

*Short Report*

# Childhood Adversity and Depression among Older Adults: Results from a Longitudinal Survey in China

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**ABSTRACT**

This study examined the association of childhood adversity with depression or severity of depressive symptoms among Chinese older adults, using data from the China Health and Retirement Longitudinal Study (CHARLS). The data is from a nationally representative sample of Chinese residents aged 45 or older and surveys of the sample population were conducted in 2011 and 2013; and individuals aged at 60 years or older, and interviewed for depressive symptom were included in this study. Multiple logistic regression analyses showed that the likelihood of depression was significantly associated with poor parental mental status, physical abuse, and emotional abuse during childhood. Our study adds to research in the area of adverse childhood events and its effect on adult psychological and physical well-being.

**KEYWORDS**

Depression; childhood adversity; population aging

**INTRODUCTION**

Depression is a common and serious mental health problem in the general population and affects about 4–15% of older adults [1]. According to the estimates of the World Health Organization in 2017, depression is more prevalent in the general population of North America. The United States 2012–2013 National Survey estimated that the 12-month and lifetime prevalence of depression was 10.45% and 20.6%, respectively [2]. While the prevalence of depression is estimated to be lower in Asian countries, the lifetime prevalence of suicide attempts in patients with depression could be as high as 40% [3]. Meanwhile, depression symptoms in older adults are often mistaken for other symptoms of normal aging and so do not draw attention clinically, and patients do not get treatment.

Studies have indicated that childhood adversity experience is not only associated with risk of suicide [4] and risky behaviors such as alcohol misuse, risky sexual practices and criminal activities which persist into adulthood [5], but also with geriatric depression in later life [6]. Greater psycho-social adversity in childhood has been associated with poorer physical capability in people of middle age in Western societies [7]. Recently, a cohort study has indicated that low childhood socioeconomic status is

associated with the onset of depression in Japanese older adults [8]; childhood abuse has been associated with depression in later life in older persons in The Netherlands [9]. In this Dutch study, the investigators suggested that older adults with a history of childhood abuse may be more negatively affected by stress or stressful events, and presented data which suggested the dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis [9]. In addition, the causes of depression in older adults are not clear, and study of childhood adversity may help elucidate the etiology of depression in older adults. Since no study has been conducted in the Chinese populations, we performed a study to examine the effect of childhood adversity on depression symptoms and depression score among the elderly.

**DATA AND METHODS**

This study used the datasets from surveys conducted in 2011 and 2013 as a part of the China Health and Retirement Longitudinal Study (CHARLS) [10]. The sample included Chinese residents aged 60 years or older who were interviewed as part of a nationally representative sample of Chinese residents; and individuals who participated in the interviews conducted in both 2011 and 2013 were included for this study.

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The depression outcome was measured using the Center for Epidemiologic Studies Depression 10-item (CES-D10) scale, a short self-report scale designed to measure depressive symptomatology in the general population [11]. Depression was defined when the total CES-D10 score was greater than 10 and the total score of depression was obtained. The childhood adversities were measured by five domains: physical abuse, emotional abuse, emotional neglect, the worse mental status of parents or guardian, and a negative relationship of parents. Because the sample was with a repeated-measure in both 2011 and 2013, we performed, after a descriptive analysis of depression by the childhood adversity, a multiple logistic regression analysis and a multiple linear regression with random-effect model to examine the association of the risk for depression and depressive symptom score with the childhood adversity, respectively, in individuals who were interviewed in the surveys at both years.

## RESULTS

The baseline statistics of individual childhood adversity measurement and coding are presented and score was summarized by individual domains (Table 1). Depression and the mean depression score were increased with multiple domains of childhood adversity experienced. Based on data from 2011, the rate of depression was significantly elevated in individual older adults who experienced poor mental status of parents or guardians, such as guardians who often felt nervous and anxious (47.64%), guardians who often got upset easily or feel panicky (50.97%), guardians who showed sadness or depression lasting over two weeks (46.35%) compared with those who did not have these respective experiences ( $P < 0.0001$ ). Individuals who experienced physical abuse such as being beaten by

the guardian (40.8%) and emotional abuse such as the guardian being too strict (40.5%) in childhood also had a significantly elevated rate of depression in later adult life compared those who did not have such experiences ( $P < 0.0001$ ) (Table 2).

