### Saudi Journal of Humanities and Social Sciences

Abbreviated Key Title: Saudi J Humanities Soc Sci ISSN 2415-6256 (Print) | ISSN 2415-6248 (Online) Scholars Middle East Publishers, Dubai, United Arab Emirates Journal homepage: https://saudijournals.com

**Original Research Article** 

# Exploring the Interdependent Relationship between Education and Health in Spain: The Benefits of Investing in Both Fields for Society's Well-Being

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**DOI:** <u>10.36348/sjhss.2023.v08i07.003</u> | **Received:** 20.06.2023 | **Accepted:** 23.07.2023 | **Published:** 28.07.2023

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### **Abstract**

We have conducted a research study that covers the period from 2000 to 2020, with the aim of constructing "autoregressive vectors" to investigate the interconnections between Education and Health in Spain. The purpose is to comprehend the advantages of investing in both fields for the betterment of society. Our team obtained data from the World Bank and conducted an analysis to examine the relationship between Education and Health in Spain. Our conclusions indicate that Education and Health are two critical factors that significantly impact the overall prosperity of society in Spain. Education has a strong impact on health as it enhances individuals' knowledge and understanding about health and wellness. On the other hand, health is essential for maintaining stability in education, as a healthy person is able to focus and perform well academically. The two are mutually dependent and have a positive influence on each other. A healthy individual is more likely to pursue education and have better opportunities, while education can result in better health outcomes through increased awareness and access to healthcare. Therefore, investing in both fields is crucial for ensuring a stable and thriving society in Spain. The positive relationship between Education and Health highlights the significance of investing in both fields to attain a higher quality of life for the citizens of Spain. We discovered that Education and Health are positively related in Spain and access to quality education has a positive effect on health outcomes. Good health is also necessary for individuals to perform well academically and complete their education, creating a positive feedback loop between Education and Health.

**Keywords**: Health, Education, Spain. **JEL Classification**: A20, H75, I1, I11, I18.

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## Introduction

According to Rinaldo, Pujiastuti, and Sukimin (2022), the government is highly concerned with addressing health issues to enhance community welfare. Duindam (2022) states that climate change is a major challenge for global human health and well-being. Environmental changes, including global climate change, have become a significant issue and are caused by global warming and the greenhouse effect (Raksanagara, Arisanti, and Rinawan, 2017). Climate change can have serious effects on human health, such as increased temperatures, droughts, storms, species extinction, food shortages, health risks, poverty, and displacement (Widianingsih, Ginting, and Saputra, 2022). Climate change also affects air, water, food, and shelter, which are all essential determinants of social

and environmental health (Burns, 2023). community environments can lead to disease transmission, environmental pollution, and health problems. Proper waste management and sustainability efforts are necessary to prevent disease spread and environmental pollution (Fatimah, Environmental health is the study of how hazardous Environmental factors such as air quality (indoors or outdoors), water, food, soil, dust, and consumer goods can impact human health, and the impact can be compounded by the combination of multiple stressors (Solomon, 2022). The environment, along with behavioral factors, health services, genetics, and population, affects public health (Raksanagara, Arisanti, and Rinawan, 2017). Despite this, many people are still unaware of the impact of environmental pollution on health (Sutanto, Kristama, Purwoko,

Harnawan, Dewi, Fadilah, Wicaksono, Hadriyanto, Kusuma, 2021). Therefore, good waste management practices are crucial in avoiding illnesses caused by environmental health problems (Maharani, Warlenda, and Putri, 2021).

Environmental Health Management is an art that implements and regulates systems from the public health department to maintain an ecological balance between humans and their environment (biotic and abiotic) in order to achieve a healthy and happy human quality of life (Geumala, Nugraha, Pratiwi, Ali, 2018). The quality of human life is a determining factor which is the main basis for the development of a country, this is because human quality determines the progress of a nation (Krisnanik, Rahayu, Tobing, 2019). Assessment of quality of life can change depending on health status, psychological and social support (Larasati, Wahyuni, Nopriadi, 2022). Many individuals are not fully aware of how to maintain a healthy lifestyle, as evidenced by their failure to keep their surroundings clean (Ilyas, Endasari, Mawaddah, Franchika, 2022). To address this issue, promoting healthy living through educational videos and socialization can be a helpful step (Ningsih & Suyowati, 2021). Health socialization is a means of transforming behavior through educational methods (Evi, Nia, Nita, Desi, Gita, Seta, 2022).

