



# The Relationship Between the Chronicity and Severity of Abuse, Socio-economics, Psychosocial Factors, and Mental Health

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## ABSTRACT

The abuse and mental health of older persons are sources of great concern. However, there are limited data on the relation between the chronicity (frequency of abuse) by severity (minor, severe) of abuse (e.g. psychological, physical) and mental health (e.g. depression). Women/men aged 60–84 years from seven European cities (n=4,467) participated in this study, and data were analysed with bivariate/multivariate methods. High chronicity (frequency, median/above) of psychological and physical abuse independently of severity was related to depression and anxiety; financial and overall abuse to anxiety; and minor financial abuse and overall abuse to depression. Regressions showed that some factors (e.g. being from Greece) were associated with a lower depression/anxiety “risk” and others (e.g. low social support) with high risk. Low chronicity (frequency, below median) of psychological abuse was associated with a lower anxiety risk. The management of depression/anxiety, particularly anxiety, among elders should also consider the roles of abuse and social support.

## KEY WORDS

Chronicity; Severity; Abuse, Socio-economics; Psychosocial Factors; Mental Health

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## INTRODUCTION

Depression and anxiety disorders are relatively common among older persons. Depending on the sample type (e.g. community), prevalence of depression or depressive symptoms of clinical importance among persons aged 65 years and over ranges from 1–23.6% (1-3). Regarding

anxiety, depending on the sample type (e.g. community), the prevalence of anxiety disorder among persons aged 65 and over ranges between 8 and 14.2% (4,5). Depression (3,6) and anxiety (7–9) disorders are generally less frequent in older adults than in younger people, but a recent meta-analysis concerning



depression indicated that, when compared, the oldest were at higher risk for depression than the youngest (10). Rates of depression and anxiety are higher in women than in men, but the gender gap may narrow in the oldest age groups (6,8,11–14). Depression has been associated with various factors such as increased risk for morbidity and suicide, and decreased physical, cognitive and social functioning (15–17), but also poor physical health, bereavement and isolation/exclusion (11,18–24). Anxiety, conversely, increases the risk of mortality in general for men and particularly after heart surgery, and panic attacks increase the risk for cardiovascular morbidity and mortality (25–27). It has been also connected with factors such as having several chronic medical conditions, impaired subjective health and increased disability (4, 27–32). A high comorbidity between depression and anxiety has been reported among older adults. The frequency of anxiety disorders in those suffering from depression is as high as 50% and depression can co-exist with anxiety in 25–80% of cases (33–39).

One area that has received limited attention concerns the association between elder abuse, depression and anxiety, although abuse toward older persons is a serious public health issue (40). A review of 49 studies regarding the prevalence of elder abuse across types (e.g. physical) and samples (e.g. community) reported a mean rate of 13%, and rates in the general population fluctuated between 3.2 and 27.5% with over 6% having been abused during the last month (41). Recent surveys from Europe (e.g. UK), Israel and USA with general population and community samples reported abuse rates ranging from 0.2 to 29.7% depending on the type (e.g. psychological) and operational definition of abuse (42–47). As to specific types of abuse, depending on the sample type (e.g. general population), psychological abuse rates, which seems to be the most common form, fluctuate between 0.3 and 52% (41–43, 47–51), while rates of any abuse may reach up to 55% (41). Studies have reported a co-existence of depression, anxiety or emotional symptoms, particularly depression, with elder abuse (e.g. physical) (52–61, 62). Conversely, however, some authors have shown that the association between elder abuse and depression is mediated by social support levels (63) and that depression is not linked to the

prevalence of psychological abuse (46). Overall, conclusions about the connection between elder abuse and mental health (e.g. depression) are hampered by the variations in the operationalization of abuse. Additionally, important facets of abuse (i.e. chronicity and severity) are usually not addressed and it is unclear whether the various abuse types (e.g. psychological, physical) are differentially connected with depression and anxiety.

As suggested above, the relationship between the chronicity (frequency) and severity form (minor, severe, total) of elder abuse, depression and anxiety has been poorly investigated among general population samples of older women and men. As far as we know, only two studies have addressed chronicity and severity (56) and chronicity (53) of elder abuse in some way. The Luoma et al. (56) study of older women in five European countries found, for instance, that high proportions of the women were abused at high frequency levels and that mental health was not associated with the severity of abuse. However, the operationalization of abuse frequency (1–6 times in the past year, monthly occurrence or even more often) and severity (seldom and single forms of abuse to several forms of abuse and very often) were imprecise. Chokkanathan and Lee (53) in their study of elder abuse in urban India observed that some of the older persons were exposed to chronic abuse (e.g. physical), but the operationalization of chronicity was also imprecise (1–2 times, 3–5 times, >5 times) and the connection between mental health and chronic abuse was not addressed. Furthermore, none of the studies investigated whether the chronicity or severity of abuse (or both) were associated with mental health. Generally, studies regarding elder abuse do not address the frequency and severity form of abuse per se, or in relationship to other factors (e.g. mental health), and as indicated previously only two studies have investigated these issues in some form.

Given the occurrence of abuse, repeated and severe acts (e.g. being burned or scalded) may have a stronger influence on the experience of depression and anxiety than one act or occasional, minor acts (e.g. being grabbed). Additionally, the effects of the accumulation of minor and severe acts (total) may be even stronger, although each severity form (minor or severe)



independently may impact on the experience of depression and anxiety. Furthermore, the impact of the chronicity of abuse on the experience of depression and anxiety may be particularly salient with respect to its highest levels (frequency of abuse acts on the median and higher). Additionally, little is known about the differential effects of the chronicity and severity forms of different abuse types and overall abuse on the experience of depression and anxiety.

