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Socio-economic inequality in the prevalence of violence against older adults – Findings from India

Abstract

Background: Violence against older adults is a well-recognised socio-psychological and public health problem worldwide. It is uncared-for, undiagnosed, and untreated problem that is widespread across both developed and developing countries. Therefore, this paper aims to understand the extent of socio-economic status related inequality in violence against older adults.

Methods: Data for this study came from Building a Knowledge Base on Population Aging in India (BKPAI). Violence against older adults was the outcome variable for this study and defined as *older adults who faced any abuse or violence or neglect or disrespect by any person*. Bivariate analysis and regression-based decomposition technique is used to understand the relative contribution of various socioeconomic factors to violence among (N=9541) older adults.

Results: The most dominant form of violence is verbal (10%) followed by disrespect (5.8%) and economic violence (5.2%). Older adults aged 80+ years [OR: 1.49; CI: 1.14-1.93] and working [OR: 1.26; CI: 1.02-1.56] had higher likelihood to suffer from violence than their counterparts. On the other hand older adults who were currently in union [OR: 0.79; CI: 0.65-0.95], living with children [OR: 0.53; CI: 0.40-0.72] and belonging to richer wealth quintile [OR: 0.35; CI: 0.24-0.51] had lower likelihood to suffer from violence than their counterparts. The decomposition results revealed that poor older adults are more prone to violence (Concentration index: -0.20). Household's wealth status was responsible for 93.7% of the SES-related inequality whereas living arrangement of older adults explained 13.7% SES-related inequality. Education and working status of older adults made a substantial contribution to the inequalities in reported violence, explaining 3.7% and 3.3% of the total inequality, respectively.

Conclusion: With no or meagre income of their own, older adults belonging to the poorest wealth quintile have little or no bargaining power to secure a violent free environment for themselves. Therefore, special attention in terms of social and economic support should be given to the economically vulnerable older population.

Keywords: Violence, Older adults, Inequality, India

Background

Violence against older adults is a larger socio-psychological and public health problem worldwide. It is a largely undiagnosed, uncared-for, and untreated problem that is widespread across both developed and developing countries [1]–[4]. It is reported that around one in six people aged 60 years and above experienced some forms of abuse or violence in the community or household level settings [5]. This has eventually led to older adults experience devastating consequences like serious injuries, health, and long-term socio-economic and psychological problems [6]–[10]. However, the growing unprecedented abuse and violence against older adults is one of the most serious socio-psycho-health problems in many low and middle-income countries [11]. The lack of appropriate approach, neglect and under report of older adult violence in these settings make it more challenging. Besides, these countries are also witnessing a rapid growth in aging population. For example, according to the 2011 census currently, India contributes 8.6 percent of the aged population, and further, it is expected to increase to 20 percent in 2050 [6]. Globally, an estimation showed that people aged 60 years and above comprise 900 million in 2015 and it is about to increase of 2 billion in 2050 [12]. The increase in aged population in every corner of the world has created several social and health problems, and violence against older adults is one of them.

The World Health Organization defines elder abuse as “a single or repeated act or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person” [5]. Older adults are abused by their family members, spouses, friends, community members, and also by healthcare providers. There are multiple forms of violence and abuses that have been reported. These include physical, sexual, psychological, and emotional abuse; financial and material abuse; abandonment; neglect; and serious loss of dignity and respect [5], [13], [14]. And, it is highly associated with decreased older adults’ quality of life and increased morbidity and mortality rates [9],

[13], [15]–[17]. Further, Abusing the older is linked to disability and functional limitation [15]. Some determinants influence the greater risk of older adults' violence such as the older person having low education, belong to low-income groups, and poor social status [6], [8], [18]. Although there are other facets of certain risk factors that create such an environment against older adults in physical violence and verbal abuse, however, it has not been extensively understood in the Indian scenario.

Though most of the studies found that a high incidence violence against older adults exists in low socio-economic strata of the society, however, it has not been frequently reported in many communities and therefore is highly underreported [6], [8], [18], [19]. The low coverage of such reporting is caused by several reasons such as inaccessible institutional supports and a lack of information, education, and communication [8], [18]. For understanding this, a systematic review presented and identified the major causes like the older adult faces nearly 11.6% psychological abuse, 6.8% financial abuse, 4.2 neglect, 2.6% physical violence, and 0.9 percent sexual abuse [11]. Similarly, a study found in India shows that nearly 11% of older adults have experienced some form of violence after turning the age of 60 [8]. However, it significantly varies across gender and income groups. Increasing the trends and patterns of older adults' violence in India that is more consistently linked to their health and socio-psychological well-being [6], [7], [20], [21]. However, very few studies have tried to understand the multiple determinants which influence the prevalence of violence among older adults in India and its regions.

