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Qi Hu
Zhejiang University of Finance and Economics
Shiyu Peng
Zhejiang University of Finance and Economics
Yanan You
China Pharmaceutical University
Minglai Zhu
Nankai University
Ennan Wang
wen@njmu.edu.cn
Nanjing Medical University

Research Article

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Posted Date: February 27th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8955415/v1

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Additional Declarations: No competing interests reported.

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Qi Hu[1], Shiyu Peng[1], Yanan You[2], Minglai Zhu[3], Ennan Wang*

1.Qi Hu
Affiliation: School of Public Administration, Zhejiang University of Finance & Economics, 18 Xueyuan Street, High- Tech Education Park, Hangzhou 310018, Zhejiang, China.
Email:huqi@zufe.edu.cn

1.Shiyu Peng
Affiliation: School of Public Administration, Zhejiang University of Finance and Economics, 18 Xueyuan Street, High-Tech Education Park, Hangzhou 310018, Zhejiang, China.
E-mail : 15267929131@163.com。

2. Yanan You
Affiliation: The Research Center of National Drug Policy & Ecosystem, China Pharmaceutical University, Nanjing 211166, Jiangsu Province, China
Email: 3123044234@stu.cpu.edu.cn

3. Minglai Zhu
Affiliation: School of finance, Nankai University, 38 Tongyan Avenue, Tianjin 300350, China.
Email: zhuml@nankai.edu.cn

Corresponding author:
Ennan Wang
Highest academic degrees: Ph.D
Affiliation: School of Health Policy and Management, Nanjing Medical University, 101 Longmian Avenue, Nanjing 211166, Jiangsu, China.
Email: wen@njmu.edu.cn
Phone: 86+15651688278

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Abstract

Background: Health behaviors are key determinants of healthy aging. In family-oriented contexts, adult children's economic resources may influence older parents' behaviors through intergenerational support, but the mechanisms remain unclear.

Methods: Using data from the 2013–2020 China Health and Retirement Longitudinal Study (CHARLS), we analyzed adults aged 60 years and above. Regression and mediation analyses were used to examine the associations between children's economic resources and older parents' smoking and physical activity.

Results: Higher levels of adult children's income and housing wealth were associated with lower smoking and higher physical activity among older parents. Financial transfers were the primary pathway, while reduced caregiving and emotional contact suggest a substitution between monetary and time-based support.

Conclusions: Adult children's economic resources shape older parents' health behaviors through multiple support pathways. Promoting balanced intergenerational support may help improve health behaviors in aging populations.

Keywords: economic status, liquid assets, housing wealth, health behaviors, intergenerational support

Introduction

Over the past decades, China has experienced rapid and large-scale population aging. By the end of 2023, individuals aged 60 years or older reached 297 million, accounting for 21.1% of the total population(Tao & Deng, 2025). As aging deepens, China's demographic structure is undergoing profound shifts, with projections indicating that by 2050 more than one-third of the population will be aged 60 years or older(Xinhua, 2018). Ensuring that this growing cohort can age with dignity and maintain a high quality of life poses mounting challenges for healthcare systems, community services, and socioeconomic development.

Health behaviors are central, modifiable determinants of healthy aging, and behaviors such as engaging in regular physical activity and avoiding smoking are consistently associated with better quality of life and reduced mortality risk among middle-aged and older adults(Atallah et al., 2018; Fang et al., 2025; Lee et al., 2010; Oktaviani et al., 2022; Sowa et al., 2016). From the perspective of health economics, health can be viewed as an investable form of health capital, and individuals' health behaviors are shaped not only by preferences but also by resource constraints that affect health investments and behavioral choices (Grossman, 1972, 1999). A large body of evidence further suggests that socioeconomic status (SES) is strongly patterned with health behaviors: individuals with higher income and wealth tend to have better access to health-related information and products and more opportunities for leisure and sports participation, thereby being more likely to adopt beneficial behaviors (e.g., exercise, healthy diet) and less likely to rely on risky coping behaviors such as smoking or excessive drinking(Duan et al., 2025; Hanson & Chen, 2007; Li, 2025; Wang et al., 2022; Zhang et al., 2021). Conversely, socioeconomically disadvantaged groups often face financial strain, poorer residential environments, limited community resources, and barriers to healthcare access, which may constrain their capacity to engage in health-promoting behaviors and reinforce unhealthy coping strategies, contributing to a pronounced social gradient in health behaviors(Duan et al., 2025; Hamasaki, 2025; Rezaei et al., 2025).

Beyond older adults' own socioeconomic resources, family socioeconomic circumstances—particularly the socioeconomic status of adult children—have increasingly been recognized as a potential determinant of older parents' health behaviors (Torres et al., 2022; Umberson et al., 2010; Xu & Luo, 2022a). In China, care for older adults remains predominantly family-based, and intergenerational ties are reinforced by norms of filial piety. Adult children's socioeconomic resources can function as extended family resources, potentially compensating for parents' constraints.

Existing studies often use children's education as a proxy for socioeconomic status and provide evidence that children's schooling can improve parents' smoking-related behaviors, including in quasi-experimental designs that isolate exogenous increases in schooling(Torres et al., 2022; Xu & Luo, 2022a). However, education captures only part of socioeconomic resources and may affect parental behaviors through indirect pathways.

Economic resources may provide a more direct and actionable indicator of the disposability and liquidity of family resources, yet empirical evidence on how adult children's economic status affects older parents' health behaviors remains limited. Moreover, the influence of children's economic resources on parents' behaviors is unlikely to operate solely through cash transfers. Intergenerational solidarity theory conceptualizes parent–child relations as multidimensional, encompassing functional support (help, money), associational ties (contact), affectual closeness (emotional closeness) and so on(Silverstein & Bengtson, 1991, 1994; M. Silverstein & Bengtson, 1997). These dimensions can shape health behaviors through several behavior-relevant mechanisms: (i) resource enablement, whereby financial support lowers the immediate cost of health inputs (e.g., exercise opportunities, healthcare-seeking behavior) (Wang & Gao, 2011; Wen & Zhang, 2023); (ii) time and care reallocation, whereby caregiving facilitates routine formation and reduces behavioral barriers(Cao, 2015; Rattay & Lippe, 2020; Sarason et al., 1990; Yamada & Teerawichitchainan, 2015); and (iii) social influence and support, whereby emotional closeness and frequent contact reinforce health norms and self-regulation(Chambers et al., 2001; Sun, 2010; Thomas et al., 2019). At the same time, children's economic improvement may reduce time available for in-person contact and caregiving, implying potential substitution between money and time. Recent evidence suggests a negative association between children's financial support and informal care provision, highlighting the need to model multiple support channels jointly(Chappell, 1991; Cong & Silverstein, 2008; Schulz et al., 2020).

Economic resources are heterogeneous. In this study, we distinguish adult children's income as a proxy for liquid resources that can be readily mobilized for immediate support and consumption-related health inputs, whereas adult children's housing value reflects fixed assets and longer-term wealth accumulation that may shape co-residence arrangements, caregiving availability, and the capacity to provide sustained support. This distinction is rarely incorporated into studies on intergenerational resources and older adults' behavioral outcomes.

Using nationally representative longitudinal data, this study examines how adult children's economic status is associated with older parents' key health behaviors and tests whether financial support, emotional support, and

caregiving support mediate these associations. This study builds upon these foundations with several key advancements: First, most intergenerational-resource studies focus on parents' health outcomes rather than health behaviors, which are more proximal and actionable targets for healthy-aging interventions. Second, few studies differentiate between liquid and fixed forms of children's economic resources when examining intergenerational influences. Third, the behavioral pathways linking children's economic status to parents' behaviors through multiple forms of intergenerational support remain insufficiently tested in a unified framework. By centering health behaviors, differentiating liquid versus fixed resources, and jointly modeling multidimensional intergenerational support, this study provides more policy-relevant evidence for designing family-based strategies to promote healthy aging in China.

Materials and Methods

Data source

This study uses data from the 2013–2020 waves of the China Health and Retirement Longitudinal Study (CHARLS), a nationally representative survey conducted by the National School of Development at Peking University in collaboration with the Institute of Social Science Survey. CHARLS employs multistage stratified probability sampling to collect detailed demographic, socioeconomic, health, and family relationship data for individuals aged 45 and above across China.

The baseline survey in 2011 covered 150 counties/districts and 450 villages/urban communities in 28 provinces, yielding 17,708 respondents from 10,257 households. Follow-up surveys are conducted biennially. For the present study, data from 2013, 2015, 2018 and 2020 were pooled to form a cross-sectional dataset. We restricted the sample to respondents aged 60 or above who had at least one surviving child.

Measures

Dependent Variables

In this study, older parents' key health behaviors were measured using smoke and exercise.

Smoke(smoke): It was measured using responses to the CHARLS survey question, "Do you smoke?" Responses were coded as: 0 =do not smoke, 1 = smoke.

Regular exercise(exercise): Exercise was measured using responses to the question, "", and responses were coded

as: 0 = no, 1 = yes.

Independent Variables

In this study, children's wealth was measured using two key indicators from Section C of the questionnaire, which gathers information about the respondents' children. The two selected indicators were children's average income level and children's average housing value, representing liquid and fixed assets, respectively.

