ANXIETY, ANGER, AND DEPRESSION IN ELDERLY WOMEN

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Summary.—Few epidemiological data are available on affect, such as anxiety, anger, and depression, among elderly persons. Given the increase in the number of relatively older people, epidemiological studies of aging are critically important. The present study was undertaken to elucidate the relationship between age and these affects. Data obtained from 4,302 women participating in a breast cancer screening program, aged over 43 and up to 89 years, showed that correlations for age and anxiety, anger, and depression are generally low, respectively, −.02, −.05, and .05. Mean scores for anxiety, anger, and depression over the various age groups are comparatively similar, with some slight age-related trends for anger and depression. The changes in depression (an increase in mean depression scores with increasing age) appeared to be related to the positive association of the self-reported “somatic-depression” with age.

In Western societies the number of people aged 65 years and over has increased substantially. In the United States more than 10% of the population is over 65, and this proportion is expected to grow. In The Netherlands the proportion of the population of 65 and over was 11.8% in 1985. It is estimated that this percentage will be about 14 in the year of 2005, and 17% in 2025 (Bleiker & Styblo, 1988).

In psychology and psychiatry, a great deal of the literature about aged persons concerns cognitive disorders and organic brain syndromes. In publications about outpatient psychiatric care, however, only 2 or 3% of the articles concern this age group. Epidemiological data on nondementing conditions like anxiety and depression are rare. This is the more surprising since recent research has suggested that a general disposition of negative affect, marked by anxiety, hostility and depression, may be associated with the development of a wide range of diseases (Taylor, 1990). The aged are a population at risk and are recipients of considerable medical care (Eisdorfer, 1979).

McDonald and Spielberger (1978) noted that there are no standardized, self-rating instruments for measuring anxiety in people of 65 years and older. They also observed that test items may be difficult to understand for older persons, especially those with psychiatric problems. In reporting about trait-anxiety (Spielberger, 1983), normative data on American working adults were somewhat lower for the oldest group of women (50 to 69 years) than for younger groups. In a German normative sample women over 60 had on the
average higher trait-anxiety scores (Laux, Glanzmann, Schaffner, & Spielberger, 1981). In The Netherlands older women also obtained somewhat higher trait-anxiety than their younger peers (van der Ploeg, Defares, & Spielberger, 1980; van der Ploeg, 1981). Also, Bromley (1975) observed that anxiety increased steadily with age and noted that this is especially true among women. Sallis and Lichstein (1982) reported epidemiologic data which suggest that anxiety is more common among the elderly than any other age group and that the health consequences of anxiety may be especially serious for elderly persons.

Sallis, Lichstein, Clarkson, Stalgaitis, and Campbell (1983) stressed the importance of the interrelationship of anxiety and depression. Vetter and Ford (1989) interviewed individuals living at home, aged 70 and over, and measured anxiety and depression using standard questionnaires. The authors were not interested in anxiety or depression per se, but in their relation with the annual prevalence of falls. It was shown that both anxiety and depression were statistically significantly higher in those who fell than in nonfallers (20% of fallers were anxious, 8% depressed, about twice the population rate in each case). Those who fell more often had higher anxiety and depression scores than those who fell less often. In addition, combined magnitudes of anxiety and depression scores became more evident as the number of falls increased.