Based largely on the Conflict Tactic Scales 2 (CTS2) (64,65) well-known and widely used operational definitions of different abuse types (e.g. psychological), chronicity (frequency of abuse) and severity form (minor, severe), this study aimed to rectify gaps in our knowledge. Addressing the relationship between chronicity (frequency) by severity form (minor, severe or total—the combination of both types) of different types of abuse (e.g. psychological), and the experience of depression and anxiety (cases) may be beneficial. For instance, such data may provide valuable information on the role of various abuse types and their interactions with other factors (e.g. social support) in depression and anxiety, which may lead to better understanding of depression, anxiety and abuse. Such data could also be used to manage depression and anxiety, and to prevent abuse and help those who have been abused.

Thus, this study examined the relationship between the chronicity (low: frequency under median; high: frequency on the median and higher) by severity form (minor, severe, total) of different abuse types (e.g. psychological) and overall abuse (all abuse types) during the past year and depression/anxiety cases among a sample of women and men aged 60–84 years from seven European countries that disclosed their experiences of abuse. It also examined the independent effect of total low (frequency of both minor and severe acts together under median) and high chronicity (frequency of both minor and severe acts together on the median and higher) of psychological and overall abuse during the past year, while taking into account other variables (e.g. socio-economics) in depression/anxiety cases within this sample group.

## METHODS

### Participants

Randomly selected women and men aged 60–84 years (n=4,467; 2,559 women) involved in the survey “Elder abuse: A multinational prevalence survey, ABUEL” in seven European cities took part in this study. The included persons had no cognitive/sensory impairments (e.g. dementia, blindness), were national citizens or documented migrants, resided in their own/rented houses or homes for elderly and had proficiency in their native languages. Mean response rate across countries was 45.2%. More detailed description about the participants (e.g. socio-economics), materials and methods, sampling strategy and data collection, target population, cooperation, completion and response rates by country are reported in previous studies with the ABUEL data (44,46,66,67).

### Measures

Abuse was assessed with 52 items based on the Conflict Tactic Scales 2 (CTS2; 64,65) and on the UK survey of elder abuse/neglect (68). Psychological abuse consisted of 11 items, of which 6 were severe acts (e.g. threatened with being hit or having something thrown at them) and 5 minor (e.g. shouted or yelled at); physical abuse 17 items, of which 10 were severe acts (e.g. burned or scalded) and 7 minor (e.g. being grabbed); injury 7 items, of which 4 were severe acts (e.g. passed out from being hit on the head) and 3 minor (e.g. had a sprain, bruise or small cut from being hit); sexual abuse 8 items, of which 5 were severe acts (e.g. had sexual intercourse with you against your will) and 3 minor (e.g. tried to touch you in a sexual way against your will); financial abuse 9 items, of which 5 were severe acts (e.g. made you give him/them your money, possessions or property against your will) and 4 minor (e.g. tried to make you give money, possessions or property). The frequency of abuse acts was expressed in terms of: occurred once (1), twice (2), 3–5 (midpoint 4), 6–10 (midpoint 8), 11–20 (midpoint 15) or >20 (25) times during the past year (chronicity), had not occurred in the past year, but occurred before that or never occurred. When participants answered that abuse had not occurred during the past year, they were considered as no abuse cases (no). If participants



answered that they had been abused during the past year, they were considered as abuse cases (yes). This study focused on chronicity (frequency of acts) by severity form (minor, severe, total) of each abuse type (e.g. psychological) and overall abuse (all types) during the past year.

Based on the frequency of abuse acts (the midpoints as described above) of the total abused population, medians of chronicity by severity form (minor, severe, total) of each abuse type and overall abuse were calculated. Thereafter, chronicity was dichotomized in low (frequency of abuse acts under median) and high (frequency of abuse acts on the median and higher). Additionally, the frequency of minor and severe acts of each abuse type and overall abuse was pooled together into a total chronicity, but also dichotomized (low total chronicity, minor/severe acts together under median; high total chronicity, minor/severe acts together on the median and higher). Finally, as information, we provided the means/SDs of the total frequency of exposure to each abuse type/overall abuse by severity form (minor, severe, total) as well as the figures of the medians. Cronbach's alphas across the total population were psychological abuse 0.85, physical abuse 0.80, injury 0.72, sexual abuse 0.76 and financial abuse 0.71.

Depression and anxiety were assessed with The Hospital Anxiety and Depression Scale (69). This scale consists of 14 items, of which seven involve depression (e.g. lost interest in appearance) and seven anxiety (e.g. sudden feelings of panic). The total score for depression/anxiety is 21 (each), with high scores corresponding to high depression/anxiety levels. Scores 0–7 correspond to “no” cases, 8–10 to “possible” cases and 11–21 to “probable” cases. Departing from the total scores of the abused population, the data were dichotomized into no cases (scores 0–7) and cases (scores 8–21) of depression and anxiety (see for example, 70–73). Cronbach's  $\alpha$ s across the total population for anxiety across countries was 0.81 and for depression 0.80.

Social support was assessed with The Multidimensional Scale of Perceived Social Support (74), which contains 12 items arranged into three dimensions (support from family, significant other, and friends). The total score totals 84 with high scores corresponding to high social

support. Using the scores of the total abused population as a point of departure, medians were calculated and social support was dichotomized in low (under median) and high (on the median and higher) levels of social support. Cronbach's  $\alpha$ s across the total population for social support across countries was 0.92.

Alcohol use was assessed with items derived from The Alcohol Use Disorders Identification Test (AUDIT, 75). First, the participants were asked if they currently used alcohol (do you drink alcohol? yes/no). If the answer was yes, three items derived from AUDIT were asked: (1) how often do you have a drink containing alcohol? (once a month or less, 2–4 times a month, 2–3 times a week, 4 or more times a week); (2) how many drinks containing alcohol do you have on a typical day when you are drinking? (1 or 2, 3 or 4, 5 or 6, 7 to 9, 10 or more); (3) how often do you have six or more drinks on one occasion? (never, less than monthly, monthly, weekly, daily or almost daily). Finally, participants were asked about their previous use of alcohol (if you do not drink alcohol now, have you ever drunk alcohol? yes/no). This study focused on whether the participants used alcohol or not.