While the rate of depression was a little lower, the findings were consistently present in the follow-up survey conducted in 2013. Individuals who experienced a childhood adversity were more likely to have depression in 2013 when the follow-up survey was conducted. These associations of childhood adversity with depression in later life were also consistent when the total score of depression was analyzed in both 2011 and 2013.

After adjusting for covariates such as age, sexes, as well as other variables that measure physical condition, multiple domains of childhood adversity experience were associated with the rate of depression and total score of depression in the combined analysis of the two surveys together. Multiple logistic regression analysis of depression in both surveys (2011 and 2013) found that the likelihood of depression was significantly associated with poor parental mental status (OR=1.44; 95% CL: 1.31–1.57), physical abuse (OR=1.35; 95% CL: 1.12–1.65), and emotional abuse (OR=1.23; 95% CL: 1.04–1.46) (Table 3). In addition, we found that the poor parental mental health status during childhood was associated with depression symptom scores in later life (Beta = 1.14; 95% CL: 0.95–1.33); and it was still significant even after adjusting for the confounding factors (Beta=0.87; 95% CL: 0.71–1.04). Further, the number of total adverse events experienced in childhood significantly increased the likelihood; and this may suggest a "dose-response" relationship between childhood adversity and depression in later life.

**Table 1.** Descriptive statistics and coding for the independent variables at the baseline in 2011 ( $n = 3,436$ )

Variable	Code	%	Mean (SD)
<b>Poor mental status of parents or guardian</b>	Sum score		0.55 (0.90)
Guardians often felt nervous and anxious	1, most, often or always 0, No or seldom	18.51	
Guardians often got upset easily or feel panicky	1, most, often or always 0, No or seldom	15.02	
Guardians' sadness or depression lasting over 2 weeks	1, Yes 0, No	21.54	
<b>Physical abuse</b>	Sum score		0.26 (0.44)
Beaten by guardians	1 = often or sometime 0 = seldom or never	25.87	
<b>Emotional abuse</b>	Sum score		0.33 (0.50)
Guardians were too strict	1, strict or too strict 0, no or little strict	33.41	
Guardians treat siblings better than you	1, Yes 0, no	1.46	
<b>Emotional neglect</b>	Sum score		0.44 (0.68)
Female guardian often gave love and affection	1, No or seldom 0, Sometimes or often	21.21	
Female guardian often into watching over you	1, No or seldom 0, Sometimes or often	23.52	
<b>Poor parental relationship</b>	Sum score		0.28 (0.60)
Parents often quarrel	1, Sometime or often 0, few or never	19.70	
Your father often beat up your mother	1, Sometime or often 0, few or never	7.67	
Your mother often beat up your father	1, Sometime or often 0, few or never	1.17	

**Table 2.** Distribution of childhood adversity and depression among older adults in China ( $n = 3,436$ )

Variables	Code	Depression as binary(1 =Yes, 0 =No)				Depression as continuous score			
		2011		2013		2011		2013	
		%	<i>P</i>	%	<i>P</i>	Mean	<i>P</i>	Mean	<i>P</i>
<b>Poor mental status of parents or guardian</b>									
Guardians often felt nervous and anxious	0 = No	32.96		25.10		8.40		7.53	
	1 = Yes	47.64	<0.0001	40.30	<0.0001	10.76	<0.0001	10.03	<0.0001
Guardians often got upset easily or feel panicky	0 = No	32.98		25.20		8.42		7.58	
	1 = Yes	50.97	<0.0001	43.40	<0.0001	11.22	<0.0001	10.31	<0.0001
Guardians felt sadness or depressed over 2 weeks	0 = No	32.75		24.40		8.34		7.49	
	1 = Yes	46.35	<0.0001	40.70	<0.0001	10.65	<0.0001	9.82	<0.0001
<b>Physical abuse</b>									
Beaten by guardians	0 = No	33.88		26.40		8.62		7.88	
	1 = Yes	40.83	<0.0001	32.10	0.0010	9.48	<0.0001	8.31	0.0640
<b>Emotional abuse</b>									
Guardians were too strict	0 = No	33.26		26.20		8.55		7.82	
	1 = Yes	40.51	<0.0001	31.30	0.0020	9.42	<0.0001	8.35	0.0130
Guardians treat siblings better than you	0 = No	35.50		27.50		8.81		7.97	
	1 = Yes	48.00	0.0670	37.50	0.1350	10.94	0.0190	9.76	0.0330
<b>Emotional neglect</b>									
Female guardian often gave you love and affection	0 = No	35.26		27.80		8.77		7.99	
	1 = Yes	39.46	0.1100	29.00	0.6280	9.46	0.0460	8.03	0.8900
Female guardian often into watching over you	0 = No	35.33		27.30		8.77		7.92	
	1 = Yes	40.00	0.1300	35.70	0.0040	9.76	0.0160	9.04	0.0030
<b>Poor parental relationship</b>									
Parents often quarrel	0 = No	34.68		26.70		8.71		7.82	
	1 = Yes	40.15	0.0080	33.20	0.0010	9.40	0.0120	8.73	<0.0001
Your father often beat up your mother	0 = No	34.92		26.90		8.71		7.86	
	1 = Yes	44.27	0.0020	40.00	<0.0001	10.21	<0.0001	9.71	<0.0001
Your mother often beat up your father	0 = No	35.70		27.80		8.83		7.97	
	1 = Yes	37.50	0.8100	35.90	0.2620	9.90	0.2900	9.93	0.0370