Health is a primary need that allows everyone to carry out their activities for their productivity, therefore health is important for the progress and prosperity of an area (Sandila, Rizal, Satya, Sulastri, Arif, Alfana, Listyaningsih, 2020). In a nation where the allocation for healthcare is limited, majority of the healthcare expenses are unattainable and a large number of citizens still reside in rural or suburban areas, accessing healthcare becomes challenging, unresponsive, and unaffordable (Pramesh, Seshadri, Fernandez, Rao, Dutta, Mohan, 2021). Healthcare affects everyone and the funding decisions for healthcare determine the type and availability of healthcare services (Duckett, 2023). Developing healthcare is an effort to secure the independence of the nation and create a healthy and robust society. One approach to achieve this is by providing healthcare services, which are activities offered by the government to individuals and communities with the goal of preventing and treating illnesses (Redjeki, 2020).

In delivering healthcare to those in need, health services play a crucial role in ensuring that patients receive care that meets established quality standards. The quality of healthcare is often measured by a hospital's ability to provide services in accordance with its mandates and responsibilities (Siregar, Lipin, Pipin, 2021). Each country has a different health system according to country conditions which causes differences in the resulting health status (Yulianti, Gunawan, Meidiansyah, 2021). Differences in health

status between different population groups. Some differences in health may be due to biological variation or independent choice. Others may be caused by environmental conditions beyond the individual's control. In this case, the unequal distribution of health can be seen as unnecessary, avoidable, unfair, and unfair. Such differences are usually referred to as inequalities or health inequalities (Emerson, 2021). Health is the human right of every individual regardless of work (Sengelen & Erisgen, 2022). Health inequality provides an excellent example of the complex relationship between social, economic, political contracts, and the types and resources of policy responses (Wiston, 2023).

Health is largely shaped by factors not related to healthcare, including income level, level of education. living conditions, and employment environment (Wester, 2023). In difficult economic conditions, the priority is how to survive. Or, what is a priority in everyday life is eating or "stomach" affairs. Everyone tries in various ways to get food. What is important is a "full stomach". Various other necessities of daily life tend to be set aside temporarily and only become a concern when the stomach is full. Under these conditions, the aspects of health and education become "less attention". The specific goal is to make the "stomach" full. Various other forms of expenditure were suspended or kept to a minimum. Among various other expenses that are considered very basic are meeting the needs for health and education (Siahaan, 2018). Funding is an important factor in national development, particularly in the health and education sectors. In these two sectors, there is an imbalance in financing on the basis of the level of regulations governing the system, the unequal financing budget, and the allocated allocation. The health and education sectors are very closely related to each other, so that existing imbalances can affect health development and education development (Febrianti, 2021). Health development is part of The objective of advancing the nation is to increase consciousness and foster the willingness and capability to live healthily among all citizens, in order to achieve optimal public health (Citation not provided). (Nova, Ekawati, Heriziana, 2022).

Education's growth encompasses a broad range of aspects, including social, cultural, economic, and political aspects. In a social sense, education leads to the production of knowledgeable individuals who play a crucial role in social transformation in society. From a cultural viewpoint, education is a vital tool for transmitting norms, fostering values, and inculcating cultural beliefs among citizens. Politically, education must cultivate individual capacities to become responsible citizens who understand their rights and duties in society, nation, and state. Hence, education must produce individuals with the foresight and values

to strengthen national unity (Suryana, 2020). Schools, as educational establishments, play important and strategic roles in health promotion initiatives (Mustar, Susanto, Bakti, 2018). Education can be obtained through various channels, including traditional educational institutions such as schools, universities, and religious organizations, as well as through everyday experiences that foster personal growth and learning. The term "education" are term "educare" comes from the Latin language, and it has two distinct definitions: "dúcere," meaning to steer or direct, and "educare," meaning to raise or bring up meaning to nurture and foster growth. This definition focuses on the more formal aspect of education as a process of human development that involves teaching, learning, and creativity (Neves-Pereira, 2023).

Education serves as a powerful tool for individuals to attain knowledge, skills, and values that can help them navigate their lives and become active, productive members of society. It provides opportunities for individuals to learn about their world, and to develop their critical thinking and problem solving skills. The role of education in personal and professional development cannot be overstated. It provides a foundation for lifelong learning and personal growth, and equips individuals with the skills necessary to adapt to changing circumstances and pursue their dreams and aspirations. Moreover, education has a significant impact on social and economic development. It is widely recognized that Nations with a welleducated population tend to boast stronger economies and a higher degree of innovation (Citation not provided), and greater political stability. This is because education helps build a knowledgeable, skilled, and innovative workforce, which is crucial for economic growth and development. Education also plays an important role in reducing poverty and inequality, as it provides individuals Individuals who have the required expertise and understanding are equipped to actively participate in the workforce and secure better paying employment opportunities (Norris, 2023).