Poor healthcare, mistreatment, neglect, and financial abuse are the more common practices against older adults that are usually penetrated by family members in Indian society [19]–[21]. Nonetheless, there are many theories such as social exchange theory, feminist theory, political-economic theory, psychopathology of the caregiver theory, role accumulation theory, situational theory, social learning theory, stratification theory, and symbolic

interactionism theory that provide plausible causes of older adults abuse and violence [22]. Further, these theories also explain the pros and cons of abuse among older adults and violence caused by family members, relatives, spouses, friends, or community members [22]. This evolves a range of physical, emotional, sexual, and financial causes.

Although there may be multiple forms of older adult abuse and violence like intentional or unintentional, negligence, and abandonment, but in the Indian context, negligence, abandonment, and financial abuses are more common [21], [23], [24]. However, still, these types of abuse and violence are underreported in most cases [19]. For that, the associated risk factors are comprised of physical disability, poor physical and mental health, and also from poor socio-economic conditions of the individuals [6], [18], [25]. The unprecedented growing social and public health issues like older adults' violence create disastrous for social values and health vulnerability [13], [17], [19]. In the context of India, there is a paucity of literature on older adults who experience violence in various socio-economic settings. India is an orthodox and patriarchal society where older adults have been taken care of by their sons and daughters-in-law. In India, there is low coverage of social security for older adults that tends to increase the high burden on their families who support them [8]. In due course, this leads to a higher chance of older adult violence in India.

Based on the above pieces of evidences, this paper aims to understand the extent of socio-economic status related inequality in violence against older adults in Indian society. The effort is made to identify the most vulnerable population sub-group who suffers from different types of violence in multi-setting cultures. The present paper hypothesized that there was no socio-economic status related inequality in violence among older adults in India.

Methods

Data

The present research used data from Building a Knowledge Base on Population Aging in India (BKPAI) which was a national level survey and was conducted in 2011, across seven states of India. The survey was sponsored by Institute for social and economic change (ISEC), Tata Institute for social sciences (TISS), Institute for economic growth (IEG) and UNFPA, New Delhi. The survey gathered information on various socio-economic and health aspects of ageing among households of those aged 60 years and above. Seven major regionally representative states were selected for the survey with the highest 60+ year's population than the national average. This survey was carried out on a representative sample in the northern, western, eastern, and southern part of India following a random sampling process.

The primary sampling unit (PSU) were villages for rural areas, and urban wards in urban areas. The sample of 1280 elderly households were fixed for each state. Further details on the sampling procedure, sample size is available in national and state reports of BKPAI, 2011 [23]. For the current study the effective sample size was of 9541 older adults residing in seven states aged 60+ years were selected.

Outcome variables

The outcome variable was binary in nature. The question was asked to older adult that *“Ever since you completed 60 years of age, have you faced any abuse or violence or neglect or disrespect by any person?”* The response was coded as 0 “No” and 1 “Yes”.

Predictor variables

The predictors included age (60-69, 70-79 and 80+), gender (men and women), education (none, below five years, 6-10 years and 11+ years), marital status (not in union and currently in union), living arrangement (alone, with spouse, with children and others), working status (no, yes), contribute money to household expenditure (no income, yes and no), wealth

(poorest, poorer, middle, richer and richest), religion (Hindu, Muslim, Sikh and others), caste (scheduled caste (SC), scheduled tribe (ST), other backward class, and others), place of residence (rural and urban) and states (Himachal Pradesh, Punjab, West Bengal, Odisha, Maharashtra, Kerala and Tamil Nadu).

Statistical analysis

Descriptive statistics and bivariate analysis were used to find the preliminary results. Further, multivariate analysis (binary logistic) has been done to fulfil the objective of the study. The results were presented in the form of odds ratio (OR) with a 95% confidence interval (CI).

The model is usually put into a more compact form as follows:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1x_1 + \dots + \beta_Mx_{m-1},$$

Where β_0, \dots, β_M are regression coefficient indicating the relative effect of a particular explanatory variable on the outcome. These coefficients change as per the context in the analysis in the study.

Moreover, wealth quintile was the key variable to measure the economic status of the household. A household wealth index was calculated in the survey by combining household amenities, assets and durables and characterizing households in a range varying from the poorest to the richest, corresponding to wealth quintiles ranging from the lowest to the highest.

The study used wealth score (continuous variable) for decomposition analysis and for the calculation of Concentration Index (CI), the study used wealth quintile which has divided into five equal size of the population.

Concentration index

Concentration index represents the magnitude of inequality by measuring the area between the concentration curve and line of equality, and calculated as twice the weighted covariance between the outcome and fractional rank in the wealth distribution divided by variable mean.

The concentration index can be written as follows:

$$C = \frac{2}{\mu} \text{cov}(y_i, R_i)$$

Where, C is the concentration index; y_i is the outcome variable index; R is the fractional rank of individual i in the distribution of socio-economic position; μ is the mean of the outcome variable of the sample and cov denotes the covariance [26]. The index value lies between -1 to +1.

Further, study decompose the concentration index to understand the relative contribution of various socioeconomic factors to the violence among older adults. To do this, study used regression based decomposition technique, which was proposed by Wagstaff et al. [27].