Children's Average Income (lnchinco_m): This variable represented the total income of all children (and their spouses) from the previous year, averaged by the number of children. It served as a measure of the children's liquid assets. The income data was summed for all children and then divided by the number of children to calculate the average income level per child.

Children's Average Housing Value (lnhouse_m): This variable captured the average property value of all children's housing, representing their fixed assets. The total housing value was calculated for all children and then divided by the number of children to derive an average housing value.

Mediating Variables

Intergenerational support was considered the mediating variable, focusing on the support children provide to their older adults. This support was measured in three key areas: economic support, caregiving support, and emotional support. When respondents reported having multiple children, the measures of intergenerational support aggregated the total contributions from all children.

Economic support (eco): This variable was derived from responses to the CHARLS query, "How much economic support did you receive from your children in the past year?" It captured the total monetary value and goods received from children. For analytical purposes, this variable was categorized as follows: 0 = no support provided, 1 = support between 0 and 1,000 RMB, 2 = support between 1,000 and 10,000 RMB, and 3 = support exceeding 10,000 RMB.

Caregiving support (care): This binary variable originated from the CHARLS question, "Who provides care for you when you have difficulties with dressing, bathing, eating, getting up, using the toilet, doing housework, cooking, shopping, making phone calls, taking medication, or managing money?" A response indicating care provided by "children, daughter-in-law/son-in-law, grandchildren" was coded as 1, denoting that children were the caregivers; all other responses were coded as 0.

Emotional support (connect): Emotional support was measured by the frequency of face-to-face contact between parents and children, based on the CHARLS question, "How often do you see your children?" The responses were coded as follows: 0=less than once a month, 1=less than once a week, 2=more than once a week. A higher score indicated more frequent Emotional supports, implying a stronger level of emotional support from children.

Control Variables

A range of socio-demographic and lifestyle factors that may influence the health of the older adults were incorporated as control variables: age (age, continuous variable),gender (gender, 0 = female, 1 = male), marital status (marry, 0 = no spouse, 1 = has spouse, cohabitation is considered as having a spouse), education (edu, 1 = primary school and below, 2 = vocational school and below, 3 = college and above),residence (add, 0 = rural, 1 = urban), basic medical insurance (medi, 0 = not insured, 1 = insured), supplementary medical insurance (phi, 0 = not insured, 1 = insured), pension (pension, 0 = not receiving, 1 = receiving), chronic disease(chronic, 0=no,1=yes), Ability of daily living (ADL, 4 = no difficulty, 3 = some difficulty but can still complete the task, 2 = some difficulty and require assistance, and 1 = unable to complete the task). Detailed variable information is shown in Table 1.

Table 1 Descriptive Statistics for Variables

	Variable	Variable Code	Variable Definition	Sample Size	Mean	Standard Deviation
Dependent Variables	Regular Exercise	exercise	0=No, 1=Yes	78541	.239	.427
	Smoking	smoke	0=No, 1=Yes	62351	.152	.359
Main Explanatory Variables	Children's Annual Income	chinco_m	Continuous variable, log-transformed	43107	10.33	1
	Children's Property Value	house_m	Continuous variable, log-transformed	18202	2.966	2.116
	Economic Support	eco	0=No Support 1=(0,1000] 2=(1000,10000] 3=More than 10000	53807	1.372	.735
Mediating Variables	Emotional Support	connect	0=Less than once a month 1=Less than once a week 2=More than once a week	55197	1.026	.893
	Caregiving Support	care	0=Not Provided 1=Provided	78541	.22	.414

Control Variables	Age	age	Continuous variable	60665	60.502	10.553
	Gender	gender	0=Female, 1=Male	81218	.474	.499
	Residence	add	0=Rural, 1=Urban	77943	.351	.477
	Marital Status	marry	0=No Spouse, 1=Has Spouse	81193	.856	.351
	Education	edu	1=Primary School or Below, 2=Vocational School or Below, 3=College or Above	60164	1.373	.535
	Basic Medical Insurance	medi	0=Not Insured, 1=Insured	59915	.956	.206
	Supplemental Medical Insurance	Phi	0=Not Insured, 1=Insured	56706	.054	.225
	Pension Insurance	pension	0=Not Receiving, 1= Receiving	68421	.452	.498
	chronic disease	chronic	0=do not have chronic disease ,1= have one or more chronic disease	78541	.511	.5
	Ability of daily living	ADL	The variable is derived from the sum of scores on 11 basic activities of ADL, including dressing and bathing. It ranges from 11 to 44.	58801	41.905	4.772

Statistical analysis

The data used in this study, sourced from the CHARLS dataset and stored in dta format, were processed using Stata 15.1. To analyze the impact of children's economic status on the health behaviors of older adults, a Logit regression model was employed. Probit regression model was utilized to affirm the robustness of our findings.

The Impact of Children's Economic status on Older adults' Health

The total effect of children's economic status on the health behaviors of older individuals is assessed using two key variables to represent: smoke and exercise. Since these variables are non-continuous, ordered categorical variables, the Ordered Logit model is employed as the primary regression method. Additionally, Ordered Probit model regression

is used for robustness checks to compare and validate the model's stability.

The Ordered Probit model is specified as follows:

$$Old_{Health_{ij}} = \Phi\left(\beta_1 Child_{eco_i} + \beta_2 Old_{control_i} + \varepsilon_i\right) \quad (1)$$

Where Old_Health_{ij} is the dependent variable representing the health behavior of the i-th older adults individual, and j corresponds to the health behavior measurement scale； $Child_eco_i$ is the main explanatory variable representing the economic status of the i-th older adults individual's children. This study uses children's annual income to represent liquid assets and children's property value to represent fixed assets. $\beta_2 Old_control_i$ represents a series of control variables for the i-th older adults individual, including personal characteristics such as age, gender, marital status, education, health insurance participation, and other factors. ε_i is the random error term。$\Phi(\cdot)$ is the cumulative distribution function (CDF) of a standard normal distribution, representing the non-linear relationship between the independent variables and the probability of observing a particular health outcome。The specific form of the model is as follows:：

$$\Phi\left(Old_{Health_{ij}}{}^{*}\right) = \begin{cases} 1 & Old_{Health_{ij}} < q1 \\ 2 & q1 < Old_{Health_{ij}} < q1 \\ & \cdots\cdots \\ J & Old_{Health_{ij}} < qj-1 \end{cases} \quad (2)$$

The latent variable $Old_Health_{ij}{}^{*}$which cannot be directly observed, is expressed as follows:

$$Old_{Health_{ij}}{}^{*} = \beta_1 Child_{eco_i} + \beta_2 Old_{control_i} + \varepsilon_i \quad (3)$$

q is the parameter to be estimated, representing unknown threshold values, and it satisfies the following condition: q1<q2<….<qj-1，at the same time, we define $Old_Health_{ij}{}^{*} \le q1, Old_{Health_{ij}}{}^{*} = 1$； $q1 < Old_Health_{ij}{}^{*} \le q2, Old_{Health_{ij}}{}^{*} = 2$； …； $Old_Health_{ij}{}^{*} > qj-1, Old_{Health_{ij}}{}^{*} = J$。

This study also establishes an Probit model to test the robustness of the results. The specific form is as follows:

$$Old_{Health_{ij}} = \beta_0 + \beta_1 Child_{eco_i} + \beta_2 Old_{control_i} + \varepsilon_i \quad (4)$$

Test of Mediating Effects

This study examines the role of intergenerational support as a mediating variable in the relationship between children's economic status and the health behaviors of older adults. By utilizing a structural equation model (SEM),

we assess whether a mediating effect exists in this relationship. The model allows us to quantify both the direct effects of children's economic status and intergenerational support on the health behaviors of the older adults, as well as the indirect effects that arise through the mediating role of intergenerational support. This approach provides a comprehensive understanding of the factors influencing the health of older adults, capturing the combined impact of children's financial resources and the support they provide to their aging parents.

The mediation effect model is tested as follows:

$$Old_{Health_{ij}} = \alpha_1 + \beta_1 Child_{eco_i} + \gamma_1 Old_{control_i} + \varepsilon_i \quad (5)$$

$$Gap_{ik} = \alpha_2 + \beta_2 Child_{eco_i} + \gamma_2 Old_{control_i} + \theta_i \quad (6)$$

$$Old_{Health_{ij}} = \alpha_3 + \beta_3 Child_{eco_i} + \delta_3 Gap_{ik} + \gamma_3 Old_{control_i} + \mu_i \quad (7)$$

$$(i = 1,2,\dots,n; k = 1,2,3)$$

Where Gap_{ik} refers to the intergenerational support received by the i-th older adults individual, with k=1,2,3 representing economic support, emotional support, and caregiving support, respectively.

Based on this, two additional regression models are constructed to test the mediating effect of intergenerational support using the stepwise method(Baron & Kenny, 1986). Equation (6) uses children's total income and property value as independent variables, with the three types of intergenerational support as dependent variables, to test whether children's economic status significantly affects the intergenerational support received by the older adults. Equation (7) adds the three intergenerational support variables to Equation (5) to examine which type of support has a greater impact on the physical and mental health of the older adults.

Intergenerational support is identified as a key mechanism through which children's economic status influences older adults' health if the following three conditions are met:

In Equation (5), the coefficient β_1 (children's economic status on older health behaviors) is significant.

In Equation (6), the coefficient β_2 (children's economic status on intergenerational support) is significant.