Education is a crucial component of our existence that has a powerful impact on both personal and collective outcomes. It's a valuable investment that equips individuals with the necessary skills to reach their aspirations and acts as a catalyst for economic and societal advancement. The significance of education cannot be overemphasized and investing in it is vital to guarantee a brighter future for all. Education has a considerable effect on elevating the social-economic wellbeing of individuals and The collective community. It broadens for understanding, imparts critical abilities, and fosters positive shifts in behavior and perspectives, thus propelling growth with greater certainty (Agrawal & Bishnoi, 2023). Higher education graduates are expected to be equipped to meet the demands of the business world and changing lifestyles (Widyatuti &

Jauhar, 2023). The lack of education and illiteracy often restricts access to information and negatively impacts people's livelihoods (Tonegawa, 2022). To effectively manage education, institutions incorporating technology, such as electronic modes The education system provides various learning opportunities that are accessible through multiple channels (Dhiman, Bharti, Gaur, 2023). Virtual provides students education with educational opportunities through synchronous and asynchronous technology (Husain, Iqbal, Muhammad, 2022). Virtual Reality is utilized in education as an alternative way of learning and involves creating simulations that resemble reality (Gusman & Huzein, Government policies regarding distance learning require educators to use technology as an educational tool, which is widely implemented in educational institutions (Zulkifli, 2022). Modern online education expands the accessibility and flexibility of education, leading to a restructuring of the education system and reallocation of resources (Li, 2022).

The importance of education in shaping the future of society is undeniable. Education equips individuals with the necessary knowledge and skills to face challenges and adapt to changes in the world. It empowers people Gain autonomy and create a positive impact on their own lives on the expansion and enhancement of the neighborhoods in which they reside. As some field of education continues to evolve and advance, it is crucial for educators and institutions to stay updated with the latest innovations and advancements in teaching methods and technology (Chen, Chen, Li, 2021). The teaching profession is crucial in the education system, with teachers responsible for imparting knowledge and skills to students. It requires individuals with a passion for education, strong commitment to their students and society, and a bachelor's degree in teacher education (Setyaningsih, Muchtarom, Rejekiningsih, 2019). The right perception and motivation for the profession is also essential (Setyaningsih, Muchtarom, Rejekiningsih, 2019). (Setyaningsih, Muchtarom, Rejekiningsih, 2019). The utilization of technology in education has also become increasingly common in recent years. Electronic modes of education and virtual reality have been implemented in many institutions, providing students with new and innovative ways to learn (Dhiman, Bharti, Gaur, 2023, Gusman, Huzein, 2022). Online distance education has also expanded the scope of education, allowing individuals to access educational resources regardless of time and location (Li, 2022). The integration of technology in education presents new opportunities for students and teachers, but also highlights the importance of government regulations in ensuring the proper use and implementation of these advancements (Zafarullah, Kanwal, Jaleel, Ashraf, Iqbal, 2022, Zulkifli, 2022). In addition, an education system that is strong, transparent, advanced and adaptive tends to produce more advanced products for the younger generation (Yanti, 2022). The concept of an education system refers to a pattern of education delivery that is approached usually at the state (or nation) level, the most important level where formal education is organized (Hatos, 2022). Interest and motivation to learn is very important in the learning process. A supporting platform is needed to be motivated in carrying out student hours activities properly. The learning technique that can be chosen is collaborative and creative learning in achieving effective output graduates (Lutfiani, Sunarya, Millah, Anjani, 2022). Acquiring knowledge is a dynamic experience that involves exchange of information between students and their educational sources in a structured educational setting. Education plays an important role as a systemic learning process to achieve increased student growth and development, which is manifested in changes in new behavior that is measurable as student achievement. To achieve this, one of the solutions is to develop a learning method and technique that is oriented towards student abilities. Because the purpose of education is not just the transfer of knowledge which in quotation marks means only storing the achievement of goals paying attention to the processes and abilities possessed by students. Learning

and learning activities are effective if their implementation is based on the potential of students who are synergized with appropriate learning methods and techniques, so that students who become the target of learners can grow and develop proportionally both in terms of physical, social and psychosocial (mental, intellectual and emotional children). It is also to obtain balanced and integrated results between intellectual abilities (cognitive), attitudes (affective), and skills (psychomotor). The teacher's role in using various teaching methods and techniques is also important in learning (Sari, 2022). This design was used to examine Health and Education in Spain, with data from the World Bank open data.