Results:

Figure 1 displays the type of violence faced by older adults in India. The highest percentage of older adults reported verbal violence (10%) followed by disrespect (5.8%), economic violence (5.2%) and neglect (5.1%).

[Figure 1 about to here]

Socio-demographic profile of older adults was presented in *Table 1*. About three-fifth of older adults belonged to 60-69 years age group and nearly half of them women. Only six percent of older adults had more than 11 years of education and same proportion of older adults were living alone. Around one-fourth of older adults working and half of the older

adults contributed money for household expenditure. Majority of older adults were Hindu and lived in rural areas.

[Table 1 about to here]

Percentage of older adults who faced any violence by background characteristics were presented in *Table 2*. Older adults with 80+ years of age (15.4%), women (11.5%) and those who had no education (13.6%) reported more violence compared to their counterparts. Older adults with higher education and currently in union faced less violence in the household. Older adults lived alone (17.6%) and working (15.2%) reported more violence than those who were lived with others and not working respectively. Older adults those who did not contribute money for household expenditure (15.4%) faced more violence compared to the rest of the categories. There was a negative association between wealth quintile and reporting of violence by older adults. A higher proportion of older adults belonged to scheduled tribe and lived in rural areas reported more violence than other caste categories and those lived in urban areas. The highest percentage of violence was reported in Maharashtra (34.3%) followed by Himachal Pradesh (11.5%).

[Table 2 about to here]

Results from logistic regression estimates for violence among older adults were presented in *Table 3*. The likelihood of violence was significantly higher among older adults with age 80+ years (OR, 1.49; CI: 1.14-1.93) compared to 60-69 years age group. Moreover, older adults currently in union (OR, 0.79; CI: 0.65-0.95) were less likely to faced violence than those who were not in union. Older adults those who were working (OR, 1.26; CI: 1.02-1.56) reported significantly higher odds of violence compared to those who were not working. The likelihood of violence was higher among older adults those who did not contribute money for household expenditure (OR, 1.25; CI: 1.05-1.86) than reference category. The odds of

violence was higher in Maharashtra (OR, 3.43 CI: 2.62-4.75) however it was lower in West Bengal (OR, 0.50; CI: 0.34-0.72), Orissa (OR, 0.56; CI: 0.39-0.82), Kerala (OR, 0.28; CI: 0.18-0.44) and Tamil Nadu (OR, 0.13; CI: 0.08-0.22) compared to Himachal Pradesh.

[Table 3 about to here]

Estimates of decomposition analysis for the contribution of various explanatory variables to violence among older adults were presented in *Table 4*. The positive scores of concentration index denotes that violence among older adults concentrated among rich older adults for that particular predictor and vice-versa. Older adults aged 70-79 years, women, living with spouse, working, those contributed money for household expenditure, belonged poorer wealth quintile, and to SC/ST categories and lived in urban areas concentrated more among disadvantaged population in terms of reported violence. On the other hand, having secondary or higher education, currently in union, living with children, and belonged to Muslim or Sikh religion inclined to concentrate among better off. Household's wealth status, living arrangement, education, and working status of older adults were the major contributors to the inequalities. Household's wealth status was responsible for 93.7% of the SES-related inequality whereas living arrangement of older adults explained 13.7% SES-related inequality. Education and working status of older adults made a substantial contribution to the inequalities in reported violence, explaining 3.7% and 3.3% of the total inequality, respectively.

[Table 4 about to here]

Figure 2 depicts the concentration curve for violence reported by older adults in India. Since the concentration curve lies above the line of equality it implies that violence among older adults is concentrated towards the poor. If the curve is formed below the line of equality than the inequality is concentrated towards rich and vice-versa. Moreover, more the area between

line of equality and curve higher the inequality. India was having inequality of -0.20 which depicts that violence was concentrated more among poor older adults.

[Figure 2 about to here]

Discussion

Using the BKPAI data of 2011, we tried to understand the socio-economic inequality for violence among 9541 older adults residing in the Indian states of Himachal Pradesh, Punjab, West Bengal, Odisha, Maharashtra, Kerala and Tamil Nadu. The key highlights of the present paper are as follows: First, of all the forms of violence faced by the older adults, the highest was verbal violence followed by disrespect, economic violence, and neglect. Second, while the positive significant determinants of experiencing violence among the older adults are age and work status, the negative significant determinants are educational and marital status, living arrangement, and wealth quintile. Third, there exist clear evidence of socio-economic inequality in experiencing violence and household's wealth status contributed the maximum; consequently older adults belonging to the poorer sections of the society are more susceptible to violence.