Health care use was assessed as the number of contacts with different health care staff (e.g. physician) and health care services (e.g. primary care) during the past 12 months. Further, we assessed the number of diseases (e.g. cardiovascular) from which the participants were presently suffering. The items were derived from the Stockholm County Council health survey (76).

Demographics/socio-economics were assessed and this study focused on the following variables: Country (Greece, Germany, Lithuania, Italy, Portugal, Spain, Sweden), age (60–84 in groups of 5 years), sex (female, male), marital status (single, married/cohabitant, divorced/separated, widow/er), education (low, middle, high), profession (blue-collar, low white-collar, middle/high white-collar, housewives/husbands), financial support (work, other income, partner income, work pension) and financial strain. Financial strain (worries about how to make ends meet) was assessed with one item (in a no/sometimes/often/always format). A participant was considered to experience “financial strain” if she/he selected any response other than no.



Four items (e.g. birthplace) assessed whether the participants were migrants or indigenous inhabitants. The demographic/socio-economic variables were tailored for each country, but similar in content.

### Design and procedure

The design was cross-sectional. Recruitment and data gathering in the seven European cities were performed during January–July 2009. The data were collected through face-to-face interviews (on average one hour duration) of the respondents, usually in their homes and making sure that they were alone. In general, the respondents were first contacted by telephone/letter and then an appointment was made. The interviews were conducted by previously trained female interviewers following an interview manual (<http://www.abuel.org/>). In several cases, the data were collected through a combination of interviews and self-response. All scales (if not available) were translated into the native languages, back-translated and culturally adapted. The same procedure was applied for other materials (e.g. information letters). The participants were informed (in writing/verbally) about the research and informed consent was requested. Confidentiality, anonymity and the participant's rights were emphasized. The respondents could stop the data collection at any point in time. Ethical permission was received in each country (for further details see Lindert et al. [66]).

### Statistical analyses

Bivariate and multivariate analyses of the prevalence of abuse (e.g. psychological), social support and alcohol use in relationship, with abuse taking into account various factors (e.g. socio-economics) and description of the perpetrators are shown in previous studies with the ABUEL data (44,46,67,77).

All analyses in this study were conducted on respondents exposed to abuse during the past year. Differences in cases of depression and anxiety in connection with chronicity levels (low and high) by severity form (minor, severe, total) of different abuse types and overall abuse were examined with chi-square tests ( $\chi^2$ ). The significant

level for bivariate and multivariate analyses was set at  $p < 0.05$ .

Moreover, two block-wise multiple logistic regression analyses were conducted, one each for depression and anxiety. In block-wise logistic regression, independent variables are entered into the regression equation block by block and the contribution of every block in explaining the dependent variable is expressed as Nagelkerke R<sup>2</sup> changes. Nagelkerke R<sup>2</sup> (78) is an approximation to descriptive goodness-of-fit statistics to scrutinize whether the proposed logistic model fits (the strength of association between variables is quantified).

The dependent variables were depression and anxiety dichotomized into no cases (scores 0–7) and cases (scores 8–21) among participants exposed to abuse. The independent variables (“predictors”) were selected based on statistical inference—factors (e.g. socio-economics) that differentiated abused and non-abused participants in previous analyses (e.g. 44,46,67,77). The predictors were country, age, sex, marital status, education, profession, financial support, financial strain, alcohol use, diseases number, health care use and social support dichotomized into low (under median) and high (on the median and higher). We also added total chronicity (frequency of both minor and severe acts together) of psychological and overall abuse (frequency of both minor and severe acts together of all abuse types, including psychological abuse) dichotomized into low (frequency of both minor and severe acts together under median) and high (frequency of both minor and severe acts together on the median and higher). As physical, sexual and financial abuse and injury separately were not suitable for the regression model (e.g. too few cases) for depression and anxiety, they were not included. However, overall abuse included these abuse types in addition to psychological abuse. The selection of comparison variables was based on previous analyses (44,46,67). Associations between the variables were expressed as Odds Ratios (OR), CI 95% and Nagelkerke R<sup>2</sup> for each block and total. The fitness of the logistic models were tested (Wald test) and were significant at  $p < 0.0001$ .



## RESULTS

### Relationship between abuse (chronicity by severity form), depression and anxiety

As shown in Table 1, irrespective of severity form (minor, severe, total), respondents exposed to high chronicity (frequency of acts on the median and higher) of psychological and physical abuse compared with those exposed to low chronicity (frequency of acts under median) scored higher on depression and anxiety (cases, 8–21). Similar patterns were found regarding financial and overall abuse in relation to anxiety; overall abuse in relation to depression; and minor financial abuse in relation to depression. However, sexual abuse and injury were not significantly related to depression and anxiety cases in any severity form (minor, severe, total). Similarly, severe and total financial abuse was not significant in relation to depression.

### Correlates of depression and anxiety

**Depression:** As shown in Table 2, of the variables in the demographic/socio-economic block (I), being from Greece, Italy, Lithuania, Portugal and Spain and aged 75–79, and having no financial strain were independently associated with a lower risk for depression (cases). The variance explained was 31.1%. Of the block lifestyle (II), drinking was independently associated with a higher risk for depression, and the variance explained was 1.2%. The blocks health indicators (III), psychological abuse (IV) and overall abuse (V) were not independently associated with depression, and the variance explained were 0.2%, 2% and 0.1%, respectively. The block social support (VI) revealed that low support was independently associated with a higher risk for depression, and the variance explained was 4.1%. The model explained 38.7% of the variance in depression.

