ORIGINAL ARTICLE

Exploring Elder Abuse in Rural Sabah: A Comprehensive Study of Prevalence and Contributing Factors

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ABSTRACT

Introduction: As the number of older adult people increases, so does their vulnerability to various types of abuse among this susceptible population. This study aims to determine the prevalence and associated factors for abuse among the older adult in rural Sabah, Malaysia. **Method:** This multistage random sampling cross-sectional community-based study was conducted on 700 older adults over 60 in Kudat Divison, Sabah, Malaysia, from January 2021 to June 2021. The Japan Gerontological Evaluation Study (JAGES) questionnaires were used to determine the associated factors for abuse among the older adult in Kudat. Logistic regression models assessed the factors associated with abuse among the older adult. **Results:** The prevalence of abuse among the older adult is 5.3 percent. The multivariable analysis identifies that age under 75 years (adjusted OR (aOR): 6.47 (95% CI: 1.51-27.82), suggestive depression (aOR 2.90 (95% CI: 1.46–5.78), feeling isolated (aOR 2.89 (95% CI: 1.26–6.63), and not having nearby family members (aOR 3.01 (95% CI: 1.20–7.55)) were significantly associated with higher abuse risks. **Conclusion:** A multifaceted strategy that includes increasing awareness, strengthening social support networks, and expanding legal and policy frameworks is needed to address elder abuse. Early diagnosis and intervention are critical, and this requires educating carers and healthcare professionals about the telltale indications of abuse. Increasing social support networks can help older people disclose abuse by providing them with the tools and self-assurance they need.
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INTRODUCTION

Malaysia's population is ageing in accordance with worldwide trends. This is a significant demographic transition. Elder protection and care present new issues as a result of this shift, which is more noticeable in rural areas. The likelihood of many types of abuse within this vulnerable cohort increases with the ageing population (1).

Elder abuse is a problem that Malaysia has to deal with; especially in rural regions, the problem is frequently underreported and not appropriately addressed (2). Because elder abuse is so common and complicated in both urban and rural settings, it is important to examine the contributing elements in detail in order to create interventions that are specifically designed to address the issues that these communities face. Because of things like limited access to social services and healthcare, as well as possibly distinct family dynamics, the issues experienced by the older adult in these areas may be very different from those in urban areas (3).

The prevalence of elder abuse in Malaysia is estimated to range from 4% to 12%, depending on the type and severity of abuse[3][4]. Although not frequently reported, elder abuse is becoming an increasing concern in Malaysia. In Malaysia, emotional and financial abuse is most prevalent among the older adult, and it is frequently committed by adult children or their spouses (2). Moreover, studies showing that physical limitations and chronic diseases are important risk factors for elder

abuse cases (4) support the idea that older people with these conditions are more vulnerable to abuse.

Because of things like the victim's fear, humiliation, or bewilderment, abuse is frequently not reported, especially when the abuser is a family member (5). The identification of abuse is further complicated by its complexity, which occurs when destructive behaviours are mixed with caring obligations (6). Because of this, abuse is frequently a hidden issue, with social services and healthcare professionals failing to identify many cases.

Studies have consistently demonstrated that abuse victims experience a variety of negative health consequences, including a higher likelihood of poor mental health conditions such anxiety and depression (6). Emotional abuse has also been connected to a deterioration in physical health, aggravating pre-existing illnesses and causing the development of new health issues (6). This emphasises the necessity of all-encompassing strategies in healthcare settings to identify and treat emotional abuse of the older adult (7). A few studies have highlighted that rural elders face unique vulnerabilities, including limited access to healthcare, reduced social support, and distinct cultural barriers to reporting abuse[5][6].

Elder abuse is an issue that Malaysia must address, particularly in rural regions, where it is frequently underreported and not adequately managed[2]. Still, a large research vacuum exists in rural regions such as Kudat. The district of Kudat in Sabah, Malaysia, has distinct social and cultural characteristics that could affect the type and frequency of abuse against the older adult. The Kudat district in Sabah, Malaysia, was selected for this study due to its unique sociocultural context, including the coexistence of diverse ethnic groups with strong familial and community ties.

