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Mortality and disability outcomes of self-reported elder abuse: A 12-year prospective investigation.

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ABSTRACT

BACKGROUND/OBJECTIVES: Elder abuse is a challenging public health issue in need of more robust studies to identify abuse and examine health outcomes following abuse. This study aimed to determine whether elder abuse could predict mortality and disability over the ensuing 12 years.

DESIGN: Population-based prospective cohort study of women aged 70-75 in 1996; survival analysis.

SETTING: Australia

PARTICIPANTS: 12,066 women with complete data on elder abuse

MEASUREMENTS: Elder abuse was assessed using the 12-item Vulnerability to Abuse Screening Scale (VASS) subscales: vulnerability, coercion, dependence, and dejection.

Outcomes were death, and disability (defined as an affirmative response to ‘Do you regularly need help with daily tasks because of long-term illness, disability or frailty?’).

RESULTS: In 1996, 8% reported vulnerability, 6% coercion, 18% dependence and 22% dejection. By October 2008, 3488/12066 (29%) were deceased. Increased mortality was associated with coercion and dejection, after controlling for demographics, social support, and health behavior (hazard ratio (HR) and 95% confidence interval (CI) 1.21 (1.06; 1.40) and 1.12 (1.03; 1.23) respectively), but not after adding chronic conditions to the coercion model. Over the 12 years, disability was reported by 2158/11027 women who had reported no disability in 1996. Women who reported vulnerability or dejection were at increased risk of disability, after controlling for demographics, social support, and health behavior (HR and CI: 1.25 (1.06; 1.49) and 1.55 (1.38; 1.73) respectively). The hazard ratio remained significant for dejection when chronic conditions and mental health were included in the model (1.40 (CI 1.24; 1.58).

CONCLUSION: This study found that specific components of vulnerability to elder abuse were differentially associated with higher rates of disability and mortality over the ensuing 12 years.

INTRODUCTION

Elder abuse is increasingly understood to be a serious public health challenge for the 21st century, with an estimated 2 million older persons in the US likely to experience abuse every year.⁽¹⁾ Elder abuse involves a violation of the fundamental human right to safety,⁽²⁾ and can include neglect, physical abuse, psychological or emotional abuse, sexual abuse, and financial abuse.⁽¹⁾ With an ageing world population, the incidence of elder abuse is likely to increase dramatically.⁽³⁾

While elder abuse has been difficult to identify and measure, there is increasing consensus on the scope of the problem.⁽⁴⁾ In a systematic review of community-based prevalence studies up to 2006, prevalence estimates ranged from 3 to 27%.⁽⁴⁾ Other systematic reviews estimate prevalence at between 2% and 14%,^(5, 6) with wide variations due to methodological differences (eg age, sampling, nationalities).^(4, 7)

An Australian population-based study of more than 12,000 women aged 70-75 estimated that 1-6% had experienced abuse, with psychological abuse the most common.⁽⁸⁾ For instance, 6% of women reported having been verbally abused, 4% reported having their things taken without their agreement, 3% reported being forced to do things they didn't want to do, 2% that someone close to them had tried to hurt or harm them recently, 1% that they had been pushed, grabbed, shoved, kicked, or hit, or been forced to take part in unwanted sexual activity within the last year.

A number of risk factors for elder abuse have been consistently reported. These include increasing age, female gender, and a shared living situation.⁽⁹⁻¹¹⁾ Dementia is a well-supported risk factor,^(9, 12, 13) along with self-neglect,⁽¹⁴⁾ and social isolation.^(13, 15, 16) Other risk factors include psychological factors such as depression, loneliness and poor quality of life, poor health, those living in rented housing versus owner-occupiers, and lower socio-economic occupation histories.^(12, 17, 18) Severity of cognitive impairment, depression, and delusions were associated with elder abuse in the multi-national European study.⁽¹²⁾ Among an Australian

population-based sample of women over 70, higher vulnerability to elder abuse was found for women from non-English speaking backgrounds, women who were separated or in de facto relationships, women who had ever been in a violent relationship, and among those with more visits to medical specialists.⁽⁸⁾