**Anxiety:** Of the variables in the demographic/socio-economic block (I), being from Greece and having no financial strain were independently associated with a lower risk for anxiety (cases), and being a female with a higher risk. The variance explained was 27.3%. The block lifestyle (II), drinking, was not independently associated with the experience of anxiety, and the variance explained was 0.1%. Of the variables in the block health

indicators (III), often using health care services was independently associated with a lower risk for anxiety, and the variance explained was 1.1%. The psychological abuse block (IV), low chronicity level, was independently associated with a lower risk for anxiety, and the variance explained was 3.8%. The overall abuse block (V) was not independently associated with anxiety, and the variance explained was 0.1%. The block social support (VI) revealed that low support was independently associated with an increased risk for anxiety, and the variance explained was 2.2%. The model explained 34.6% of the variance in anxiety.

## DISCUSSION

### Relationship between abuse (chronicity by severity form), depression and anxiety

Irrespective of severity form (minor, severe, total), exposure to high chronicity of psychological and physical abuse (frequency of acts on the median and higher) was connected with depression and anxiety (cases). Similar patterns were observed regarding financial and overall abuse in connection with anxiety; and minor financial abuse and overall abuse in connection with depression. Sexual abuse and injury were not significantly connected with depression and anxiety in any severity form (minor, severe, total), nor were severe and total financial abuse connected with depression, which may be due to inadequate power (too few cases). The addition of the other abuse types (e.g. physical) to psychological abuse as represented by overall abuse did not change the pattern. However, following regressions on depression and anxiety it was revealed that only total chronicity of psychological abuse was independently related to mental health (i.e. anxiety). See below for a discussion on the issue.

### Abuse correlates of depression and anxiety

High total chronicity of psychological abuse (frequency of both minor and severe acts together on the median and higher) and of overall abuse (frequency of both minor and severe acts together of all abuse types on the median and higher) were not independently linked to depression (cases) after adjusting for known risk factors.



Our findings are at odds with studies (mostly concerning prevalence) showing that abuse (e.g. physical) co-exists with depression (54–59,61, see also 62). In contrast, it has been shown that the relationship between abuse and depression is mediated by social support levels (63), no relationship was found between depression and the prevalence of psychological abuse (46,56) reported, meaning that mental health was not associated with the severity of abuse.

Despite the inconsistent findings, the present lack of independent association between the total chronicity of psychological and overall abuse and depression is nevertheless surprising. As shown in Table 1, the mean exposure to total psychological abuse (frequency of both minor and severe acts together) among respondents with depression was 71.06 (23.33 severe acts) and 48.4% of them were exposed to high levels of severe chronicity (frequency of abuse acts on the median and higher). The corresponding mean figures for overall abuse was 74.39 (24.93 severe acts) and for percentages of high levels of severe chronicity 43.8%. Thus, one would expect these events to constitute sufficient strong stressors to be independently associated with depression; in particular, psychological abuse, as it is considered to be grave and more damaging for older persons than other abuse forms (42,79). This was not the case, and one could hypothesize that the respondents were already depressed prior to the abuse events and that the events did not contribute much to their feelings of despondency. Another hypothesis, not necessarily in contradiction with the previous one, could be that biological factors supposed to mediate mood with increased age (e.g. serotonin activity decreases in a variety of brain regions) had a greater influence on depression than abuse (6,15). In view of our results, more research into the effects of abuse chronicity on depression is warranted among older persons.

High total chronicity of psychological abuse (frequency of both minor and severe acts together on the median and higher) was independently linked to anxiety (cases), but overall abuse was not (frequency of both minor and severe acts together of all abuse types on the median and higher) indicating that the addition of other types of abuse to psychological abuse played little role. Few studies have addressed the relationship between abuse

(e.g. psychological) and anxiety/distress, but it has been reported that these conditions are generally connected with abuse prevalence (46,52,54,55,60,61). However, in view of the variation in the operationalization of abuse and anxiety/distress these findings should be interpreted with caution. Interestingly, the means of exposure to total psychological abuse (frequency of both minor and severe acts together) among respondents with anxiety were rather similar to those with depression (64.26, 22.01 were severe acts) as well the percentage (49.7%) of those exposed to high levels of severe chronicity (frequency of abuse acts on the median and higher). The corresponding mean figures (71.36, 24.86 were severe acts) and percentages of high levels of chronicity (47%) for overall abuse were also similar. Thus, contrary to overall abuse (addition of other abuse forms to psychological abuse) and also depression, psychological abuse was independently related to anxiety.

Although psychological abuse does not cause physical injuries, it has been argued that the intense fear and guilt produced by it has more durable and damaging effects on the self-esteem of older persons and others (e.g. women exposed to domestic violence) than physical abuse, for instance (42,54,61,79–81). High self-esteem has been linked to characteristics such as strong coping skills, persistence in the face of challenges, control and confidence that one's outcomes are determined by one's actions, and the opposite in relation to low self-esteem (82–85). Self-esteem seems also to have an anxiety "buffering" effect (86–89). Thus, in relation to our findings, one could hypothesize that psychological abuse created both a less predictable future and a greater demand for coping skills than other types of abuse (addition of other abuse types to psychological). Demands and control are important antecedents of anxiety (90,91), and the struggle for control and coping, in this context, may be a risk for anxiety and at the same time prevent a graver risk for depression (as long as the end of the struggle does not end in loss of control in a wider context). Furthermore, excessive fear is a central component in anxiety and often in response to, for instance, specific situations (91,92). Similarly, arguing that the fear caused by psychological abuse is particularly intense, one could hypothesize it to be more influential on anxiety than on depression. Conversely, due to the



cross-sectional character of the data, it is possible that the respondents' experiences of anxiety led to dependency on those around them, resulting in dissatisfaction and burdens and subsequently in abuse. Dependency on others (e.g. physical problems) may increase abuse risk (93–96). More research into, among other things, the mechanisms behind the effects of the chronicity of abuse on anxiety is warranted among older persons.

