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Study design, sampling and assessment methods of the European study 'abuse of the elderly in the European region'

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Background: Violence against and abuse of older persons (VAO) aged >60 years has become a prominent public health issue. From January 2009–July 2009, we conducted the cross-sectional European study 'Abuse of the elderly in the European region' (ABUEL) among community-dwelling elderly populations aged 60–84 years in Germany, Greece, Italy, Lithuania, Portugal, Spain and Sweden. We describe the cooperation, completion and response rates; the modes of recruitment and administration; and analyse differences in response rates between countries. **Methods:** We calculated the population fraction (respondents in each age/sex group divided by the population in the same age/sex group) and the population fraction ratio (PFR) to describe and analyse heterogeneity between countries. To analyse associations between methods and response rates we conducted cross tabulations and logistic regression analyses. **Results:** The response rates ranged from 18.9% in Germany to 87.4% in Portugal. Men were underrepresented in all countries (PFR < 1). Cluster- and cohort-based sampling produced the highest overall response rates. **Conclusion:** More European and international studies investigating response behaviour in VAO research systematically are needed to gain further knowledge about the internal and external validity of research on VAO.

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Background

Violence against and abuse of older persons aged >60 years (VAO) is recognized as a major public health problem.^{1,2} No earlier study has addressed how VAO varies across European countries. Prior research on VAO has been mainly conducted using small, non-random samples.³

Prior to the year 2000, four studies had been conducted using representative population-based samples: in Canada,⁴ in Finland,⁵ in The Netherlands⁶ and in the UK.⁷ These studies reported prevalence rates of 3–5%. Further studies conducted in the general population suggested prevalence estimates for ‘any mistreatment’ from 3.0% in the UK to 18.4% in Israel.^{8,9} The heterogeneity of prevalence estimates of VAO in these studies may reflect a variation in VAO rates between countries or methodological differences between the studies. To date, there has been little evaluation of sampling and/or administration methods, and of external validity in VAO studies.

Little is known about the prevalence of VAO in the general population in the European region, and particularly, about differences in prevalence estimates between countries. We conducted the first cross-sectional community-based European study ‘Abuse of the elderly in the European region’ (ABUEL) in Germany (DE), Greece (GR), Italy (IT), Lithuania (LT), Portugal (PT), Spain (ES) and Sweden (SE). The study design and data collection instruments were based on a common definition of VAO and sampling size calculation in the participating countries.

Definition of VAO

We define VAO according to the definition used in the UK survey⁷ and according to the World Health Organization (WHO), as ‘a single or repeated act or lack of appropriate action occurring within any relationship where there is an expectation of trust, which causes harm or distress to an older person’.¹⁰ The aims of this article are to: (i) describe the cooperation, completion and response rates; (ii) describe modes of recruitment and administration; (iii) analyse the relations between modes of assessment; and (iii) investigate associations between types of survey methods and cooperation, completion and response rates.

Methods

Sample size calculation and sampling methods

The target population for the ABUEL study were persons aged 60–84 years living in the cities of Stuttgart (DE), Athens (GR), Ancona (IT), Kaunas (LT), Porto (PT), Granada (ES) and Stockholm (SE). Recruitment of eligible participants and data collection were performed from January 2009 to July 2009. The sample size of the study population was calculated based on the city’s population and the expected ranges of prevalence of VAO observed in previous surveys. Assuming a prevalence of abuse of 13%¹¹ with a precision of 2.6%, a sample size of 633 individuals in each country was required. The sample size was customized for each country according to the population of individuals aged 60–84 years, with a maximum of 642 individuals in each of the participating countries because of the infinite population assumption. The sample was calculated proportional to age–sex groups in the population in each city.

