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Elder mistreatment in a community dwelling population: Findings from The Malaysian Elder Mistreatment Project (MAESTRO)

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Abstract: 299 words, text 3152 words, 44 references, 1 figure, 3 tables)

Abstract:

Background: As Malaysia is fast becoming an ageing nation, the health, safety and welfare of elders are major societal concerns. Elder mistreatment is a phenomenon recognised abroad but less so locally. This paper presents the baseline findings from the Malaysian Elder Mistreatment Project (MAESTRO) study, the first community-based study on elder mistreatment in Malaysia.

Design: Cross-sectional study; analysing baseline findings of a cohort of older adults.

Setting: Kuala Pilah district, Negeri Sembilan state, Malaysia

Objectives: To determine the prevalence of elder abuse among community dwelling older adults and its associated factors.

Participants: A total of 2,112 community dwelling older adults aged 60 years and above were recruited employing a multistage sampling using the national census.

Primary and secondary outcome measures: Elder mistreatment; measured using a validated instrument derived from previous literature and the modified Conflict Tactic Scales, similar to the Irish national prevalence survey on elder abuse with modification to local context. Factors associated with abuse, and profiles of respondents were also examined.

Results: The prevalence of overall abuse was reported to be 4.5% in the past 12 months. Psychological abuse was most common, followed by financial, physical, neglect and sexual abuse. Two or more occurrences of abusive acts were common, while clustering of various types of abuse was experienced by one third of abused elders. Being male (aOR 2.15, 95% CI 1.23 to 3.78), being at risk of social isolation (aOR 1.96, 95% CI 1.07 to 3.58), a prior history of abuse (aOR 3.28, 95% CI 1.40 to 7.68) and depressive symptomatology (aOR 2.88, 95% CI 2.88 to 21.27) were independently associated with overall abuse.

Conclusion: Elder mistreatment occurred among one in every twenty elders. The findings on elder mistreatment indicate the need to enhance elder protection in Malaysia, with both screening of and interventions for elder mistreatment.

Key words: Elder abuse, elder mistreatment, prevalence, risk factors, Malaysia

Article summary:

Strengths

- The first community-based study on elder mistreatment reported in Malaysia employing a large sample size, good response rate, highly personalised method of data collection and referral of abused elders to the local health authorities

Limitations

- The temporal relationship of the association between elder mistreatment and various risk factors cannot be established due to the cross-sectional study design
- Underreporting, due to exclusion of severely cognitively impaired elders from the analysis, as well as elders not disclosing abuse

INTRODUCTION

Malaysia is fast achieving ageing population status. Census data shows an estimated 5.9% of a total 30.9 million population are elderly persons aged 65 years and above while elders aged 60 and above make up nine percent of the population, a proportion similar to that of developed nations.[1,2] The world population is ageing rapidly, with developing countries like Malaysia doubling the number of elderly in a relatively short span of time compared to developed countries.[3]

Malaysia, in line with the United Nations World Assembly on Ageing, held in Vienna in 1982, recognizes persons aged 60 years and above as belonging to the elderly age group.[4,5] With the rapidly ageing population, it is imperative that health needs of the elders are looked into. Population ageing brings with it its share of maladies, including proper treatment of non-communicable diseases, increased risk of falls, and even abuse of elders.[6]

The National Policy on Elders, first drafted in 1995 by the then Ministry of National Unity and Social Development,[7] and subsequently amended in 2011 by the current Ministry of Women, Family and Community Development recommends ensuring that elders are free from oppression and abuse, while enabling the elder to continue living with their family and society as long as possible.[5] It is therefore important to ensure that elders are protected from harm in all senses, to promote and protect their health and well-being, before focusing on other curative strategies, in line with successful ageing.[8]

Local researchers have highlighted the absence of information or data on elder abuse, the deficiencies of our health care system in detecting suspected elder abuse, besides the lack of mandatory reporting of elder abuse, while advocating for community-based health care to be expanded.[4,9] Sociodemographic profiling of abused elders too would lead to better identification of elder abuse. Currently there are no laws to prevent elder abuse, besides the

provision of the Domestic Violence Act 1994 which by default covers all family members including elders.[4,9]

International data on elder abuse shows that elder abuse prevalence varies globally between 1% to 44.6%,[10], and between 2.2% to 66% in Asia,[11] despite the greater emphasis on filial piety in Asian cultures. This slow degradation of values coincides with the disbanding of extended families in favour of the nuclear family set up especially when work opportunities take youngsters away to larger cities.[11,12] Asian elders perceive non-inclusion in family matters and disrespect towards them as humiliation or 'loss of face' and would rarely admit this. Neither would they report abuse by their offspring, or seek help, in order to safeguard the family honour. These prevalence estimates are likely largely an underestimation. The factors associated with elder abuse are frequently older age, female sex, minority ethnic status, lower levels of education, lower socioeconomic status, cohabiting with other relatives in western societies compared to living alone in Chinese communities, current employment in some instances, poorer physical function, poorer physical and mental health, dependency on others, history of chronic disease, cognitive decline, depression, stress, prior history of abuse, social isolation, and prior poor family relationships.[12-21]

Community dwelling elders were the focus of this study as filial piety is greatly valued, with three quarters of Malaysian elderly residing at home with adult children and/or other family members, and not in nursing homes or institutions.[22,23] This paper reports the baseline findings of the prevalence and correlates of elder mistreatment among community dwelling elderly in the local context.

MATERIALS AND METHODS

Study population

The Malaysian Elder Mistreatment Project (MAESTRO) is an epidemiological study of elder mistreatment among Malaysian older adults aged 60 years and above.[24] The inclusion criteria were older adults aged 60 years or more, residing at home, alone or with family over the past 12 months and not institutionally bound. The sampling frame for this study was obtained from the Malaysian Department of Statistics (DoS). A two-stage sampling process was carried out in the recruitment of older adults in the rural district of Kuala Pilah in Negeri Sembilan state, so chosen because of its high dependency ratio and high net migration rate.[1,25] Details of the study methods conform to the STROBE reporting guideline[26] and have been described previously in the study protocol.[24] This study employed face-to-face interviews with 2,118 older adults with their written informed consent (84.9% response rate) from a total of 2,496 older adults in the sampling frame. Approximately 378 older adults did not respond due to migration, death, or were not at home when visited up to three times during the survey period (See Figure 1). No difference was found in the characteristics of older adults such as age, ethnicity and sex among the respondents and non-respondents. Data analysis was performed on 1,927 respondents after excluding 201 older persons with severe cognitive impairment or unknown cognitive status. The following paper describes the baseline data of this cohort.

Definition and measurement

This study uses the term elder abuse or elder mistreatment, as used by the World Health Organisation (WHO),[27] to cover both abuse and neglect.[28] Elder mistreatment was measured using a validated instrument derived from previous literature and the modified Conflict Tactic Scales, similar to the Irish national prevalence survey on elder abuse with modification to

local context.[20] Prior to this study, pilot testing of the questionnaire and feasibility was conducted, whereby 291 elderly were interviewed.[29]

In line with the WHO definition of elder abuse, the five major subtypes were defined. The main outcome for this study was overall abuse in the past 12 months, operationalised as the presence of any one occurrence of physical, psychological, sexual, financial abuse or neglect by someone in a position of trust such as family members, friends or neighbours. Psychological abuse and neglect were defined as ten or more occurrences in the past 12 months perpetrated by someone in a position of trust as reported by the elder respondent, or if there were less than ten such occurrences in the past 12 months, but perceived by the elderly respondent as having had a serious impact on them, then this was also taken to constitute psychological abuse or neglect. Physical, sexual and financial abuse were construed as any one occurrence in the past 12 months perpetrated by someone in a position of trust as reported by the elder.