In Equation (7), the coefficient β_3 (intergenerational support on older health behaviors) is significant, and the coefficient $\beta 3$ (children's economic status on older health behaviors) becomes insignificant (indicating a full mediation effect) or remains significant (indicating a partial mediation effect).

Decomposition of Mechanism

Substituting equation (6) into equation (7), we obtain：

$$Old_{Health_{ij}} = \alpha_3 + \delta_3\alpha_2 + (\beta_3 + \delta_3\beta_2)Child_{eco_i} + w_3 Old_{control_i} + \delta_3\theta_i + \mu_i \quad (8)$$

Where β_3 represents the direct effect of children's economic status on parental health behaviors, while $\delta_3\beta_2$ represents the indirect effect of children's economic status on parental health through the mediating variable.

Results

Basic results

Table 2 reports the total effects of children's liquid assets on older adults' health behaviors. Across logit and probit specifications, children's liquid assets are significantly associated with healthier behaviors among older parents. Specifically, in the logit models, children's liquid assets are negatively related to smoking (Model 1a:β =-0.0656, $p < 0.05$; Model 1a':OR = 0.9365, $p < 0.05$) and positively related to exercise (Model 1b:β =0.2747, $p < 0.001$; Model 1b':OR = 1.3162, $p < 0.001$). Table 3 presents analogous results for children's housing assets. The estimates consistently show that children's housing wealth is associated with a lower probability of smoking (Model 2a:β = -0.0909, $p < 0.001$; Model 2a':OR = 0.9131, $p < 0.001$) and a higher probability of exercising (Model 2b:β = 0.0501, $p < 0.05$; Model 2b':OR = 1.0514, $p < 0.05$) among older adults. Taken together, these findings suggest that both liquid and illiquid forms of children's assets are positively correlated with healthier behavioral choices among older parents.

Among covariates, older age predicts less smoking but more exercise, and males are far more likely to smoke than females. Having a spouse is protective against smoking, while higher education and urban residence are generally associated with healthier behavioral profiles, especially greater exercise. Basic medical insurance enrollment is associated with lower odds of exercise in both models and higher odds of smoking in Table 2, suggesting potential issues of adverse selection and moral hazard in the medical insurance system, where individuals with poorer health are more likely to enroll in basic medical insurance, leading to less emphasis on managing their health.

Table 2. Total Effects of Children's Liquid Assets on Older Adults' Health Behaviors

	Logit model (coefficient)		Logit model (OR)	
	Model 1a	Model 1b	Model 1a'	Model 1b'

	smoke	exercise	smoke	exercise
lnchinco_m	**-0.0656****	**0.2747*****	**0.9365****	**1.3162*****
	(0.0284)	**(0.0236)**	**(0.0266)**	**(0.0311)**
age	-0.0228***	0.0324***	0.9774***	1.0330***
	(0.0031)	(0.0023)	(0.0031)	(0.0024)
gender	3.3507***	-0.0471	28.5223***	0.9540
	(0.0745)	(0.0445)	(2.1250)	(0.0425)
marry	-0.4945***	-0.0013	0.6099***	0.9987
	(0.0800)	(0.0544)	(0.0488)	(0.0543)
edu	-0.1833**	0.4763***	0.8325**	1.6101***
	(0.0585)	(0.0430)	(0.0487)	(0.0692)
add	-0.1598**	0.4404***	0.8523**	1.5533***
	(0.0690)	(0.0466)	(0.0588)	(0.0723)
pension	-0.0980	-0.5334***	0.9066	0.5866***
	(0.0629)	(0.0461)	(0.0571)	(0.0271)
medi	1.3506**	-0.9147***	3.8598**	0.4006***
	(0.4988)	(0.1864)	(1.9251)	(0.0747)
phi	-0.2210	0.3800***	0.8017	1.4623***
	(0.1410)	(0.0842)	(0.1131)	(0.1232)
chronic	0.1516**	-0.0989**	1.1637**	0.9058**
	(0.0617)	(0.0425)	(0.0718)	(0.0385)
adl	0.0267***	0.0167***	1.0270***	1.0169***
	(0.0072)	(0.0050)	(0.0074)	(0.0051)
_cons	-3.2553***	-6.6349***	-	-
	(0.6901)	(0.4154)	-	-
N	12760	16110	12760	16110

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Table 3. Total Effects of Children's Housing Assets on Older Adults' Health Behavior

	Logit model (coefficient)		Logit model (OR)	
	Model 2a	Model 2b	Model 2a'	Model 2b'
	smoke	exercise	smoke	exercise
lnhouse_m	**-0.0909*****	**0.0501*****	**0.9131*****	**1.0514*****
	(0.0220)	**(0.0123)**	**(0.0201)**	**(0.0129)**
age	-0.0283***	0.0212***	0.9721***	1.0215***
	(0.0048)	(0.0031)	(0.0047)	(0.0032)

gender	3.3288***	-0.0142	27.9052***	0.9859
	(0.1070)	(0.0557)	(2.9860)	(0.0550)
marry	-0.4593***	0.0345	0.6317***	1.0351
	(0.1068)	(0.0668)	(0.0675)	(0.0691)
edu	-0.0853	0.1021*	0.9183	1.1075*
	(0.0877)	(0.0603)	(0.0805)	(0.0668)
add	-0.0823	0.5339***	0.9210	1.7056***
	(0.1099)	(0.0651)	(0.1012)	(0.1110)
pension	-0.4128**	0.6587***	0.6618**	1.9322***
	(0.1350)	(0.0787)	(0.0894)	(0.1521)
medi	0.0000	-0.4908**	1.0000	0.6122**
	(.)	(0.2412)	(.)	(0.1476)
phi	-0.0100	0.2378**	0.9901	1.2684**
	(0.2289)	(0.1205)	(0.2267)	(0.1528)
chronic	0.2694**	-0.0999*	1.3092**	0.9049*
	(0.0890)	(0.0542)	(0.1165)	(0.0491)
adl	0.0210**	0.0223***	1.0212**	1.0226***
	(0.0096)	(0.0061)	(0.0098)	(0.0062)
_cons	-1.9274***	-3.3704***	-	-
	(0.5618)	(0.4676)	-	-
N	6163	7996	6163	7996

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Robustness Checks

To assess whether the baseline associations are driven by sample composition, unobserved time-invariant heterogeneity, or model-specific assumptions, we conducted a series of robustness checks using (i) longitudinal panel specifications based on harmonized CHARLS 2013–2020 data and (ii) probit models as an alternative link function.

Panel Data Regression Analysis (2013-2020)

This study further consolidates the 2013-2020 CHARLS data to create a panel data sample. From this, older adults aged 60 and above with surviving children were selected for the panel data regression analysis as a robustness check. After excluding irrelevant and missing variables, the final effective sample size for analysis is 2,960. The regression results are presented in Table 4 and Table 5, showing that the signs and significance levels of the regression coefficients

are largely consistent with those of the pooled cross-sectional model, confirming the robustness of the results.

Table 4. Total Effects of Children's Liquid Assets on Older Adults' Health Behavior using Panel data

	Logit model (coefficient)		Logit model (OR)	
	Model 3a smoke	Model 3b exercise	Model 3a' smoke	Model 3b' exercise
lnchinco_m	**-0.5763****	**0.1699****	**0.5620****	**1.1852****
	(0.2709)	**(0.0556)**	**(0.1522)**	**(0.0659)**
age	-0.0470	0.0218**	0.9541	1.0221**
	(0.0402)	(0.0078)	(0.0383)	(0.0079)
gender	9.9344***	0.0362	2.1e+04***	1.0368
	(1.2514)	(0.0968)	(2.6e+04)	(0.1004)
marry	-1.3126**	-0.0337	0.2691**	0.9669
	(0.6131)	(0.1111)	(0.1650)	(0.1075)
edu	-0.7868	0.1656	0.4553	1.1801
	(0.5732)	(0.1070)	(0.2610)	(0.1263)
add	-0.2640	0.6829***	0.7679	1.9797***
	(0.6494)	(0.1278)	(0.4987)	(0.2530)
pension	-0.8198	0.6493***	0.4405	1.9143***
	(0.7874)	(0.1458)	(0.3469)	(0.2791)
medi	0.0000	-0.3577	1.0000	0.6993
	(.)	(0.3512)	(.)	(0.2456)
phi	-1.8501	0.2941	0.1572	1.3419
	(1.4034)	(0.2161)	(0.2206)	(0.2900)
chronic	1.1859**	0.0270	3.2738**	1.0274
	(0.5213)	(0.0922)	(1.7065)	(0.0948)
adl	0.1290*	-0.0014	1.1377*	0.9986
	(0.0718)	(0.0126)	(0.0817)	(0.0126)
_cons	-6.0813	-4.1301***		
	(5.1281)	(1.0816)		
lnsig2u	3.3049***	-0.5152	27.2466***	0.5974
	(0.2553)	(0.6675)	(6.9547)	(0.3987)
N	1963	2960	1963	2960

Table 5. Total Effects of Children's Housing Assets on Older Adults' Health Behavior using Panel data

	Logit model (coefficient)	Logit model (OR)