Overall, the respondents were exposed to a greater number of psychological abuse acts in contrast to other types of abuse. This may reflect previous findings indicating that psychological abuse seems to be the most common form of elder abuse (41), and that it is considered to be grave and more damaging for older persons than other types of abuse (42,79).

#### **Demographic/socio-economic correlates of depression and anxiety**

Respondents from Greece, Italy, Lithuania, Portugal and Spain were at less risk for depression (cases) than those from the reference country (Germany) and those from Greece for anxiety (cases). The prevalence of depressive symptoms and depression disorders vary greatly in Europe and findings may be contradictory. For instance, studies have reported that young (97) and old persons (98) in southern countries have the highest levels of depression symptoms. The SHARE study (99), reported that persons from Spain, France, Italy and Greece had the highest depression levels and those from Austria, Germany and Sweden the lowest. The ESMed survey found higher rates of depression among persons in the Netherlands, France and Belgium compared to those in Spain, Italy and Germany (100,101). The EURODEP study (102), however, in general did not find higher rates of depression in southern countries, and in fact persons from Spain had lower rates of depression than those from Germany, UK and Italy. There are also divergences within countries depending on, among other things, the samples studied (e.g. regional, national, primary care). For example, in Germany the prevalence of depression may range from 0.8–8.3% (103–106); in Spain from 1.8–14.3% (101,107,108); in Italy from 3.8–6.5% (108,109); in Lithuania, the rates of major depression were 22% (110);

in Portugal from 19.2–46.1% (111–113); and in Greece, the rates of moderate to severe depression were 12% (114) and of depressive symptoms 30.3% (115). Whether differences and contradictory findings between countries are a reflection of, for example, patho-protective and pathogenic factors specific to culture, divergences in the perception of what depression is, instrumentation used, different welfare and family support regimens or depression thresholds or a combination of these factors remains an issue. However, data suggest that thresholds vary between cultural settings and could account for country-associated differences in prevalence (116,117). Thus, our findings seem both contrary to, and in line with, previous observations, indicating that further research on the issue is warranted.

The prevalence of anxiety in Greece is not well known. However, Gournas, Madianos and Stefanis (118) found that 3.1% of older persons aged >65 (community residents in Athens) suffered from anxiety disorders. Gater et al. (119) reported rates of generalized anxiety disorder among persons aged 18–65 years (general health care settings in Athens) at 16.1% for women and 12.5% for men, and for agoraphobia or panic disorder at 1.6% and 1.5%, respectively. The figures in Greece for generalized anxiety disorder were greater than those in Germany and Italy, but not in relation to agoraphobia or panic disorder. However, these studies are rather old and the samples small, making it hazardous to draw conclusions. Otherwise, recent European studies of the prevalence of different types of anxiety disorders, such as generalized anxiety (age 14–70 years) do not include Greece (120–122), preventing cross-country comparisons and discussion. Thus, whether the lower risk for anxiety among persons in Greece compared to those from Germany pertain to, for example, patho-protective and pathogenic factors specific to culture, divergences in the perception of what anxiety is or different welfare and family support regimens or a combination of these factors cannot be ascertained due to the lack of comparative data.

Being aged 75–79 years was associated with a lower risk for depression (cases) compared to the reference age (60–64 years), which is at odds with data from a recent study indicating that the oldest compared with the youngest are at higher risk for depression (10).



Additionally, it has been suggested that the decrease in depression and anxiety in older age may be due to cohort effects, non-sampled groups and epidemiological methods/diagnostic issues (123). Notwithstanding, it is odd that only this age group was connected with depression, suggesting that it may be a random finding.

Being a female was associated with a higher risk for anxiety (cases), which corroborates data from many studies reporting that women are more prone to anxiety than men throughout the lifespan (8,14,37,124), although recent evidence suggests that gender differences narrow among the very old, that is 80+ years (13). Little is known about antecedent risk factors for anxiety disorders in girls and older women, particularly the latter. Though not pertaining necessarily to older women, data suggest that females' vulnerability to anxiety disorders may be due to (depending on the type), for instance, genetic factors and familial environment (125–127), childhood sexual or physical abuse (128,129) and stress exposure during adolescence (130). However, these issues were not addressed here.

No financial strain was associated with a lower risk for depression and anxiety (cases), indicating that respondents who experienced financial strain were more “prone” to score high on these conditions. Financial strain could be considered as an additional SES indicator in the sense that those experiencing it do not have “access to desired resources” (131). In general, older persons in Europe fare worse in terms of poverty than younger cohorts and their financial situation has deteriorated during the past years, with increases in living costs and cuts or stagnation of benefits/services (132–135), and this may have been instrumental in their financial strain experiences. Financial strain is a source of great stress for older persons and has been associated with many problems such as poor sleep, depression, early disability, pain and mortality (136–144). Thus, our findings seem to further corroborate previous studies on the relationship between financial strain and poor health (e.g. depression).

#### **Lifestyle/health correlates of depression and anxiety**

Alcohol use was associated with higher risk for depression (cases). Alcohol use among older persons is considerable, but varies between samples and countries. For example, in Europe, across 27 countries, it was observed that 88% of persons aged 55+ had had an alcoholic beverage in the past 30 days and 25% daily. In the past 12 months, 14% were involved in binge drinking (five or more drinks of 50 g alcohol on a single occasion) several times a week (145). Alcohol use dependence may also be common among older persons. For instance, a review regarding alcohol dependence (according to DSM-III-R, DSM-IV or ICD-10) among general population samples (including elderly) in 26 European countries, found dependence rates for men of 6.1% and of 1.1% for women (146). The effects of alcohol use among older persons, particularly misuse, can be dramatic and involve among other things an increased risk for depression, cardiovascular problems and mortality (147–153). Comorbidity between alcohol dependence and depression is common (154,155), although some studies have failed to observe a relationship between alcohol use and depression (156,157). Notwithstanding, the bulk of evidence suggests that alcohol use—in particular, hazardous use—is associated with depression. There are several possible explanations for the relationship between alcohol use and depression. For instance, depression may have developed independently of alcohol use (particularly misuse), may have been a result of the effects of alcohol (e.g. psychosocial) or predated alcohol use (158–160). However, these issues were not addressed here. Nevertheless, our findings seem to corroborate previous observations of an association between alcohol use and depression.