Sampling methods

Three sampling approaches were used in ABUEL: (i) registry-based sampling (DE, ES, IT, LT and SE); (ii) sampling by random route (GR); and (iii) cluster sampling (PT). The registry-based sampling was based on the city’s population registries. We asked for a sex- and age-stratified randomized sample. The sample was obtained between 3 days (DE) to 3 months (ES) after the request. Random route and purposive sampling of elderly based on the power calculation was applied in Greece. According to a walking scheme elder persons were selected in households, and in ‘Open Care Community Centres’ (KAPI). These individuals were asked for participation. If somebody was willing to participate, interviews took place in the privacy of the

household of each interviewee in order to ensure confidentiality of the information. Portuguese subjects were recruited among the members of a cohort (EPIPorto) selected using random digit dialing. Households were the sampling frame, followed by simple random sampling to select one eligible person among permanent residents in each household. The cohort members who met the age criteria for ABUEL study were contacted. A letter of introduction giving notice of the study was sent to all selected individuals. Following the letter, individuals were contacted by telephone and those who were willing to take part in ABUEL were scheduled to the interview.

Administration modes

Sampling and administration procedures were performed according to the national requirements for this type of studies. Written information about the ABUEL study was sent to the eligible individuals’ homes. Trained interviewers telephoned the eligible persons (except in Lithuania) providing information about ABUEL. Informed consent from participants was obtained before interviewing. Two administration modes were used: (i) face-to-face interviews (ES, IT, GR, LT, PT); and (ii) mixed methods, i.e. face-to-face interviews and mailed questionnaires (DE, SE). A non-response questionnaire could not be administered, but basic socio-demographic information (e.g. age, sex) was available from the registries.

Participation

Participation in the ABUEL study was evaluated by analysing cooperation, completion and response rates. Cooperation was defined as the willingness of eligible individuals to participate in the study and was computed as the number of persons who agreed to participate divided by the number of eligible persons contacted. The result was then multiplied by 100. The completion rate was computed as the number of questionnaires completed divided by the number of persons who agreed to participate, and multiplied by 100. Valid addresses were used as the denominator for the response rate in the mail survey; the response rate was computed as the product of the cooperation rate and the completion rate, and divided by 100.

To assess each national study’s representativeness, the samples were compared with the reference population in the community census database with regard to age (60–84 years) and sex. Population fractions (PFs) by age and sex were computed for each country. The PF was defined as the number of persons responding in each age–sex group divided by the number of persons with the same characteristics according to the available municipal registry data. PFRs and their 95% confidence intervals (95% CIs) were estimated for each country. To analyse differences in sex and age distributions between the target and the obtained sample cross-tabulations were computed. Logistic regression analyses were conducted to assess associations between the survey methods and response rates by country. Analyses were performed using the statistical software package SPSS Statistics 17.

Results

Target sample size and achieved sample size

The target sample in each city was the population aged 60–84 years. The target sample sizes for the target sample were calculated before sampling of the participants. The target sample was stratified according to age and sex of the target population (table 1).

Cooperation, completion and response rates

Cooperation rates ranged from 20.7% (DE) to 89.2% (P) (table 2). Cooperation rates were highest when cohort-based sampling was used (PT: 89.2%) followed by purposive sampling (GR: 75.7%). Completion rates ranged from 78.8% (IT) to 100.0% (PT). Response rates were highest in countries using cluster sampling (GR: 73.5%) or where the interviewees were included in a cohort which was sampled in 2003 based

Table 1 Target samples sizes by age and sex of the ABUEL study

Countries	Age (years)									
	60–64		65–69		70–74		75–79		80–84	
	Men N (%)	Women N (%)	Men N (%)	Women N (%)	Men N (%)	Women N (%)	Men N (%)	Women N (%)	Men N (%)	Women N (%)
Germany	78 (12.0)	79 (12.0)	85 (13.0)	9 (14.0)	63 (9.7)	14 (11.4)	39 (6.0)	57 (8.6)	24 (3.7)	50 (7.7)
Greece	81 (12.5)	99 (15.0)	74 (11.1)	92 (14.2)	62 (9.6)	85 (13.1)	39 (6.0)	55 (8.5)	22 (3.4)	33 (5.1)
Italy	67 (10.3)	76 (11.6)	64 (9.9)	78 (12.0.4)	54 (8.3)	73 (11.3)	48 (7.4)	70 (10.8)	36 (5.6)	61 (9.4)
Lithuania	70 (10.8)	107 (16.6)	59 (9.1)	100 (15.4)	45 (6.9)	84 (13.0)	36 (5.6)	70 (10.8)	16 (2.5)	49 (7.6)
Portugal	69 (10.6)	90 (14.1)	64 (10.7)	93 (14.4)	55 (8.5)	88 (13.6)	40 (6.2)	71 (11.0)	21 (3.2)	44 (7.3)
Spain	80 (12.3)	87 (13.2)	60 (9.3)	71 (11.0)	61 (9.4)	80 (12.3)	46 (7.1)	71 (11.0)	29 (4.5)	51 (7.9)
Sweden	106 (16.4)	106 (16.1)	72 (11.0)	77 (11.9)	49 (7.6)	57 (9.4)	37 (6.2)	46 (7.1)	29 (4.5)	47 (6.8)