Depression, as a common mental health problem also among elderly persons, was studied by DeForge and Sobal (1988). In using the Zung Self-report Depression Scale (Zung, 1965), they differentiated between the psychological and somatic depression items. Somatic symptoms may be a part of the aging process and may confound the assessment of depression. Women displayed more depressive symptoms than men. Also, age group differences were found, with those aged 75 years and above scoring significantly higher on the Zung scale. Depression was moderately associated with age as a continuous variable. Older people reported more psychological symptoms than men. Also, age group differences were found, with those aged 75 years and above scoring significantly higher on the Zung scale. Depression was moderately associated with age as a continuous variable. Older people reported more psychological symptoms than their younger counterparts. Zung (1973) tested subjects of 65 years and older while they were carrying out community activities in social settings. It was concluded that baseline values for depression on the Zung scale for normal older subjects are higher than those for younger individuals. According to the DSM-III—R (1987) the prevalence of depressive disorders has increased in the age cohorts that came to maturity after the Second World War. Some show increasing frequency of depressive disorders as they grow older. Dunn and Sacco (1989) studied depression in a relatively large elderly community sample by applying the Zung scale, among others. The subjects' responses were split according to age (60—74 yr. versus 75 yr. and older). Scores for the young-old and old-old subjects were not significantly different on the Zung scale.
Depression has been linked with anxiety and anger as etiological factors at the trait level (Mook, van der Ploeg, & Kleijn, 1990). Anger in USA normative samples shows differences as a function of age. Trait anger seems lower in women over 40 years than in younger age groups (Spielberger, 1988). In Dutch normative samples older women on average also had somewhat lower trait anger scores (van der Ploeg, Defares, & Spielberger, 1982).

As was indicated by this review, there appears to be a lack of epidemiologic data on anxiety, depression, and anger among elderly persons. In view of the increase in elderly subjects in Western societies and the importance of negative affective styles in the health status of the elderly, it is important to examine the relation of age to anxiety, anger, and depression.

In this paper, data are reported on a large group of women, aged over 43 and up to 89 years. The primary objective of this study was to examine substantive issues about these elderly women and to provide epidemiological data on anxiety, anger, and depression.

**Method**

**Procedure**

In the Dutch city of Nijmegen about 15,000 female inhabitants of 43 years and over, which is about 50% of the female population in that age range, received in 1989 an invitation to take part in a free population-based screening program for breast cancer. Together with this invitation, they received the Self-assessment Questionnaire-Nijmegen at their private addresses. They were instructed on a voluntary basis to complete the questionnaire before mammography and to return the questionnaire in a stamped-addressed envelope or to present it at the reception desk before the screening. This population screening program for breast cancer is repeated every two years.

**Subjects**

Subjects were women aged 43 to 89 years, who were invited to participate in the breast cancer screening program. In 1989 in all 8,233 women took part in this screening. Of these, 4,302 (mean age 57.4 yr., SD 10.1 yr.) returned completed questionnaires which could be used for statistical analysis. As some values were missing, in some analyses 4,269 were used.

**Instruments**

The Self-assessment Questionnaire-Nijmegen includes scales that, among others, measure trait-anxiety, trait-anger, and trait-depression. There are 98 items in the Dutch language to which subjects can respond by rating themselves on a 4-point scale of frequency, with 1 = "almost never" and 4 = "almost always" response categories. A low mean score on each scale indicates a low frequency in the self-reported affect.

All scales have been adapted for the Dutch population. It was found that a literal translation from English into Dutch sometimes produced some-
what poorer results than does a more idiomatic or more free translation. In
the process of translating an inventory into another language, cultural differ-
ences are of importance. Given these differences, it is not accurate to speak
of a “translation” of the scales mentioned above; we should say that they
have been adapted for use in another language in such a manner that cultural
differences have also been controlled (van der Ploeg, 1985).

The Trait-anxiety Inventory (van der Ploeg, et al., 1980), a Dutch adap-
tation of the State-Trait Anxiety Inventory, STAI-Form Y (Spielberger,
1983), has 20 items. The Trait-anger Scale (van der Ploeg, et al., 1982), a
Dutch adaptation of the State-Trait Anger Scale (Spielberger, Jacobs, Russell,
& Crane, 1983), has 10 items. The Trait-depression Scale (Mook, et al.,
1982; Mook, van der Ploeg, & Kleijn, 1990), an adaptation of the Self-
rating Depression Scale (Zung, 1965, 1973), also has 20 items. For this
scale, two subscales can be distinguished, the somatic depression (these 8
items measure depression with items like “morning is when I feel the best,”
“I get tired for no reason”) and the psychological depression subscale con-
sisting of 8 items, e.g., “I feel hopeful about the future,” “I am more
irritable than usual.”

