score at Cumulative Illness Rating Scale (severity index) scale, and score on Functional Independence Measure scale.

Statistical Analysis

Side differences of HADS values were investigated by means of the Mann–Whitney U and Kruskall Wallis test. Group comparisons on RFI scores in patients with and without over-threshold symptoms of psychological distress were also performed by means of Mann–Whitney U test for unpaired samples. The association between religious beliefs and psychological distress was further explored using logistic regression, with psychological distress as the dependent variable. Both unadjusted and adjusted models were run. All analyses were performed with the statistical software package Stata 8.0.

Results

First, HADS values appeared to be independent of side at the Mann–Whitney U test (z = −8.21, P = 0.41). Moreover, the Kruskall Wallis test was applied to the whole population. The test gave the value 3.73 (not significant).

Descriptive statistics for the HADS are shown in Table 2. Fifty-five cases of the patient population (41.6%) had a total score above the cut-off of 10 (range, 11 to 36). Fifty-five patients (41.6%) had a value > 10 at the anxiety subscale and 57 patients (43.2%) had a value > 5 at the depression subscale.

Table 3 displays unadjusted and unadjusted logistic regression models. Age could be a confounding variable and we adjusted for it, but no association was found.

Logistic models were performed on dichotomized HADS scores (respectively <10 and ≥10). For each unit increase in RFI scores, we observed a 5% decrease in HADS scores. The relationship between RFI and HADS scores was not affected by the adjustment for sociodemographic factors and cognitive functioning, and after further adjustment for functional dependence, comorbidity, living conditions, and marital status.

In this model, the other significant variable was functional dependence, as measured by Functional Independence Measure (odds ratio, 0.96; 95% CI, 0.91 to 0.98; P < 0.001).

As shown in Table 3, the analysis of HADS subscales “anxiety” and “depression” gave similar results, with a 4% and 5% decrease in HADS scores, respectively, for each unit increase in RFI scores.

Among the 5 patients who were using antidepressant therapy, poststroke depression developed in 3 of them.

Discussion

HADS score is significantly associated with RFI scores in a negative fashion. Patients without emotional distress have higher score at RFI. Both depression and anxiety are influenced. HADS score is also significantly associated with Functional Independence Measure scores in a negative fashion. Depression is more likely to occur in severely disabled patients, as expected from previous data.

HADS is a reliable and valid tool for identifying and quantifying the most common forms of psychological disturbances in medical patients. The score is not influenced by physical symptoms. We set the cut-off point at 10, as was recommended for probable anxiety and depression. The 2-dimensional structure of the scale has been confirmed by factor analysis. Cross-sectional studies use the scale for screening purposes. In the acute phase of stroke, between day 3 and 7 after admittance, HADS showed that 26.4% of stroke patients had anxiety symptoms, with 14.0% from depressive symptoms and 7.9% from both. At a 6-month follow-up of stroke survivors, 16% had scores >10 on the anxiety subscale and 12% on the depression subscale. Patients with physical disability were more likely to be depressed, whereas the correlation between disability and anxiety was less strong.

Explanations for the depression damping effect of spirituality and religious beliefs are only partially identifiable. IL-6, cardiovascular control mechanisms, and lowering of blood pressure are some possible organic mechanisms. A better coping with stress, motivation, optimistic drive, inner strength, and peace can control depression generated by psychological factors. Prayer appears to be the most common form of religious coping and even nonreligious people often turn to prayer in the throes of suffering. Prayer is a common coping strategy among elderly individuals with persistent pain. Several themes focus on how prayer is used for

<table>
<thead>
<tr>
<th>HAD ≥10</th>
<th>HAD-A ≥5</th>
<th>HAD-D ≥5</th>
</tr>
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<tbody>
<tr>
<td>OR</td>
<td>CI</td>
<td>P</td>
</tr>
<tr>
<td>Model 1*</td>
<td>0.95</td>
<td>0.93–0.98</td>
</tr>
<tr>
<td>Model 2†</td>
<td>0.96</td>
<td>0.93–0.99</td>
</tr>
<tr>
<td>Model 3‡</td>
<td>0.95</td>
<td>0.91–0.98</td>
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</table>

*Unadjusted models with RFI as the unique predictor.
†Models adjusted for age, gender, education, and baseline MMSE score.
‡Models adjusted for age, gender, education, and baseline MMSE score, marital status, cohabiting status, comorbidity, and FIM score.

Independent models were run for the total scale and for the depression (HAD-D) and anxiety (HAD-A) subscales. Odd ratio (OR) and 95% CI are displayed.
coping after stroke. They are connecting to God, considering self, others, and nature, ways of praying, becoming more focused on everyday, reaching back to early family life, linking present and past, finding strength, and being unburdened and comforted.

Brain–mind relationships and stressors are largely unknown. For example, transcendental meditation was examined for the first time in 73 residents at a home for older subjects. Half of them were assigned to a daily meditation and half were not. After 3 years, none in the meditation group died, but 25% of the no-meditation group had died. Other observations that go beyond science are collected from both Chinese and Japanese American Communities, in which the fourth day of the month is considered unlucky. Yet statistics indicate that those communities have a peak of mortality just on that day.

It is very difficult to state that one’s faith has a more powerful influence than psychotherapy. A meta-analysis study has revealed that significant albeit small improvement in mood is evidently yielded by psychotherapy, whereas no effect is found in overt depression. However, there are no investigations of stroke inpatients treatment by means of religious techniques. Paradoxically, there is almost cynicism about any differential effectiveness among psychological intervention and the strong demand for accountability of the services delivered.

In conclusion, we found that faith is associated with emotional distress, which is a multifactor process negatively affecting quality of life. Religious and spiritual beliefs should be considered, because they have a weight in such complicity.

The limitations of the study are the following: (1) it is still unknown whether faith fosters recovery after stroke; (2) differences are not clear between spirituality and religiosity in coping with poststroke emotional distress; (3) it is still unknown whether skeptic people may acquire faith after a dramatic event such as stroke; and (4) the extension of our results to other cultures and/or to other form of religiousness is also unknown. Our research was performed in Italy, a country where the majority of inhabitants are Catholic, and more particularly in Rome, a city where the Pope resides. However, religious coping mechanisms have been identified in non-Catholic people. They should be considered in poststroke rehabilitation, and spiritual assistance should be provided to those patients who overtly or silently call for it.

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Disclosures

None.

References

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