	Model 4a smoke	Model 4b exercise	Model 4a' smoke	Model 4b' exercise
lnhouse_m	**-0.3304****	**0.0537****	**0.7186****	**1.0551****
	(0.1362)	**(0.0211)**	**(0.0979)**	**(0.0222)**
age	-0.0387	0.0208**	0.9620	1.0210**
	(0.0367)	(0.0077)	(0.0353)	(0.0079)
gender	8.7508***	0.0352	6.3e+03***	1.0359
	(1.6447)	(0.0961)	(1.0e+04)	(0.0996)
marry	-1.1492*	-0.0229	0.3169*	0.9774
	(0.6169)	(0.1101)	(0.1955)	(0.1076)
edu	-0.7474	0.1866*	0.4736	1.2052*
	(0.5235)	(0.1061)	(0.2480)	(0.1279)
add	-0.2067	0.7060***	0.8132	2.0259***
	(0.5875)	(0.1271)	(0.4778)	(0.2575)
pension	-0.6912	0.6588***	0.5010	1.9326***
	(0.7191)	(0.1450)	(0.3603)	(0.2802)
medi	0.0000	-0.4157	1.0000	0.6599
	(.)	(0.3481)	(.)	(0.2297)
phi	-1.6811	0.2909	0.1862	1.3377
	(1.2752)	(0.2145)	(0.2374)	(0.2870)
chronic	1.1038**	0.0314	3.0156**	1.0319
	(0.5368)	(0.0917)	(1.6187)	(0.0947)
adl	0.1261*	0.0016	1.1344*	1.0016
	(0.0692)	(0.0124)	(0.0785)	(0.0124)
_cons	-10.4716**	-2.5485**		
	(4.5457)	(0.9221)		
lnsig2u	3.0401***	-0.5835	20.9070***	0.5579
	(0.4123)	(0.7001)	(8.6196)	(0.3906)
N	1963	2960	1963	2960

Substitution of Estimate model

Tables 6–7 report probit estimates using both pooled cross-sections and the panel sample. Across specifications, probit models yield the same qualitative conclusions as logit models: higher children's liquid assets and housing assets are associated with lower smoking propensity and higher exercise propensity among older parents. The stability of results across logit and probit models indicates that the baseline conclusions are not sensitive to the choice of functional form for the binary outcomes.

Table 6. Total Effects of Children's Liquid Assets on Older Adults' Health Behavior using Probit model

	Probit model		Probit model	
	Pooled Cross-sections Data		Panel Data	
	Model 1a''	Model 1b''	Model 3a''	Model 3b''
	smoke	exercise	smoke	exercise
lnchinco_m	**-0.0365****	**0.1538*****	**-0.3413****	**0.1013****
	(0.0158)	**(0.0132)**	**(0.1635)**	**(0.0327)**
age	-0.0120***	0.0186***	-0.0279	0.0131**
	(0.0018)	(0.0013)	(0.0243)	(0.0046)
gender	1.8047***	-0.0270	6.0466***	0.0210
	(0.0368)	(0.0253)	(0.5543)	(0.0577)
marry	-0.2883***	-0.0004	-0.7627**	-0.0224
	(0.0437)	(0.0308)	(0.3663)	(0.0661)
edu	-0.1018**	0.2804***	-0.4891	0.1005
	(0.0339)	(0.0249)	(0.3538)	(0.0640)
add	-0.0829**	0.2541***	-0.1525	0.4109***
	(0.0386)	(0.0269)	(0.3945)	(0.0757)
pension	-0.0563	-0.3171***	-0.5152	0.3930***
	(0.0362)	(0.0266)	(0.4906)	(0.0870)
medi	0.8175**	-0.5559***	0.0000	-0.2138
	(0.2645)	(0.1118)	(.)	(0.2092)
phi	-0.0893	0.2179***	-1.1464	0.1749
	(0.0806)	(0.0496)	(0.8710)	(0.1302)
chronic	0.1054**	-0.0562**	0.7094**	0.0171
	(0.0345)	(0.0243)	(0.3240)	(0.0549)
adl	0.0144***	0.0085**	0.0782*	-0.0012
	(0.0041)	(0.0028)	(0.0439)	(0.0074)
_cons	-1.8682***	-3.7363***	-3.8498	-2.4643***
	(0.3738)	(0.2375)	(3.0901)	(0.6362)
N	12760	16110	1963	2960

Table 7. Total Effects of Children's Housing Assets on Older Adults' Health Behavior using Probit model

	Probit model		Probit model	
	Pooled Cross-sections Data		Panel Data	
	Model 2a''	Model 2b''	Model 4a''	Model 4b''
	smoke	exercise	smoke	exercise
lnhouse_m	**-0.0529*****	**0.0295*****	**-0.2228****	**0.0320****
	(0.0120)	**(0.0073)**	**(0.0835)**	**(0.0126)**

age	-0.0140***	0.0126***	-0.0257	0.0125**
	(0.0027)	(0.0018)	(0.0242)	(0.0046)
gender	1.7955***	-0.0077	5.9875***	0.0201
	(0.0526)	(0.0329)	(0.5898)	(0.0574)
marry	-0.2654***	0.0201	-0.7616**	-0.0158
	(0.0586)	(0.0391)	(0.3663)	(0.0657)
edu	-0.0356	0.0633*	-0.5069	0.1134*
	(0.0514)	(0.0360)	(0.3518)	(0.0636)
add	-0.0316	0.3199***	-0.1368	0.4258***
	(0.0617)	(0.0394)	(0.3917)	(0.0753)
pension	-0.2678***	0.4045***	-0.4691	0.3997***
	(0.0786)	(0.0486)	(0.4873)	(0.0867)
medi	0.0000	-0.3014**	0.0000	-0.2505
	(.)	(0.1441)	(.)	(0.2080)
phi	-0.0087	0.1383*	-1.1541	0.1730
	(0.1319)	(0.0742)	(0.8622)	(0.1296)
chronic	0.1698***	-0.0587*	0.7279**	0.0196
	(0.0498)	(0.0321)	(0.3251)	(0.0548)
adl	0.0114**	0.0120***	0.0849*	0.0007
	(0.0055)	(0.0035)	(0.0444)	(0.0073)
_cons	-1.1525***	-1.9597***	-7.1666**	-1.5205**
	(0.3163)	(0.2741)	(2.8504)	(0.5468)
N	6163	7996	1963	2960

Path analysis

Based on these findings, the study further explored the mediating role of intergenerational support in the relationship between children's economic status and the health behaviors of the older adults, as well as analyzed the differential effects of various types of intergenerational support.

Mediation Analysis: Children's Liquid Assets

Tables 8 and 9 examine whether and how intergenerational support mediates the association between children's liquid assets and older adults' health behaviors. We first estimate ordered logit models with three dimensions of intergenerational support as outcomes (Table 9), and then introduce these mediators into the health behavior models (Table 8) to assess changes in the coefficient of children's liquid assets and the behavioral relevance of each support dimension.

Children's liquid assets are strongly associated with the composition of intergenerational support. Higher liquid

assets significantly increase economic support (Model 6a:β = 0.3859, p < 0.001), while being associated with less daily care (Model 6b:β = −0.2278, p < 0.001) and reduced emotional contact (Model 6c:β = −0.1103, p < 0.001). These estimates suggest that greater economic resources are linked to more financial transfers but lower time-based involvement.

In the baseline model, children's liquid assets are negatively associated with smoking (Model 1a: β = −0.0656, p < 0.05). After controlling for the three intergenerational support variables, the coefficient on children's liquid assets remains negative but is attenuated (Model 5a: β = −0.0517, p < 0.10), indicating partial mediation. Among the mediators, economic support is negatively associated with smoking (Model 5a:β = −0.0703, p < 0.10), whereas daily care and emotional contact are not statistically related to smoking. Combined with Table 9, the results are consistent with an indirect pathway in which higher children's liquid assets increase economic support, which is in turn associated with lower smoking probability among older adults. In contrast, there is no empirical support for mediation through daily care or emotional contact for smoking in this specification.

For physical exercise, children's liquid assets remain positively associated with exercise after adding intergenerational support (Model 1b:β = 0.2747, p < 0.001; Model 5b: β = 0.2301, p < 0.001), again suggesting partial mediation. All three intergenerational support dimensions are statistically relevant for exercise: Economic support and emotional contact are positively related to exercise (Model 5b:β = 0.0985, p < 0.05; Model 5b:β = 0.0487, p < 0.05), whereas daily care is negatively related (Model 5b:β = −0.5273, p < 0.001). Combined with Table 9, the indirect pathways operate mainly through increased economic support and reduced daily care, while reduced emotional contact represents an offsetting channel.

Overall, the mediation results indicate that children's liquid assets are associated with healthier behaviors among older parents through multiple support channels, with economic support and reduced care dependency playing a consistently health-promoting role, while reduced emotional contact may weaken behavioral gains in physical activity.