Health Outcomes of Elder Abuse

Only a small body of robust evidence exists on health outcomes associated with elder abuse. The New Haven Established Population for Epidemiological Studies in the Elderly cohort found that substantiated reports of elder abuse were significantly associated with shorter life spans after adjusting for other factors related to increased mortality in older adults.⁽¹⁴⁾ The Chicago Health and Aging Project found that both reported and confirmed elder abuse, as well as self-neglect, predicted one year all-cause mortality and this effect was found for all but those with the highest level of cognitive and physical function.⁽¹⁹⁾ Further analyses showed that the mortality associated with both reported and confirmed elder abuse was greatest for those with lowest levels of psychological and social wellbeing.⁽²⁰⁾

Only two large community-based prospective studies have examined health outcomes associated with self-reported elder abuse. Analysis of data from the Australian Longitudinal Study on Women's Health (ALSWH) indicated that three-year physical and mental health outcomes were predicted by one of the four Vulnerability to Abuse Screening Scale (VASS) subscales: dejection.^(8, 21, 22) In the Women's Health Initiative analysis of data from women aged 50-79, self-reported physical and verbal abuse independently predicted mortality over 7-8 years, with physical abuse having the highest predictive value.⁽²³⁾

Some nationally representative cross-sectional studies provide evidence of an association between elder abuse and morbidity. For instance, population based studies in Australia and The Netherlands found that elder abuse was strongly associated with both physical health conditions,⁽⁸⁾ and mental health indicators.^(8, 24) In the USA, the National Elder Mistreatment

Study of 5777 adults aged 60 found that emotional abuse was the best predictor of emotional symptoms.⁽²⁵⁾

Non-representative studies also provide evidence of a wide range of negative health outcomes associated with elder abuse including: physical symptoms such as injuries, gynaecological complaints, gastrointestinal disorders, fatigue, headache, myalgias;⁽²⁶⁾ high blood pressure or heart problems, chronic pain;⁽²⁷⁾ and psychological distress, including depression and anxiety.^(22, 24, 26, 27) Research also suggests that those who report elder abuse have much higher use of health services and at considerably greater cost.^(15, 28, 29)

Limitations of current research on health outcomes of elder abuse include the very small number of studies, short-term follow-ups in prospective studies,^(19, 22) or a reliance on cross-sectional research,^(8, 16, 24-27) and a focus on cases of substantiated abuse only,^(14, 19, 20) or current symptomatology rather than longer-term serious health outcomes such as mortality or disability.^(24, 26, 27) Currently there is almost no research that examines long-term health outcomes over a decade or more, and none that examine disability as an outcome. Given the long-term costs of disability, this is an important outcome to investigate.

The current study aims to address some of these limitations. It involves a 12 year follow-up of a nationally representative cohort of older women enrolled in the ALSWH, and uses all-cause mortality and self-reported disability as the key health outcomes. We aimed to determine whether a screening measure of elder abuse risk administered in 1996 when the women were aged 70-75 years, could predict health outcomes (mortality and morbidity) 12 years later, controlling for a wide range of known and potential confounders.

METHODS

Design

The ALSWH is a study of three national cohorts of women who, at baseline in 1996, were aged 18–23 years ('1973-78 cohort'), 45–50 years ('1946-51 cohort') and 70–75 years ('1921-26 cohort').^(30, 31) The three cohorts were selected randomly from the national Medicare Health

Insurance database that includes all permanent residents of Australia, with intentional over-sampling of women from rural and remote areas. The study was designed to track the women's health for up to 20 years, providing longitudinal data on physical and mental health, health service use and socio-demographics. Since 1996, each of the three age cohorts has been surveyed every three years.

This paper focuses on the older cohort of women. The consent rate for participation in the 20-year study was 37-40% for the older cohort.⁽³¹⁾ Comparison with the 1996 Census indicates the respondents were reasonably representative of women of this age in the general population, but with some over-representation of women with tertiary education. Further details of the recruitment methods and response rates have been described elsewhere.^(30, 31)

Sample

The current study involves a 12 year follow-up of the 1921-26 cohort, aged 82-87 in 2008. The cohort comprised 12,066 older women who responded to questions about elder abuse at the first survey in 1996. Of these, 10,166 responded in 1999, 8455 in 2002, 7010 in 2005, and 5450 in 2008. By October 2008, 3488 deaths had been identified (28.9% of original 1996 cohort sample), including 79 women who had responded to the 2008 survey. A further 1946 women (16.1%) had withdrawn from the study and 631 women (5.2%) could not be contacted. Of the remaining 6001 women, 5371(89.5%) responded to the 2008 survey.