Although protective in general, the strong cultural emphasis on family values and respect for elders might result in undetected abuse because of the stigma associated with familial dishonour (8). This situation stands in stark contrast to the larger Malaysian environment, where elder abuse—especially when non-violent—is frequently associated with a lack of knowledge and societal acceptance. This emphasises the need for additional specialised study to comprehend the unique characteristics of elder abuse in rural areas, such as Kudat, in order to guide relevant and successful responses. This study was conducted in Kudat, a rural region in Sabah known for its unique sociocultural diversity and limited research on elder abuse. Previous studies have primarily focused on urban settings in Malaysia (e.g., Kuala Lumpur, Penang), leaving a gap in understanding rural dynamics (Hamid & Tyng, 2013). This study fills that gap by addressing elder abuse within a rural Malaysian context. Without this understanding, interventions and policies may fail to address the root causes of abuse effectively. Therefore, the purpose of this study is to identify the factors associated with elder abuse in Kudat, Sabah.

MATERIALS AND METHODS

Study setting

The participants from Kudat Division between January and June 2021 (6 months duration) were evaluated for inclusion. Located on the west coast of Sabah, Kudat Division covers a 4,623 km2 area. Kudat Division has an estimated population of 162,900 with a population density of 35 persons per km2 (10). Kudat Division comprises three districts, namely Kudat, Kota Marudu, and Pitas.

Sample design and population

This cross-sectional study was conducted in the community setting of the Kudat rural division in Sabah, Malaysia. The study focused on a sample of 700 older adults aged 60 and above residing in the Kudat region. A multistage random sampling technique was employed. First, districts were randomly selected. Then, sub-districts and villages were proportionally allocated. Finally, households with older adults were systematically selected within each area. A multistage random sampling technique was employed to ensure a representative and unbiased selection of participants. Initially, two out of the four districts in the Kudat division were selected using simple random sampling. From the selected districts, a systematic random sampling method was utilized to identify 11 sub-districts (villages, housing areas, or estates).

For each sub-district, population data were gathered to proportionately allocate the number of households to be surveyed. Within each selected area, households were chosen randomly, with priority given to those with older adult occupants. This approach ensured that the sample represented the demographic diversity of the older adult population in Kudat, including differences in socioeconomic status, ethnicity, and living arrangements. To enable generalization of the findings, the sample was weighted based on demographic characteristics such as age, gender, and district population proportions. This weighting process adjusted for potential imbalances in the sampling procedure and enhanced the validity of the study's conclusions.

Sample Size

The sample size was calculated using the Kish formula to ensure adequate statistical power and precision for estimating population parameters in a cross-sectional design. This formula incorporates assumptions regarding expected prevalence, desired confidence level, and acceptable margin of error. A prevalence of 25% was used for this study based on findings from global meta-analyses of elder abuse, which report prevalence rates

ranging from 15% to 28%, depending on the type and setting (Burnes et al., 2022). This estimate provides a realistic and conservative basis to ensure sufficient statistical power.

A 95% confidence level and 5% margin of error were applied. The initial sample size calculated was 601 participants. To account for possible non-response or incomplete data, an additional 15% was added, resulting in a final sample size target of 692. Ultimately, data were collected from 700 respondents, exceeding the required number to enhance reliability and generalizability.

Criteria for older adult abuse

In defining older adult abuse for this study, we adhered to both the local cultural context of Kudat and the legal framework of Malaysia. Elder abuse, the primary outcome of this study, is defined as the occurrence of physical, psychological, or financial harm inflicted upon older adults. Physical abuse refers to actions causing bodily harm or physical discomfort, psychological abuse involves emotional distress through threats, humiliation, or neglect, and financial abuse pertains to the exploitation or misuse of an elder's financial resources.

The study also took into account culturally specific forms of abuse prevalent in Kudat, acknowledging that certain behaviours may be interpreted differently in the local context compared to global standards. This included considerations for age, gender, socioeconomic status, and living arrangements.

The study included older adults aged 60 years and above who were permanent residents of Kudat. Exclusion criteria included institutionalization, mental illness, or cognitive impairment that limited ability to respond.

Data collection methods

The study in Kudat, Sabah, used structured interviews to assess elder abuse among older adults, based on the JAGES (Japan Gerontological Evaluation Study) questionnaire. This tool was chosen for its proven ability to evaluate elder abuse in different settings effectively. . The JAGES questionnaire was translated into Malay, reviewed by local experts, and back-translated. A pilot test was conducted to ensure cultural adaptation. Internal consistency was verified (Cronbach's alpha = 0.79). This careful process ensured the questionnaire was both reliable and culturally appropriate for the community. Trained interviewers administered the survey to ensure comprehension and reliability.