Table 8. Mediating Effects of Intergenerational Support in the Relationship Between Children's Liquid Assets and Older Adults' Health Behaviors

	Model 1a smoke	Model 5a smoke	Model 1b exercise	Model 5b exercise
lnchinco_m	**-0.0656****	**-0.0517***	**0.2747*****	**0.2301*****
	(0.0284)	**(0.0306)**	**(0.0236)**	**(0.0240)**
Eco		**-0.0703***		**0.0985****
		(0.0414)		**(0.0308)**

Care		-0.0026		**-0.5273*****
		(0.0785)		**(0.0572)**
Connect		-0.0235		**0.0487****
		(0.0336)		**(0.0237)**
Age	-0.0228***	-0.0234***	0.0324***	0.0304***
	(0.0031)	(0.0033)	(0.0023)	(0.0024)
Gender	3.3507***	3.3584***	-0.0471	-0.0636
	(0.0745)	(0.0778)	(0.0445)	(0.0451)
Marry	-0.4945***	-0.5396***	-0.0013	0.0089
	(0.0800)	(0.0817)	(0.0544)	(0.0550)
Edu	-0.1833**	-0.2165***	0.4763***	0.3850***
	(0.0585)	(0.0620)	(0.0430)	(0.0442)
Add	-0.1598**	-0.1634**	0.4404***	0.4385***
	(0.0690)	(0.0745)	(0.0466)	(0.0487)
Pension	-0.0980	-0.1557**	-0.5334***	-0.2668***
	(0.0629)	(0.0742)	(0.0461)	(0.0516)
Medi	1.3506**	1.9396**	-0.9147***	-0.7551***
	(0.4988)	(0.6958)	(0.1864)	(0.1883)
Phi	-0.2210	-0.1596	0.3800***	0.3621***
	(0.1410)	(0.1481)	(0.0842)	(0.0873)
Chronic	0.1516**	0.1598**	-0.0989**	-0.0878**
	(0.0617)	(0.0649)	(0.0425)	(0.0431)
Adl	0.0267***	0.0268***	0.0167***	0.0005
	(0.0072)	(0.0077)	(0.0050)	(0.0051)
_cons	-3.2553***	-3.7762***	-6.6349***	-5.4798***
	(0.6901)	(0.8679)	(0.4154)	(0.4213)
N	12760	11672	16110	14750

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Table 9. Effects of Children's Liquid Assets on Intergenerational Support (Ordered Logit Models)

	Model 6a eco	Model 6b care	Model 6c connect
lnchinco_m	**0.3859*****	**-0.2278*****	**-0.1103*****
	(0.0174)	**(0.0200)**	**(0.0162)**
Age	-0.0051**	0.0016	0.0309***
	(0.0018)	(0.0022)	(0.0017)
Gender	-0.1801***	-0.3306***	-0.1753***

	(0.0346)	(0.0420)	(0.0324)
Marry	0.0714*	-0.5516***	-0.0034
	(0.0391)	(0.0482)	(0.0395)
Edu	0.1224**	-0.4760***	0.0744**
	(0.0397)	(0.0455)	(0.0328)
Add	-0.0195	-0.0759	0.3777***
	(0.0401)	(0.0488)	(0.0359)
Adl	0.0000	-0.1354***	0.0072*
	(0.0035)	(0.0059)	(0.0037)
Chronic	0.0620*	0.1999***	0.0364
	(0.0332)	(0.0412)	(0.0319)
Pension	-0.1429***	1.6814***	0.1516***
	(0.0384)	(0.0478)	(0.0348)
Medi	-0.3542**	1.3062***	-0.0665
	(0.1713)	(0.2433)	(0.1577)
Phi	0.1790**	0.1584*	0.2016**
	(0.0750)	(0.0859)	(0.0672)
cut1	1.4576***	-6.0837***	0.7608**
	(0.3125)	(0.4318)	(0.3012)
cut2	3.4742***	-	1.5857***
	(0.3135)	-	(0.3012)
N	14813	16110	16035

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

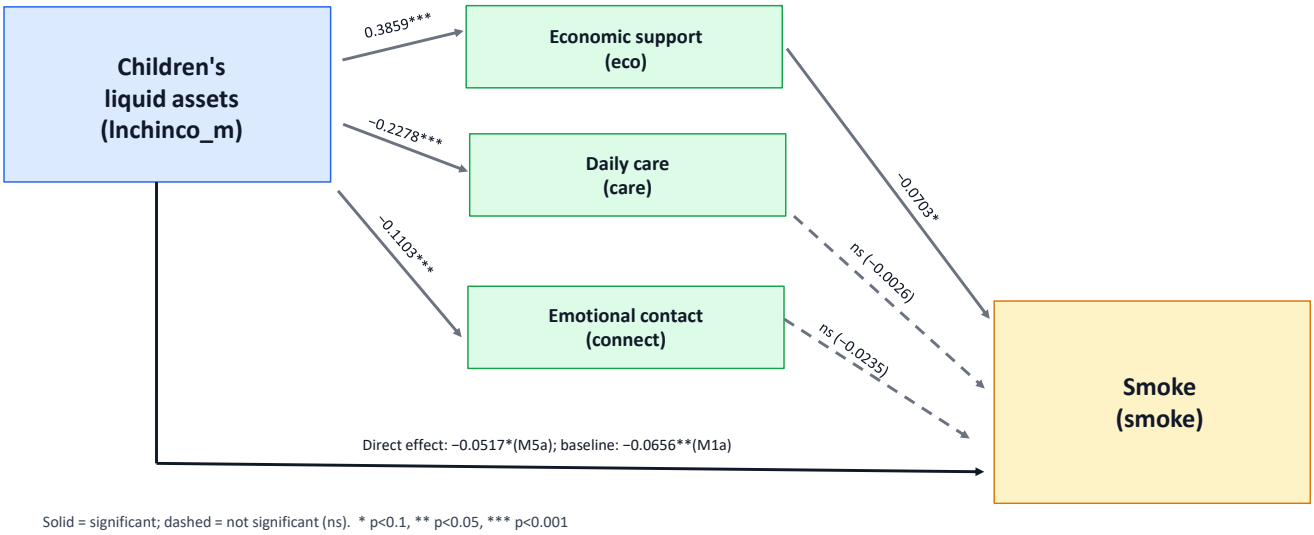


Figure1 Mediating Effects of Intergenerational Support in the Relationship Between Children's Liquid Assets and

Older Adults' Smoking

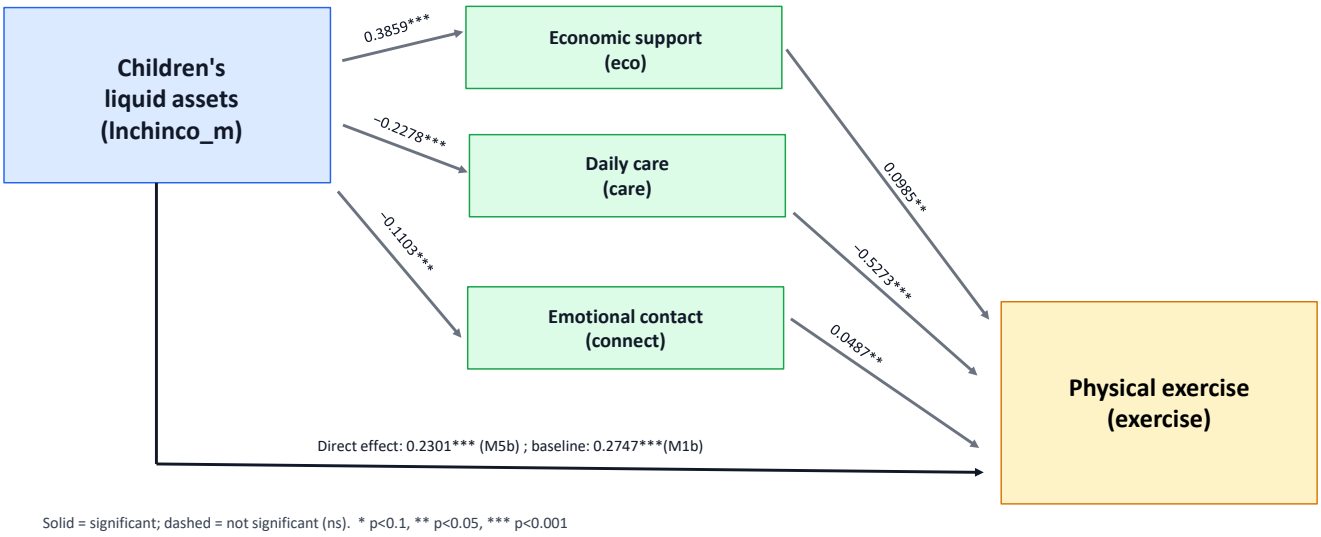


Figure2 Mediating Effects of Intergenerational Support in the Relationship Between Children's Liquid Assets and Older Adults' Exercising

Mediation Analysis: Children's Housing Assets

Tables 10 and 11 replicate the mediation analysis using children's housing assets. The results indicate that children's housing assets primarily affect older adults' health behaviors through financial channels, with economic support being the only significant mediator in the relationship between housing assets and physical exercise. Specifically, higher housing assets increase economic transfers to parents (Model 8a: $\beta = 0.0957$, $p < 0.001$), which in turn significantly promote exercise participation (Model 7b: $\beta = 0.0911$, $p < 0.05$).

Neither emotional contact nor daily care support exhibits a statistically significant mediating effect, suggesting that housing wealth primarily affects older adults' behaviors through financial channels rather than relational mechanisms.