Measures

Mailed self-complete surveys comprised between 270 and 340 items at three-yearly intervals. Deaths were identified by linkage with the National Death Index⁽³²⁾ and information provided by friends and relatives. Outcome variables were survival and whether assistance was required due to disability.

Survival: Survival was calculated as the number of days between study entry and date of death or survival at 31 October 2008.

Disability: Disability was measured by an affirmative response to the question, ‘Do you regularly need help with daily tasks because of long-term illness, disability or frailty (e.g., personal care, getting around, preparing meals, etc)?’ in 1996, 1999, 2002, 2005 and 2008. Time to disability was calculated as occurring halfway between the dates on which surveys were returned. For example, a woman who responded to the first survey in June 1996, and first reported disability in June 1999, was estimated to have become disabled in December 1997. Follow-up for women who were not disabled was calculated as time to withdrawal, death or the last survey completed.

Elder abuse: The main explanatory variable was experience of elder abuse in 1996. Elder abuse was measured by the four VASS subscales (vulnerability, dependence, dejection and coercion, see Table 1), with satisfactory reliability and validity.⁽²¹⁾

Other potential explanatory variables from the 1996 survey were selected based on previously reported associations with mortality in older adults.⁽³³⁾ Explanatory variables fit into four broad categories: demographic factors, social support measures, health behaviors and health status indicators. *Demographic factors* included age from 70-75 years, area of residence (‘urban’ or ‘non-urban’), highest level of education achieved (‘no formal qualification’, ‘school’, ‘trade’ or ‘university’) and ability to manage on available income (‘impossible’ or ‘difficult all the time’, ‘difficult sometimes’ or ‘not too bad’ or ‘easy’).

Social support measures included marital status (‘partnered’, ‘widowed’ or ‘single’) and the social interaction subscale of the Duke Social Support Index, which measures the level of interaction with family and friends.⁽³⁴⁾ Social interaction was grouped in three levels ranging from ‘low’ indicating little contact with other people, to ‘moderate’ to ‘high’, indicating frequent contact with others.

Health behaviors included smoking status, alcohol consumption, and level of physical activity. Smoking status was classified as ‘never smoked’, ‘ex-smoker’ or ‘current smoker’, and alcohol consumption as ‘non-drinker’, ‘occasional drinker’ (rarely or less than once a week), ‘moderate

drinker' (from 1 to 14 drinks per week) and 'heavy drinker' (more than 14 drinks per week).⁽³⁵⁾

Physical activity was scored as sedentary versus any level of exercise.⁽³⁶⁾

Health status indicators included number of chronic conditions and poor mental health.

Women were asked whether they had been diagnosed by a doctor with one or more of the following chronic conditions: diabetes, heart disease, stroke, osteoporosis, and cancer other than skin cancer. The mental health subscale of the Medical Outcomes Study Short-Form 36 (SF-36) is a weighted sum of five items about nervousness, anxiety, depression and psychological well-being.⁽³⁷⁾ A mental health score of 52 or less was used to indicate poor mental health.⁽³⁸⁾

Statistical Analysis

The sample for this analysis included 12066 women who responded to questions about elder abuse at the first survey in 1996. Cross-sectional associations between potential explanatory variables and the four elder abuse scales (vulnerability, coercion, dependence and dejection) in 1996 were tested using chisquare and a 5% level of significance. Survival analysis was performed using SAS version 9.2 (SAS Institute, Inc., Cary NC) and STATA/MP version 10.1 (StataCorp LP, College Station, TX) and data at Survey 1 in 1996. Survival analysis models were built for each of the elder abuse scales: vulnerability, coercion, dependence and dejection. Each model was initially adjusted for age from 70, and area of residence. Other factors were added to the models in the following order: other demographic factors, social support measures, health behaviors, any chronic condition and finally poor mental health. Models were assessed for appropriateness of the proportional hazard assumption and goodness of fit.⁽³⁹⁾ Similar models were constructed for disability. Women who had reported no disability at the first survey in 1996 (n=11027) were included in the analysis.