The eight physical abuse questions included if anyone had ever tried to slap or hit the elder, or restrained them in any way, among others. Psychological abuse assessment included if anyone had called the elder harsh words, sworn at or cursed the elder, besides verbally threatening them, of the seven questions. Sexual abuse questions included if anyone had ever spoken to, touched or tried to touch them in a sexual manner or forced them into having intercourse. The nine financial abuse questions included if anyone had stolen their money, things, property or documents, been prevented access to their money, things, property or documents, or in the local context, having experienced no contribution towards monthly expenses like food or rent which had previously been agreed upon, among others. Assessment of neglect was based on 14 questions including not receiving help if unable to perform the Katz activities of daily living, besides including access to the basic amenities of life, namely, food, clean clothes, health care or medications, and shelter.

Besides prevalence, clustering of abuse was defined as the number of subtypes of abuse reported to have been experienced by the elder in the past 12 months. Factors studied included age, sex, marital status, ethnicity, education, poverty, living arrangements, current employment, physical health, chronic disease, cognitive impairment, stress, anxiety, depressive symptoms, history of abuse and risk of social isolation.[24]

Ethical approval

Ethical approval was sought and obtained from the Medical Research and Ethics Committee, Ministry of Health Malaysia and the University of Malaya Medical Centre's Institutional Review Board. Interviewer debriefing sessions were also held at regular intervals, as part of the safety protocol.[24] Abused elders were referred to the nearest district health office and social welfare authorities.

Data analysis

All statistical analyses were performed using the SPSS software version 20.0 (SPSS Inc, 2009, Chicago, Illinois). The 2,118 respondents had their sociodemographic background compared to the 378 non-responders. Univariate analyses were used to describe the prevalence of all types of elder mistreatment in the last 12 months. Sampling weights were applied to produce unbiased estimates. Descriptive analyses were performed to describe presence or absence of overall abuse. Logistic regression was performed for both univariate and multivariate analysis to estimate the crude and adjusted ORs including its 95% CI of overall abuse. The model was adjusted simultaneously for sociodemographic characteristics, general health status including physical health, mental health, physical and cognitive function, chronic disease, history of abuse and risk of isolation that may serve as correlates of abuse. Variables with $p < 0.25$ in the univariate analyses were included in the regression model.

RESULTS

Prevalence of elder mistreatment

The overall prevalence of elder mistreatment reported in the last 12 months is 4.5% (see Table 1). Psychological abuse is the most frequent (2.2%), followed by financial (2.0%), neglect (1.1%), physical (0.5%) and lastly, sexual abuse (0.1%). About 5.2% of males reported experiencing abuse as compared to 4.0% of females. Older adults reporting two or more experiences of abusive acts in the past 12 months (2.7%) were more common than a single abusive experience (1.7%). Clustering of abuse subtypes shows that about 3% of older persons had experienced one type of abuse, and 1.2% had experienced multiple types of abuse.

Profile of respondents

Table 2 shows the baseline characteristics of elderly respondents by the presence of overall abuse. Slightly more abused elders are males, aged 60-69 years old, not married, of non-Malay ethnicity and of lower educational levels. They are also more likely to be living in poverty, staying alone and currently employed. In terms of mental health, those who reported abuse are more likely to have depressive symptoms, anxiety, and stress, besides poorer physical health. Eighty percent of elders had at least one known chronic disease while almost ten percent had probable, and another ten percent, borderline cognitive impairment. Almost one in twenty abused elders reported having experienced abusive acts before the age of 60, while almost ten percent of elders were found to be at risk of social isolation.

Analysis of factors associated with elder abuse

Examining each factor individually, older adults aged 70 to 79 years, those not married, hard-core poverty, current employment, presence of any one chronic disease, stress, anxiety,

depressive symptoms, history of abuse, and being at risk social isolation were all found to have $p<0.25$ and therefore included in the multivariable regression (Table 3). However, in the multivariable analysis, males were found to be twice as likely as females to be abused (aOR 2.15, 95% CI 1.23 to 3.78), while those with depressive symptoms were eight times more likely to be abused (aOR 7.83, 95% CI 2.88 to 21.27). A prior history of abuse increased the odds of abuse by three times (aOR 3.28, 95% CI 1.40 to 7.68) while socially isolated older adults had twice the odds of being abused (aOR 1.96, 95% CI 1.07 to 3.58). Age, marital status, ethnicity, educational level, poverty, living arrangements, current employment, chronic disease, stress and anxiety were no longer significantly associated with overall abuse in the multivariable model (Table 3).

DISCUSSION

Generalisation of findings

This community-based survey garnered a very respectable 84.9% response rate from respondents, showing that the results are generalizable to the target population of older adults. A comparison of the respondents to census data showed that it was largely representative of the older adults population in Kuala Pilah district.[30]

Prevalence of abuse

The prevalence of overall elder mistreatment in this study was slightly higher than the estimate found in Ireland, from which the instrument was based upon.[20] Other studies utilising a similar means of assessment obtained prevalence estimates of 12.3% in Portugal,[31] 2.6% in the UK,[19] 3.24% in the USA,[32] and 4.6% also in the USA.[33] Our findings are at the lower prevalence range comparing other studies reviewed (1.1% to 44.6%)[10] as well as those reported in Asia (2.2% to 66%).[11] Elder abuse still occurs despite the pre-conceived notion that filial piety, respecting and caring for elders is practiced widely and expected of Asian families and children. This has to be tempered with the social changes in Asian societies as they become more westernised and thus the old cultural values are therefore diluted with the intrusion of Westernised occupations and lifestyles.[12,18] Degradation of cultural values is occurring along with rapid changes to the family structure, urbanisation and modernisation. Number of experiences of abuse at 1.7% and 2.7% for one or more than one abusive act experienced was similarly reported by two studies before. This was 30.7% of abused elders in Portugal[34] and 32.8% in Thailand.[35] Clustering of abuse was also seen in a Latino population in the USA,[31] and another Portuguese study,[34] with similar proportions of abused elders (two thirds and one third respectively) experiencing one type or multiple types of abuse.

The most common type of abuse, psychological abuse, was reported by elders. This is similar to studies done elsewhere where psychological abuse is the most frequently reported type of abuse.[14,15,36,37] Similar to evidence elsewhere, sexual abuse was the least common type of elder abuse. Only one occurrence of verbal sexual harassment was reported. This is similar to a national prevalence study on elder mistreatment in the United Kingdom and was reported by a male respondent.[19]

Factors associated with elder abuse

Males were predisposed to elder abuse compared to females, which may be explained by the local culture prevalent to Negeri Sembilan state in which Kuala Pilah district is located. The practice of 'adat perpatih', where womenfolk hold the rights to ancestral property and land is a local custom or tradition peculiar to Negeri Sembilan state, which dictates that property is handed down to daughters rather than sons. Female elderly are therefore valued more in this matriarchal community compared to male elderly. This 'adat' is applicable to Malays, and as they comprise the majority of the population, may explain the higher prevalence of abuse among males compared to females.[38]

Depressive symptomatology in this study was found to be strongly associated with elder abuse. Similar findings were reported from other studies, estimated to be between 2.5 to 4.5 times more as older adults' with poor mental health conditions may predispose them to abuse.[20,39,40] However, depression could be a risk factor or the effects of the abuse.[20,41]

A prior history of abuse was found associated with elder abuse among elderly respondents of this study. This finding has also been reported by other research, where it has been postulated that elder abuse is an extension of domestic abuse that has occurred at a younger age and that is is now continuing into old age.[17,34] It may also be explained by the same stressors being present in the elderly person's environment or family. Another plausible explanation is that

the abusive act is being perpetrated in a cyclical pattern.[16,42] The cyclical pattern may also be explained by transgenerational or social exchange theory, whereby those abused elders view violent behaviour as acceptable, and thus may perpetrate it themselves later.[43,44]

