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Family Socioeconomic Status and Child Health: Evidence from China

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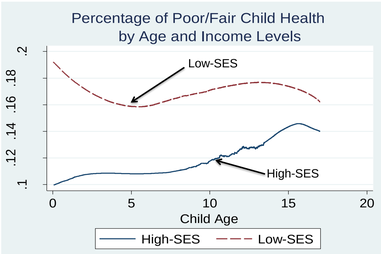
INTRODUCTION

The positive relationship between income and health is widely acknowledged and well documented. However, not much attention has been paid to the relationship between household income and child health until 2000s. Previous studies[1,2,3] use household income as a proxy for family socioeconomic status (SES) and find that children in high-SES families are more likely to have good health status. It is also found that the positive relationship between children's health status and household income becomes more pronounced as children age in the United States and Canada. Some studies also confirm the positive relationship in other developed countries. However, very few studies about family SES and child health have been conducted for developing countries.



- Children in low-SES families are more likely to have poor or fair health status in China

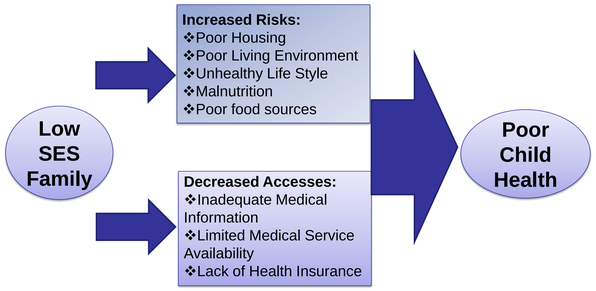
Note: (1) Data are from the "China Health and Nutrition Survey; (2) low-SES households and high-SES households are defined as the households with total income that distribute in the lower 50% and upper 25% of the sample, respectively.

RESEARCH QUESTIONS

This study aims to bridge the gap in the literature by providing the analysis of the relationship between family SES and child health in China. Specifically we seek to address the following questions:

1) What is the effect of total household income (family SES) on children's health status as children age?
2) What are the other influential factors of children's health in China?
3) Can some of the influential factors serve as the explanatory variables, or the third factors, underlying the relationship between household income and child health in China?

MODEL STRUCTURE



EMPIRICAL MODEL

$$H_{it}=\beta_0+\beta_1 lnY_{it}+\beta_2 A_{it}+\beta_3 EDU_{it}+\beta_4 EMP_{it}+\beta_5 G_{it}+\beta_6 T_t+V_{it}$$

- Where H_{it} is the child health status, which is an ordered categorical variable, with value 1-4 (1=Excellent, 2=Good, 3=Fair, and 4=Poor). lnY_{it} is the log of total household income; A_{it} denotes child's age; EDU_{it} represents mother's education level and EMP_{it} indicates mother's employment situation. T_t controls for year effects. G_{it} represents several controlling variables for family characteristics, including family size, whether the child lives with both parents, whether the child's mother is biological mother.
- Data are obtained from the "China Health and Nutrition Survey (CHNS)" (1991, 1993, 1997, 2000, 2004, and 2006).
- The ordered probit model with controlling for cluster effects from community level is applied for the study.

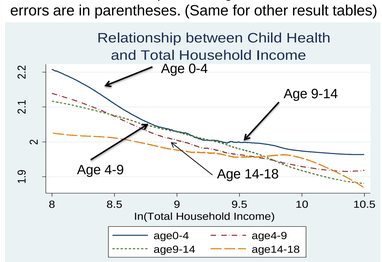
RESULTS

The Relationship between Household Income and Child Health

Health Status Ordered Probits (1 = Excellent,4 = Poor)

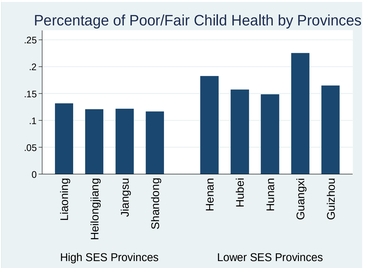
Ages	0-4	4-9	9-14	14-18
Without Mother's Education				
Number of Observations	1463	3233	4046	4004
In(total family income)	**-0.113****	**-0.117*****	**-0.124*****	**-0.060****
	(0.053)	**(0.040)**	**(0.030)**	**(0.024)**
With Mother's Education & Employment Situation				
Number of Observation	1383	3144	3916	3839
In(total family income)	**-0.098***	**-0.111*****	**-0.124*****	**-0.058****
	(0.055)	**(0.042)**	**(0.030)**	**(0.025)**
Mother's education ≥high school	**-0.218***	-0.107	-0.082	-0.042
	(0.115)	(0.072)	(0.068)	(0.071)
Mother is employed	**0.306*****	0.151	**0.151***	**0.195*****
	(0.116)	(0.107)	**(0.087)**	**(0.074)**

Note: *, ** and *** represent significance level of 1%, 5% and 10%. Robust standard errors are in parentheses. (Same for other result tables)



- There is a positive relationship between total household income and child health, and the positive relationship steepens as child ages from 0-4 to 9-14;
- The effects of total household income drops dramatically for 14-18 years old children.

