An Empirical Analysis of Life Satisfaction in Adolescent Development in High- and Middle-income Countries

Amirreza Kazemikhasragh
University of Mexico (UNAM)

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An Empirical Analysis of Life Satisfaction in Adolescent Development in High- and Middle-income Countries

By Amirreza Kazemikhasragh[1]

Abstract

The income discrepancies in high- and middle-income countries increases stress, limitations in access to social resources, and aggravates health situations. The empirical analysis of this experimental study studies the relationship between parental income inequality in early life and health and life satisfaction of adolescents. This study uses empirical data from the Health Behaviour in School-aged Children (HBSC) to study school-age children health behaviour symptoms in high- and middle-income countries in the years 2002, 2006, 2010 and 2014. The research uses macro variables and the income inequality index from the World Bank. The analysis of the Gini coefficient was carried out among high- and middle-income countries. In this sense, the results show that income gaps prevail in households, directly impacting adolescent development. Therefore, improving inequality remains the pending issue in most high- and middle-income countries and meets the poverty reduction goals established by the SDGs of the 2030 agenda. This research aims to reduce the existing gaps in addressing income inequality.

Keywords: Income inequality, Adolescents, Health
JEL classifications: D63, I14, J13, J16

Introduction

According to Marianna, satisfaction with life is the cognitive component of subjective wellbeing and is defined as wellbeing concerning oneself in one's life and the degree of satisfaction with objective life conditions. Likewise, concerning the above, people who show high satisfaction with life benefit physically and mentally and face a lesser predisposition to specific adult health problems and premature mortality. On the other hand, as Cortez evidenced in her 2014 study, a group of adolescents associated feeling depressed due to economic instability in their homes.

The current scenario of growing inequalities has furthered resource gaps and health inequities. Health inequity is rooted in social inequity since political, social, and economic forces determine the conditions in which people live and die. According to the World Health Organization, the development of a society can be judged by the quality of the population's health status, how health problems are distributed along the social spectrum, and the degree of protection people enjoy. In this sense, to improve health conditions and their distribution, it is necessary to identify the causal chain that accounts for the social bases of inequalities.

According to Kim et al. (2018), socioeconomic and health characteristics in childhood influence morbidity survival and life satisfaction in adulthood and old age. In this sense, childhood is a period of vulnerability in which genetic and family factors interact with environmental exposures and other determinants that lead to a complex combination of health effects and outcomes. Wellbeing depends on a society's economic state, life satisfaction, social structure, and society's health.

In this context, studies reveal that children's exposure underlie the considerations of income inequality in their homes, which is a deficit for adolescents' future and life satisfaction

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[1] Amirreza Kazemikhasragh, University Program of Studies on Asia and Africa (PUEAA) National Autonomous University of Mexico (UNAM), Programa de Becas Posdoctorales de la UNAM, Mexico City, Mexico. amirkazemi@outlook.com

(Halfon et al., 2017; Assari & Caldwell, 2018; Marshall et al. 2020). Also, According to Van Dijk-Wesselius (2018), there is a relationship with the environment and the development of physical, cognitive, emotional, and social skills in the early stages of life and has an enormous influence on future health, life satisfaction, education, and social participation. In this sense, social inequalities in the initial stage of child development are among the main contributing factors to inequalities in adult life and, consequently, create a circle of intergenerational disadvantage.

Literature Background

In recent years, changes in the family structure and social inequalities have affected the health of the child and adolescent population. According to Lim & Ashing-Giwa (2013) and Mendes et al. (2016), satisfaction with family life has been considered an important study area due to its relationship with health indicators, quality of life, stress coping strategies, family cohesion, adaptability, communication, and family functioning. Furthermore, Patton et al. (2016) highlight that living conditions in childhood and physical, cognitive, emotional, and social development are determinants of future adults' health, academic performance, work, and social contributions.

Health in childhood and adolescence depends on stress; previous studies considered exposure to income inequality in early life increased stress (Elgar & Currie, 2016; Elgar et al., 2017; Rosa et al., 2018; Elgar et al., 2019). However, other findings show a positive relationship with satisfaction in the economic and work environment (Narasuci et al., 2018; Ramli, 2019). Although extensive studies have been conducted on the relationship between health and income inequality (Matthew & Brodersen; 2018; Bor et al., 2017; Curran & Mahutga, 2018; Truesdale & Jencks, 2016), Ride (2019) mentions a relationship between income inequality and health status in early life. On the other hand, Rözer & Volker (2016) studied the effects of income inequality in different periods of life.

