

AN ANALYSIS OF THE MACRO- AND MICRO-MECHANISMS AFFECTING THE RELATIONSHIP BETWEEN EDUCATION AND DEVELOPMENT

TEREZA KOCOVÁ, MIROSLAV MARADA

Charles University in Prague, Faculty of Science, Department of Social Geography and Regional Development, Czechia

ABSTRACT

The aim of this study is to discuss the role of education in the process of development of poor countries. The study is divided into five sections, each of which is concerned with the relationship of education with one of the development indicators. Sections frame the given issue within a macro perspective, analyse the underlying micromechanisms and present specific examples found in the case studies. Overall, it has been illustrated that while the macrorelationship between education and development at the global level is quite evident, the specific individual mechanisms which enable such relationship are very diverse and dependent on the context in which they work.

Keywords: education, development, economic behavior, demographic behavior, inequality

1. Introduction

Our lives are constantly entangled with the process of education – everyday, we learn of something new, to do something new, or to use something new. Even though we might not always be consciously aware of it, this sum of knowledge, skills and attitudes, influenced by our abilities and experiences – education – affects our behaviour and impacts on our lives, especially in terms of their quality. The contemporary world has seen a dramatic increase in the importance of education as a lifelong process. Therefore, it is not surprising that a rising number of experts have started to consider economic capital or natural resources as a rather passive ingredient in the development process; instead, they favour human resources as the principal factor determining economic growth and social development (Todaro 2000).

Especially in the developing countries, education is the principal (and often singular) way to escape the so-called poverty trap. Who lacks in the necessary knowledge or skills is unlikely to succeed on labour market, which makes it rather difficult to provide material security for one self and one's family. Hanjra et al. (2009b) further suggest that education enables a person to adapt and modify their knowledge according to new situations, wherefore, for an educated person, it is easier to survive in a constantly changing world by adapting to changing conditions.

Education is one of the most important dimensions of human development, especially through its influence on human behaviour. As such, it shapes a wide range of human activities and attitudes – hygiene related habits, cultural and social values, economic behaviour, migratory

activity, demographic trends or their environmental consciousness. Although the universal right to education has been listed in the Universal declaration of human rights since 1948, yet even after the dawn of the 21st century, it is still not accessible to all. This is the reason why education has become a topic of global proportions, frequently featured in debates on the state of developing countries and followed attentively by a variety of international institutions lead by the UN.

It has become generally accepted that education brings significant benefits to the prospects of social development – more educated find it easier to get jobs, to provide for their families, have healthier lifestyles and subsequently live longer, too. (e.g. Silles 2009; Gyimah 2003).

It follows that, on average, more educated societies also tend to be more developed (according to both economic and noneconomic development indicators). If, however, we explore this relationship in more depth, we discover that things are not as straightforward as the previous assertion would lead us to believe. Specific local factors also have an impact on the way this relationship plays out. The successful impact of education on development can sometimes be determined by a detail, condition or event, which triggers the whole process of development through education. In this study, the application of education to development against the backdrop of such unique features is called a micromechanism.

Through an overview of available literature and selected case studies, this study seeks to analyse chosen micromechanisms of the relationship between education and development and to paint a detailed picture of their mutual interconnection.

The Study presents the following hypothesis – frequently accepted even within the wider public (media, schools) – which will be subjected to an analysis and either confirmed or rejected.

1. We expect a strong correlation between the level of education and the basic development indicators (GDP, gender equality index, rate of migration, fertility rate, infant mortality, contraception use) measured on the level of states.

2. We expect that, due to the complexity of development problems in different contexts, it will be impossible to identify a single dominant micromechanism defining the relationship between education and development. However, due to their frequent mention in literature (e.g. Breierova and Duflo 2002; Glewwe and Miguel 2007), the study will attempt to confirm the influence of health and hygiene as the most significant microfactors of development.

The study is divided into five chapters (economic activities of the population, migration, gender inequality, demographic trends, health), each of which is concerned with the relationship of education with one of the development indicators. Each chapter is then composed of two parts. The first frames the given issue within a macro-perspective (determines the relationship between education and the selected development indicator on the level of states) and graphically illustrates the correlation, while the second analyses the underlying micromechanisms and presents specific examples found in the case studies.