Validity and reliability estimates for these Dutch scales have been docu-
mented in the Dutch test manuals and have been satisfactory or good. The
test-retest reliability (over 49 days) for trait-anxiety in women is .88 and for
trait-anger the test-retest reliability (retest after 35 days) is .78. The Cron-
bach alpha for trait-anxiety is .93, for trait-anger it is .87, and for trait-
depression .86.

RESULTS AND DISCUSSION

In the sample (N = 4,269) the correlation between age and anxiety is
-.02, between age and anger -.05, and between age and depression .05
(r > .04, p < .01), as shown in Table 1. Of all reported scales, the somatic
depression scale shows the highest correlation with age (r = .10, p < .01). Psy-
chological depression is not statistically significantly correlated with age (r =
.02). The correlations between the affects, also reported in Table 1, are for
anxiety and anger .46, for anxiety and depression .84, and for anger and de-
pression .36. The subscales of depression are highly correlated with the total
depression scale.

Means and standard deviations for anxiety, anger, and depression in var-
ious age-related cohorts are summarized in Table 2. Anxiety scores on the av-
erage are more or less alike in the groups up to 69 yr. In women over 70, on
the average, there seems to be a slightly decreasing trend for anxiety. The
mean scores for trait anger are also more or less the same in the various age
groups up to 69 yr. In the groups over 70 the mean anger scores are slightly
lower. For trait depression, over the age groups, there seems to be a minimal
increase in average scores. The mean scores on the subscale somatic depres-
ELDERLY FEMALES: ANXIETY, ANGER, DEPRESSION

Table 1

Pearson Correlations* of Scores on Scales and Age (N = 4,269)

<table>
<thead>
<tr>
<th>Measure</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Anxiety</td>
<td>-02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Anger</td>
<td>-05</td>
<td>.46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Depression</td>
<td>.03</td>
<td>.84</td>
<td>.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Depression-Somatic</td>
<td>.10</td>
<td>.54</td>
<td>.20</td>
<td>.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Depression-Psychological</td>
<td>.02</td>
<td>.79</td>
<td>.34</td>
<td>.88</td>
<td>.47</td>
<td></td>
</tr>
</tbody>
</table>

*p < .01, r > .04.

...sion increase with age, whereas the mean scores on the subscale psychological depression is about the same per age cohort.

Analysis of variance of the anxiety scores did not yield a statistically significant main effect for age, as grouped in Table 2 (F = 0.67, p = .72). For anger a significant main effect for age was found (F = 3.15, p < .001) and also for depression (F = 2.19, p < .05). The somatic subscale of depression yielded a statistically significant effect for age (F = 6.67, p < .001) in contrast to the psychological subscale of depression (F = 3.33, p = .96). On those scales on which the analysis of variance yielded a statistically significant effect (anger, depression, somatic-depression), a multiple-comparison test, the Student-Newman-Keuls test, was used to study the differences in means between the age groups. For anger, mean scores for the age cohort 70–74 yr. differed significantly (p = .05) with the mean scores of the following age cohorts: 43–44, 45–49, 55–59, and 65–69 yr. The Student-Newman-Keuls test for depression showed statistically significant (p < .05) differences in mean scores from the age-cohorts 55–59 and 65–69 yr. For somatic-depression, the test yielded differences between cohort 43–44 yr. and all other cohorts except the 45–49 yr. cohort. The 45–49 yr. cohort differed statistically significantly from the 55–59 yr. cohort, 60–64 yr. cohort, 65–69 yr. cohort, and the 70–74 yr. cohort.

The correlations for age and each of the three affective traits are generally low, explaining only a minimal amount of variance. Although the mean scores for anxiety, anger, and depression over the various age groups are more or less alike, age-related trends for anger, depression and the subscale somatic-depression reached statistical significance in the analysis of variance. Despite the statistical significance, which is easily reached with a large sample, the clinical relevance of the differences and age-related trends may be regarded as low.