In the same vein, the effects of income inequality significantly affect health at an early age; at the same time, it has a negative and significant effect in adulthood. In comparison, other findings Ward & Viner. (2017) point out the relationship between income inequality and life expectancy, infant mortality, and homicide in low and middle-income countries. However, Wagstaff & Van Doorslaer (2000) highlight few studies on health indicators with income levels, especially empirical research, that allows analytically decomposing inequalities or quantifying the relative impact of one or other policies in reducing them. Consequently, there is little evidence for comparing different countries regarding income-related health inequalities.

As noted above, there is a lack of available studies on family income inequality in childhood and the health of children and adolescents. Therefore, it can be said that there are few studies on income inequality at different times during early life and the upbringing of a child and the important role of public policy formulation on income inequality in households. This study will close this gap using data from the Health Behaviour in School-aged Children (HBSC) survey and World Bank data using variables that measure life satisfaction (life expectancy, GNI per capita, life expectancy and Gini ratio) of children and adolescents, considering different periods in life in high- and middle-income countries.

This study will test the following hypotheses: 1. Income inequality in the family in the first years of life has a long-term effect on the individual in income inequality during life, health, and reduced life satisfaction. 2. The exposure of a child to the family's socioeconomic position affects long-term life satisfaction. 3. Exposure to low health status during adolescence will affect life satisfaction.

Data and Methodology

Data

A. World Health Organization Survey on Adolescent Health Behavior

The Health Behaviour in School-aged Children (HBSC) survey has been conducted every year since 1994. The data required for this study on life satisfaction and health behaviours were extracted from this database for 2002, 2006, 2010 and 2014.

B. Health and Psychological Factors

This research uses Health Behaviour in School-aged Children (HBSC) surveys to extract health-related variables; this study uses Torsheim & Wold (2001) research to select health and psychological symptoms. Symptoms used to create a health index by using physical health include headaches, back pain, dizziness, and psychological symptoms such as mood swings, nervousness, and difficulty sleeping.

C. The Economic and Social Situation

This study uses the Health Behaviour in School-aged Children (HBSC) variables to study changes in the family's economic and social position. According to Hartley et al. (2016), this study considers the variables economic and social changes such as family income, the status of family property and car, the amount of vacation during the year, the use of personal computers for family members, the number of bathrooms in the house, having a washing machine and dishwasher, and having a private room for the family members.

D. Macroeconomic Variables

We used the World Bank database for each country to employ economic variables such as gross national income, Gini income inequality index, and life expectancy. Also, we created a dummy variable equal to 1 to examine whether the country of the responder is a high-income country and 0 otherwise.

A sample description is provided in Table 1.

Table 1: Description of Variables

Variable	Symbol	Description
Life satisfaction	Lifesat	At the top of the ladder, '10' is the responder's best possible life, and the bottom '0' is the worst possible life for the responder.
Age category	Agecat	Responders were divided into three categories: 11, 13, and 15 years old
Gender	Gender	Dummy variable equal to 1 for male and 0 for female
Socioeconomic position	Socecp	Socioeconomic status at the individual level
Parents job status	Parents	An index to show the job status of the parents
Health status	Health	An index to show health status
Social media use	SoMed	An index to show the use of social media
GNI per capita	GNIpc	GNI per capita
Gini ratio	GI	Gini index (World Bank estimate)
Life expectancy	Lifeexp	Life expectancy
Country income category	CoIn	Dummy variable equals 1 whether the country of the responder is a high-income country and 0 otherwise

Methodology

We use a survey regression technique to examine the relationships between adolescents' life satisfaction and income inequality, health and psychological factors, economic and social status, and macro variables. Our approach follows Yang et al. (2021) view in a regression framework:

$$Y_{it} = \alpha + \beta_1 X_{it} + \varepsilon$$

Where X_{it} represents independent variables; individual-level characteristics, Y_{it} represents life satisfaction, macro variables and social status, ε represents standard errors.