RESULTS

The baseline 1996 rates of reporting the VASS elder abuse items are shown in Table 1. Among women aged 70 to 75 years old in 1996, 39% reported vulnerability to elder abuse, although

the actual experience of specific types of elder abuse was lower. For instance, 2.2% reported that someone close to them had tried to hurt or harm them recently, 5.9% that someone close to them had psychologically abused them, and 4.3% reported that someone had taken things that belonged to them without their agreement. Furthermore 18% reported dependence and 22% dejection, indicating vulnerability to abuse through items such as lack of trust and privacy, and feeling nobody wants them around.

Insert Table 1 about here

The percentage of women in 1996 with each demographic, social and health characteristics are shown for no abuse, vulnerability, coercion, dependence and dejection in Table 2. There were significant associations between individual elder abuse scales and demographic factors, social support measures, health status indicators and health behaviors (Table 2). Women who had experienced abuse tended to be less educated and have more difficulty managing on available income. In terms of social support measures, they were less likely to be partnered, and had lower levels of social interaction. They also had poorer mental health, more chronic conditions, were more likely to smoke, and were less likely to exercise than women who had not experienced abuse.

Insert Table 2 about here

Mortality Outcomes

By October 2008 there had been 3488 (28.9%) deaths over the 12 years. Increased mortality was associated with the coercion, dependence and dejection factors, but not vulnerability, after controlling for age and urban/rural residence (Table 3). The effect of dependence was no longer significant after controlling for education level, marital status, and social support measures. Higher mortality risk remained for women reporting coercion and dejection, after controlling for demographic factors, social support measures and health behaviors. When chronic conditions were entered into the model, higher mortality risk remained significantly associated with coercion (hazard ratio (HR) = 1.16, 95% confidence interval (CI) = 1.10-1.34).

None of the scales were significant when poor mental health was included in the models (Table 3).

Insert Table 3 about here

Disability Outcomes

Disability was reported at subsequent surveys by 19.6% (2158/11027) of women who had reported no disability at the first survey in 1996. After adjustment for age and area of residence, disability was associated with vulnerability, coercion and dejection, but not dependence (Table 4). The effect of coercion was no longer significant for disability after adjustment for age, area of residence, education and their ability to manage on their income. Vulnerability was significant after adjustment for demographic factors, social support, health behaviors and any chronic condition, but not once poor mental health was included in the model. Risk of disability remained highly significant for women who reported dejection (HR =1.40, 95% CI = 1.24-1.58), after controlling for all factors (Table 4).

Insert Table 4 about here

DISCUSSION

Both disability and mortality were predicted by elder abuse, as measured by the VASS. The findings add to previous research^(19, 23) by using longitudinal data collected from a broadly representative community based sample over a 12 year period and for the first time we have demonstrated a link between elder abuse and disability. Furthermore, the study provides evidence of the effects of four different types of self-reported abuse on long-term health outcomes, compared with previous prospective research based on a single variable of reported or confirmed abuse,⁽²⁰⁾ or more specific types of self-reported abuse such as physical or verbal abuse.⁽²³⁾ Our findings based on self-reported abuse are significant in light of growing calls for better research to inform prevention of elder abuse,⁽⁴⁰⁾ since effective prevention programs must be based on an accurate and efficient screening tool that is easily administered at the community level.

After controlling for a wide range of demographic, social support, health behavior and health condition variables, the coerced factor was the only form of abuse found to predict mortality. The most frequently endorsed item in this scale is “Has anyone taken things that belong to you without your OK?”, suggesting that the factor may be aligned with financial abuse, although the second most frequently endorsed item “forced ... to do things you didn’t want to do” suggests psychological abuse. By contrast, the risk of disability was best predicted by the dejected factor measured by the items: feeling sad and lonely often, feeling uncomfortable with someone in the family, and feeling unwanted. While the items suggest possible overlap with mental health, in fact the dejected factor remains significant after controlling for mental health and social isolation. Thus, the factor can be conceptualised as emotional abuse although further research is warranted.