Poor social support from both friends and family may cause elders to be at risk of social isolation. [41] In this study, older adults at risk of social isolation were found to be twice more likely to be abused. Previous research in Malaysia has shown that elders with better social support are those who kept active socially and were well connected by virtue of participating in political and religious activities or the local neighbourhood watch.[30] Currently, social support may be eroded by virtue of younger people migrating to urbanised areas leaving a largely elder population in rural areas like Kuala Pilah.[2] Net migration for Negeri Sembilan state is high, it being among the top three states to send migrants out to other states. Negeri Sembilan had the highest migration effectiveness ratio in Malaysia.[25]

Strengths and limitations of this study

The large sample size, good response rate, highly personalised method of data collection and referral of abused elders to the local health authorities are some of the strengths of this study. To the best of our knowledge, this is the first community-based study on elder abuse reported in Malaysia. As the baseline data is from a cross-sectional study, the temporal relationship of the association between elder mistreatment and various risk factors cannot be established. As experience of abuse in this study were based on self-report, underreporting of abuse is a possible shortcoming. Underreporting is also possible due to exclusion of severely cognitively impaired elders who may be more susceptible to abuse. Older adults who experienced abuse may not want to disclose their status and this is especially so in Asian communities, where upholding the family honour is important in order to 'save face', lest the

family be humiliated by disclosure of such negative personal experiences encountered by the elder person.[11]

CONCLUSION

This study, based on a representative sample of older adults residing in rural Malaysia suggests that elder abuse occurs among one in every twenty elders. The prevalence found in this study are within the range reported elsewhere. Some similarities are observed in the distribution of correlates of elder abuse with findings from other studies. This adds to the growing number of literature reported in Asia. Overall, the findings from this study strongly indicate the need for further efforts to enhance elder protection in Malaysia. Early screening and home visits to identify older adults with poor mental health, prior history of abuse and those at risk of isolation is needed. Increasing awareness on elder abuse is important in order to empower elders as well as enable service providers to provide better care for vulnerable elders.

STUDY PROTOCOL

The study protocol is available at http://dx.doi.org/10.1136/bmjopen-2016-011057.

DATA SHARING STATEMENT:

The data may be accessed at the Julius Centre University of Malaya website at http://jcum.um.edu.my or by emailing jcum@ummc.edu.my.

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Author contributions:

RS was responsible for the study conception, design, conduct, acquisition of subjects, data collection, data entry, data analysis, data interpretation, drafting of, critical revision and final approval of the manuscript.

CWY, NNH & DP were responsible for the study conception, design, conduct, data analysis, data interpretation, acquisition of funding, critical revision and final approval of the manuscript.

AB, KC & FH were responsible for the study design, data analysis and interpretation, acquisition of funding, critical revision and final approval of the manuscript

ZMA, SNA, IAR, SAA, RR, RM and ZLM were responsible for the study design, conduct, data interpretation, and final approval of the manuscript.

NAA & TA were responsible for the data interpretation, critical revision and final approval of the manuscript.

Competing interests: None declared.

GRAPHICS

Table 1: Prevalence of all types of elder abuse in the last 12 months (N=1,927)

Type of abuse/ Number of subtype experiences[a]	Weighted prevalence[b]					
	Male		Female		Total[c]	
	n	% (95% CI)	n	% (95% CI)	n	%, (95% CI)
Overall abuse	**40**	**5.2 (3.7, 7.4)**	**44**	**4.0 (2.8, 5.6)**	**84**	**4.5 (3.5, 5.7)**
0	716	94.8	1127	96.0	1843	95.6
1	19	2.1	18	1.5	37	1.7
≥2	21	3.1	26	2.5	47	2.7
Psychological	**16**	**2.2 (1.3, 3.8)**	**22**	**2.3 (1.4, 3.7)**	**38**	**2.2 (1.5, 3.2)**
0	740	97.8	1149	97.7	1889	97.8
1	8	1.0	8	0.7	16	0.8
≥2	8	1.2	14	1.5	22	1.4
Financial	**16**	**2.1 (1.2, 3.6)**	**19**	**2.0 (1.2, 3.3)**	**35**	**2.0 (1.4, 3.0)**
0	740	97.9	1152	98.0	1892	98.0
1	13	1.8	17	1.6	30	1.7
≥2	3	0.3	2	0.3	5	0.3
Neglect abuse	**10**	**1.6 (0.8, 3.1)**	**11**	**0.8 (0.4, 1.7)**	**21**	**1.1 (0.7, 1.8)**
0	746	98.4	1160	99.2	1906	98.9
1	2	0.2	3	0.2	5	0.2
≥2	8	1.4	8	0.6	16	0.9
Physical	**5**	**0.4 (0.2, 1.0)**	**6**	**0.6 (0.2, 1.4)**	**11**	**0.5 (0.3, 1.0)**
0	751	99.6	1165	99.4	1916	99.5
1	4	0.3	2	0.2	6	0.2
≥2	1	0.1	4	0.4	5	0.3
Sexual	**1**	**0.3 (0, 2.1)**	**0**	**-**	**1**	**0.1 (0, 0.8)**
0	755	99.7	1171	100.0	1926	99.9
1	1	0.3	0	0	1	0.1
≥2	0	0	0	0	0	0

[a] Table percentages for number of experiences are columnar percentages
[b] Weighted for enumeration block (EB) and living quarters (LQ) as provided by DOS
[c] Total for overall abuse is > total of each subtype of abuse as multiple subtypes of abuse may have been experienced by an abused elder

Table 2: Baseline characteristics of elderly respondents by presence of overall abuse (N=1,927)

Characteristics	Abused		Non-abused		Total
	n	%[a]	n	%[a]	N
Age					
Oldest-old (80+ years)	8	4.4	175	95.6	183
Old-old (70-79 years)	29	3.7	752	96.3	781
Young-old (60-69 years)	47	4.9	915	95.1	962
Sex					
Male	40	5.3	715	94.7	755
Female	44	3.8	1127	96.2	1171
Marital status					
Not married	7	10.9	57	89.1	64
Widowed	19	3.1	593	96.9	612
Married	58	4.6	1193	95.4	1251
Ethnicity					
Non Malay[b]	6	13.3	39	86.7	45
Malay	78	4.1	1804	95.9	1882
Educational level					
Secondary or higher	16	3.2	489	96.8	505
None or primary	68	4.8	1354	95.2	1422
Poverty					
Hardcore poor (<RM440)	19	5.3	341	94.7	360
Poor (RM441-700)	20	5.8	327	94.2	347
Non-poor (>RM700)	44	3.6	1164	96.4	1208
Living arrangements					
Staying alone	12	6.7	168	93.3	180
Staying with others	72	4.1	1675	95.9	1747
Current employment					
Currently employed	11	5.8	179	94.2	190
Not currently employed	72	4.2	1648	95.8	1720
Physical health					
Below normal	47	5.1	871	94.9	918
Normal	37	3.7	954	96.3	991
Cognitive impairment					
Borderline	14	5.6	238	94.4	252
None	70	4.2	1605	95.8	1675
Stress					
Stress	9	31.0	20	69.0	29
No stress	75	4.0	1806	96.0	1881
Anxiety					
Anxiety	15	24.2	47	75.8	62
No anxiety	69	3.7	1785	96.3	1854
Depressive symptoms					
Depressive symptoms	14	31.1	1803	96.3	1872
No depressive symptoms	69	3.7	31	68.9	45

Table 2. continued

Characteristics	Abused		Non-abused		Total
	n	%[a]	n	%[a]	N
Chronic disease					
Presence of any one disease	73	4.9	1431	95.1	1504
No chronic disease	11	2.6	410	97.4	421
History of abuse (prior to age 60)					
Abuse	14	17.3	67	82.7	81
No abuse	68	3.8	1735	96.2	1803
Risk of social isolation					
At risk	28	8.2	315	91.8	343
Not at risk	53	3.4	1519	96.6	1572

[a]Table percentages are row percentages

[b] Malays refer to the largest population group in Malaysia, while non-Malays in this study refers to both ethnic Chinese and Indians