One-eighth of the world's population of older adult lives in India. With falling income and health, breaking of the joint family and change in social attitudes, the older adults are the most vulnerable sub-population of the country. Coupled with this, abuse among older adult's is becoming more and more prevalent in India [18], [28], [29]. Our finding on the highest percentage of verbal abuse experienced by the older adults is consistent with past studies [30]–[32]. Ruelas-González et al., 2016 by using the Mexican data of National Health and Nutrition Survey 2012, that included a sample of 8,894 individuals who were 60 years or older found that verbal aggressions was the most prevalent. Existing literature explains different pathways that causes verbal abuse faced by the older adults. According to Summers

& Hoffman, (2006), the most common abuse among the older adults is verbal abuse which is not visible but has a huge repercussion on the older adults. They explain that a conversation taking place in the presence of an older adult does not imply that the message is comprehended or understood by the older adult since the most obvious barrier to communication is hearing impairment or hearing loss which is quite common among the older adults. Further, Lai, 2011 emphasizes that yelling, scolding, treating impolitely, and threatening verbally is a way of showing disrespect in interpersonal interactions.

Our finding that the likelihood of experiencing violence increases with age contradicts with studies [31], [32], [34]. However, excerpts from focus group discussion on reasons of abuse among older adults due to age revealed that since the older adults are not young and do not belong to vibrant young culture, it is easy to being disrespected [35]. Education is found to be a significant negative predictor of experience of violence among older adults and is in line with other studies [7], [31], [34], [36], [37]. Higher educational attainment may affect the level of openness on abuse among the older adults and therefore they may be unwilling to share information on sensitive topics like abuse to maintain a family façade [8]. A popular believe is that, those who are economically independent have lesser odds of experiencing violence [38]. However, our results indicated otherwise - older adults with working status experience higher odds of violence. The possible explanation for our study finding might be because the income earned is forcibly taken suggesting the presence of economic violence. Further, those who do not contribute money for household expenses are more likely to experience violence because they are economically dependent on their children [30]. Our study results indicate that for older adults being employed (i.e. economically independent) as well as not contributing to household expenses (i.e. economically dependent), both are risk factors to experience violence.

Our decomposition results indicate that there exist economic inequality in reporting of violence by older adults. A study by Naughton et al., 2012 in Ireland showed that individuals with a low-income had a doubled risk of being victims of abuse of any kind. Likewise, low income was associated with neglect, but not when other forms of abuse was considered [40]. In Iran, Hosseinkhani, Zahra Khodamoradi & Sheikh, 2019 found that older adults belonging to lower socio-economic status are majorly at risk of abuse. The World Health Organization (WHO) and International Network for the Prevention of Elder Abuse (INPEA) in their study *Missing Voices* gathered the views of older persons on elder abuse and showed that poverty and inequality are reasons for elder abuse (WHO & INPEA, 2002). Keskinoglu et al., 2007 tries to explain the factors such as living with many family members and with low family income that cause violence towards older adults with low income. Further, the rates of abuse among older adults are highest in families where income levels for the older adult and for the abuser/caregiver are extremely low [44] and, there is low coverage of social security for older adults that tends to increase the burden on their care givers [8].

Our study is not devoid of limitation. One of them is that the analysis is based on cross-section data that limited our scope to do cause-effect analysis. Absence of traditional Indian values have always perceived old age as a stage of wisdom, maturity, prestige, and power, with respect given to older adults, especially to the oldest male [45]. However, recent verbatim from focus group discussions reveal that older adults are now considered as burden in the society [29]. Therefore, it is quite ironical to discuss the different forms of abuse faced by the older adults in a country trapped in its own contradictory ideas.

Conclusion

Our results indicate that violence among older adults is prevalent in the society and therefore an understanding of its determinants is valuable for policy makers to improve the services

towards the older adults of the country. The existence of economic inequality in reporting of violence shows the miserable conditions of the older adults belonging to the poorest wealth quintile. With no or meagre income of their own they have little or no bargaining power to secure a violent free environment for themselves. Social and economic support should be given to these older adults to live a dignified life. Finally, keeping in mind, the changing pattern of Indian culture and values, efforts should be made to make individuals across all age group respect, honour and care for the older adults.

Declarations:

1. **Ethics approval and consent to participate:** The study is based on secondary data, which is in public domain and available on request. Therefore, ethical approval and consent to participate are not required.
2. **Funding:** We declare that we did not receive any funding for this work.
3. **Availability of data and material:** We have provided details of the data in the methodology section. The BKPAI data can be obtained from the ISEC Bangalore. The report and the survey tools are also available on the website: https://india.unfpa.org/sites/default/files/pub-pdf/AgeingReport_2012_F.pdf
4. **Authors' contributions:** Conception and design of the study: DS, SS, PSM and PK; analysis and/or interpretation of data: PK and SS; drafting the manuscript: PSM, and DS; reading and approving the manuscript: DS, PSM, SS and PK.
5. **Competing interests:** Authors declare that they do not have any competing interest.
6. **Consent for publication:** Not applicable.