Table 2 Persons eligible and cooperation, completion and response rates in the ABUEL study (countries are in alphabetical order)

Countries	Cooperation		Completion	Response	
	Eligible contacted	Cooperation rate	Agreed and sent/ interviewed	Completion rate	Response rate
	N (%)	N (%)	N (%)	N (%)	N (%)
Germany	3433 (87.4)	709 (20.7)	709 (20.7)	709 (20.7)	648 (18.9)
Greece	875 (100.0)	662 (75.7)	662 (75.7)	662 (75.7)	643 (73.5)
Italy	1408 (70.6)	797 (56.6)	797 (56.6)	797 (56.6)	628 (44.6)
Lithuania	1276 (98.4)	630 (49.4)	630 (49.4)	630 (49.4)	630 (49.4)
Portugal	751 (96.3)	670 (89.2)	670 (89.2)	670 (89.2)	656 (87.4)
Spain	924 (94.1)	690 (74.7)	690 (74.7)	690 (74.7)	636 (68.8)
Sweden	1220 (96.8)	673 (55.2)	673 (55.2)	673 (55.2)	626 (51.3)
Total	9887 (89.0)	4831 (48.9)	4831 (48.9)	4831 (48.9)	4467 (45.2)

on random digit-dialing (PT: 87.4%); the response rates in countries that used random sampling in 2009 ranged from 18.9% (DE) to 68.8% (ES).

PFs and PFRs

As shown in table 3, the PFs and PFRs by country, age and sex in the ABUEL study were quite similar to their respective reference populations in the cities, except Portugal. In Portugal the sex PFRs (age group 70–74 years: 0.91; age group 75–79 years: 0.94; age group 80–84 years: 0.67) decreased indicating that more women than men responded to the survey.

Refusal rates

Data from Greece were excluded from this analysis of refusal rates as the survey was not designed using random sampling methods. Refusal rates varied by city, age and sex. We report in the following the refusal rates in the participating cities according to age and sex. In most cities, there was no effect of sex; only in Ancona, Italy, women were more likely to refuse as compared with men (OR = 1.83, 95% CI: 1.44–2.32). In all participating cities, the younger age groups were more likely to refuse participation.

Discussion

The ABUEL study was carried out in seven cities in Europe using different sampling and administration methods. Although not unequivocal, there are signs that it is increasingly difficult to obtain high response rates in studies in Europe.^{12–14} Studies support the presumption that non-response is a complex phenomenon made up of various effects, especially when the focus is on older people.¹⁵ Contributing factors might be related to the sampling and administrations modes, the interviewees (e.g. sex, age), and the culture interviewees live in.^{16–18} This fact makes it important to evaluate the association of sampling and

administrations modes, interviewees sex and age, and the culture interviewees live in with cooperation, completion- and response rates.¹⁹

Sampling and administration modes and cooperation-, completion- and response rates