Frequent use of health care services was linked to lower risk for anxiety (cases). Persons with mental health problems, not least older persons, are poor users of health services. Studies show that up to 70% of older adults with mood and anxiety disorders do not use services. Greater odds of non-use have been connected with, for instance, being male, married/cohabitant and less educated (161–163). However, our findings seem to reflect that respondents may have been receiving treatment for their anxiety problems and therefore were at lower risk.



### **Social support correlates of depression and anxiety**

Low social support was connected with higher risk for depression and anxiety (cases), indicating that support from family, significant others and friends has a protective effect. Social support is important for older persons as they often depend on family, significant others and friends regarding, for instance, daily activities, affection and personal care (164,165). Having social support has positive effects on, for example, mental/physical health and quality of life, while low social support/social isolation has adverse effects (60,166–172). The mechanisms behind the positive influence of social support on the older person's health are complex, but data suggest that its positive effects are achieved through biological processes that protect against illness or strengthening the older person's coping ability and recovery when sick (32,171,173–176). Further, the "buffer" effect of social support on depressive and anxiety symptoms may be achieved by protecting older persons from the stress of physical health ailments (15). Low social support has been shown repeatedly to be a predictor of depression in older persons with physical health stressors (177), even taking into account other factors (e.g. history of depressive symptoms). Thus, our results seem to confirm previous observations that low social support is related to depression and anxiety.

### **Limitations**

This study has a number of limitations. First, conclusions about causality cannot be established due to the cross-sectional character of the data. Accordingly, the findings must be interpreted with caution. Second, the respondents were recruited in urban centers from seven specific European countries. The respondents may not be representative of those living in non-urban areas as well as other countries in Europe and elsewhere (e.g. USA). Consequently, we cannot guarantee the generalizability of the results. Third, the gathered data was based on the respondents' subjective assessments of their situation, and were not objectively confirmed. For instance, the presence/types of depression and anxiety were not objectively confirmed with established diagnostic instruments. Therefore, the results should be interpreted with caution. Fourth, attrition rates varied between the

cities and the total attrition was high, leading to the possibility of "selection" of respondents that diverged from people in general (e.g. more severely ill persons may have refused). However, no major differences were observed between the respondents and the reference population in the community census database (age/sex) (see 65). Fifth, data were collected both through interviews and self-response, raising issues about the reliability/validity of responses. Analyses (data not shown here) contrasting responses through interviews and self-response found no differences in response patterns (see also 178). Sixth, the variance explained by our regressions was relatively low, indicating that other factors may also play a role. Despite these limitations, the present study may have provided new insights into the experience of depression and anxiety, particularly in relation to the chronicity/severity of psychological abuse, and its relation to other factors (e.g. social support) among women and men aged 60–84 years in seven European cities.

### **CONCLUSIONS**

A relatively large number of our respondents were exposed to many acts of abuse in each of the abuse types assessed (e.g. psychological) and overall abuse, and severe abuse acts were also common. For instance, the means of exposure to minor abuse acts among respondents with depression ranged between 5.33 (injury) and 55.56 (overall abuse) and severe acts between 4.67 (injury) and 24.93 (overall abuse). The highest means were observed in psychological abuse (minor, 47.73; severe, 23.33; total, 71.06) and overall abuse (minor, 55.56; severe, 24.93; total, 74.39). Slightly over 26% of the respondents reported experiencing depression and 23.7% anxiety, with the highest percentages among respondents exposed to high abuse chronicity (range 38.3–66.7%). Slightly over 17% of the respondents drank three or more drinks a day and 26.8% drank six or more drinks on one occasion, indicating the presence of hazardous alcohol use. Almost half of the respondents reported low social support, and the percentage was greater among those exposed to high abuse chronicity (54%), in relation to anxiety (65.4%) and depression (64.8%). The experience of financial strain



was not uncommon, particularly among those exposed to high abuse chronicity (62.1%), in relation to anxiety (81.1%) and depression (78.9%). Although, independently, only anxiety was influenced by abuse (psychological), the importance of it should not be undervalued.

Overall, our data indicate that a relatively large number of older persons in Europe are exposed to many strains and burdens, requiring urgent actions to improve their situation. Health and social care staff involved in the assessment and management of depression/anxiety among older persons should consider, for instance, the roles of abuse chronicity and social support. In addition to the assessment and management of mental health, actions are needed to deal with abuse, financial strain and hazardous drinking. Of particular concern is the chronicity/severity of abuse, which calls for urgent actions in form of information campaigns, and prevention and treatment interventions from social/health care planners/providers among others. Society at large must be thoroughly informed about elder abuse. The burdens of abuse must be alleviated, protection must be given to avoid further abuse among those who have been victimized and those at risk must be identified. The burdens seem to co-exist and the actions need to be synchronous at various levels (e.g. individual), applying different methods (e.g. cognitive-behavior therapy), varying time frames (e.g. short-term) and carried out by various professionals (e.g. psychologists, nurses). In this context, our results provide new findings concerning, for example, the relationship between abuse chronicity and mental health that may be useful for health care policymakers, planners and providers in their work to improve the well-being of older persons in Europe.

Further research on the relationship between the chronicity/severity of abuse in relation to depression and anxiety, while considering other factors (e.g. social support, culture) is necessary, not least to establish causal links. The research should be longitudinal and involve various sample types.

## **DISCLOSURE**

The authors report no conflicts of interest in this work.