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Table-1 Socio-economic profile of older adults in India		
Variables	Sample	Percentage
Age (years)		
60-69	5,890	61.8
70-79	2,612	27.4
80+	1,036	10.9
Gender		
Men	4,525	47.4
Women	5,014	52.6
Educational Status		
None	4,871	51.1
Below 5 years	1,954	20.5
6 to 10 Years	2,136	22.4
11+ years	578	6.1
Marital Status		
Not in Union	3,759	39.4
Currently in Union	5,780	60.6
Living Arrangement		
Alone	561	5.9
With Spouse	1,521	15.9
With children	6,717	70.4
Others	740	7.8
Working Status		
No	7,229	75.8
Yes	2,310	24.2
Contribute money for household expenditure		
No Income	4,110	43.1
Yes	5,013	52.6
No	416	4.4
Wealth quintile		
Poorest	2,251	23.6
Poorer	2,114	22.2
Middle	1,970	20.7
Richer	1,771	18.6
Richest	1,433	15.0
Religion		
Hindu	7,570	79.4
Muslim	671	7.0
Sikh	898	9.4
Others	400	4.2
Caste		
Scheduled Caste	1,979	20.7
Scheduled Tribe	531	5.6
Other backward class	3,507	36.8
Others	3,522	36.9
Place of residence		
Rural	7,042	73.8
Urban	2,497	26.2
State		
Himachal Pradesh	1,470	15.4
Punjab	1,351	14.2
West Bengal	1,127	11.8
Orissa	1,453	15.2
Maharashtra	1,380	14.5
Kerala	1,356	14.2
Tamil Nadu	1,403	14.7
Total	9,539	100

Table-2 Percentage of older adults who faced any violence by background characteristics in India.		
Background characteristics	Percentage	p<0.05
Age (years)		*
60-69	10.7	
70-79	10.7	
80+	15.4	
Gender		*
Men	10.8	
Women	11.5	
Educational Status		*
None	13.6	
Below 5 years	11.8	
6 to 10 Years	6.6	
11+ years	6.0	
Marital Status		*
Not in Union	12.3	
Currently in Union	10.5	
Living Arrangement		*
Alone	17.6	
With Spouse	12.2	
With children	10.6	
Others	9.6	
Working Status		*
No	9.9	
Yes	15.2	
Contribute money for household expenditure		*
No Income	10.7	
Yes	11.2	
No	15.4	
Wealth quintile		*
Poorest	17.3	
Poorer	13.1	
Middle	8.4	
Richer	8.0	
Richest	6.4	
Religion		
Hindu	11.1	
Muslim	10.0	
Sikh	12.4	
Others	12.9	
Caste		*
Scheduled Caste	12.0	
Scheduled Tribe	14.0	
Other backward class	7.9	
Others	13.5	
Place of residence		*
Rural	12.2	
Urban	8.3	
State		*
Himachal Pradesh	11.5	
Punjab	10.4	
West Bengal	7.5	
Orissa	9.2	
Maharashtra	34.3	
Kerala	2.9	
Tamil Nadu	1.9	
Total	11.2	

*if p<0.05

Table-3 Logistic regression estimates for violence among older adults in India	
Background characteristics	Odds Ratio (95% CI)
Age (years)	
60-69	
70-79	0.97(0.78,1.19)
80+	1.49*(1.14,1.93)
Gender	
Men	
Women	0.96(0.78,1.19)
Educational Status	
None	
Below 5 years	1.08(0.89,1.32)
6 to 10 Years	0.79*(0.63,1)
11+ years	0.60*(0.39,0.9)
Marital Status	
Not in Union	
Currently in Union	0.79*(0.65,0.95)
Living Arrangement	
Alone	
With Spouse	0.69*(0.48,0.98)
With children	0.53*(0.4,0.72)
Others	0.44*(0.3,0.66)
Working Status	
No	
Yes	1.26*(1.02,1.56)
Contribute money for household expenditure	
No Income	
Yes	0.92(0.74,1.16)
No	1.25*(1.05,1.86)
Wealth quintile	
Poorest	
Poorer	0.63*(0.5,0.79)
Middle	0.43*(0.32,0.58)
Richer	0.39*(0.29,0.53)
Richest	0.35*(0.24,0.51)
Religion	
Hindu	
Muslim	1.08(0.75,1.55)
Sikh	1.51*(1.04,2.18)
Others	1.09(0.72,1.66)
Caste	
Scheduled Caste	
Scheduled Tribe	0.91(0.63,1.32)
Other backward class	0.96(0.73,1.25)
Others	1.37*(1.07,1.75)
Place of residence	
Rural	
Urban	0.94(0.78,1.14)
State	
Himachal Pradesh	
Punjab	0.82(0.56,1.2)
West Bengal	0.50*(0.34,0.72)
Orissa	0.56*(0.39,0.82)
Maharashtra	3.53*(2.62,4.75)
Kerala	0.28*(0.18,0.44)
Tamil Nadu	0.13*(0.08,0.22)

*p<0.05; CI: Confidence Interval

Table 4: Estimates of decomposition analysis for contribution of various explanatory variables for violence among older adults in India