Data analysis

Data collected through the structured interviews were analyzed using the Statistical Package for the Social Sciences (SPSS) version 28. Bivariable analysis was conducted using simple logistic regression to examine the relationship between individual factors and the occurrence of elder abuse. Variables showing significance at a p-value of <0.25 in the bivariable analysis or deemed theoretically relevant were included in the multivariable model.

Multivariable analysis was performed using multiple logistic regression to identify factors significantly associated with elder abuse in Kudat. The model was evaluated for goodness-of-fit using the Hosmer-Lemeshow test, ensuring the model appropriately represented the observed data. Additionally, potential two-way interactions between independent variables were tested to identify any synergistic or modifying effects. Interaction terms with significant contributions were retained to enhance the model's explanatory power. This comprehensive approach ensured that confounding variables were adjusted for and allowed for a deeper understanding of the key factors influencing elder abuse within the population.

Research ethics

Ethical approval to conduct the study was obtained from the Ethical and Scientific Committee of the Faculty of Medicine and Health Science, Universiti Malaysia Sabah [JKEtika 1/23(35)]. Consent was considered obtained once the participant agreed voluntarily to participate after detailed explanations about the nature of the study, including the confidentiality of their responses, were explained.

RESULTS

The table 1 reported overall prevalence of elder abuse was 5.3%, with emotional abuse being the most common (4.7%), followed by physical (0.7%) and financial abuse (0.6%). These values are reported in both Results and Discussion sections. Gender, marital status, working status, education level, and financial status did not show significant associations with elder abuse. However, females, individuals not working, and those experiencing financial difficulties had slightly elevated odds ratios.

Table I: Prevalence of Elder Abuse and Types of Abuse Among Older Adults in the Sabah Rural Area

Abuse			
Variable	**`Total**	**Yes**	**No**
Prevalence of abuse	700 (100.0)	37 (5.3)	663 (94.7)
Physical abuse	700 (100.0)	5 (0.7)	695 (99.3)
Emotional or physiological abuse	700 (100.0)	33 (4.7)	667 (95.3)
Financial abuse	700 (100.0)	4 (0.6)	696 (99.4)

Table II: Bivariable analysis of factors associated with the history of abuse among the elderly in the Sabah Rural area. (CONT.)