Table 3: Univariate and multivariate logistic regression analysis of factors associated with overall elder abuse[a]

Characteristics	Crude Odds Ratio	95% CI	*p*-value	Adjusted Odds Ratio	95% CI	*p*-value
Age						
Old-old (80+ years)	0.87	0.36 to 2.10	0.757	0.70	0.22 to 2.28	0.559
Old (70-79 years)	0.70	0.40 to 1.21	0.197*	0.71	0.37 to 1.33	0.283
Young-old (60-69 years)	Ref			Ref		
Sex						
Male	1.34	0.80 to 2.24	0.265	2.24	1.23 to 3.78	0.008**
Female	Ref			Ref		
Marital status						
Not married	3.29	1.10 to 9.82	0.033*	0.73	0.23 to 2.31	0.589
Widowed	0.87	0.48 to 1.58	0.637	0.77	0.34 to 1.74	0.530
Married	Ref			Ref		
Ethnicity						
Non Malay	1.73	0.63 to 4.81	0.290		-	
Malay	Ref					
Educational level						
Secondary or higher	0.76	0.40 to 1.46	0.412		-	
No formal or primary	Ref					
Poverty						
Hardcore poor (<RM440)	1.65	0.87 to 3.13	0.122*	1.88	0.90 to 3.90	0.091
Poor (RM441-700)	1.17	0.61 to 2.23	0.635	1.05	0.52 to 2.14	0.891
Non-poor (>RM700)	Ref			Ref		
Living arrangements						
Staying alone	1.99	0.93 to 4.26	0.076*	1.20	0.44 to 3.28	0.718
Not staying alone	Ref			Ref		
Current employment						
Currently employed	1.60	0.75 to 3.41	0.223	1.64	0.75 to 3.56	0.213
Not currently employed	Ref					
Physical function						
Walking speed	1.37	0.24 to 7.68	0.724		-	

Table 3 continued

Characteristics	Crude Odds Ratio	95% CI	*p*-value	Adjusted Odds Ratio	95% CI	*p*-value
Physical health						
Below normal	1.12	0.67 to 1.88	0.655		-	
Normal	Ref					
Chronic disease						
Presence of any one disease	1.85	0.90 to 3.79	0.094*	1.93	0.85 to 4.40	0.116
No chronic disease	Ref			Ref		
Cognitive impairment						
Borderline	1.28	0.66 to 2.49	0.471		-	
None	Ref					
Stress						
Stress	5.69	1.89 to 17.14	0.002*	0.98	0.32 to 2.99	0.996
No stress	Ref			Ref		
Anxiety						
Anxiety	6.24	2.88 to 13.52	<0.001*	2.44	0.89 to 6.68	0.082
No anxiety	Ref			Ref		
Depressive symptoms						
No depressive symptoms	9.97	4.58 to 21.73	<0.001*	7.83	2.88 to 21.27	<0.001**
Depressive symptoms	Ref			Ref		
History of abuse (prior to age 60)						
Abuse	5.79	2.65 to 12.64	<0.001*	3.28	1.40 to 7.68	0.006**
No abuse	Ref			Ref		
Risk of social isolation						
At risk	2.18	1.25 to 3.80	0.006*	1.96	1.07 to 3.58	0.029**
Not at risk	Ref			Ref		

* Significant at p<0.250; ** Significant at p<0.05

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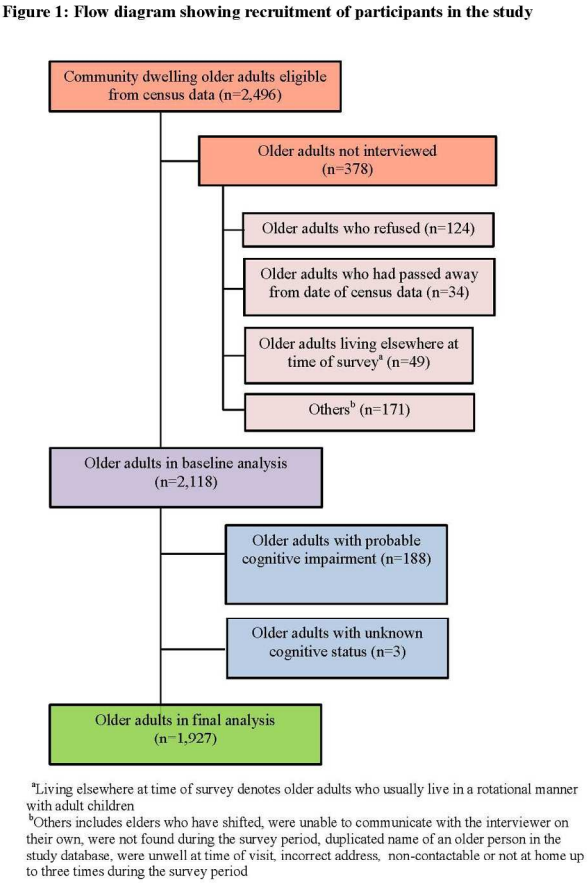

Figure 1: Flow diagram showing recruitment of participants in the study

210x297mm (200 x 200 DPI)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7-8
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	*9*
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	7-9
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	9
		(*b*) Describe any methods used to examine subgroups and interactions	-
		(*c*) Explain how missing data were addressed	7
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	9
		(*e*) Describe any sensitivity analyses	-
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7
		(b) Give reasons for non-participation at each stage	7
		(c) Consider use of a flow diagram	Figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	19-20
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	10, 18
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	18,21,22
		(*b*) Report category boundaries when continuous variables were categorized	19
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
Discussion			
Key results	18	Summarise key results with reference to study objectives	12-13
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	15
Generalisability	21	Discuss the generalisability (external validity) of the study results	12,15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	16

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

The prevalence and correlates of elder abuse and neglect in a rural community of Negeri Sembilan state: Baseline findings from The Malaysian Elder Mistreatment Project (MAESTRO), a population based survey

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Title: The prevalence and correlates of elder abuse and neglect in a rural community of Negeri Sembilan state: Baseline findings from The Malaysian Elder Mistreatment Project (MAESTRO), a population based survey

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(Original research)

(Abstract: 299 words, text 3951 words, 52 references, 1 figure, 3 tables)

Abstract:

Background: As Malaysia is fast becoming an ageing nation, the health, safety and welfare of elders are major societal concerns. Elder abuse is a phenomenon recognised abroad but less so locally. This paper presents the baseline findings from the Malaysian Elder Mistreatment Project (MAESTRO) study, the first community-based study on elder abuse in Malaysia.

Design: Cross-sectional study; analysing baseline findings of a cohort of older adults.

Setting: Kuala Pilah district, Negeri Sembilan state, Malaysia

Objectives: To determine the prevalence of elder abuse among community dwelling older adults and its associated factors.

Participants: A total of 2,112 community dwelling older adults aged 60 years and above were recruited employing a multistage sampling using the national census.

Primary and secondary outcome measures: Elder abuse; measured using a validated instrument derived from previous literature and the modified Conflict Tactic Scales, similar to the Irish national prevalence survey on elder abuse with modification to local context. Factors associated with abuse, and profiles of respondents were also examined.

Results: The prevalence of overall abuse was reported to be 4.5% in the past 12 months. Psychological abuse was most common, followed by financial, physical, neglect and sexual abuse. Two or more occurrences of abusive acts were common, while clustering of various types of abuse was experienced by one third of abused elders. Being male (aOR 2.15, 95% CI 1.23 to 3.78), being at risk of social isolation (aOR 1.96, 95% CI 1.07 to 3.58), a prior history of abuse (aOR 3.28, 95% CI 1.40 to 7.68) and depressive symptomatology (aOR 2.88, 95% CI 2.88 to 21.27) were independently associated with overall abuse.