Table 10. Mediating Effects of Intergenerational Support in the Relationship Between Children's Housing Assets and Older Adults' Health Behaviors

	Model 2a smoke	Model 7a smoke	Model 2b exercise	Model 7b exercise
lnhouse_m	**-0.0909***** **(0.0220)**	**-0.0871***** **(0.0222)**	**0.0501***** **(0.0123)**	**0.0487***** **(0.0125)**
Eco		-0.0605 (0.0589)		**0.0911**** **(0.0402)**
Care		0.1733 (0.1402)		-0.0126 (0.0897)

Connect		-0.0127		-0.0031
		(0.0461)		(0.0305)
Age	-0.0283***	-0.0297***	0.0212***	0.0210***
	(0.0048)	(0.0049)	(0.0031)	(0.0032)
Gender	3.3288***	3.3465***	-0.0142	-0.0073
	(0.1070)	(0.1087)	(0.0557)	(0.0563)
Marry	-0.4593***	-0.4281***	0.0345	0.0247
	(0.1068)	(0.1077)	(0.0668)	(0.0678)
Edu	-0.0853	-0.0864	0.1021*	0.0917
	(0.0877)	(0.0881)	(0.0603)	(0.0608)
Add	-0.0823	-0.0695	0.5339***	0.5396***
	(0.1099)	(0.1113)	(0.0651)	(0.0660)
Pension	-0.4128**	-0.4035**	0.6587***	0.6817***
	(0.1350)	(0.1375)	(0.0787)	(0.0800)
Medi	0.0000	0.0000	-0.4908**	-0.5037**
	(.)	(.)	(0.2412)	(0.2419)
Phi	-0.0100	0.0208	0.2378**	0.2047*
	(0.2289)	(0.2309)	(0.1205)	(0.1219)
Chronic	0.2694**	0.2507**	-0.0999*	-0.0954*
	(0.0890)	(0.0893)	(0.0542)	(0.0546)
Adl	0.0210**	0.0268**	0.0223***	0.0204**
	(0.0096)	(0.0107)	(0.0061)	(0.0068)
_cons	-1.9274***	-2.0340***	-3.3704***	-3.3622***
	(0.5618)	(0.5929)	(0.4676)	(0.4885)
N	6163	6106	7996	7918

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Table 11. Effects of Children's Housing Assets on Intergenerational Support

	Model 8a eco	Model 8b care	Model 8c connect
lnhouse_m	**0.0957*** **	**-0.0397** **	**0.0018**
	(0.0116)	**(0.0184)**	**(0.0102)**
Age	-0.0024	0.0440***	0.0287***
	(0.0026)	(0.0043)	(0.0025)
Gender	-0.1735***	-0.6591***	-0.1670***
	(0.0463)	(0.0815)	(0.0452)
Marry	0.1761***	-0.8984***	-0.0236

	(0.0525)	(0.0802)	(0.0527)
Edu	0.1604**	-0.3259**	0.0093
	(0.0580)	(0.1056)	(0.0481)
Add	0.1086*	-0.1807*	0.4363***
	(0.0624)	(0.1041)	(0.0554)
Chronic	0.0488	0.1954**	0.0668
	(0.0450)	(0.0775)	(0.0446)
Adl	0.0150***	-0.2236***	0.0007
	(0.0044)	(0.0104)	(0.0046)
Pension	-0.0024	-0.0822	0.1853**
	(0.0846)	(0.1380)	(0.0692)
Medi	-0.4409*	0.6290	-0.0247
	(0.2305)	(0.4089)	(0.1952)
Phi	-0.0418	-0.1810	0.0784
	(0.1124)	(0.1847)	(0.1038)
cut1	-1.5977***	-5.1054***	1.4268***
	(0.3825)	(0.7182)	(0.3641)
cut2	0.6223		2.3270***
	(0.3807)		(0.3647)
N	7937	7996	7943

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

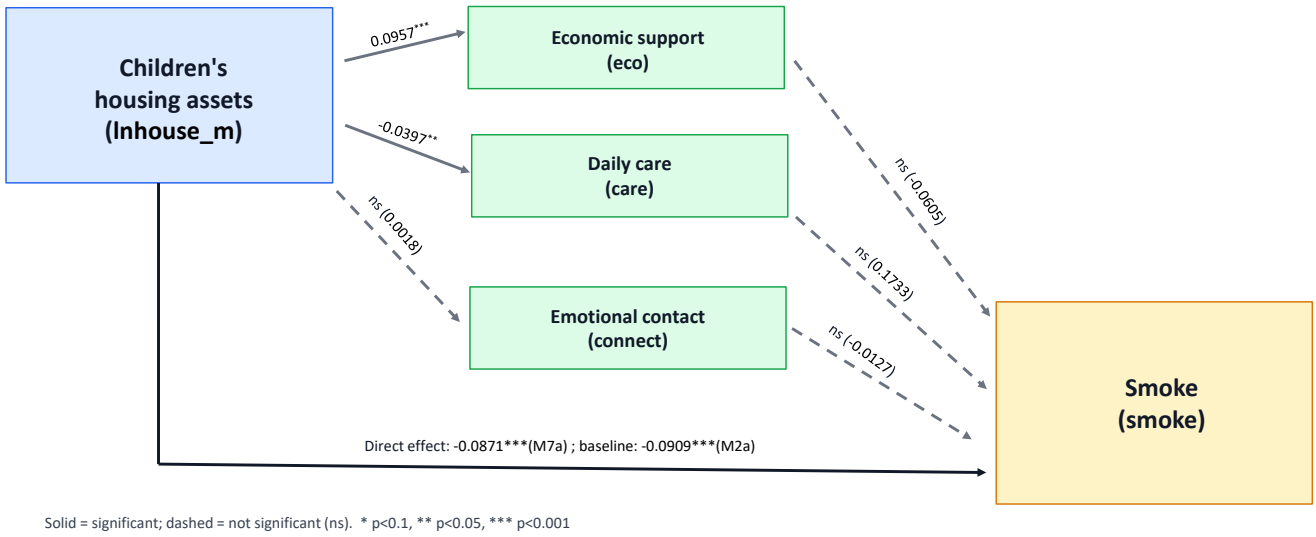


Figure3 Mediating Effects of Intergenerational Support in the Relationship Between Children's Housing Assets and Older Adults' Smoking

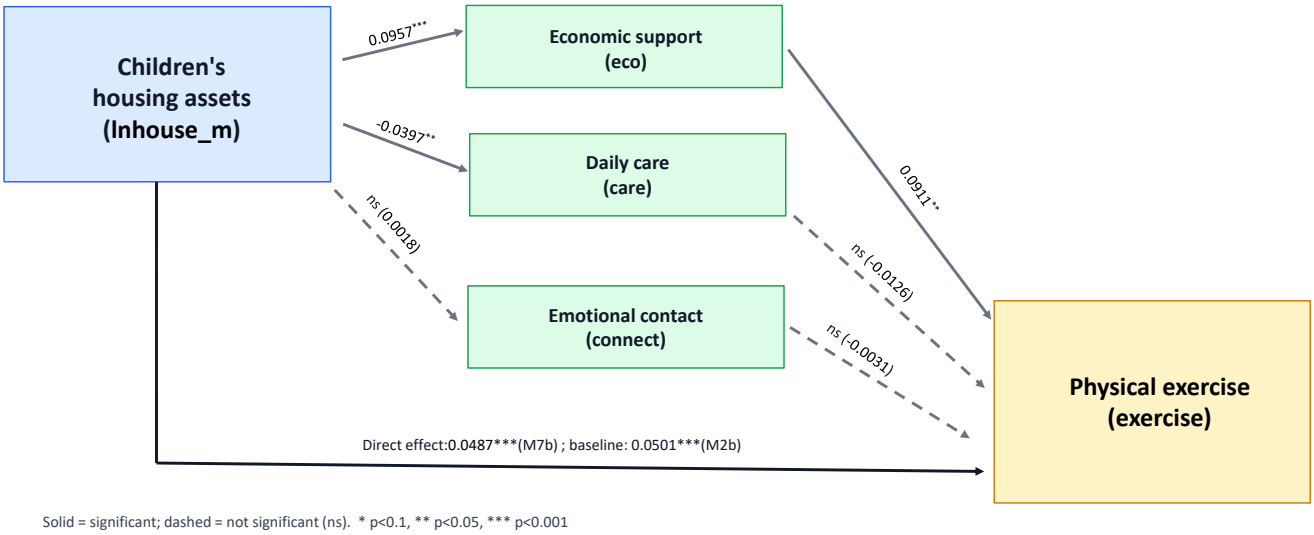


Figure4 Mediating Effects of Intergenerational Support in the Relationship Between Children's Housing Assets and Older Adults' Exercising

Discussion

This study provides evidence that adult children's economic status is systematically associated with older parents' health behaviors in China, with richer children linked to lower smoking propensity and higher exercise participation among older adults. These findings contribute to the growing literature on intergenerational spillovers by shifting the focus from parental health outcomes(Payne et al., 2019; Zhang & Silverstein, 2023) to behavioral risk factors, which are more proximal and policy-actionable targets in healthy aging strategies.

Importantly, we move beyond a single proxy of offspring socioeconomic position by distinguishing liquid assets from illiquid assets, and we provide behavioral insight. Liquid resources can more readily relax such constraints and enable sustained participation. The stronger association between children's liquid assets and parental exercise is consistent with the idea that physical activity often entails recurring direct and indirect costs—transportation, equipment, access to age-friendly facilities, and opportunity costs of time(Chen et al., 2025; Lindström et al., 2001; Malkowski et al., 2025; Yarmohammadi et al., 2019). While in a context where homeownership carries strong symbolic and practical value, higher housing wealth can signal stability, security, and future support capacity, potentially reducing stress-related coping behaviors such as smoking(Huang et al., 2021; Seo et al., 2022).