Table 2 shows the summary statistics. In detail, the average GNI per capita is 30,248 (US$), with a minimum of $790 and a maximum of $104,370. Life satisfaction indicates that at the top of the ladder, '10' is the best possible life for the responder, and the bottom '0' is the worst possible life for the responder. The average life satisfaction is 7.6, which shows that most responders are satisfied with life. The average life expectancy in the studied countries is 78 years, with a minimum of 65 years and a maximum of 83 years. The Gini index is used to identify the extent to which income distribution; the average Gini ratio in the studied countries is 31.75. However, the highest ratio in our sample is 42.5, which means there is less equality in the distribution of income, and the lowest is 24. Our sample includes half male and half female. Less than half of the parents had jobs on the date of collecting data. Health status was created by using physical health factors such as headache, back pain, dizziness, and psychological symptoms such as mood swings, nervousness, and difficulty sleeping; the index's average is 0.7. According to Elgar et al. (2017), we divided responders according to age to three: 11, 13, and 15. Finally, we created an index to measure the use of social media by considering that responders talk to their friends by applications, send text messages via applications, using email, and other social media. However, 40% of the responders use social media to talk to their friends frequently.

Table 2: Summary Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Lifesat	758,435	7.586868	1.934437	0	10
Agecat	789,286	2.003218	0.810381	1	3
Gender	795,918	0.490623	0.499912	0	1
Socecp	757,742	0.671741	0.247529	0	1
Parents	77,554	0.429667	0.198078	0	1
Health	196,382	0.702063	0.189316	0	1
SoMed	678,112	0.400789	0.211331	0	1
GNIpc	709,767	30248.04	19594.66	790	104370
GI	608,789	31.74099	4.108248	24	42.5
Lifeexp	745,792	77.98539	3.988911	65.12878	83.22927
CoIn	795,918	0.084754	0.278515	0	1

The correlation of the studies variables is presented in Table 3. There is a positive relationship between Lifesat, Socecp, Health, GNIpc, Lifeexp, and CoIn. On the other hand, there is a negative correlation between the Lifesat, Agecat, SoMed. Additionally, we consider the correlation between gender and inequality in income distribution (Gini ratio). Also, there is a negative relationship between gender and GI.

Table 3: Correlation Matrix

	Lifesat	Agecat	Gender	Socecp	Parents	Health	SoMed	GNIpc	GI	Lifexp	Coln
Lifesat	1										
Agecat	-0.1764	1									
Gender	0.0742	-0.0004	1								
Socecp	0.0337	0.0315	0.0389	1							
Parents	-0.0592	-0.0203	0.013	-0.2648	1						
Health	0.3578	-0.1529	0.2045	-0.0002	-0.0167	1					
SoMed	-0.0033	-0.0021	0.0014	0.0152	-0.0056	-0.0028	1				
GNIpc	0.0578	0.0138	0.0024	0.3881	0.0408	-0.019	0.0247	1			
GI	-0.0182	-0.0233	-0.0074	-0.3185	0.0724	0.0078	-0.0115	-0.5943	1		
Lifeexp	0.0333	0.0399	0.0109	0.2457	0.1067	-0.027	0.0242	0.5783	-0.5003	1	
CoIn	0.0852	-0.0285	-0.0055	-0.4075	0.1431	0.0403	-0.0222	-0.4881	0.2571	-0.4095	

Results

This study examines the effects of inequality on adolescents' life satisfaction by closing the gap in studies in the literature. This study reports on the adverse effects of income inequality adolescence on life satisfaction in adulthood. The results from Table 4 confirm De looze et al.'s (2018) assertion that adolescents living in countries with lower inequality report higher life satisfaction than adolescents living in countries with higher levels of inequality. However, our results and coefficients show that income inequality has a stronger negative effect on life satisfaction than males. In the line of Graafland & Lous's (2018) results show that income inequality effects are more substantial on females. Ward & Winer (2017) recommend that reducing income inequality benefit adolescents' life satisfaction. Girón & Kazemikhasragh (2021) state that health has a positive relationship with economic status at the macro level. The results also confirm previous studies (Elgar et al., 2017; Dankulincova Veselska et al. 2018; Zaborskis & Grincaite, 2018) that health status positively impacts life satisfaction. Also, the coefficients of the health status for females and males emphasise greater coefficients and impact for females. Matos et al. (2017) show that health impacts life satisfaction and school achievement in adolescents.