Conclusion: Elder abuse occurred among one in every twenty elders. The findings on elder abuse indicate the need to enhance elder protection in Malaysia, with both screening of and interventions for elder abuse.

Key words: Elder abuse, elder mistreatment, prevalence, risk factors, Malaysia

Article summary:

Strengths

- The first community-based study on elder abuse reported in Malaysia employing a large sample size, good response rate, highly personalised method of data collection and referral of abused elders to the local health authorities

Limitations

- The temporal relationship of the association between elder abuse and various risk factors cannot be established due to the cross-sectional study design
- Underreporting, due to exclusion of severely cognitively impaired elders from the analysis, as well as elders not disclosing abuse

INTRODUCTION

Malaysia is fast achieving ageing population status. Census data shows an estimated 5.9% of a total 30.9 million population are elderly persons aged 65 years and above while elders aged 60 and above make up nine percent of the population, a proportion similar to that of developed nations.[1,2] Malaysia, in line with the United Nations World Assembly on Ageing, held in Vienna in 1982, recognizes persons aged 60 years and above as belonging to the elderly age group.[3,4] With the rapidly ageing population, it is imperative that health needs of the elders are looked into. Population ageing brings with it its share of maladies, including proper treatment of non-communicable diseases, increased risk of falls, and even abuse of elders.[5]

International data on elder abuse shows that elder abuse prevalence varies globally between 1% to 44.6%,[6] and between 2.2% to 66% in Asia.[7] A recent review synthesising prevalence from community based studies among elders aged 60 yielded a pooled prevalence of abuse estimate at 15.7%.[8] Psychological abuse was found to be the most common form (11.6%), followed by financial, neglect, physical and sexual abuse at 6.8%, 4.2%, 2.6% and 0.9% respectively. Regional elder abuse estimates suggest Asia predominated at 20.2%, despite the greater emphasis on filial piety in Asian cultures. This estimate is followed by Europe (15.4%) and the Americas (11.7%).[8] The reasons for the higher estimate found in Asian cultures is unknown although the increasing rapid economic development and social change in many Asian countries may have significantly contributed to the elder abuse problem. The slow degradation of values coincides with the disbanding of extended families in favour of the nuclear family set up especially when work opportunities take youngsters away to larger cities.[7,9] Some previous literature had reported that elder abuse may be associated with older age, female sex, minority ethnic status, lower levels of education, lower socioeconomic status, cohabiting with other relatives in western societies compared to living alone in

Chinese communities, current employment in some instances, poorer physical function, poorer physical and mental health, dependency on others, history of chronic disease, cognitive decline, depression, stress, prior history of abuse, social isolation, and prior poor family relationships.[9-18]

Global and regional estimates suggest that elder mistreatment is a significant health and social problem. Therefore, it is important that local data is collected to raise awareness and convince policy makers that the elder abuse issue is a real problem in the community, and that action is clearly needed. Local researchers have highlighted the absence of information or data on elder abuse that could direct the forming of specific legislation to address elder abuse. Currently there are no laws to prevent elder abuse in the country. The provision of the current Domestic Violence Act 1994 although by default covers all family members including older persons, primarily aims to deter violence against intimate partners, and hence is considered insufficient to safeguard and protect the rights of the older persons.[3,19]

Community dwelling elders were the focus of this study as more than three quarters of Malaysian elderly residing at home with adult children and/or other family members, and not in nursing homes or institutions.[20,21] This paper reports the baseline findings of the prevalence and correlates of elder abuse among community dwelling elderly in the local context.

MATERIALS AND METHODS

Study population

The Malaysian Elder Mistreatment Project (MAESTRO) is an epidemiological study of elder abuse among Malaysian older adults aged 60 years and above.[22] The inclusion criteria were older adults aged 60 years or more, residing at home, alone or with family over the past 12

months and not institutionally bound. The sampling frame for this study was obtained from the Malaysian Department of Statistics (DoS). A two-stage sampling process was carried out in the recruitment of older adults in the rural district of Kuala Pilah in Negeri Sembilan state, so chosen because of its high dependency ratio and high net migration rate.[1,23] Details of the study methods conform to the STROBE reporting guideline[24] and have been described previously in the study protocol.[22] This study employed face-to-face interviews with 2,118 older adults with their written informed consent (84.9% response rate) from a total of 2,496 older adults in the sampling frame. Approximately 378 older adults did not respond due to migration, death, or were not at home when visited up to three times during the survey period (See Figure 1). No difference was found in the characteristics of older adults such as age, ethnicity and sex among the respondents and non-respondents. Data analysis was performed on 1,927 respondents after excluding 201 older persons with severe cognitive impairment or unknown cognitive status. The following paper describes the baseline data of this cohort.

Definition and measurement

This study uses the term elder abuse or elder mistreatment, as used by the World Health Organisation (WHO),[25] to cover both abuse and neglect.[26] Elder abuse was measured using a validated instrument derived from previous literature and the modified Conflict Tactic Scales, similar to the Irish national prevalence survey on elder abuse with modification to local context.[17] Prior to this study, pilot testing of the questionnaire and feasibility was conducted, whereby 291 elderly were interviewed.[27]

In line with the WHO definition of elder abuse, the five major subtypes were defined. The main outcome for this study was overall abuse in the past 12 months, operationalised as the presence of any one occurrence of physical, psychological, sexual, financial abuse or neglect by someone in a position of trust such as family members, friends or neighbours. Psychological abuse and neglect were defined as ten or more occurrences in the past 12

months perpetrated by someone in a position of trust as reported by the elder respondent, or if there were less than ten such occurrences in the past 12 months, but perceived by the elderly respondent as having had a serious impact on them, then this was also taken to constitute psychological abuse or neglect. Physical, sexual and financial abuse were construed as any one occurrence in the past 12 months perpetrated by someone in a position of trust as reported by the elder. Clustering of abuse was defined as the number of subtypes of abuse reported to have been experienced by the elder in the past 12 months.

The eight physical abuse questions included, for example, if anyone had ever tried to slap or hit the elder, or restrained them in any way, among others. Psychological abuse assessment consisted of seven questions such as verbally insulted the elder using harsh words, sworn at or cursed them, besides threatening them. Sexual abuse questions included if anyone had ever spoken to, touched or tried to touch them in a sexual manner or forced them into having intercourse. The nine financial abuse questions included if anyone had stolen their money, things, property or documents, been prevented access to their money, things, property or documents, or in the local context, having experienced no contribution towards monthly expenses like food or rent which had previously been agreed upon, among others. Assessment of neglect was based on 14 questions including if the elderly had received any form of assistance if he/she was unable to perform any activities of daily living listed, or lacked access to basic amenities such as food, clean clothes, health care or medications, and shelter.

Sociodemographic characteristics such as age, sex, marital status, ethnicity, education, poverty, living arrangements and current employment, besides other characteristics such as physical health, chronic disease, cognitive impairment, stress, anxiety, depressive symptoms, history of abuse and risk of social isolation were examined.[22] In this study, physical health was scored using the SF12v2 physical component scale in relation to the past seven days.[28]

Permission for usage of this questionnaire was obtained and purchased from Quality Metrics' SFTM. These questionnaires are available in Malay (local language) and English versions, validated for use in the Malaysian population.[29]

History of chronic disease was self-reported by the older person, who were asked if they had ever been told by a doctor or medical staff that they suffered from cardiovascular disease, hypertension, stroke, arthritis or joint pain, Parkinson's disease, diabetes mellitus, respiratory problems such as lung infections or asthma, cancer, or hypercholesterolaemia. This was similar to the format utilised in the National Health and Morbidity Survey.[30] An affirmative answer to any of these conditions was taken as 'yes' for chronic disease.

Cognitive impairment was assessed using the Elderly Cognitive Assessment Questionnaire (ECAQ). The ECAQ has ten items, grouped under memory, orientation and memory recall. It has been validated for use in the local population,[31] with scores of 0 to 4 considered probable cognitive impairment, 5 to 6 borderline cognitive impairment and 7 to 10 normal cognition.[32] Interviewers noted responses and continued accordingly regardless of the scoring at this point.