It is known that with increasing age a decrease in participation rate may be expected. In the present study it was shown that among the invited women (N = 15,000) an average of 29% returned a completed questionnaire. The response-percentage is highest in the relatively younger women and is negatively related with age. The response-percentage of completed question-
### TABLE 2

**Means and Standard Deviations For Anxiety, Depression, and Anger in Various Age-related Cohorts of Women**

<table>
<thead>
<tr>
<th>Age, yr.</th>
<th>n</th>
<th>Dutch Versions of Spielberger, et al.'s Scales</th>
<th>Zung’s Depression</th>
<th>Psychological Items</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Anxiety</td>
<td>Anger</td>
<td>Depression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>43—44</td>
<td>407</td>
<td>38.8</td>
<td>10.7</td>
<td>18.1</td>
</tr>
<tr>
<td>45—49</td>
<td>747</td>
<td>38.7</td>
<td>10.8</td>
<td>18.0</td>
</tr>
<tr>
<td>50—54</td>
<td>679</td>
<td>38.7</td>
<td>11.0</td>
<td>17.5</td>
</tr>
<tr>
<td>55—59</td>
<td>692</td>
<td>39.2</td>
<td>10.9</td>
<td>17.7</td>
</tr>
<tr>
<td>60—64</td>
<td>601</td>
<td>38.7</td>
<td>11.1</td>
<td>17.5</td>
</tr>
<tr>
<td>65—69</td>
<td>574</td>
<td>38.6</td>
<td>10.6</td>
<td>17.9</td>
</tr>
<tr>
<td>70—74</td>
<td>341</td>
<td>38.2</td>
<td>11.0</td>
<td>16.6</td>
</tr>
<tr>
<td>75—79</td>
<td>170</td>
<td>37.6</td>
<td>10.4</td>
<td>17.0</td>
</tr>
<tr>
<td>80—89</td>
<td>58</td>
<td>37.1</td>
<td>11.3</td>
<td>17.2</td>
</tr>
<tr>
<td>Total</td>
<td>4,269</td>
<td>38.7</td>
<td>10.9</td>
<td>17.6</td>
</tr>
</tbody>
</table>
naires of women who actually took part in the breast-cancer screening is much higher (mean of 54%) and decreases only slightly with increasing age.

In this study women took part who were able to attend the breast-cancer screening center. So we might have tested the more healthy, mobile, elderly women with a positive health orientation, who were motivated to have a mammogram. This possible selection bias might explain that we did not observe an increasing trend for mean anxiety scores over the years. Recently, Schwarzer (1992) reported that general trait-anxiety may have a different meaning among the elderly than in other age groups, because it may be influenced by worries about illness and death. This might suggest an increase in mean trait-anxiety scores with increasing age, which was not found in the present study.

It is also suggested that among the elderly, measurement of negative affects may be complicated, e.g., older persons represent a selective cohort who have survived, older persons may also be less psychologically minded and seem to somatize their problems, and older persons have to interact with the social pressures of their children who do not wish to see their own aging parent labeled as psychologically or psychiatrically impaired (see Eisdorfer, 1979). Further, somatic problems may increase during the aging process, and various types of physical illness may be associated with psychological concomitants. In our study we have differentiated between the somatically and the psychologically oriented depression items. Analysis of variance of both sets of items showed a significant main effect for age on the somatic depression items and a nonsignificant result on the psychological ones. This result attests to the increase in somatic problems with age, even in our "healthy, mobile" sample. As Vetter and Ford (1989) pointed out, physical disability may cause anxiety and depression, which may require drugs be administered, in turn leading to disability and anxiety, and so continuing the vicious circle.

In the present study we did not encounter many problems in the administration of the questionnaire as suggested by McDonald and Spielberger (1978), and we are convinced that presenting self-report scales in groups comparable to ours is feasible. In such "healthy" groups, scores for negative affects in the so-called old-old subjects (75 yr. and over) are more or less similar to those of young-old (60 to 74 yr.) and even young (under 60 yr.) subjects.

REFERENCES


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