Background characteristics	Coefficient	Elasticity	CI	Absolute contribution	% Contribution	
Age (years)						
60-69						
70-79	0.06	-0.001	-0.014	0.000	-0.1	
80+	0.51*	0.004	0.018	0.000	-0.3	-0.4
Gender						
Men						
Women	-0.05	-0.001	-0.033	0.000	-0.2	-0.2
Educational Status						
None						
Below 5 years	0.08	0.003	0.002	0.000	0.0	
6 to 10 Years	-0.23*	-0.003	0.260	-0.001	3.8	
11+ years	-0.52	0.000	0.613	0.000	0.0	3.7
Marital Status						
Not in Union						
Currently in Union	-0.24*	-0.009	0.040	0.000	1.7	1.7
Living Arrangement						
Alone						
With Spouse	-0.37*	-0.005	-0.197	0.001	-4.7	
With children	-0.63*	-0.038	0.089	-0.003	16.3	
Others	-0.81*	-0.005	0.092	0.000	2.2	13.7
Working Status						
No						
Yes	0.23*	0.004	-0.174	-0.001	3.3	3.3
Contribute money for household expenditure						
No Income						
Yes	-0.12	-0.003	-0.006	0.000	-0.1	
No	0.16*	0.001	-0.054	0.000	0.3	0.2
Wealth						
Poorest						
Poorer	-0.38*	-0.012	-0.338	0.004	-19.5	
Middle	-0.73*	-0.018	0.139	-0.003	12.0	
Richer	-0.91*	-0.017	0.523	-0.009	42.7	
Richest	-1.03*	-0.016	0.760	-0.012	58.5	93.7
Religion						
Hindu						
Muslim	0.03	0.001	0.146	0.000	-0.7	
Sikh	0.37*	0.004	0.311	0.001	-6.0	
Others	0.06	0.000	0.296	0.000	0.0	-6.7
Caste						
Scheduled Caste						
Scheduled Tribe	0.01	-0.001	-0.444	0.000	-2.1	
Other backward class	0.03	-0.001	-0.029	0.000	-0.1	
Others	0.30*	0.012	0.219	0.003	-12.6	-14.9
Place of residence						
Rural						
Urban	-0.07	-0.001	0.247	0.000	1.2	1.2
State						
Himachal Pradesh						
Punjab	-0.05	-0.003	0.331	-0.001	4.8	
West Bengal	-0.50*	-0.007	-0.163	0.001	-5.5	
Orissa	-0.59*	-0.008	-0.368	0.003	-14.2	
Maharashtra	1.29*	0.031	-0.125	-0.004	18.6	
Kerala	-1.06*	-0.010	0.349	-0.003	16.8	

Tamil Nadu	-2.04*	-0.015	-0.222	0.003	-16.0	4.5
Calculated CI				-0.021		
Actual CI				-0.198		
Residual				-0.177		