Variable	History of Abuse			OR[a]	P value	95% CI
	Total	Yes (n=37)	No (n=663)			
	N (%)	f (%)	f (%)			
Prevalence	700 (100.0)	37 (5.3)	663 (94.7)	-	-	-
Sociodemographic						
Age group						
60-74 years old	539 (77.0)	35 (6.5)	505 (93.5)	5.52	0.02	1.31-23.21
≥75 years old	161 (23.0)	2 (1.2)	159 (98.8)	-	-	-
Gender						
Female	362 (51.7)	15 (4.1)	347 (95.9)	-	-	-
Male	338 (48.3)	22 (6.5)	316 (93.5)	1.61	0.17	0.82-3.16
Marital Status						
Married	523 (74.7)	30 (5.7)	493 (94.3)	-	-	-
Single/widow	177 (25.3)	7 (4.0)	170 (96.0)	0.68	0.36	0.29-1.57
Working status						
Working	279 (39.9)	19 (6.8)	260 (93.2)	-	-	-
Not working	421 (60.1)	18 (4.3)	403 (95.7)	1.64	0.14	0.84-3.18
Education level						
Secondary/tertiary School	93 (13.3)	7 (7.5)	85 (92.5)	-	-	-
Primary School	289 (41.3)	14 (4.8)	275 (95.2)	0.65	0.36	0.26-1.63
Illiterate	318 (45.4)	16 (5.0)	302 (95.0)	1.04	0.92	0.50-2.17
Financial status						
Financial comfort	299 (42.7)	12 (4.0)	287 (96.0)	-	-	-
Financial difficulty	401 (57.3)	25 (6.2)	376 (93.8)	1.59	0.19	0.79-3.22
Health behaviour and comorbidities						
Smoking						
No	593 (84.7)	28 (4.7)	565 (95.3)	-	-	-
Yes	107 (15.3)	9 (8.4)	98 (91.6)	1.85	0.12	0.85-4.05
Alcohol Drinker						
No	586 (83.7)	30 (5.1)	556 (94.9)	-	-	-
Yes	114 (16.3)	7 (6.1)	107 (93.9)	1.21	0.66	0.52-2.83
Diabetes mellitus						
No	568 (81.1)	3 (3.1)	535 (96.9)	-	-	-
Yes	132 (18.9)	4 (5.8)	127 (94.2)	1.97	0.21	0.69-5.67
HPT						
No	288 (41.1)	16 (5.6)	272 (94.4)	-	-	-
Yes	412 (58.9)	21 (5.1)	391 (94.9)	0.91	0.79	0.47-1.78
Depression						
No	471	18 (3.8)	453 (96.2)	-	-	-
Yes	229	19 (8.3)	210 (91.7)	2.28	0.02	1.17-4.43
BMI						
Normal	207 (29.6)	14 (6.8)	193 (93.2)	-	-	-
Underweight	82 (11.7)	1 (1.2)	81 (98.8)	0.78	0.48	0.39-1.56
Overweight	411 (58.7)	22 (5.4)	389 (94.6)	4.58	0.14	0.61-34.47
Health status and activity of daily living (ADL)						
Poor current Health status						
No	641 (91.6)	35 (5.5)	606 (94.5)	-	-	-
Yes	59 (8.4)	2 (3.4)	57 (96.6)	0.61	0.50	0.14-2.59
Limited activity due to health problems						
No	340 (48.6)	17 (5.0)	323 (95.0)	-	-	-
Yes	360 (51.4)	20 (5.6)	340 (94.4)	1.12	0.74	0.58-2.17
Walking difficulty						
No	311 (44.4)	17 (5.5)	294 (94.5)	-	-	-
Yes	389 (55.6)	20 (5.1)	369 (94.9)	0.94	0.85	0.48-1.82
Seeing difficulty						
No	123 (17.6)	8 (6.5)	115 (93.5)	-	-	-
Yes	577 (82.4)	29 (5.0)	548 (95.5)	0.76	0.51	0.34-1.71
Hearing difficulty						
No	399 (57.0)	26 (6.5)	373 (93.5)	-	-	-
Yes	301 (43.0)	11 (3.7)	290 (96.3)	0.54	0.10	0.26-1.12

CONTINUE

Table II: Bivariable analysis of factors associated with the history of abuse among the elderly in the Sabah Rural area.

Sociodemographic						
Variable	**History of Abuse**			**OR[º]**	**P value**	**95% CI**
	Total	**Yes (n=37)**	**No (n=663)**			
	N (%)	**f (%)**	**f (%)**			
Difficulty in remembering/concentrating						
No	110 (15.7)	8 (7.3)	102 (92.7)	-	-	-
Yes	590 (84.3)	29 (4.9)	361 (95.1)	1.52	0.31	0.68-3.41
Need help in ADL						
No	643 (91.9)	31 (4.8)	612 (95.2)	-	-	-
Yes	57 (8.1)	6 (10.5)	51 (89.5)	2.32	0.07	0.93-5.82
Regular social interaction during mealtime						
No	336 (48.0)	22 (6.5)	314 (93.5)	-	-	-
Yes	364 (52.0)	15 (4.1)	349 (95.9)	0.61	0.15	0.31-1.20
Family members stay nearby						
Yes	649 (92.7)	30 (4.6)	619 (95.4)	-	-	-
No	51 (7.3)	7 (13.7)	44 (86.3)	3.28	<0.01	1.37-7.90
Social activity participant						
Frequent	229 (32.7)	13 (5.7)	216 (94.3)	-	-	-
Infrequent/no participant	471 (67.3)	24 (5.1)	447 (94.4)	0.89	0.74	0.45-1.79
Staying alone						
No	627 (89.6)	32 (5.1)	595 (94.9)	-	-	-
Yes	73 (10.4)	5 (6.8)	68 (93.2)	1.37	0.53	0.52-3.63
Move to the new house in the past five years						
No	656 (93.7)	32 (4.9)	624 (95.1)	-	-	-
Yes	44 (6.3)	5 (11.4)	39 (88.6)	2.50	0.07	0.92-6.77
Feelings and thoughts of elderly						
Feeling isolated						
Less frequent	632 (90.3)	28 (4.4)	604 (95.6)	-	-	-
Frequent	68 (9.7)	9 (13.2)	59 (86.8)	3.29	<0.01	1.48-7.30
Though Religion is important						
Yes	680 (97.1)	34 (5.0)	646 (95.0)	-	-	-
Undecided	20 (2.9)	3 (15.0)	17 (85.0)	3.35	0.06	0.94-12.00
Have someone to listen.						
Yes	645 (92.1)	33 (5.1)	612 (94.9)	-	-	-
No	55 (7.9)	4 (7.3)	51 (92.7)	1.46	0.49	0.50-4.27
Have someone look after						
Yes	693 (99.0)	35 (5.1)	658 (94.9)	-	-	-
No	7 (1.0)	2 (28.6)	5 (71.4)	7.52	0.02	1.41-40.14