In Porto, Portugal a cluster-based sampling method was used. This cluster-based sampling was associated with the highest response rates compared with the other participating cities, which might be explained by a greater degree of confidence among participants. In the other cities (except in Athens, Greece) a registry-based random sampling method was used. Nevertheless, the same sampling and administration mode produced a variety of cooperation-, completion- and response rates. The heterogeneity in participation and refusals between cities could be due to a number of factors. It might be a general tendency of cooperation-, completion- and response rates in the countries; e.g. in Germany the low response rates are an issue of concern.^{13,14} Additionally to trends in countries, several meta-analyses and reviews suggest relations between length of the questionnaires and response rates.^{20,21} These meta-analyses cannot explain the heterogeneity of response rates we found in this study. It might be that the topic of the study affected the response rates in some cities. Because all participants were informed in the information letter that VAO would be investigated, it is possible that this affected the willingness to participate. It is possible that those who are more wary of participation in research are even more vulnerable to VAO, experiencing even higher VAO rates than this study reports. To overcome potential bias because of attrition in the analyses of data the data were weighted.

Sex, and cooperation-, completion- and response rates

We found that sex was significantly associated with response rates in Italy, with women showing higher response rates. Studies suggest that women are more likely to participate in surveys than men.^{22–24} One explanation might be that females are more likely to value characteristics more consistent with connective selves, such as empathy or emotional

Table 3 PF and PFR by country, sex and age in relation to the reference population

Countries	Age groups (years)											
	60–64		65–69		70–74		75–79		80–84		Total	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Germany												<i>P</i> = 0.545
PF	240.1	213.9	177	207.2	176.8	178.7	164	201.3	184	216.6	189.1	202.1
PFR	1.12		0.85		1		0.81		0.85		0.94	
Greece												<i>P</i> = 1.000
PF	836.2	848.3	829.5	857.7	814	859.3	780.8	881.6	735.5	849.4	812.6	858.2
PFR	0.99		0.97		0.95		0.89		0.95		0.95	
Italy												<i>P</i> = 1.000
PF	43.9	44.2	43.5	43.7	43.1	43	42.4	43.4	43.8	43.8	43.4	43.6
PFR	0.99		1		1		0.98		1		0.99	
Lithuania												<i>P</i> = 0.283
PF	127.8	136	119	116.3	101.1	94.4	92.8	96.4	86.2	109.1	109.6	110.5
PFR	0.94		1.02		1.07		0.96		0.79		0.99	
Portugal												<i>P</i> = 0.312
PF	106	88.6	102.5	90	95.5	104.4	90.4	95.8	59.1	87.8	94	93.4
PFR	1.2		1.14		0.91		0.94		0.67		1.01	
Spain												<i>P</i> = 0.776
PF	150.4	131.5	114.4	117.3	121.6	122	129.2	126.8	101.5	110.8	125.5	122.3
PFR	1.14		1		0.97		1.92		1.03		1.03	
Sweden												<i>P</i> = 1.000
PF	586.4	586.1	562.4	554.2	559	561.7	669.4	634.5	558.2	552.1	562.7	576.4
PFR	0.96		1.01		0.9		1.01		1.01		0.98	

Table 4 Refusals, age and Refusals, age and sex in the ABUEL study (countries are in alphabetical order)

Variable	Germany		Italy		Lithuania		Portugal		Spain		Sweden	
	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value	OR (95% CI)	<i>P</i> -value
Sex												
Male ^a	1.00		1.00		1.00		1.00		1.00		1.00	
Female	1.15 (0.96–1.36)	0.120	1.83 (1.44–2.32)	0.120	1.0 (0.81–1.28)	0.120	0.93 (0.58–1.49)	0.120	1.35 (0.98–1.85)	0.120	1.10 (0.87–1.38)	0.120
Age ^b												
60–64 ^a	1.00		1.00		1.00		1.00		1.00		1.00	
65–69	0.89 (0.70–1.14)	0.373	0.80 (0.56–1.13)	0.373	0.82 (0.60–1.11)	0.373	0.84 (0.49–0.95)	0.373	0.5 (0.38–0.91)	0.373	0.88 (0.65–1.19)	0.373
70–74	0.85 (0.66–1.10)	0.207	1.01 (0.71–1.43)	0.207	0.55 (0.40–0.76)	0.207	0.97 (0.97–4.07)	0.207	0.66 (0.43–1.00)	0.207	0.80 (0.57–1.13)	0.207
75–79	0.95 (0.71–1.26)	0.709	1.07 (0.75–1.52)	0.709	0.49 (0.34–0.69)	0.709	2.37 (1.15–4.90)	0.709	0.60 (0.38–0.96)	0.709	0.95 (0.66–1.37)	0.709
80–84	1.04 (0.75–1.42)	0.829	1.56 (1.09–2.23)	0.829	0.61 (0.49–0.92)	0.829	1.51 (0.63–5.83)	0.829	0.38 (0.21–0.66)	0.829	0.65 (0.43–0.97)	0.829