Stress, anxiety and depressive symptomatology were assessed in relation to the past seven days using the Depression, Anxiety and Stress Scales (DASS-21) instrument. It was read out and respondents asked to identify a response to each statement being read, ranging from not at all, infrequent, frequent, to very frequent, according to how they felt in the past one week. The DASS 21 is a shorter version of the longer 42 item DASS, and has been shown to have adequate validity for each measure of depression, anxiety and stress,[33,34] as well as having been validated in the Malay language.[35]

Risk of social isolation was assessed using the revised Lubben's social network scale (LSNS-6). This tool comprising six questions quantified on a Likert scale, was put forth to the elderly

respondent, asking about the number of persons they heard from, could talk to about personal matters, or call for help from either family or friends. The scores range from 0 to 30. Scores <12 showed those at risk for social isolation and those ≥12 were deemed to have good social support and hence not at risk for social isolation, as suggested in previous studies.[36]

Previous validation of these tools revealed a Cronbach's alpha of 0.731 for cognitive status measurement, 0.748 for depression measurement, 0.855 for physical and mental health component scores, 0.769 for risk of social isolation, and 0.540 for overall abuse measurement.[27] Previous history of abuse was asked by means of a single question. The specific question asked if elderly respondents ever experienced any of the abuse or neglect mentioned, before the age of 60.

Ethical approval

Ethical approval was obtained from the Medical Research and Ethics Committee, Ministry of Health Malaysia and the University of Malaya Medical Centre's Institutional Review Board. Interviewer debriefing sessions were also held at regular intervals, as part of the safety protocol.[22] Abused elders were also referred to the nearest district health office and social welfare authorities.

Data analysis

All statistical analyses were performed using the SPSS software version 20.0 (SPSS Inc, 2009, Chicago, Illinois). The 2,118 respondents had their sociodemographic background compared to the 378 non-responders. Univariate analyses were used to describe the prevalence of all types of elder abuse in the last 12 months. Sampling weights were applied to produce unbiased estimates. Descriptive analyses were performed to describe presence or absence of overall abuse. Logistic regression was performed for both univariate and

multivariate analysis to estimate the crude and adjusted ORs including its 95% CI of overall abuse. The model was adjusted simultaneously for sociodemographic characteristics, general health status including physical health, physical and cognitive function, chronic disease, history of abuse and risk of isolation that may serve as correlates of abuse. Variables with $p < 0.25$ in the univariate analyses were included in the regression model.

RESULTS

Prevalence of elder abuse

The overall prevalence of elder abuse reported in the last 12 months is 4.5% (see Table 1). Psychological abuse is the most frequent (2.2%), followed by financial (2.0%), neglect (1.1%), physical (0.5%) and lastly, sexual abuse (0.1%). About 5.2% of males reported experiencing abuse as compared to 4.0% of females. Older adults reporting two or more experiences of abusive acts in the past 12 months (2.7%) were more common than a single abusive experience (1.7%). Clustering of abuse subtypes shows that about 3% of older persons had experienced one type of abuse, and 1.2% had experienced multiple types of abuse.

Profile of respondents

Table 2 shows the baseline characteristics of elderly respondents by the presence of overall abuse. Slightly more abused elders are males, aged 60-69 years old, not married, of non-Malay ethnicity and of lower educational levels. They are also more likely to be living in poverty, staying alone and currently employed. In terms of mental health, those who reported abuse are more likely to have depressive symptoms, anxiety, and stress, besides poorer physical health. Eighty percent of elders had at least one known chronic disease while almost ten percent had probable, and another ten percent, borderline cognitive impairment. Almost one in twenty abused elders reported having experienced abusive acts before the age of 60, while almost ten percent of elders were found to be at risk of social isolation.

Analysis of factors associated with elder abuse

Examining each factor individually, older adults aged 70 to 79 years, those not married, hard-core poverty, current employment, presence of any one chronic disease, stress, anxiety,

depressive symptoms, history of abuse, and being at risk social isolation were all found to have $p<0.25$ and therefore included in the multivariable regression (Table 3). However, in the multivariable analysis, males were found to be twice as likely as females to be abused (aOR 2.15, 95% CI 1.23 to 3.78), while those with depressive symptoms were eight times more likely to be abused (aOR 7.83, 95% CI 2.88 to 21.27). A prior history of abuse increased the odds of abuse by three times (aOR 3.28, 95% CI 1.40 to 7.68) while socially isolated older adults had twice the odds of being abused (aOR 1.96, 95% CI 1.07 to 3.58). Age, marital status, ethnicity, educational level, poverty, living arrangements, current employment, chronic disease, stress and anxiety were no longer significantly associated with overall abuse in the multivariable model (Table 3).

DISCUSSION

Generalisation of findings

This community-based survey garnered a very respectable 84.9% response rate from respondents, showing that the results are generalizable to the target population of older adults (See Figure 1). A comparison of the respondents to census data showed that it was largely representative of the older adults population in Kuala Pilah district.[37]

Prevalence of abuse

The prevalence of overall elder abuse in this study was slightly higher than the estimate found in Ireland, from which the instrument was based upon.[17] Other studies utilising a similar means of assessment obtained prevalence estimates of 12.3% in Portugal,[38] 2.6% in the UK,[16] 3.24% in the USA,[39] and 4.6% also in the USA.[40] Our findings are at the lower prevalence range comparing other studies reviewed (1.1% to 44.6%, or pooled at 15.7%)[6,41]

as well as those reported in Asia (2.2% to 66%).[7] Elder abuse still occurs despite the pre-conceived notion that filial piety, respecting and caring for elders is practiced widely and expected of Asian families and children. This has to be tempered with the social changes in Asian societies as they become more westernised and thus the old cultural values are therefore diluted with the intrusion of Westernised occupations and lifestyles.[9,15] Degradation of cultural values is occurring along with rapid changes to the family structure, urbanisation and modernisation. Number of experiences of abuse at 1.7% and 2.7% for one or more than one abusive act experienced was similarly reported by two studies before. This was 30.7% of abused elders in Portugal[42] and 32.8% in Thailand.[43] Clustering of abuse was also seen in a Latino population in the USA,[38] and another Portuguese study,[42] with similar proportions of abused elders (two thirds and one third respectively) experiencing one type or multiple types of abuse.

The most common type of abuse, psychological abuse, was reported by elders. This is similar to studies done elsewhere where psychological abuse is the most frequently reported type of abuse.[11,12,44,45] Similar to evidence elsewhere, sexual abuse was the least common type of elder abuse. Only one occurrence of verbal sexual harassment was reported. This is similar to a national prevalence study on elder abuse in the United Kingdom and was reported by a male respondent.[16]

Factors associated with elder abuse

Males were predisposed to elder abuse compared to females, which may be explained by the local culture prevalent to Negeri Sembilan state in which Kuala Pilah district is located. The practice of '*adat perpatih'*,a matrilineal kinship system, where womenfolk hold the rights to ancestral property and land is a local custom or tradition peculiar to Negeri Sembilan state. The basic difference between the matrilineal and bilateral system is seen at the household unit

level or family. Under the '*adat perpatih'* system, much of the pattern of life revolves around the women of the family, which also dictates that inheritance and property is handed down to daughters rather than sons. Descendants of the mother, and her sisters and daughters is the most important kinship group in the '*adat perpatih'* system. Thus, female elderly are valued more in this matriarchal community compared to male elderly. This '*adat*' is applicable to Malays, and as they comprise the majority of the population, may explain the higher prevalence of abuse among males compared to females.[46]

Depressive symptomatology in this study was found to be strongly associated with elder abuse. Similar findings were reported from other studies, estimated to be between 2.5 to 4.5 times more as older adults' with poor mental health conditions may predispose them to abuse. [17,47,48] However, depression could be a risk factor or the effects of the abuse. [17,49]