Regarding Ogundari & Awokuse (2018), life expectancy has a positive relationship with health status. We use life expectancy as a control variable for health status; results confirm that having longer life expectancy and better health status positively impact life satisfaction. Results show that life satisfaction is lower in the older age category. Burton-Jeangros & Zimmermann-Sloutskis (2016) report lower life satisfaction in the older age group. Additionally, many researchers show that family socioeconomic position is an important factor in life satisfaction. Our results confirm previous results that socioeconomic status leads to life satisfaction in adolescents (Chen et al., 2016 and Yan et al., 2020). According to Elgar et al. (2017), we use GNI per capita as a proxy variable to control socioeconomic status. Our results confirm that GNI per capita positively impacts life satisfaction in the studies countries.

Finally, we control the robustness check by country category (high-income countries or middle-income countries) to see the behaviour of coefficient estimates. Following Barslun et al. (2007), we run a robustness check on Stata using the "Checkrob" command. The results confirm that the coefficients for our variables are unvarying in their sign. So, there is no

difference between high-income and middle-income countries; these results may be for having 8% of middle-income countries in our sample.

Table 4: Results of Regression and Robustness Check by Country

	Lifesat	Robustness Check by country	Sign prediction	Lifesat (female)	Robustness Check by country	Sign prediction	Lifesat (Male)	Robustness Check by country	Sign prediction
Agecat									
13	-0.14**	-0.13**	+	-0.19**	-.18**	+	-0.06**	-0.05**	+
	(0.05)	(0.05)		(0.06)	(0.06)		(0.06)	(0.06)	
15	-0.19*	-0.17*	+	-0.2*	-0.19*	+	-0.16**	-0.15**	+
	(0.08)	(0.09)		(0.11)	(0.09)		(0.11)	(0.11)	
Socecp	0.62**	1.16**	+	0.60**	1.11**	+	0.64**	1.19**	+
	(0.04)	(0.05)		(0.06)	(0.07)		(0.05)	(0.07)	
Parents	0.52**	0.43**	-	0.59**	0.52**	-	0.44**	0.37**	-
	(0.04)	(0.04)		(0.05)	(0.05)		(0.06)	(0.06)	
Health	3.45**	3.73**	+	3.77**	3.93**	+	2.90**	3.41**	+
	(0.06)	(0.04)		(0.07)	(0.07)		(0.07)	(0.08)	
SoMed	-0.02	-0.01	+	-0.05	-0.04	+	0.02	0.03	+
	(0.03)	(0.03)		(0.01)	(0.01)		(0.05)	(0.05)	
GNIpc	0.01**	0.02**	+	0.01*	0.02**	+	0.01**	0.02**	+
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
GNIpc*time	0.01**	0.02**	+	0.00*	0.01*	+	0.02**	0.03**	+
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
GI	-0.04**	-0.05**	-	-0.06**	-0.07**	-	-0.03**	-0.04**	-
	(0.01)	(0.01)		(0.02)	(0.02)		(0.01)	(0.01)	
GI*time	-0.05**	-0.06**	-	-0.07**	-0.08**	-	-0.04**	-0.05**	-
	(0.01)	(0.01)		(0.02)	(0.02)		(0.01)	(0.01)	
Lifeexp	0.02**	0.04**	+	0.03**	0.04**	+	0.02**	0.03**	+
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)	
Robustness check by country		X			X			X	
Number of observations	59,310	59,310		30,746	30,746		28,564	28,564	
Pvalue	0.00	0.00		0.00			0.00		

Asterisk (**) and (*) denote statistically significant at 1% and 5% levels, the standard error in parenthesis

Conclusion

This study provides a comprehensive understanding of the effects of income inequality in early life and adolescence and its negative consequences in adulthood. Various studies have been conducted to identify the determinants of life satisfaction in adolescence. For example, Marques et al. (2017) showed the correlation between health-related factors and life satisfaction; the results show that health factors significantly impact individuals in early life and adolescence. The present study confirms previous studies to fill the study gap in the studied countries regarding health, income inequality, and family social status. Our results suggest that inequality in payments to parents has a negative impact on life satisfaction in adolescence. At the same time, life satisfaction affects a person's developmental pathways. Furthermore, the results show that women are more affected by pay inequality in adolescence, although more studies are needed to understand psychological mechanisms. This study helps policymakers to support women's empowerment in policymaking to enhance sustainable development by reducing income inequality and ensuring that children's and families' health is protected.

Several groups can consider this research. Researchers can use this method in various studies of political alliances, intergovernmental, and international organisations. This study can lead to sustainable development by identifying specific components to reduce income inequality and increase adolescents' life satisfaction.

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