### **RESEARCH METHODS**

Utilizing secondary World Bank data, this model used was to estimate Health and Education in Spain. A 20-year research study was conducted from the year 2000 to the year 2020, and "vectors' autoregressive" are utilized to describe the link of variable one to the other variables. We use the multivariate regression approach to analyze the links between the variables EDCTN or Education and HLTH or Health in Spain:

Table 1: An explanation of the variable description that we will use

Variable	Description	Source	Unit Analysis
Education	Data on education that we found within 20 years, from 2000	World Bank	Percent
(EDCTN)	to 2020		
Health (HLTH)	Health Data in spain, over a vulnerable period of 20 years	World Bank	Percent
	from 2000 to 2020		

EDCTN  $_{t} = \beta_{0} + \beta_{1} \text{ HLTH}_{t1} + e_{t}$  fma 1 HLTH  $_{t} = \beta_{0} + \beta_{1} \text{ EDCTN}_{t1} + e_{t}$  fma 2

Information: HLTH: Health EDCTN: Education

e: erroneous title t: time sequence

β: degree in terms of causation influence

fma: method

For this study, every regression link is coupled using vector calculations, making each variable simultaneously the independent and dependent variable. Dickey-definition Fuller's of zero as obtained from PP analysis, and p=1 with  $\Delta yt=(\rho-1)\ yt\text{-}1+ut$  being prepared, when  $\Delta-$  This is some start attempt, diff operations were used. To "unit root test," In this investigation, the following equation was used:

 $\Delta Y 1 = \alpha_0 + \beta_0 T + \beta_1 Y_{t-1} + \sum_{i=1}^{\infty} (i-1)^{i} q \alpha_1 \Delta Y_{t-1} + e_t$ 

#### Caption:

Y are a unit root variables check.

T "linear pattern" variant portrayed, with "various in lag" are Yt1, 0 was showed as "one formula," and "t" as "trend's time" are indicated. The alternative theory (h0) and alternative unit root test hypotheses include the ones listed below:

H0:  $\alpha=0$ H1:  $\alpha\neq 0$ 

# **RESULTS AND DISCUSSION**

To determine whether a data set we use is a good or stationary data, we use several stationarity tests. An analysis is also performed for several possibilities if the data is not truly stationary. Table 2 shows some results from the effort to perform some unit root tests. The unit root test tries to prove whether a data has a unit root or not. After performing some transformations, we can rerun the test to ensure that the data is truly stationary

Table 2: The test of ADF's Unit Root on EDCTN and HLTH data in Spain

Variable Unit Root Incorporated in the Examination of the Augmented 5% Critical D	Description

		evaluation formula	Dickey-Fuller Test results	Value	
EDCTN	Level	Intercept	-1.362788	0.5792	
	First Diff	Intercept	-3.044486	0.0486	Stationer
HLTH	Level	Intercept	-1.871345	0.3379	
	First Diff	Intercept	-3.396265	0.0244	Stationer

The results of the ADF Unit Root test on the variables EDCTN and HLTH indicate that each variable has two outcomes, one at the level and one at the first difference. For the level of the variable EDCTN, the ADF Test statistic is -1.362788, which are more than 5% critical value by 0.5792. That means the variable EDCTN is non-stationary at the level. However, for the first difference of the variable EDCTN, the ADF probability is -3.044486, that was less 5% of 0.0486. That was indicates that the variable EDCTN is stationer on first diff. For variable HLTH, on level test, the ADF Test probability is -1.871345, are greater than 5% of

0.3379. That can be stated that the variable HLTH is non-stationary. Meanwhile, for the first difference of the variable HLTH, the ADF Statistics is -3.396265, that was less 5% probability of 0.0244. We know that was indicates that the variable HLTH is stationary at the first difference. In general, the results of the ADF Unit Root test show that both variables EDCTN and HLTH are stationary at the first difference. Therefore, both variables can be used in further testing equations. The next testing is the Optimum lag test, which can be seen at Table 3.