The study aims to provide a logical categorisation of the individual micromechanisms according to the aspect of human development they are related to. The purpose of this is to give a synoptic overview of the mechanisms through which various components of human development and education interact. Of course, it is impossible to capture all of these mechanisms, however, through the overview of available literature, the study seeks to identify and discuss as many of them as possible.

2. Sources of data and methodology

Summary reports of world organisations (UN, WB), which to quantify the current state of education and its trends across the world, serve as the primary data source for the adequate framing of the debate on the global level. The study has also made use of the UNDP (United Nations Development Program – a UN development project) annual reports. This program has helped to promote the use of the HDI (human development index) indicator and also oversees the fulfilment of the millennium development goals, which include the provision of basic education to all persons. Specifically, the study used data from the 2009 Human Development Report.

The World Bank provides information of the ongoing initiative to provide education for all on its Internet portal, which also served as a data-source. The study also made use of data from the PRB (Population Reference Bureau) portal, the 2009 World Population Data Sheet, specifically.

The study is based on an analysis of roughly one hundred academic articles, the overwhelming majority of which are foreign studies focused on the countries of southern Asia and sub-Saharan Africa and tend to be relatively recent (1990–2010). The used studies have been collected from roughly 80 different sources, usually peer-reviewed academic journals. The following sources have provided the greatest amount of used articles: Social Science & Medicine, World Development, Journal of Development Economics, Economics of Education Review, Journal of Policy Modelling. Less frequently (At least two articles from the given journal were used in the study) appearing periodicals include e.g. Agricultural Water Management, Economics Letters or Health & Place.

During the analysis, it is necessary to zoom in on the lowest possible level of analysis of the relationship between education and development. Attention is devoted to case studies and reports from various parts of the world (mostly from the developing countries). Appropriate articles concerned with the relevant issue were identified through the use of relevant keywords (education, development). A Systematic analysis of these articles then gave shape to the structure of this study. As some mechanisms appeared repeatedly, they came to form the individual chapters (effectively mirroring the fields of human development) – economic activity, demographic trends, health, gender inequality and migration. Categorisation has been uneasy in this case – individual micromechanisms frequently overlap and one item might fall within multiple categories. In certain specific cases, the decision regarding the relevant categorisation might have been somewhat subjective. Here, using the case study analysis, authors are trying to confirm the second hypothesis of this study. To confirm or to reject the first hypothesis, the relationship between education, here represented by the level of literacy, and the selected indicator of human development has been determined via regular methods of assessing interactions between variables (correlation analysis and regression analysis). A scatter plot has been constructed for each pair of variables (Literacy and a selected development indicator) and the regression line has been inserted into it. The combination of the scatter plot and the regression line already tells us a great deal about the interdependence of the involved variables. However, in order to get a better measure of the strength of the obtained relationship, the Pearson correlation coefficient (denoted as 'r') has also been calculated. The relationship between the given variables has then been expressed through the linear regression, defined by the regression equation:

$$y = a + bx$$

where:

x is the independent (explanatory) variable (in this case the level of literacy),

y is the dependent (explained) variable (in this case the selected human development indicator),

a is a constant, which determines the distance of the y axis intersection from the coordinate origin (the value of the function for $x = 0$),

b is a constant, which determines the slope of the angle of the regression line to the x axis.

The least squares method, which aims to minimise the sum of the squares of residual values (Hendl 2004), has been used to find the values of the a and b parameters. In order to further confirm whether the regression equation sufficiently explains the relationship between the two variables, the coefficient of determination (denoted as R^2), which states the share of variability of the y variable explained by the x variable (Hendl 2004), has been calculated, too. Both correlation analysis and regression analysis have been calculated with use of the SPSS program.

Of course, there are limitations in the methods of research, particularly in the analysis of micromechanisms that stand behind the relationship between education and development. The study is based on a large number (about 100) of case studies – it means that high validity of collected data is guaranteed, but at the price of non-repeatability of research. However, for the research of mechanisms which stand behind the relationship of

education and development, the methods and data collection are perfectly adequate, because the attempt in this case is to get to the lowest possible level of the issues of the relationship between education and development. So the method of analysis of case studies seems to be the best option.

3. Mechanisms determining the relationship between education and development

As mentioned above, individual micromechanisms have been organised into categories mirroring fields of human development. Towards the purpose of this study, this categorisation is logical and expedient. It enabled the identification of fields where the influence of education is strong, and those where it is weaker.