A prior history of abuse was found associated with elder abuse among elderly respondents of this study. This finding has also been reported by other research, where it has been postulated that elder abuse is an extension of domestic abuse that has occurred at a younger age and that is is now continuing into old age.[14,42] It may also be explained by the same stressors being present in the elderly person's environment or family. Another plausible explanation is that the abusive act is being perpetrated in a cyclical pattern.[13,50] The cyclical pattern may also be explained by transgenerational or social exchange theory, whereby those abused elders view violent behaviour as acceptable, and thus may perpetrate it themselves later.[51,52]

Poor social support from both friends and family may cause elders to be at risk of social isolation. [49] In this study, older adults at risk of social isolation were found to be twice more likely to be abused. These included those feeling isolated despite living with family members, as well as those living alone. In the latter case, perpetrators were persons whom elders do come in contact with, regardless of frequency, such as adult children or neighbours. The

social scale measure also reflects lack of support, so not hearing from family or friends contributed to this measure too. Previous research in Malaysia has shown that elders with better social support are those who kept active socially and were well connected by virtue of participating in political and religious activities or the local neighbourhood watch.[30] Currently, social support may be eroded by virtue of younger people migrating to urbanised areas leaving a largely elder population in rural areas like Kuala Pilah.[2] Net migration for Negeri Sembilan state is high, it being among the top three states to send migrants out to other states. Negeri Sembilan had the highest migration effectiveness ratio in Malaysia.[23]

Strengths and limitations of this study

The large sample size, good response rate, highly personalised method of data collection and referral of abused elders to the local health authorities are some of the strengths of this study. To the best of our knowledge, this is the first community-based study on elder abuse reported in Malaysia. As the baseline data is from a cross-sectional study, the temporal relationship of the association between elder abuse and various risk factors cannot be established. As experience of abuse in this study was based on self-report, underreporting of abuse is a possible shortcoming. Underreporting is also possible due to exclusion of severely cognitively impaired elders who may be more susceptible to abuse. Older adults who experienced abuse may not want to disclose their status and this is especially so in Asian communities, where upholding the family honour is important in order to 'save face', lest the family be humiliated by disclosure of such negative personal experiences encountered by the elder person.[7] While the findings are largely representative of rural elderly in this district, it may not be the same in the urban scenario. However, this study by virtue of being the first to identify the magnitude of elder abuse among community dwelling elderly locally, is of importance to the public health programme.

CONCLUSION

This study, based on a representative sample of older adults residing in rural Malaysia suggests that elder abuse occurs among one in every twenty elders. The prevalence found in this study is within the range reported elsewhere. Some similarities are observed in the distribution of correlates of elder abuse with findings from other studies. This adds to the growing number of literature reported in Asia. Overall, the findings from this study strongly indicate the need for further efforts to enhance elder protection in Malaysia. Early screening and home visits to identify older adults with poor mental health, prior history of abuse and those at risk of isolation is needed. Increasing awareness on elder abuse is important in order to empower elders as well as enable service providers to provide better care for vulnerable elders.

STUDY PROTOCOL

The study protocol is available at http://dx.doi.org/10.1136/bmjopen-2016-011057.

DATA SHARING STATEMENT:

The data may be accessed at the Julius Centre University of Malaya website at http://jcum.um.edu.my or by emailing jcum@ummc.edu.my.

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Author contributions:

RS was responsible for the study conception, design, conduct, acquisition of subjects, data collection, data entry, data analysis, data interpretation, drafting of, critical revision and final approval of the manuscript.

CWY, NNH & DP were responsible for the study conception, design, conduct, data analysis, data interpretation, acquisition of funding, critical revision and final approval of the manuscript.

AB, KC & FH were responsible for the study design, data analysis and interpretation, acquisition of funding, critical revision and final approval of the manuscript

ZMA, SNA, IAR, SAA, RR, RM and ZLM were responsible for the study design, conduct, data interpretation, and final approval of the manuscript.

NAA & TA were responsible for the data interpretation, critical revision and final approval of the manuscript.

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GRAPHICS

Table 1: Prevalence of all types of elder abuse in the last 12 months (N=1,927)

Type of abuse/ Number of subtype experiences[a]	Weighted prevalence[b]					
	Male		Female		Total[c]	
	n	% (95% CI)	n	% (95% CI)	n	%, (95% CI)
Overall abuse	**40**	**5.2 (3.7, 7.4)**	**44**	**4.0 (2.8, 5.6)**	**84**	**4.5 (3.5, 5.7)**
0	716	94.8	1127	96.0	1843	95.6
1	19	2.1	18	1.5	37	1.7
≥2	21	3.1	26	2.5	47	2.7
Psychological	**16**	**2.2 (1.3, 3.8)**	**22**	**2.3 (1.4, 3.7)**	**38**	**2.2 (1.5, 3.2)**
0	740	97.8	1149	97.7	1889	97.8
1	8	1.0	8	0.7	16	0.8
≥2	8	1.2	14	1.5	22	1.4
Financial	**16**	**2.1 (1.2, 3.6)**	**19**	**2.0 (1.2, 3.3)**	**35**	**2.0 (1.4, 3.0)**
0	740	97.9	1152	98.0	1892	98.0
1	13	1.8	17	1.6	30	1.7
≥2	3	0.3	2	0.3	5	0.3
Neglect abuse	**10**	**1.6 (0.8, 3.1)**	**11**	**0.8 (0.4, 1.7)**	**21**	**1.1 (0.7, 1.8)**
0	746	98.4	1160	99.2	1906	98.9
1	2	0.2	3	0.2	5	0.2
≥2	8	1.4	8	0.6	16	0.9
Physical	**5**	**0.4 (0.2, 1.0)**	**6**	**0.6 (0.2, 1.4)**	**11**	**0.5 (0.3, 1.0)**
0	751	99.6	1165	99.4	1916	99.5
1	4	0.3	2	0.2	6	0.2
≥2	1	0.1	4	0.4	5	0.3
Sexual	**1**	**0.3 (0, 2.1)**	**0**	**-**	**1**	**0.1 (0, 0.8)**
0	755	99.7	1171	100.0	1926	99.9
1	1	0.3	0	0	1	0.1
≥2	0	0	0	0	0	0

[a] Table percentages for number of experiences are columnar percentages
[b] Weighted for enumeration block (EB) and living quarters (LQ) as provided by DOS
[c] Total for overall abuse is > total of each subtype of abuse as multiple subtypes of abuse may have been experienced by an abused elder

Table 2: Baseline characteristics of elderly respondents by presence of overall abuse (N=1,927)

Characteristics	Abused		Non-abused		Total	*p*-value
	n	%[a]	n	%[a]	N	
Age						
Oldest-old (80+ years)	8	4.4	175	95.6	183	0.41
Old-old (70-79 years)	29	3.7	752	96.3	781	
Young-old (60-69 years)	47	4.9	915	95.1	962	
Sex						
Male	40	5.3	715	94.7	755	0.26
Female	44	3.8	1127	96.2	1171	
Marital status						
Not married	7	10.9	57	89.1	64	0.04
Widowed	19	3.1	593	96.9	612	
Married	58	4.6	1193	95.4	1251	
Ethnicity						
Non Malay[b]	6	13.3	39	86.7	45	0.29
Malay	78	4.1	1804	95.9	1882	
Educational level						
Secondary or higher	16	3.2	489	96.8	505	0.41
None or primary	68	4.8	1354	95.2	1422	
Poverty[c]						
Hardcore poor (<RM440)	19	5.3	341	94.7	360	0.26
Poor (RM441-700)	20	5.8	327	94.2	347	
Non-poor (>RM700)	44	3.6	1164	96.4	1208	
Living arrangements						
Staying alone	12	6.7	168	93.3	180	0.07
Staying with others	72	4.1	1675	95.9	1747	
Current employment						
Currently employed	11	5.8	179	94.2	190	0.22
Not currently employed	72	4.2	1648	95.8	1720	
Physical health						
Below normal	47	5.1	871	94.9	918	0.66
Normal	37	3.7	954	96.3	991	
Cognitive impairment						
Borderline	14	5.6	238	94.4	252	0.47
None	70	4.2	1605	95.8	1675	
Stress						
Stress	9	31.0	20	69.0	29	0.01
No stress	75	4.0	1806	96.0	1881	
Anxiety						
Anxiety	15	24.2	47	75.8	62	<0.001
No anxiety	69	3.7	1785	96.3	1854	
Depressive symptoms						
Depressive symptoms	14	31.1	1803	96.3	1872	<0.001
No depressive symptoms	69	3.7	31	68.9	45	