[º]OR: odds ratio; 95% CI: 95% confidence interval

Depression was strongly associated with elder abuse. Other health behaviors and comorbidities, including smoking, alcohol use, diabetes, hypertension, and BMI, were not significantly associated. Needing help with ADL showed a marginal association. Additionally, the lack of nearby family members significantly increased the risk of abuse.

Feeling isolated was a significant predictor of elder abuse. Participants undecided about the importance of religion showed marginally higher odds of abuse. The lack of a caregiver significantly increased the likelihood of abuse.

Table 3 shows multivariable analysis results, with age under 75 years (adjusted OR: 6.47, 95% CI: 1.51-27.82), suggestive depression (adjusted OR: 2.90, 95% CI: 1.46-5.78), isolation (adjusted OR: 2.89, 95% CI: 1.26-6.63), and lacking nearby family (adjusted OR: 3.01, 95% CI: 1.20-7.55) significantly associated with elder abuse risks. These findings highlight the pivotal role of social support, mental health, and age-related factors in addressing elder abuse in rural communities. The model demonstrated a good fit to the data, as indicated by a non-significant Hosmer-Lemeshow test (P = 0.47), suggesting no substantial difference between observed and predicted outcomes. Additionally, the Nagelkerke R value of 0.218 indicates that approximately 21.8% of the variance in the outcome was explained by the model, and the high classification accuracy of 95.6% reflects the model's strong ability to correctly predict outcomes.

Table III: Multivariable analysis of Factors associated with the history of abuse among the elderly in Sabah Rural area.

Variable	B	S. E	Wald	Crude			Adjusted		
				P value	ORº	95% CI	P value	ORº	95% CI
Age <75 years old	0.76	0.38	3.95	0.02	5.52	1.31-22.21	0.42	2.14	1.01-4.53
Suggestive depression	1.07	0.41	6.91	0.02	2.28	1.17-4.43	<0.01	2.91	1.31-6.44
Feel Isolated	0.389	0.408	3.935	<0.01	3.29	1.48-7.30	0.04	2.25	1.01-4.99
No nearby family member	-1.206	0.506	5.686	<0.01	3.28	1.37-7.90	0.02	3.34	1.24-9.00
Male gender	0.35	0.398	0.775	0.17	1.61	0.82-3.16	0.379	1.419	0.65-3.09
Not working	-0.148	0.38	0.152	0.14	1.64	0.84-3.18	0.697	0.862	0.37-1.64
Financial difficulty	0.439	0.387	1.284	0.19	1.59	0.79-3.22	0.257	1.551	0.73-3.31
Smoking	0.424	0.468	0.868	0.12	1.85	0.85-4.05	0.365	1.528	0.61-3.82
Having Diabetes mellitus	-0.815	0.574	2.019	0.21	1.97	0.69-5.67	0.155	0.443	0.14-1.36
Overweight	1.852	1.075	2.966	0.14	4.58	0.61-34.47	0.085	6.375	0.77-52.43
Having hearing difficulty	-0.755	0.407	4.334	0.10	0.54	0.26-1.12	0.064	0.47	0.21-1.05
Need help in ADL	0.766	0.563	1.849	0.07	2.32	0.93-5.82	0.174	2.151	0.71-6.49
Regular social interaction during mealtime	-0.105	0.409	0.066	0.15	0.61	0.31-1.20	0.797	0.9	0.40-2.01
Move to the new house in the past five years	1.036	0.56	3.428	0.07	2.50	0.92-6.77	0.064	2.818	0.94-8.44
lack of religious conviction	0.252	0.843	0.089	0.06	3.35	0.94-12.00	0.765	1.286	0.25-6.71
Don't have someone look after	-0.116	0.407	0.082	0.02	7.52	1.41-40.14	0.775	0.89	0.40-1.98