While the data do not provide a clear explanatory mechanism for the link between elder abuse risk and mortality and disability outcomes, it is significant that the VASS contributes additional explanatory power beyond that of demographics including marital status and social interactions with friends, represented by the third step in the hazard ratio models. At this step, both coercion and dejection remain significant predictors of mortality. At this step also, both vulnerability and dejection predict disability. The findings are suggestive of the importance of the quality of interpersonal relationships, above and beyond the well documented effect of social support.⁽¹⁶⁾ Our study points to a specific negative impact of abusive interpersonal relationships on mortality and disability among older women. Furthermore, it suggests that relatively subtle indicators such as “feeling uncomfortable with anyone in the family” or “feeling that nobody wants you around” have strong predictive utility for later disability.

Contributions to Existing Literature

Our study extends the small existing literature on the association between elder abuse and mortality and disability risk. First, it used a large cohort of over 12,000 older Australian women who were broadly representative of the national population of women aged 70-75 in

1996. Second, the women were followed over 12 years from 1996 to 2008, allowing for 12-year risk indices to be calculated. Finally, our study is the first known study to examine the utility of a brief self-report screening survey of older people in predicting future mortality and disability risk. This compares with previous risk studies that have relied on reported or substantiated abuse records,^(19, 20) rather than self-reports of recent abusive experiences.

Study Limitations

The study's reliance on self-reported measures of elder abuse is both a strength and a weakness. Its strength lies in the ability to identify a greater number of potentially at risk older people in a less intrusive way. However, self-report can also be criticised as subject to the cognitive functioning abilities of older people, and their willingness to reveal sensitive interpersonal information. There was no independent verification of self-report. However, it can also be argued that older people may be more willing to reveal such information through a confidential survey than face-to-face. In addition, some types of elder abuse, such as financial abuse, may be underestimated.

A second possible limitation is attrition in the sample over time, which means that subsequent measures of disability and vulnerability to elder abuse would be under-identified. In comparison, mortality was reliably ascertained through linkage with the National Death Index.⁽³²⁾ As women who had subsequent experience of elder abuse would be included in the group without abuse, the effects of elder abuse on subsequent disability and mortality would be diluted. Third, the items included on the VASS potentially overlap with cognitive disability and depression. Nevertheless, after controlling for mental health related quality of life, the results remained significant. Future research is needed to examine the components of the VASS in relation to definitions of elder abuse.

CONCLUSION

Elder abuse is a pervasive and seriously detrimental experience that appears to impact on mortality and disability. The current research adds to the growing body of literature that

suggests abuse in older age precedes early death and for the first time we provide evidence that abuse in older age also precedes disability. The results are strengthened by use of a large national sample of older Australian women aged 82-87, by links with the National Death Index, and by use of an elder abuse screening measure that has been previously validated.

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Table 1. Components and prevalence of elder abuse scales for 12066 women aged 70-75 years

Elder abuse scales and items	Prevalence*
Vulnerability	7.5
Has anyone close to you tried to hurt you or harm you recently?	2.2
Has anyone close to you called you names or put you down or made you feel bad recently?	5.9
Are you afraid of anyone in your family?	1.4
Coercion	6.4
Does someone in your family make you stay in bed or tell you you're sick when you know you're not?	0.7
Has anyone forced you to do things you didn't want to do?	2.6
Has anyone taken things that belong to you without your OK?	4.3
Dependence	17.5
Can you take your own medication and get around by yourself?	8.9
Do you trust most of the people in your family?	8.7
Do you have enough privacy at home?	5.8
Dejection	21.6
Are you sad or lonely often?	14.8
Do you feel uncomfortable with anyone in your family?	8.9
Do you feel that nobody wants you around?	3.6

* Weighted for area of residence

Table 2. Percentage of women with any level of characteristic by type of abuse at the first survey in 1996