3.1 Economic activity of inhabitants

Primarily, education encourages the personal development of the individual and of human capital in general. An educated person finds it easier to find work and the country's labour force improves as a result. This filters into an overall increase in productivity of the country's economy (Hanushek and Wössmann 2008).

Figure 1 illustrates the relationship between education and the GDP per capita indicator (for purchasing power

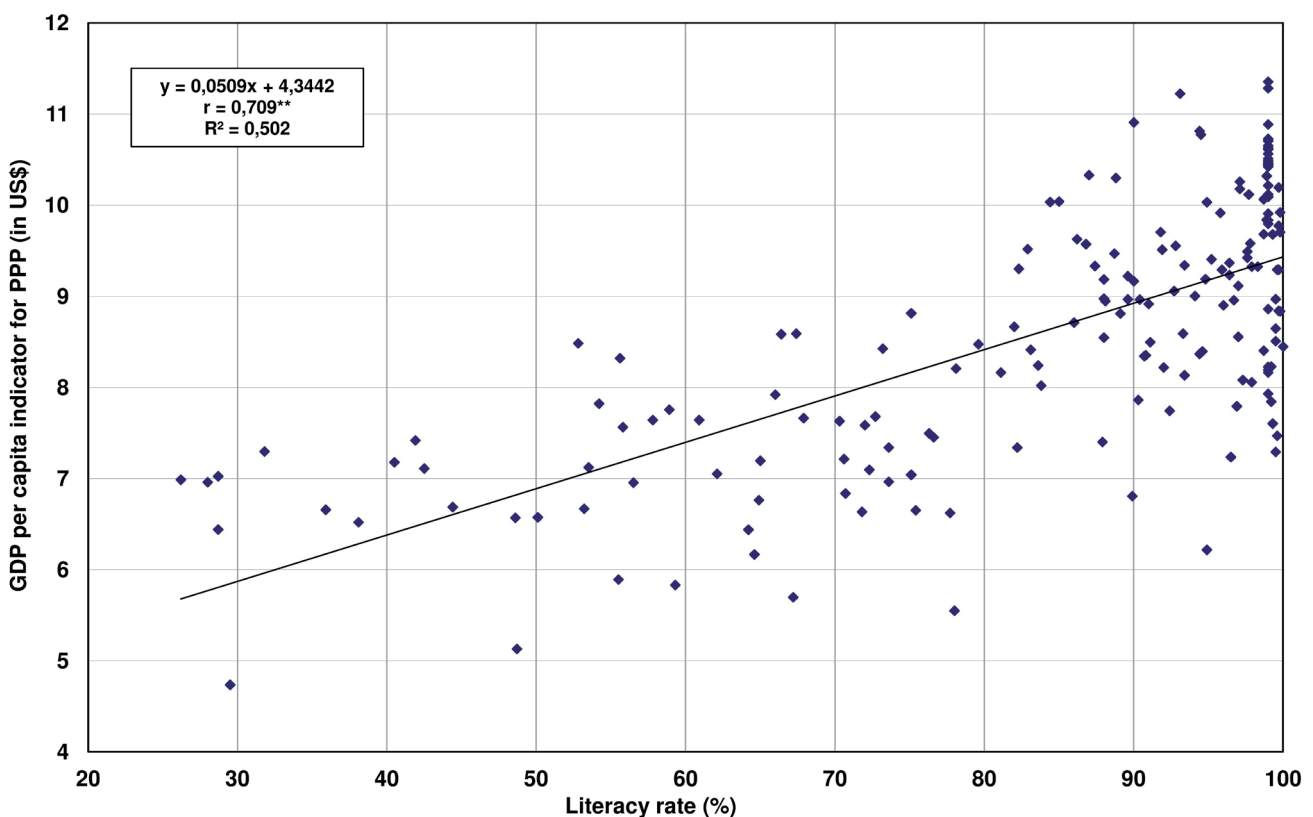


Fig. 1 Relationship between literacy rate and the GDP per capita indicator (PPP) by world's countries 2009.

Source: PRB 2009, HDR 2009

parity) on the global level. Increase in the level of literacy also indicates a higher level of GDP per capita in a given country. Countries with the lowest literacy levels are concentrated on the left side of the graph and it can be observed that their GDP per capita levels are also rather low indeed (e.g. Mali – literacy level 26.2% and GDP ppp of 1083 USD, Afghanistan – 28.0% literacy, 1053 USD of GDP ppp). In comparison, the right side of the graph concentrates countries with literacy levels reaching up to 100% and an average GDP ppp of 35,000 USD.