TABLE 1. Cases of depression/anxiety by chronicity (low, frequency under median; high, frequency on the median and higher) and severity form (minor, severe, total) of abuse types/overall abuse during the past 12 months across all the abused participants, and mean/sd and medians of chronicity/severity form of abuse types/overall abuse

	Depression Cases <sup>a</sup> (n=1166) n(%)	Test	Anxiety Cases <sup>a</sup> (n=1046) n(%)	Test
<b>Psychological abuse (n=883) <sup>b</sup></b>				
<i>Chronicity level (minor)</i>		$(\chi^2(1)=12.77, p<0.0001)$		$(\chi^2(1)=16.80, p<0.0001)$
Low <sup>c</sup>	106(26.8)		109(27.5)	
High <sup>d</sup>	165(38.5)		176(41)	
Mean±SD <sup>e</sup>	47.73±41.10		42.25±40.82	
Median (8) <sup>f</sup>				
<i>Chronicity level (severe)</i>		$(\chi^2(1)=19.25, p<0.0001)$		$(\chi^2(1)=8.09, p=0.004)$
Low	48(26.4)		64(35.2)	
High	92(48.4)		95(49.7)	
Mean±SD	23.33±28.42		22.01±29.19	
Median (5)				
<i>Chronicity level (total) <sup>g</sup></i>		$(\chi^2(1)=11.73, p<0.001)$		$(\chi^2(1)=26.92, p<0.0001)$
Low	111(27.8)		103(27.5)	
High	184(38.7)		202(42.4)	
Mean±SD	71.06±64.24		64.26±64.91	
Median (8)				
<b>Physical abuse (n=117)</b>				
<i>Chronicity level (minor)</i>		$(\chi^2(1)=5.54, p=0.019)$		$(\chi^2(1)=9.56, p=0.002)$
Low	15(30.6)		13(27.1)	
High	27(54)		29(58)	
Mean±SD	30.45±43.26		37.61±45.31	
Median (4)				
<i>Chronicity level (severe)</i>		$(\chi^2(1)=3.84, p<0.05)$		$(\chi^2(1)=10.73, p<0.001)$
Low	13(41.9)		7(23.3)	
High	14(70)		14(66.7)	
Mean±SD	14.55±28.45		18.12±30.20	
Median (3)				
<i>Chronicity level (total)</i>		$(\chi^2(1)=11.60, p<0.001)$		$(\chi^2(1)=24.66, p<0.0001)$
Low	27(32.1)		21(25.6)	
High	22(66.7)		25(75.8)	
Mean±SD	45.00±66.54		55.82±69.78	
Median (8)				

Continuing



**Injury (n=31)**

*Chronicity level (minor)*

		NS		NS
Low	5(55.6)		6(66.7)	
High	13(68.4)		13(68.4)	
Mean±SD	5.33±7.66		6.89±8.29	
Median (2)				

*Chronicity level (severe)*

		NS		NS
Low	6(75)		5(62.5)	
High	5(62.5)		8(75)	
Mean±SD	4.67±7.95		4.78±7.90	
Median (2)				

*Chronicity level (total)*

		NS		NS
Low	10(62.5)		11(68.8)	
High	10(66.7)		10(66.7)	
Mean±SD	10.00±15.60		11.67±15.56	
Median (3)				

**Sexual abuse (n=34)**

*Chronicity level (minor)*

		NS		NS
Low	3(25)		4(33.3)	
High	8(50)		11(68.8)	
Mean±SD	6.43±8.54		7.09±7.93	
Median (2)				

*Chronicity level (severe)*

		NS		NS
Low	3(30)		4(40)	
High	6(50)		9(75)	
Mean±SD	23.14±26.91		18.82±22.41	
Median (4)				

*Chronicity level (total)*

		NS		NS
Low	6(30)		8(40)	
High	6(42.9)		9(64.3)	
Mean±SD	29.57±32.24		25.91±26.22	
Median (8)				

continuing



**Financial abuse (n=175)**

<i>Chronicity level (minor)</i>		$(\chi^2(1)=6.77, p=0.009)$		$(\chi^2(1)=5.24, p=0.02)$
Low	11(23.4)		12(25.5)	
High	24(49)		24(48)	
Mean±SD	10.73±13.94		16.74±18.01	
Median (2)				
<i>Chronicity level (severe)</i>		NS		$(\chi^2(1)=7.36, p=0.007)$
Low	18(25.7)		16(22.9)	
High	18(38.3)		22(46.8)	
Mean±SD	9.87±15.22		16.53±24.43	
Median (3)				
<i>Chronicity level (total)</i>		NS		$(\chi^2(1)=6.72, p<0.01)$
Low	38(28.6)		35(26.3)	
High	18(43.9)		20(47.6)	
Mean±SD	20.60±27.26		33.26±38.06	
Median (4)				
<b>Overall abuse (n=1009)<sup>h</sup></b>				
<i>Chronicity level (minor)</i>		$(\chi^2(1)=12.35, p<0.0001)$		$(\chi^2(1)=17.00, p<0.0001)$
Low	121(26.9)		124(27.6)	
High	171(37.9)		183(40.6)	
Mean±SD	55.56±91.12		51.69±87.64	
Median (8)				
<i>Chronicity level (severe)</i>		$(\chi^2(1)=18.19, p<0.0001)$		$(\chi^2(1)=18.30, p<0.0001)$
Low	56(25.2)		62(28.1)	
High	116(43.8)		125(47)	
Mean±SD	24.93±35.55		24.86±36.88	
Median (4)				
<i>Chronicity level (total)</i>		$(\chi^2(1)=17.31, p<0.0001)$		$(\chi^2(1)=34.27, p<0.0001)$
Low	130(26.5)		120(24.4)	
High	198(38.8)		214(41.9)	
Mean±SD	74.39±82.67		71.36±86.19	
Median (8)				