	No abuse N=7458 %	Vulnerability N=876 %	Coercion N=767 %	Dependence N=2130 %	Dejection N=2512 %
Demographic factors					
Urban ^d	40.1	43.3	41.9	39.6	43.2
Education level ^{acd}					
No formal qualification	31.3	38.8	35.4	38.0	40.3
School	53.0	44.9	47.7	48.8	46.1
Trade	11.8	12.4	12.4	9.6	10.1
University	3.9	3.9	4.5	3.6	3.5
Ability to manage on income ^{abcd}					
Easy / not too bad	78.8	58.2	57.6	68.7	59.3
Difficult sometimes	16.4	28.5	29.0	22.4	28.7
Difficult all the time / impossible	4.8	13.3	13.4	8.8	12.0
Social support measures					
Marital status ^{abd}					
Partnered	61.6	57.6	52.1	54.9	41.4
Widowed	30.6	28.8	33.9	36.1	47.2
Single	7.8	13.6	14.0	9.0	11.4
Level of social interaction ^{abcd}					
Low	7.1	15.1	15.1	11.2	14.8
Moderate	29.0	34.1	34.3	31.1	36.5
High	63.9	50.8	50.6	57.7	48.7
Health behaviors					

	No abuse	Vulnerability	Coercion	Dependence	Dejection
	N=7458	N=876	N=767	N=2130	N=2512
	%	%	%	%	%
<hr/>					
Smoking status ^{abd}					
Never smoked	64.2	57.0	57.5	63.4	56.6
Ex-smoker	29.2	34.8	32.9	29.2	32.4
Current smoker	6.6	8.2	9.6	7.4	11.0
Alcohol consumption ^{bcd}					
Non-drinker	33.5	35.7	39.1	36.1	36.4
Occasional drinker	28.2	30.3	27.7	30.8	31.0
Moderate drinker	34.8	31.5	29.4	30.0	29.1
Heavy drinker	3.5	2.5	3.7	3.0	3.6
Exercise ^{bcd}					
None	27.1	31.8	35.6	33.7	35.9
Any	72.9	68.2	64.4	66.3	64.1
Health status indicators					
Mental health ^{abcd}					
Poor	4.6	24.1	23.2	13.2	29.2
Good	95.4	75.9	76.8	86.8	70.8
Chronic conditions ^{abd}					
None	58.6	47.5	48.2	54.8	47.4
One or more	41.4	52.5	51.8	45.4	52.6

Chisquare tests were statistically significant ($p < 0.05$) for characteristic and vulnerable (a), coerced (b), dependent (c) and dejected (d)

Table 3. Hazard ratios relating elder abuse to mortality between 1996 and 2008

Type of elder abuse	Hazard ratio (95% confidence interval)			
	Vulnerability	Coercion	Dependence	Dejection
Number abused	876	767	2130	2512
Number of deaths	270	272	677	850
Adjusted for				
Age, urban	1.11	1.34	1.12	1.29
	(0.98; 1.26)	(1.17; 1.35)	(1.02; 1.22)	(1.19; 1.40)
+ education, ability to manage on income		1.31	1.10	1.25
		(1.14; 1.51)	(1.00; 1.21)	(1.15; 1.36)
+ marital status, social interaction		1.27	1.09	1.19
		(1.10; 1.46)	(0.99; 1.20)	(1.09; 1.30)
+ smoking, drinking, exercise		1.21		1.12
		(1.06; 1.40)		(1.03; 1.23)
+ any chronic condition		1.16		1.08
		(1.01; 1.34)		(0.98; 1.18)
+ poor mental health		1.12		1.01
		0.97; 1.29)		(0.92; 1.11)

Table 4. Hazard ratios relating elder abuse to disability between 1996 and 2008

Type of elder abuse	Hazard ratio (95% confidence interval)			
	Vulnerability	Coercion	Dependence	Dejection
Number abused	749	647	1852	2122
Number with disability	183	152	349	539
Adjusted for				
Age, urban	1.38 (1.18; 1.60)	1.30 (1.10; 1.53)	0.99 (0.89; 1.12)	1.59 (1.44; 1.75)
+ education, ability to manage on income	1.28 (1.08; 1.51)	1.20 (0.99; 1.45)		1.50 (1.35; 1.68)
+ marital status, social interaction	1.26 (1.06; 1.49)			1.56 (1.40; 1.74)
+ smoking, drinking, exercise	1.25 (1.06; 1.49)			1.55 (1.38; 1.73)
+ any chronic condition	1.19 (1.00; 1.41)			1.50 (1.34; 1.68)
+ poor mental health	1.09 (0.92; 1.31)			1.40 (1.24; 1.58)