**Table 3.** Multiple regression with a random-effect model estimates of childhood adversity on depression in older adults (age  $\geq$  60 years)

	Depression as a binary				Depressive score							
	Model 1		Model 2		Model 1		Model 2					
	OR	95% CL	OR	95% CL	Beta	95% CL	Beta	95% CL				
Physical abuse	1.43	(1.16,1.77)	***	1.35	(1.12,1.65)	**	0.44	(0.03,0.84)	*	0.24	(-0.11,0.58)	
Emotional abuse	1.32	(1.11,1.58)	**	1.23	(1.04,1.46)	*	0.44	(0.09,0.78)	*	0.27	(-0.03,0.57)	
Emotional neglect	1.21	(1.01,1.46)	*	1.08	(0.90,1.30)		0.44	(0.08,0.81)	*	0.25	(-0.06,0.57)	
Poor parental mental status	1.59	(1.43,1.75)	***	1.44	(1.31,1.57)	***	1.14	(0.95,1.33)	***	0.87	(0.71,1.04)	***
Poor parental relationship	1.15	(0.99,1.34)		1.09	(0.95,1.26)		0.33	(0.03,0.62)	*	0.21	(-0.04,0.46)	

\*\*\*  $P < 0.001$ , \*\*  $P < 0.01$ , \*  $P < 0.05$ ; Model 1, Controlling for age, sex, marital status, resident; Model 2, Adjusting for additional physical status, such as living with children, Instrumental activities of daily living (IADL), number of chronic illness, cognitive status, memory, sleep, type of medical insurance, community condition, education and previous occupation before retirement.

## DISCUSSION

Our findings provide novel evidence that childhood adverse events affect the likelihood of depression and levels of depressive symptom scores in later life in the Chinese population which is consistent with previous studies in older adults [8, 9] in other global regions. Previous studies have indicated that childhood adversity interacted with past year stressful life events on the 12-month prevalence of major depression, post-traumatic stress disorder and anxiety disorder [12] in general populations based on the National Epidemiological Survey of Alcohol and Related Conditions. Individuals with 3 or more childhood adverse events may have a 2-fold increase in the risk of developing depression when experiencing stressful events during the past year compared to those without suffering from the childhood adverse events. In addition, a large meta-analysis of 18 case-control studies, 10 prospective studies and 8 population-based studies demonstrated a consistent association with moderate to high effect size of childhood adversity with psychosis [13].

In summary, using a population-based longitudinal survey in older adults, we found evidence that childhood adversity significantly increased the likelihood of depression in later life in residents of China. Mental health is essential not only for child development but also for health in later life. One limitation of our study is that we did not have objective data on these childhood adverse events but relied on recall of people in the survey, and it is likely that people currently experiencing depression will be more likely to remember adverse childhood events than people who are not depressed. Even with this potential bias, our study adds to research in the area of adverse childhood events and its effect on adult psychological and physical well-being. Further research is needed to find interventions that can be translated into real life moderation of childhood adverse effects on subsequent adult well-being.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper.

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