*CI: Concentration index; *if $p < 0.05$; %: percentage*

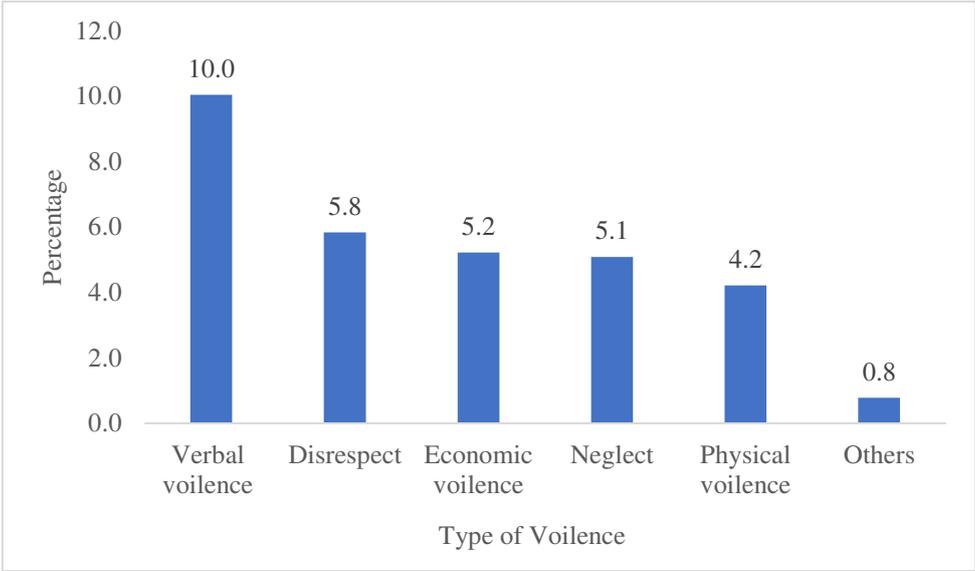


Figure 1: Type of violence reported by older adults in India

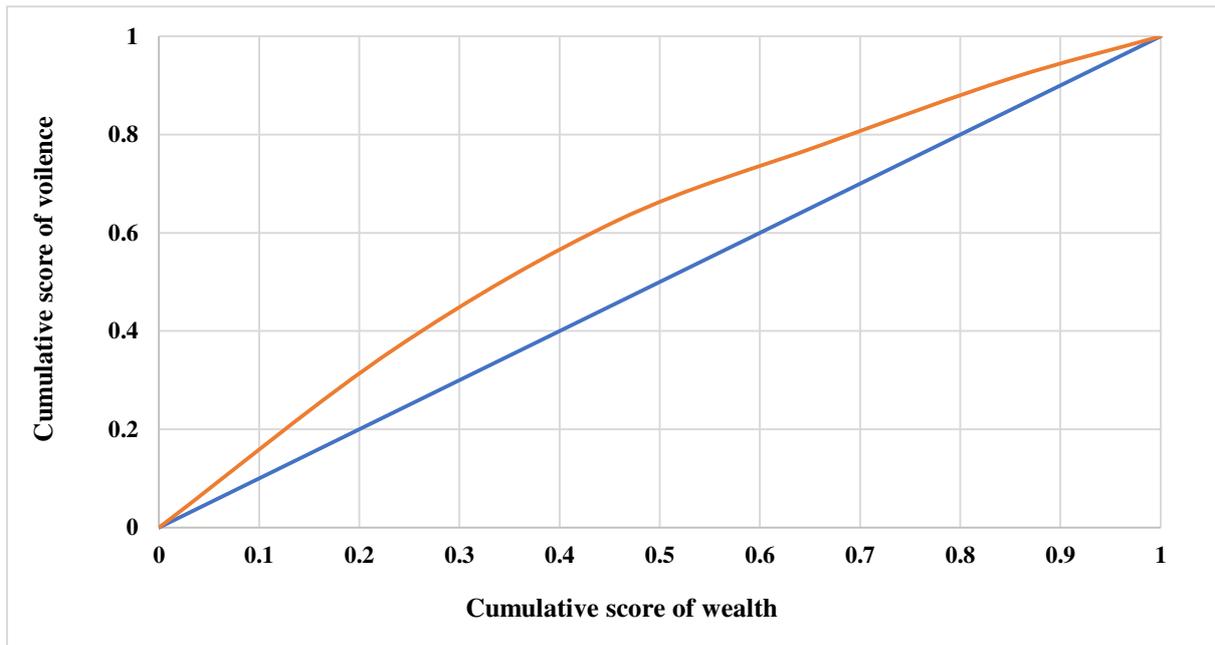


Figure 2: Concentration curve for violence among older adults in India