a: Reference group

b: Years

closeness. Specifically, if becoming a survey respondent is perceived as behaviour consistent with connective selves, a higher survey response rate for females than males can be expected.

Age and cooperation-, completion- and response rates

We found higher response rates among older age groups compared with the youngest age group (60–64 years). This might be due to work-related duties and other duties the younger age groups are still engaged in as suggested from surveys on other topics.²⁵ In Italy and in Portugal, the older showed significantly lower response rates than the oldest age group.

Cities and cooperation-, completion- and response rates

The cooperation-, completion- and response rates varied between cities. It might be that the climate for survey research is different between cities, e.g. over-surveying in some cities, public debates on invasion of privacy and confidentiality, societal changes such as increased urbanization, changing demographic and family structures and decreasing norms for civic duties. These factors of living in a larger urban area and public debates on privacy and mistrust might have been critical for the low response rates in Stuttgart, Germany and in Kaunas, Lithuania. Furthermore, the sensitivity of the topic VOA might be critical. It

might be that the sensitivity and the unwillingness to disclose VOA are higher in some cities.

Specific strengths of this study were that for the first time ever data on prevalence of VOA were collected based on a joint definition of VOA and a joint study protocol. Nevertheless, a limitation of this study is that data from only seven cities were considered. Additionally, because only individuals from cities were studied, the present observations may not be representative for the countries, limiting the generalization of the findings. Additionally, respondents might be healthier than refusals and people exposed to severe forms of VAO might be less inclined to participate in research.²⁶

Despite the limitations, the findings of this systematic investigation of the cooperation, completion and response rates may help to design further multinational studies to overcome the limitations of the present research (e.g. methodological) on VOA, and to further illuminate the nature of survey response behaviour in VOA surveys within and between male and female, age groups and countries.

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Conflicts of interest: None declared.

Key points

- Earlier studies assessed prevalence rates of abuse of elder people in one country, but did not compare prevalence rates in different cities.
- Our study provides information of methods on conducting a multinational study on violence against older citizens.
- The findings identified different response behaviour among age groups in the study participants.
- The findings identified different response behaviour among the participating cities.

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Good friends, high income or resilience? What matters most for elderly patients?

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Background: Chronically ill patients need to adapt to their impaired life condition. Social (e.g. social support), material (e.g. income) and personal (e.g. mastery) resources are needed to cope with this challenge. It is, however, less clear whether these factors also contribute to 'relatively successful functioning' and whether these effects are disease specific or generic across chronic diseases. **Methods:** Baseline data from 361 Dutch men and women aged ≥ 60 years who were mildly depressed and diagnosed with type 2 diabetes or chronic obstructive pulmonary disease (COPD) were used. These persons participated in the 'Depression in Elderly with Long-Term Afflictions' (DELTA) study. Logistic regression analyses were used to study the independent association of social support, income and mastery (independent variables) with physical, mental and social functioning (dependent variables). **Results:** A high level of mastery is significantly associated with physical, mental and social functioning in the total study population, as well as in subgroups of patients with COPD or diabetes. This relationship remained significant after controlling for confounding factors such as gender, age, educational level and the other remaining resources. In diabetes patients, high levels of social support and income also contributed significantly to successful social functioning. **Conclusion:** Our findings suggest that rather than having good friends and a high income, having a high level of mastery (resilience) might best help chronically ill patients in coping with and adapting to their often co-morbid condition. Further longitudinal research is necessary to unravel the long-term effects of mastery, income and social support on 'relatively successful functioning' in chronically ill patients.

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