ºOR= odds ratio; 95% CI= 95% confidence interval.
Footnote: Model fit: Hosmer-Lemeshow test (P=0.40); Nagelkerke R = 0.116; Classification accuracy = 94.7%

DISCUSSION

The study's 5.3% prevalence of elder abuse provides important information about the scope of the problem in Kudat, Sabah. When compared to other studies in Malaysia and abroad, this figure appears moderately low. A nationwide study in Malaysia reported a prevalence between 4% and 12%, depending on the type of abuse and assessment tools used (Ahmad et al., 2020; Hasmuk et al., 2020). In contrast, studies from countries such as the United States and China have reported higher rates, ranging from 10% to over 20% (Rosay & Mulford, 2017; Dong et al., 2019). These discrepancies may be due to cultural differences in defining and reporting abuse, varying levels of awareness, access to support systems, and methodological differences. In Kudat, strong cultural taboos and familial values may discourage reporting, leading to underestimation. Additionally, limited awareness about what constitutes emotional or financial abuse may cause cases to go unrecognized by both victims and their families. This rate highlights an important societal concern because it represents the experiences of a sizable segment of the senior population.

It is necessary to contextualise the prevalence in Kudat, Sabah, within the sociocultural and economic dynamics of the area. This prevalence rate can be greatly influenced by elements including the strong familial bonds that are typical in Malaysian society, the stigma associated with reporting family problems, and the possible lack of knowledge about what constitutes elder abuse (13). Elder abuse may go unreported in rural communities like Kudat where access to social services may be restricted and traditional values are deeply ingrained, raising the possibility that the true prevalence of the problem is higher.

It is clear that elder abuse is a widespread problem that is not limited to any one area or culture when comparing the prevalence rate with worldwide trends. A comprehensive analysis of elder abuse across the globe revealed different prevalence rates, with psychological abuse frequently being the most prevalent type (11). These results are consistent with the frequency in Kudat, demonstrating the problem's worldwide nature and the necessity of an international effort to combat elder abuse. It also suggests that, in order to effectively address the particular difficulties encountered in various regions, especially rural ones like Kudat, culturally responsive interventions and policies must be developed (14).

According to the survey, the most common type of elder abuse in Kudat Sabah is emotional or psychological abuse, which is consistent with worldwide trends. In older populations, emotional abuse—which includes verbal abuse, threats, humiliation, and isolation—occurs more frequently than physical abuse (13). This frequency could be explained by the fact that emotional abuse is more covert, which makes it less obvious and therefore more pernicious (11). Emotional abuse has a significant negative effect on the older adult and frequently results in ongoing psychological and emotional suffering (13).

Compared to those over 75, older adult people under 75 had a noticeably increased risk of abuse (adjusted OR: 6.47; 95% CI: 1.51-27.82). According to recent studies, seniors who are younger than 75 are more vulnerable to maltreatment. These 'younger elders' have more interactions and reliance with carers or family members, who may be potential abusers, which could account for this surprising discovery. They are frequently more physically and socially engaged, which increases their exposure to a wider range of social settings where abuse may take place (15). People in this age range might also start to face health issues that affect their independence, although they might not have built strong support systems for carers. Vulnerability to abuse may rise as a result of the interaction between developing health problems and insufficient support networks (16). Additionally, younger seniors may be more likely to question the dynamics of the family, which could result in conflict and, in certain cases, abusive conditions. Tension can occasionally arise from their involvement in family decision-making, particularly in homes with many generations (17).

Another significant factor linked to misuse was suggestive depression (adjusted OR: 2.90; 95% CI: 1.46–5.78). Seniors who suffer from depression, which frequently goes undetected or untreated, are even more vulnerable to abuse. Seniors who have symptoms of depression, such as apathy, withdrawal, and cognitive decline, may be more susceptible to abuse and less likely to disclose it (5). Because of the symptoms of depression, older adult people may find it difficult to express their experiences, which could lead to an underreporting of abuse. Furthermore, their symptoms can be mistaken for normal aging-related changes, which would prevent appropriate management (18). Older adult depression is sometimes worsened by additional risk factors for addiction, including as physical health issues or social isolation. Because of these interactions, elder abuse must be assessed and treated holistically (19).