A central contribution of this study lies in explicitly conceptualizing intergenerational support as a multidimensional set of transfers encompassing financial support, caregiving support, and emotional contact. This

framework emphasizes that support is not a single construct and its components may vary independently rather than move in tandem(Chappell, 1991; Payne et al., 2019; Merril Silverstein & Bengtson, 1997; Sun, 2010; Wen & Zhang, 2023), and then we demonstrate that children's resources are accompanied by a reallocation of support across monetary and time-based domains, consistent with prior intergenerational relations research(Cong & Silverstein, 2008, 2011).

Among the support dimensions examined, financial transfers represent the most consistent enabling pathway. Children with greater liquid assets provide more economic support to parents(Logan & Bian, 2003), and such support is associated with healthier behavioral profiles, including a lower likelihood of smoking and a higher probability of exercise participation(Guo et al., 2025; Mohd Fadzil et al., 2021; Ong et al., 2018; Xu & Luo, 2022b).This finding indicates that financial support may reduce barriers to adopting and maintaining healthier behaviors in later life.

At the same time, higher liquid assets are associated with reduced caregiving and emotional contact, suggesting a trade-off between financial transfers and time-intensive involvement, potentially shaped by work intensity, geographic mobility, or time constraints (Cong & Silverstein, 2008, 2011). Notably, the behavioral relevance of these components differs by outcome. Caregiving is negatively related to exercise even after accounting for parents' baseline chronic conditions and activities of daily living, which is consistent with the interpretation that intensive care reflects greater dependency and may substitute for independent physical activity. Emotional contact, in contrast, appears supportive for exercise, plausibly by buffering loneliness and sustaining motivation (Kobayashi & Steptoe, 2018), implying that declines in contact may partially offset the behavioral benefits of children's material resources (MacKinnon et al., 2000; Preacher, 2008).

For children's housing wealth, mediation appears more concentrated in the financial channel. Housing assets are associated with increased economic transfers, which in turn promote exercise, whereas daily care and emotional contact contribute limited mediating effects. This suggests that illiquid wealth may influence parental behaviors primarily when converted into actionable financial support rather than through relational engagement. Given that much of the existing literature focuses on offspring income or social status, distinguishing housing wealth as a separate dimension of children's economic position adds new evidence to the intergenerational spillover literature.

Building on the mediation decomposition, we find that although distinct forms of intergenerational support operate through different pathways in the association between adult children's economic status and older parents' health behaviors, the overall relationship is clear: better economic standing among children is associated with healthier

behavioral profiles among older parents. This pattern underscores that what matters is not only the type of support per se, but also the availability and mobilizability of support—namely, a family's capacity to access and convert resources into actionable assistance when needed. Such capacity may be conceptualized as a latent health-promoting resource that facilitates healthier behavior in later life.

Finally, this study has limitations that warrant attention. First, the analysis focuses on children-to-parent transfers and does not account for reverse transfers, which may alter net resource constraints within families. Second, future work could also examine heterogeneity by gender, age group, and urban–rural residence, as these factors may condition both intergenerational support patterns and the feasibility of behavior change. Addressing these issues would further refine causal interpretation and strengthen policy relevance.

Conclusion

This study provides evidence that adult children's economic resources are systematically associated with older parents' health behaviors in China. Higher levels of offspring liquid assets and housing wealth are linked to a lower likelihood of smoking and a higher probability of engaging in physical exercise. Mediation analyses further indicate that intergenerational financial transfers constitute the most consistent enabling pathway, whereas caregiving and emotional contact may not increase in parallel, implying a reallocation of support from time-based involvement toward monetary transfers as children's resources improve. Taken together, these findings underscore the importance of incorporating multidimensional intergenerational support into healthy aging research and inform policies aimed at facilitating sustained behavior change in later life.

Acknowledgements

The authors would like to thank *China Health and Retirement Longitudinal Survey (CHARLS)* for providing the data.

Author's contributions

Wang and Hu had full access to all of the data in this study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Wang, and Hu led the conception and design of the study. Peng, You and Zhu did the statistical analysis and interpreted the data. Hu and Peng drafted the manuscript, Wang critically revised the manuscript. All authors read and approved the final manuscript.

Fundings

This study was supported by the National Social Science Fund of China's Youth Project (Grant Number: 23CGL070).

Data availability

All datasets relevant to this study are publicly available. *China Health and Retirement Longitudinal Survey (CHARLS)* data are available from https://charls.pku.edu.cn/en/

Declarations

Ethical Approval and Consent to participate

The data used in this paper comes from *CHARLS*, which is not a clinical trial and does not have registration details, nor does it require ethical approval.

Consent for publication

Not applicable.

Conflict of interest

The authors have no conflicts of interest relevant to this article to disclose.

Reference

Atallah, N., Adjibade, M., Lelong, H., Hercberg, S., Galan, P., Assmann, K., & Kesse-Guyot, E. (2018). How Healthy Lifestyle Factors at Midlife Relate to Healthy Aging. *Nutrients*, *10*. https://doi.org/10.3390/nu10070854

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social

psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. https://doi.org/10.1037/0022-3514.51.6.1173

Cao, T. S. (2015). *Study on the influence of family structure on the health of middle-aged and elderly people* [PhD Dissertation]. Hunan University.

Chambers, M., Ryan, A. A., & Connor, S. L. (2001). Exploring the emotional support needs and coping strategies of family carers. *Journal of Psychiatric and Mental Health Nursing*, *8*(2), 99–106. https://doi.org/10.1046/j.1365-2850.2001.00360.x

Chappell, N. (1991). The effects of intergenerational transfers on the psychological well-being of elderly parents in rural China. *Journal of Aging and Health*, *3*(3), 291–311.

Chen, Yang, Shah, S., Chen, Yuquan, Owen, A. J., Ekegren, C. L., Ilic, D., & Gasevic, D. (2025). Barriers to and facilitators of physical activity among community-dwelling older adults: A systematic review. *BMJ Open*, *15*(8). https://doi.org/10.1136/bmjopen-2024-095260

Cong, Z., & Silverstein, M. (2008). Intergenerational Time-for-Money Exchanges in Rural China: Does Reciprocity Reduce Depressive Symptoms of Older Grandparents? *Research in Human Development*, *5*(1), 6–25. https://doi.org/10.1080/15427600701853749

Cong, Z., & Silverstein, M. (2011). Intergenerational Exchange Between Parents and Migrant and Nonmigrant Sons in Rural China. *Journal of Marriage and Family*, *73*(1), 93–104. JSTOR.

Duan, D., Sun, W., Hao, J., Bi, S., Zhang, S., Zou, L., Yu, Z., Dong, S., & Li, J. (2025). Mediating role of health behaviors in income-related health inequalities: Evidence from socioeconomically deprived rural areas of China. *American Journal of Preventive Medicine*, 107658.

https://doi.org/10.1016/j.amepre.2025.107658

Fang, F., Liu, Z.-Y., Lyu, J.-Q., Miao, M.-Y., Gu, J.-M., Qian, Y.-W., Shao, X.-P., Wan, Z.-X., Qin, L.-Q., Yang, J., Cai, X.-Y., Fang, Q., & Chen, G.-C. (2025). Relationship of healthy lifestyle with healthy aging and the mediation by plasma proteins: A prospective cohort study. *The American Journal of Clinical Nutrition*. https://doi.org/10.1016/j.ajcnut.2025.05.020

Grossman, M. (1972). On the Concept of Health Capital and the Demand for Health. *Journal of Political Economy*, *80*, 223–255. https://doi.org/10.1086/259880

Grossman, M. (1999). The Human Capital Model of the Demand for Health. *Health Economics*. https://doi.org/10.3386/w7078

Guo, E., Li, J., Sun, Y., & Zheng, L. (2025). Association Between Financial Support and Physical Health in Older People: Evidence from CHARLS Data. *Healthcare (Basel, Switzerland)*, *13*(10). https://doi.org/10.3390/healthcare13101163

Hamasaki, H. (2025). The Relationship Between Socioeconomic Status and Health Behaviors in Older Adults: A Narrative Review. *Healthcare*, *13*. https://doi.org/10.3390/healthcare13141669

Hanson, M., & Chen, E. (2007). Socioeconomic Status and Health Behaviors in Adolescence: A Review of the Literature. *Journal of Behavioral Medicine*, *30*, 263–285. https://doi.org/10.1007/s10865-007-9098-3

Huang, Y., He, S., & Gan, L. (2021). Introduction to SI: Homeownership and housing divide in China. *Cities (London, England)*, *108*, 102967. https://doi.org/10.1016/j.cities.2020.102967

Kobayashi, L. C., & Steptoe, A. (2018). Social Isolation, Loneliness, and Health Behaviors at Older Ages: Longitudinal Cohort Study. *Annals of Behavioral Medicine : A Publication of the Society*

of Behavioral Medicine, *52*(7), 582–593. https://doi.org/10.1093/abm/kax033

Lee, Y., Back, J. H., Kim, J., Kim, S.-H., Na, D. L., Cheong, H.-K., Hong, C. H., & Kim, Y. G. (2010). Systematic review of health behavioral risks and cognitive health in older adults. *International Psychogeriatrics*, *22*(2), 174–187. https://doi.org/10.1017/S1041610209991189

Li, Y. (2025). Exploration of the Impact and Mechanisms of Socioeconomic Status on Adolescent Health Behaviors. *Scientific and Social Research*. https://doi.org/10.26689/ssr.v7i10.12508

Lindström, M., Hanson, B. S., & Östergren, P.-O. (2001). Socioeconomic differences in leisure-time physical activity: The role of social participation and social capital in shaping health related behaviour. *Social Science & Medicine*, *52*(3), 441–451. https://doi.org/10.1016/S0277-9536(00)00153-2

Logan, J. R., & Bian, F. (2003). Parents' Needs, Family Structure, and Regular Intergenerational Financial Exchange in Chinese Cities. *Sociological Forum*, *18*(1), 85–101. JSTOR.