<sup>a</sup>=scores 8-21, figures for non-cases are not shown. Notice that the n's are total numbers independent of abuse; <sup>b</sup>=all cases, total number of persons exposed to the different abuse types/overall abuse independent of cases of depression and anxiety. For further details see Lindert et al., 2015; Macassa et al., 2013; <sup>c</sup>=all cases, frequency of abuse acts under median calculated from the total number of abuse exposures; <sup>d</sup>=all cases, frequency of abuse acts on the median and higher calculated from the total number of abuse exposures; <sup>e</sup>=cases, mean frequency of abuse acts calculated from the total number of abuse exposures; <sup>f</sup>= calculated on the total exposure to abuse acts of the total abused population by each abuse type/overall abuse and severity form; <sup>g</sup>= both minor and severe; <sup>h</sup>=all abuse types;



TABLE 2. Multiple block-wise logistic regression analyses (Odds Ratio, CI95%, R<sup>2</sup>) of the association between demographics/socio-economics, life-style, health indicators, total chronicity (low, frequency of both minor/severe abuse acts together under median; high, frequency of both minor/severe abuse acts together on the median and higher) of psychological/overall abuse, social support (low, under median; high, median and higher) and depression (n=829) and anxiety (n=830).

Independent variables	Depression		Anxiety	
	OR	CI95%	OR	CI95%
<b>Block I (demographics-socio-economics) <sup>a</sup></b>				
<i>Country</i>				
Greece	.055 <sup>****</sup>	.024-.124	.145 <sup>****</sup>	.069-.303
Italy	.334 <sup>**</sup>	.151-.742	.931	.417-2.077
Lithuania	.167 <sup>****</sup>	.088-.316	.799	.445-1.436
Portugal	.321 <sup>****</sup>	.161-.639	.768	.407-1.448
Spain	.469 <sup>***</sup>	.209-1.052	.614	.288-1.311
Sweden	1.128	.535-2.381	1.111	.588-2.101
Germany <sup>b</sup>	1			
<i>Age</i>				
65-69	1.149	.673-1.964	.940	.565-1.563
70-74	.684	.399-1.170	.909	.538-1.536
75-79	.514 <sup>*</sup>	.276-.959	.794	.433-1.457
80-84	.694	.345-1.396	.653	.333-1.279
60-64 <sup>b</sup>	1			
<i>Sex</i>				
Female	.949	.622-1.448	2.488 <sup>****</sup>	1.651-3.747
Male <sup>b</sup>	1			
<i>Marital status</i>				
Single	.556	.260-1.188	1.104	.533-2.283
Divorced-separated	.693	.380-1.263	1.140	.633-2.054
Widow-er	.744	.457-1.209	.897	.562-1.433
Married-cohabitant <sup>b</sup>	1			
<i>Education</i>				
Low <sup>c</sup>	1.033	.572-1.863	.847	.476-1.506
Middle <sup>f</sup>	.923	.554-1.538	1.051	.639-1.731
High <sup>b f</sup>	1			
<i>Occupation</i>				
Blue-collar worker	1.080	.521-2.239	.857	.424-1.733
Low white-collar worker	1.093	.514-2.325	.915	.444-1.887
Middle-high white-collar worker	1.241	.541-2.846	1.273	.571-2.840
Housewives-husbands <sup>b</sup>	1			
Continuing				



<i>Financial support</i>				
Work	1.407	.738-2.685	.933	.517-1.683
Other income <sup>g</sup>	.769	.417-1.417	.565	.308-1.038
Partner income	1.214	.590-2.495	1.463	.733-2.924
Work pension <sup>b</sup>	1			
<i>Financial strain</i>				
No	.557**	.371-.836	.419****	.282-.624
Yes <sup>b</sup>	1			
<b>R<sup>2</sup> change</b>	<b>31.1</b>		<b>27.3</b>	
<b>Block II (life-style) <sup>a</sup></b>				
<i>Drink</i>				
Yes	1.551*	1.038-2.318	.981	.660-1.460
No <sup>b</sup>	1			
<b>R<sup>2</sup> change</b>	<b>1.2</b>		<b>0.1</b>	
<b>Block III (health indicators) <sup>c</sup></b>				
<i>Physical diseases <sup>h</sup></i>				
<i>Health care use <sup>i</sup></i>	.959	.902-1.020	.974	.917-1.034
	.941	.828-1.070	.854*	.754-.967
<b>R<sup>2</sup> change</b>	<b>0.2</b>		<b>1.1</b>	
<b>Block IV (psychological abuse) <sup>a</sup></b>				
Low	.735	.202-2.671	.216*	.051-.915
High <sup>b</sup>	1			
<b>R<sup>2</sup> change</b>	<b>2</b>		<b>3.8</b>	
<b>Block V (overall abuse) <sup>a</sup></b>				
Low	.669	.183-2.450	1.895	.447-8.039
High <sup>b</sup>	1			
<b>R<sup>2</sup> change</b>	<b>0.1</b>		<b>0.1</b>	
<b>Block VI (social) <sup>a</sup></b>				
<i>Social support</i>				
Low	3.037****	2.053-4.492	2.181****	1.510-3.151
High <sup>b</sup>	1			
<b>R<sup>2</sup> change</b>	<b>4.1</b>		<b>2.2</b>	
<b>Total R<sup>2</sup></b>	<b>38.7</b>		<b>34.6</b>	

<sup>a</sup>=categorical variables; <sup>b</sup>=comparison category; <sup>c</sup>=continuous variables; <sup>d</sup>=less than primary school/primary school-similar; <sup>e</sup>=secondary school/similar; <sup>f</sup>=university/similar; <sup>g</sup>=e.g. sick pension; <sup>h</sup>=number of diseases. e.g. asthma; <sup>i</sup>=number of visits; j=\*p<0.05; \*\*p<0.01; \*\*\* p<0.001; \*\*\*\*p<0.0001.



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