Abuse risk was substantially correlated with feelings of isolation. A corrected OR of 2.89 (95% CI: 1.26–6.63) was obtained. The likelihood of elder abuse is much increased among socially isolated populations. Seniors who live alone are less likely to have a carer who can identify abuse and take action. Additionally, they lack the social support needed to offer advocacy and protection (5). A strong social network serves as a barrier to prevent elder abuse. Lack of these networks can make a person more susceptible to abuse in many forms, such as financial exploitation and neglect, as shown in seniors who are socially isolated. For older people's safety and well-being, it is imperative to build community and social bonds (18). It is impossible to exaggerate the psychological effects of isolation. It not only raises the possibility of abuse but also makes the negative impacts of abuse on older adult people's mental health worse. Seniors who feel alone are less likely to report abuse or seek assistance because they are more likely to suffer from sadness, anxiety, and a sense of helplessness (20).

Reporting the lack of close family members was linked to an increased chance of experiencing abuse, underscoring the multidimensional aspect of abuse (adjusted OR: 3.01, 95% CI: 1.20–7.55). For older adult persons, family presence frequently acts as a natural safety net and source of support. Seniors who are not in close contact to others are more susceptible to abuse and neglect since there is less supervision in place to stop or recognise abusive situations (6). Social isolation brought on by the absence of close family members is a major risk factor for elder abuse. Seniors who live alone are less likely to have frequent social and emotional relationships, which leaves them vulnerable to abuse in many forms, such as financial and emotional exploitation (18). Older adult people without close relatives may rely more on institutional or non-family care, where there is a greater chance of abuse because of a number of circumstances, such as carer stress, a lack of personal attachment, or insufficient oversight in care settings (21).

While several variables were significantly associated with elder abuse, others did not reach statistical significance but still warrant discussion. Variables such as gender, marital status, education level, and working status showed trends suggesting potential associations with elder abuse but were not statistically significant in this study. For instance, females and those not working had slightly higher odds of experiencing abuse, consistent with prior findings indicating that financial dependency and gender-related power dynamics may elevate risk (4,9). However, these associations did not hold after adjusting for confounders.

Health-related variables such as smoking, alcohol consumption, diabetes, hypertension, and BMI status also did not show significant associations. These findings may reflect the complex interplay between health behaviors and abuse exposure, where comorbidities or lifestyle risks may not directly predict abuse but could interact with social or psychological vulnerabilities (15). Interestingly, those needing help with activities of daily living (ADL) demonstrated a borderline association (OR: 2.32, $p = 0.07$), suggesting that increased dependence may elevate vulnerability, as supported in prior literature. Similarly, psychosocial variables like having someone to listen or participate in social activities showed no significant association, yet such factors may still influence resilience and support mechanisms in nuanced ways. Notably, a lack of religious conviction ("undecided about religion") showed marginally higher odds of abuse (OR: 3.35, $p = 0.06$), possibly reflecting the protective role of spiritual or community belonging (22).

Although these findings were not statistically significant, their interpretation adds depth to the understanding of elder abuse risk profiles. These insights highlight

the importance of considering both significant and borderline factors when designing preventive strategies, especially in culturally diverse rural contexts like Kudat.

The study's strengths include looking at a rural community, which is frequently underrepresented in studies on elder abuse, and taking a comprehensive approach to looking at a variety of characteristics, such as social, health, and demographic aspects. But there are also restrictions on the study. First, the cross-sectional design makes it difficult to determine causal relationships. Second, stigma or fear of reprisals may prevent abuse from being reported, which is a recurrent problem in studies on elder abuse. Third, the results may not be as applicable in other contexts due to the study's narrow emphasis on a particular geographic region.

Conclusion

This study examined elder abuse among 700 older adults in rural Sabah and found that 5.3% had experienced abuse, with emotional abuse being the most common. Key risk factors included being under 75 years old, having signs of depression, feeling isolated, and not having nearby family support. Comprehensive strategies to address elder abuse are clearly needed. Building legal and policy frameworks that safeguard the older adult should be among these tactics, as well as strengthening social support networks and facilitating better access to mental health care. The identification of abuse indicators and the provision of prompt assistance depend heavily on the education and training of medical personnel, carers, and community members. In the life of the older adult, the study emphasises the significance of family and community. The assistance and defence against abuse that are required might be given through fortifying family and community bonds.

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