Figures

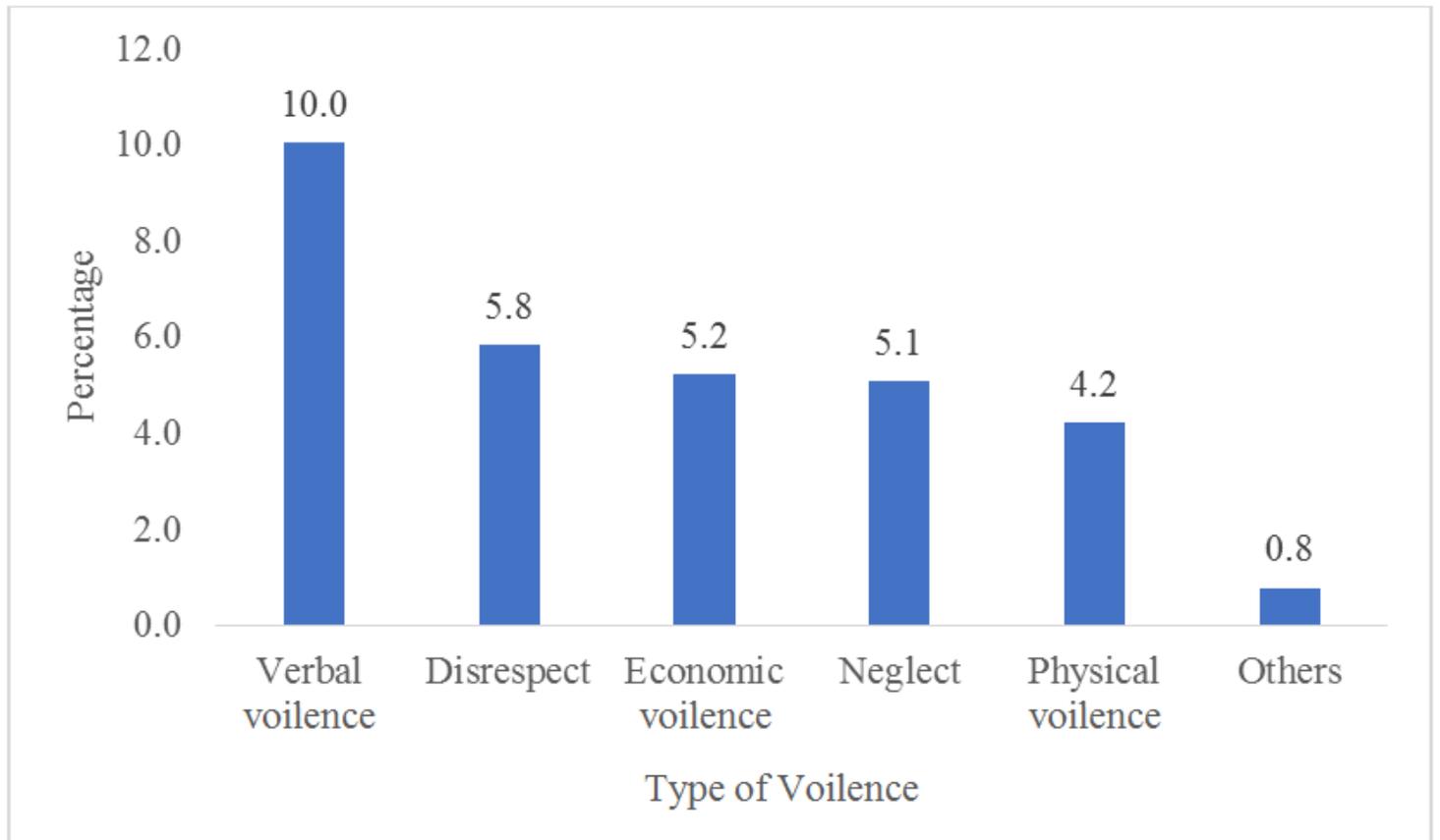


Figure 1

Type of violence reported by older adults in India

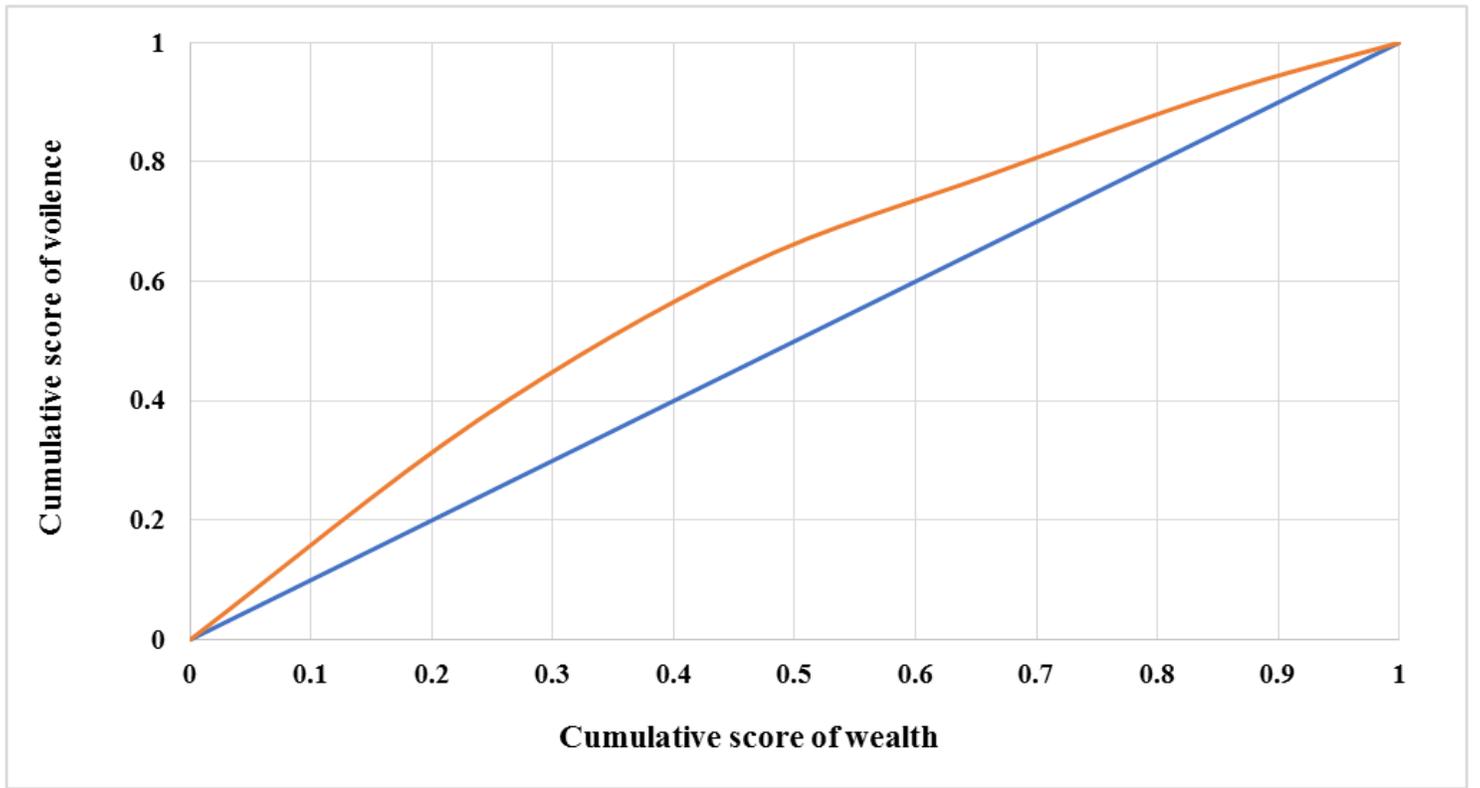


Figure 2

Concentration curve for violence among older adults in India