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science : The Official Journal of the Society for Prevention Research*, *1*(4), 173–181. https://doi.org/10.1023/a:1026595011371

Malkowski, O. S., Harvey, J., Townsend, N. P., Kelson, M. J., Foster, C. E. M., & Western, M. J. (2025). Enablers and barriers to physical activity among older adults of low socio-economic status: A systematic review of qualitative literature. *The International Journal of Behavioral Nutrition and Physical Activity*, *22*(1), 82. https://doi.org/10.1186/s12966-025-01753-4

Mohd Fadzil, N. S., Osman, I., Ismail, S., Hashim, M. J., & Khamis, M. (2021). Does financial support improve the well-being of the elderly? In *AIP Conference Proceedings* (Vol. 2347).

https://doi.org/10.1063/5.0051777

Oktaviani, L. W., Hsu, H., & Chen, Y.-C. (2022). Effects of Health-Related Behaviors and Changes on Successful Aging among Indonesian Older People. *International Journal of Environmental Research and Public Health*, *19*. https://doi.org/10.3390/ijerph19105952

Ong, R., Nguyen, T., & Kendall, G. (2018). The impact of intergenerational financial transfers on health and wellbeing outcomes: A longitudinal study. *Social Science & Medicine (1982)*, *214*, 179–186. https://doi.org/10.1016/j.socscimed.2018.08.028

Payne, C. F., Pesando, L. M., & Kohler, H.-P. (2019). Private Intergenerational Transfers, Family Structure, and Health in a sub-Saharan African Context. *Population and Development Review*, *45*(1), 41–80. https://doi.org/10.1111/padr.12225

Preacher, K. (2008). Contemporary Approaches to Assessing Mediation in Communication Research. *The Sage Sourcebook of Advanced Data Analysis Methods for Communication Research*, 13–54. https://doi.org/10.4135/9781452272054.n2

Rattay, P., & Lippe, E. von der. (2020). Association between Living with Children and the Health and Health Behavior of Women and Men. Are There Differences by Age? Results of the "German Health Update" (GEDA) Study. *International Journal of Environmental Research and Public Health*, *17*. https://api.semanticscholar.org/CorpusID:218519198

Rezaei, S., Arefhosseini, P., Badiee, N., Salari, H., Bazyar, M., Ranjbar, M., Barfar, E., Irandoost, S. F., Moghri, J., & Kakemam, E. (2025). Poverty and poor choices: Socioeconomic gradients of unhealthy behaviors among adults in a multi-center cross-sectional study in Iran. *BMC Research Notes*, *18*. https://doi.org/10.1186/s13104-025-07426-6

Sarason, I. G., Pierce, G. R., & Sarason, B. R. (1990). Social Support and Interactional Processes: A Triadic Hypothesis. *Journal of Social and Personal Relationships*, *7*(4), 495–506. https://doi.org/10.1177/0265407590074006

Schulz, R., Beach, S. R., Czaja, S. J., Martire, L. M., & Monin, J. K. (2020). Family Caregiving for Older Adults. *Annual Review of Psychology*, *71*, 635–659.

Seo, B. K., Hwang, I. H., Sun, Y., & Chen, J. (2022). Homeownership, Depression, and Life Satisfaction in China: The Gender and Urban-Rural Disparities. *International Journal of Environmental Research and Public Health*, *19*(22). https://doi.org/10.3390/ijerph192214833

Silverstein, M., & Bengtson, V. (1991). Do close parent-child relations reduce the mortality risk of older parents? *Journal of Health and Social Behavior*, *32 4*, 382–395. https://doi.org/10.2307/2137105

Silverstein, M., & Bengtson, V. (1994). Does intergenerational social support influence the psychological well-being of older parents? The contingencies of declining health and widowhood. *Social Science & Medicine*, *38 7*, 943–957. https://doi.org/10.1016/0277-9536(94)90427-8

Silverstein, M., & Bengtson, V. (1997). Intergenerational Solidarity and the Structure of Adult Child-Parent Relationships in American Families. *American Journal of Sociology*, *103*, 429–460. https://doi.org/10.1086/231213

Silverstein, Merril, & Bengtson, V. L. (1997). Intergenerational Solidarity and the Structure of Adult Child-Parent Relationships in American Families. *American Journal of Sociology*, *103*(2), 429–460. JSTOR. https://doi.org/10.1086/231213

Sowa, A., Tobiasz–Adamczyk, B., Topor-Madry, R., Poscia, A., & La Milia, D. (2016). Predictors of healthy ageing: Public health policy targets. *BMC Health Services Research*, *16*. https://doi.org/10.1186/s12913-016-1520-5

Sun, W. (2010). The impact of intergenerational support on the mental health of urban elderly people. *China Social Security*, (03), 40–41.

Tao, C., & Deng, R. (2025). Assessing the Level and Determinants of Active Aging in China: An LDA-Based Topic Modeling Approach. *Risk Management and Healthcare Policy*, *18*, 3819–3841. https://doi.org/10.2147/RMHP.S556017

Thomas, P. A., Lodge, A. C., & Reczek, C. (2019). Do Support and Strain With Adult Children Affect Mothers' and Fathers' Physical Activity? *Research on Aging*, *41*(2), 164–185. https://doi.org/10.1177/0164027518792904

Torres, J. M., Yang, Y., Rudolph, K. E., & Courtin, E. (2022). Increased adult child schooling and older parents' health behaviors in Europe: A quasi-experimental study. *SSM - Population Health*, *19*, 101162. https://doi.org/10.1016/j.ssmph.2022.101162

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social Relationships and Health Behavior Across the Life Course. In *Annual Review of Sociology* (Vol. 36, Issue Volume 36, 2010, pp. 139–157). Annual Reviews. https://doi.org/10.1146/annurev-soc-070308-120011

Wang, D., Dai, X., Mishra, S., Lim, C., Carrillo-Larco, R., Gakidou, E., & Xu, X. (2022). Association between socioeconomic status and health behaviour change before and after non-communicable disease diagnoses: A multicohort study. *The Lancet. Public Health*, *7 8*. https://doi.org/10.1016/s2468-2667(22)00157-8

Wang, P., & Gao, B. (2011). Financial transfers, unmet needs, and the well-being of older adults in urban China. *Population Studies*, *65*(3), 299–316.

Wen, C., & Zhang, Q. (2023). The role of intergenerational support in shaping oral healthcare-seeking behavior among older adults in China. *Frontiers in Public Health*, *11*, 1234539. https://doi.org/10.3389/fpubh.2023.1234539

Xinhua. (2018, July 20). *Elderly to take up one-third of Chinese population by 2050*. Elderly to Take up One-Third of Chinese Population by 2050. http://www.xinhuanet.com/english/2018-07/20/c_137338328.htm

Xu, Y., & Luo, Y. (2022a). The Effect of Adult Children's Education Attainment on Their Parents' Cognitive Health: An Intergenerational Support Perspective. *Frontiers in Public Health*, *10*, 744333. https://doi.org/10.3389/fpubh.2022.744333

Xu, Y., & Luo, Y. (2022b). The Effect of Adult Children's Education Attainment on Their Parents' Cognitive Health: An Intergenerational Support Perspective. *Frontiers in Public Health*, *10*, 744333. https://doi.org/10.3389/fpubh.2022.744333

Yamada, K., & Teerawichitchainan, B. (2015). Living Arrangements and Psychological Well-Being of the Older Adults After the Economic Transition in Vietnam. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *70 6*, 957–968.

Yarmohammadi, S., Mozafar Saadati, H., Ghaffari, M., & Ramezankhani, A. (2019). A systematic review of barriers and motivators to physical activity in elderly adults in Iran and worldwide. *Epidemiology and Health*, *41*, e2019049. https://doi.org/10.4178/epih.e2019049

Zhang, W., & Silverstein, M. (2023). Does the Economic Status of Adult Children Influence Self-Rated

Health Among Older Adults in China? *The Journals of Gerontology: Series B*, *78*(9), 1604–1616. https://doi.org/10.1093/geronb/gbad078

Zhang, Y.-B., Chen, C., Pan, X.-F., Guo, J., Li, Y., Franco, O., Liu, G., & Pan, A. (2021). Associations of healthy lifestyle and socioeconomic status with mortality and incident cardiovascular disease: Two prospective cohort studies. *The BMJ*, *373*. https://doi.org/10.1136/bmj.n604