Influential Factor 1: Location



Note: Higher-SES provinces are those rank upper 50% of GDP per capita in China and lower-SES provinces are those rank lower 50% of GDP per capita in China.

Regression Results:

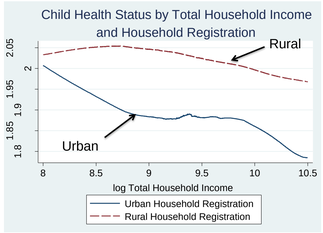
- Province factor may be a "third factor" to explain the relationship between household income and 0-4 year old children's health status;
- Children in Guangxi and Guizhou provinces are less likely to have good or excellent health status.

Influential Factor 2: Household Registration

Health Status Ordered Probits (1 = Excellent,4 = Poor)

Ages	0-4	4-9	9-14	14-18
Without Mother's Education				
Number of Observation	782	2053	2950	3237
In(total family income)	-0.065	**-0.091****	**-0.088*****	**-0.038***
	(0.064)	**(0.036)**	**(0.029)**	**(0.023)**
Household Registration	**0.306****	**0.194****	**0.318*****	**0.131***
(1=Urban; 2=Rural)	**(0.123)**	**(0.088)**	**(0.074)**	**(0.067)**

Note: Result with mother's education are not reported in the table.



- Household registration, known as "*hukou*", is a special population policy in China;
- "*Hukou*" refers to the legal living right of a person in one particular place("rural" or "non-rural")
- A child with urban *hukou* are more likely to have good and excellent health status;
- The effect is significant for all age groups if without controlling for mother's education.

Influential Factor 3: Health Insurance

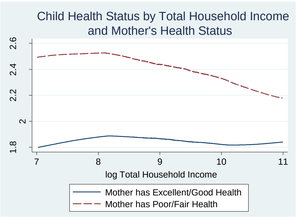
Health Status Ordered Probits (1 = Excellent,4 = Poor)

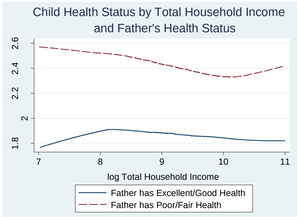
Ages	0-4	4-9	9-14	14-18
Without Mother's Education				
Number of Observation	1453	3207	4000	3931
In(total family income)	**-0.142*****	**-0.138*****	**-0.139*****	**-0.057****
	(0.053)	**(0.036)**	**(0.033)**	**(0.027)**
Child has health insurance	**-2.39****	-1.370	-0.115	0.536
	(1.191)	(1.107)	(0.811)	(0.619)
In(total family income) *	**0.230***	0.139	0.019	-0.053
Child has health insurance	**(0.124)**	(0.117)	(0.085)	(0.064)

Note: Result with mother's education are not reported in the table.

- Child health insurance has positive and significant effects on 0-4 year old children only, and the interaction term is also only significant for the 0-4 year olds;
- Health insurance has significant and largest effects on helping the youngest cohort to buffer health risks' negative effects and to have better health status.

Influential Factor 4: Parental Health





Health Status Ordered Probits (1 = Excellent,4 = Poor)

Ages	0-4	4-9	9-14	14-18
Without Mother's Education				
Number of Observation	1416	3127	3786	3565
In(total family income)	-0.071	-0.044	**-0.072****	-0.009
	(0.054)	(0.040)	**(0.033)**	(0.026)
Mother's health is excellent or good	**-1.229*****	**-1.293*****	**-0.838*****	**-0.699*****
	(0.139)	**(0.113)**	**(0.083)**	**(0.059)**
Father's health is excellent or good	**-0.511*****	**-0.599*****	**-0.824*****	**-0.529*****
	(0.128)	**(0.101)**	**(0.082)**	**(0.062)**

Note: Result with mother's education are not reported in the table.

- Parental health has large and positive effects on children's health for all age groups, and mother's health is more strongly correlated with children's health than father's health;
- Total household income's coefficients become insignificant for 0-4, 4-9 and 14-18 groups;
- Parental health is an important determinant of child health in China and it can also account as a "third factor" for the relationship between total household income and child health.

Some Other Influential Factors:

(1) Father's smoking behavior;
(2) Parental light work amount and exercise behavior;

CONCLUSIONS

(1) There is a positive relationship between household income and child health in China and the positive relationship becomes more pronounced as children age for 0-14 year old children. The effects of total household income drop dramatically for the 14-18 group.
(2) Several important influential factors that affecting child health are: location, household registration, child health insurance, parental health status, father's smoking behavior, and parental exercise behavior;
(3) The results indicate that parental health status can serve as an explanatory variable that underlying the relationship between household income and child health. However, more detailed information about parental health may be needed in further study.

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