Table 3: The examination of the best Lag from 0 to 4 has been conducted on the data of EDCTN and HLTH in Spain

<u>-</u>						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-57.57434	NA	3.793405	7.008746	7.106771	7.018490
1	-15.92006	68.60706*	0.045527*	2.578830	2.872905*	2.608062
2	-13.07955	4.010132	0.053680	2.715241	3.205366	2.763960
3	-7.171002	6.951229	0.045906	2.490706	3.176882	2.558913
4	-2.758069	4.153348	0.050088	2.442126*	3.324352	2.529821*

The results of the Optimum Lag test on the EDCTN and HLTH variables showed that there are several indices for determine the ideal number of lags or delays were determined. We know that it was include LogL, LR, FPE, AIC, SC, and HQ. At the conclusion of several indices, It can be deduced or reached that the optimal number of lags for the EDCTN and HLTH data

in Spain is 1 to 4, depending on which index is used to determine it. However, usually AIC and SC are used as the main indices in determining the optimal number of lags, this is because lag 1 is the most different. Next is the Vector Autoregression Analysis (VAR) test, which as can be viewed in Table 4.

**Table 4: VAR Model Analysis** 

	HLTH	EDCTN
HLTH	0.950184	1.737929
	(0.11270)	(0.52941)
	[ 8.43134]	[ 3.28277]
EDCTN	-0.011937	0.686756
	(0.01814)	(0.08519)
	[-0.65821]	[ 8.06116]
С	1.950466	23.46827
	(1.45819)	(6.85009)
	[ 1.33759]	[ 3.42598]
R-squared	0.925995	0.960322
Adj. R-squared	0.917288	0.955654
Sum sq. resids	0.955493	21.08578
S.E. equation	0.237077	1.113705
F-statistic	106.3568	205.7251
Log likelihood	2.033833	-28.90744
Akaike AIC	0.096617	3.190744
Schwarz SC	0.245977	3.340103
Mean dependent	8.479053	119.7387
S.D. dependent	0.824339	5.288636

The outcomes of the VAR test on the HLTH variable as Health and the EDCTN variable as Education in Spain show that it can be inferred that there exists a correlation between the two variables, and the coefficients suggest that there is a causal relationship between them. In the first row, the coefficient 0.950184 on the HLTH variable indicates that the Health variable can affect itself with a t-statistic of 8.43134. In the second row, there is a relationship between the Health and Education variables with a probability of 1.737929, which shows that education positively affects health with a t-statistic of 3.28277. In the third row, there is a relationship between the

Education and Health variables which is negatively correlated with a probability of -0.011937, indicating that health negatively affects education with a t-statistic of -0.65821. In the fourth row, there is a relationship between the Education and itself, or Education and Education, with a probability of 0.686756, indicating that education can affect itself. The final conclusion from this VAR test result is that there is a cause-and-effect relationship between health and education in Spain. Health affects itself positively according to the existing probability, education, and vice versa, education also affects health and itself.

Table 5: The Granger Causality Test Performed

Null Hypothesis:	Obs	F-Statistic	Prob.
EDCTN does not Granger Cause HLTH	20	0.43324	0.5192
HLTH does not Granger Cause EDCTN		10.7765	0.0044

The null hypothesis of no Granger causality between EDCTN and HLTH cannot be rejected with a probability value of 0.5192, implying insufficient evidence to assert that EDCTN significantly affects HLTH. On the other hand, the hypothesis of no Granger causality from HLTH to EDCTN had a probability value of 0.0044, indicating significant evidence to state that HLTH significantly affects EDCTN. Therefore, it can be concluded that HLTH has a significant impact on EDCTN, but EDCTN does not have a significant impact on HLTH.

#### CONCLUSION

Education and health in Spain, are two important factors that greatly impact the overall wellbeing of the society. Education is seen to have a significant influence on health as it determines the knowledge and awareness of individuals about health and wellness. On the other hand, health also has a crucial role in maintaining the stability of education, as a healthy individual is able to concentrate and perform better in their studies. The two are interdependent and have a positive relationship with each other. A person with good health is more likely to pursue education and receive better opportunities, while education can lead to better health outcomes through increased awareness and access to healthcare facilities. Therefore, both education and health are crucial in ensuring a stable and prosperous society. The positive relationship between education and health highlights the importance of investing in both fields to achieve a better quality of life for the citizens of Spain. Education and health are positively correlated in Spain. We believe that access to quality education has a positive impact on health outcomes, and People who have a higher educational attainment tend to engage in healthier habits and have easier access to healthcare facilities. On the other hand, we also believe that good health is necessary for individuals to perform well in their studies and complete their education, leading to a positive feedback

loop between education and health. We hope to further understand the relationship between education and health in Spain and the potential benefits of investing in both fields for the well-being of the citizens.

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