Table 2. continued

Characteristics	Abused		Non-abused		Total	*p*-value
	n	%[a]	n	%[a]	N	
Chronic disease						
Presence of any one disease	73	4.9	1431	95.1	1504	0.09
No chronic disease	11	2.6	410	97.4	421	
History of abuse (prior to age 60)						
Abuse	14	17.3	67	82.7	81	<0.001
No abuse	68	3.8	1735	96.2	1803	
Risk of social isolation						
At risk	28	8.2	315	91.8	343	0.01
Not at risk	53	3.4	1519	96.6	1572	

[a]Table percentages are row percentages

[b] Malays refer to the largest population group in Malaysia, while non-Malays in this study refers to both ethnic Chinese and Indians

[c] Poverty delineation follows that of the Economic Planning Unit, Prime Minister's Department Poverty Line Indicator

Table 3: Univariate and multivariate logistic regression analysis of factors associated with overall elder abuse[a]

Characteristics	Crude Odds Ratio	95% CI	*p*-value	Adjusted Odds Ratio	95% CI	*p*-value
Age						
Old-old (80+ years)	0.87	0.36 to 2.10	0.757	0.70	0.22 to 2.28	0.559
Old (70-79 years)	0.70	0.40 to 1.21	0.197*	0.71	0.37 to 1.33	0.283
Young-old (60-69 years)	Ref			Ref		
Sex						
Male	1.34	0.80 to 2.24	0.265	2.24	1.23 to 3.78	0.008**
Female	Ref			Ref		
Marital status						
Not married	3.29	1.10 to 9.82	0.033*	0.73	0.23 to 2.31	0.589
Widowed	0.87	0.48 to 1.58	0.637	0.77	0.34 to 1.74	0.530
Married	Ref			Ref		
Ethnicity						
Non Malay	1.73	0.63 to 4.81	0.290		-	
Malay	Ref					
Educational level						
Secondary or higher	0.76	0.40 to 1.46	0.412		-	
No formal or primary	Ref					
Poverty						
Hardcore poor (<RM440)	1.65	0.87 to 3.13	0.122*	1.88	0.90 to 3.90	0.091
Poor (RM441-700)	1.17	0.61 to 2.23	0.635	1.05	0.52 to 2.14	0.891
Non-poor (>RM700)	Ref			Ref		
Living arrangements						
Staying alone	1.99	0.93 to 4.26	0.076*	1.20	0.44 to 3.28	0.718
Not staying alone	Ref			Ref		
Current employment						
Currently employed	1.60	0.75 to 3.41	0.223	1.64	0.75 to 3.56	0.213
Not currently employed	Ref					
Physical function						
Walking speed	1.37	0.24 to 7.68	0.724		-	

Table 3 continued

Characteristics	Crude Odds Ratio	95% CI	*p*-value	Adjusted Odds Ratio	95% CI	*p*-value
Physical health						
Below normal	1.12	0.67 to 1.88	0.655		-	
Normal	Ref					
Chronic disease						
Presence of any one disease	1.85	0.90 to 3.79	0.094*	1.93	0.85 to 4.40	0.116
No chronic disease	Ref			Ref		
Cognitive impairment						
Borderline	1.28	0.66 to 2.49	0.471		-	
None	Ref					
Stress						
Stress	5.69	1.89 to 17.14	0.002*	0.98	0.32 to 2.99	0.996
No stress	Ref			Ref		
Anxiety						
Anxiety	6.24	2.88 to 13.52	<0.001*	2.44	0.89 to 6.68	0.082
No anxiety	Ref			Ref		
Depressive symptoms						
No depressive symptoms	9.97	4.58 to 21.73	<0.001*	7.83	2.88 to 21.27	<0.001**
Depressive symptoms	Ref			Ref		
History of abuse (prior to age 60)						
Abuse	5.79	2.65 to 12.64	<0.001*	3.28	1.40 to 7.68	0.006**
No abuse	Ref			Ref		
Risk of social isolation						
At risk	2.18	1.25 to 3.80	0.006*	1.96	1.07 to 3.58	0.029**
Not at risk	Ref			Ref		

* Significant at p<0.250; ** Significant at p<0.05

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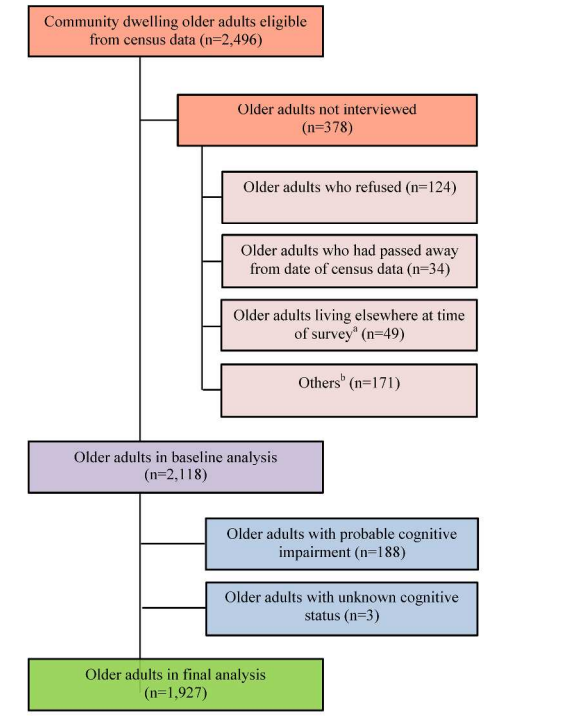
Figure 1: Flow diagram showing recruitment of participants in the study



[a] Living elsewhere at time of survey denotes older adults who usually live in a rotational manner with adult children

[b] Others includes elders who have shifted, were unable to communicate with the interviewer on their own, were not found during the survey period, duplicated name of an older person in the study database, were unwell at time of visit, incorrect address, non-contactable or not at home up to three times during the survey period

Figure 1: Flow diagram showing recruitment of participants in the study

297x420mm (300 x 300 DPI)

STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of *cross-sectional studies*

Section/Topic	Item #	Recommendation	Reported on page #
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	3
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	3
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	7
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7-8
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-8
Bias	9	Describe any efforts to address potential sources of bias	10
Study size	10	Explain how the study size was arrived at	7
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	7-9
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	10-11
		(*b*) Describe any methods used to examine subgroups and interactions	-
		(*c*) Explain how missing data were addressed	7-9
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	9-11
		(*e*) Describe any sensitivity analyses	-
Results			

Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	7,25
		(b) Give reasons for non-participation at each stage	7,25
		(c) Consider use of a flow diagram	25
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	12-13, 20-24
		(b) Indicate number of participants with missing data for each variable of interest	-
Outcome data	15*	Report numbers of outcome events or summary measures	10, 18
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	13,20,
		(*b*) Report category boundaries when continuous variables were categorized	21
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
Discussion			
Key results	18	Summarise key results with reference to study objectives	13-14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	16
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-16
Generalisability	21	Discuss the generalisability (external validity) of the study results	16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	18

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.