According to Hanjara et al. (2009b), people with more education tend to be more flexible in terms of technological changes. This increases the innovative capacity of the economy, because educated people can accept and apply new technology (modern agricultural technologies, artificial fertilisers), but also to improve upon it and spread it. For literate farmers, flexibility mostly implies the ability to adapt to changes (e.g. climatic changes). As a result, outputs achieved by literate farmers exceed those achieved by illiterate ones. For example, farmers who use reasonable amounts of artificial fertilisers experience returnability of seasonal production of 36% and 69.5% of annual production (Duflo et al. 2008). Hanjra et al. (2009b) argue that educated farmers, who soon acquainted themselves with modern varieties of rice and wheat, were a chief cause of large outputs and surpluses achieved in some parts of developing Asia and a subsequent reduction in poverty. Azhar (1991 cited in Hanjra et al. 2009b) claims that 1 year of extra education for a farmer in Pakistan (applied to farmers with 4 or more years of completed school attendance) increases the agricultural output of wheat (by 1.28%) and rice (by 1.25%). According to Birdsall (1993 cited in Ranis et al. 2000), farmers with 4 or more years of completed education are three times more likely to use artificial fertilisers and other modern technologies than farmer without formal education. A Nepalese study (Jamison and Moock 1984 cited in Ranis et al. 2000) presents the evidence that farmers who have completed at least 7 years of school attendance experience an increase in productivity – wheat production is up by a quarter, rice production by 13%. An Ethiopian study (Asfew and Admassie 2004) asserts that an extra year spent in education increases the likelihood of artificial fertiliser utilisation by 2.7 % for all adult members of a household and by 1.5% for heads of households.

Education changes a person's behaviour, which affects their economic activity by a changed attitude to the management of money. More educated persons have an increased propensity towards business and investment. Whereas illiterate persons tend to spend their finances on consumer goods, those with more education are more likely to 'use' their money more productively – such as investment, which has been confirmed for example in an American study by Cho (Cho 2009). The study demonstrated, among other claims, that education also increases the level of saving security, from no savings at all, through secure savings, to luxury oriented savings.

The micromechanisms of economic behaviour are associated with the frequently discussed topic of microcredit. Microcredit provides access to loans to people who would have otherwise never been able to obtain them. This includes primarily small loans to farmers in order to support their agricultural activities. Microfinancing, as a mechanism, is not directly influenced by education, but it serves as a springboard. The way a person is able to make use of such springboard, however, is determined by their skills abilities, which can be significantly expanded through education. An educated person can make better use of their talents, as well as of the microcredit system, for their benefit. In this case then, it could be argued that education presents an opportunity to escape the poverty trap, with the system of microcredit serving as a useful tool in the process.

3.2 Migration

Although education transforms people's migratory habits, the connection between education and migration is far from unambiguous (Williams 2006). The following lines will reveal that while in some instances education actively encourages migration, in other situation it exercises quite the opposite effect and migration remains the domain of the less educated in such case.

Figure 2 demonstrates that no general assertion can be made about the relationship between education (represented by literacy) and migration (represented by the level of emigration) on the global level.

Generally, migrants tend to gravitate towards destinations with a higher value of HDI than their place of origin (HDR 2009). Migration from developing countries to the developed ones therefore appears as most beneficial. In such case, the migrants' income is on average going to increase 15 times (up to 15,000 USD annually), the amount of their children enrolled in school doubles (increases by 47–95%) and infant mortality among their offspring decreases from 112 to 7‰ (HDR 2009).

Education can have a positive effect on migration in the case that educated people cannot find satisfactory employment in their country and migrate to a more developed country, where their chances of attending a higher quality educational institution or obtaining a more lucrative job increase significantly (HDR 2009). This migratory effect would be positive in a scenario under which these educated migrants return to their countries of origin enriched by new experiences. If, however, these migrants do not return, possible positive effects are limited to the impact of 'remittances' – finances sent back home to provide for families left behind (HDR 2009).

On the other hand, the second most numerous group of migrants is comprised of the poorest and most vulnerable. Reasons for such migration usually include attempts to escape internal upheavals in the country of origin – natural catastrophes, political instability or

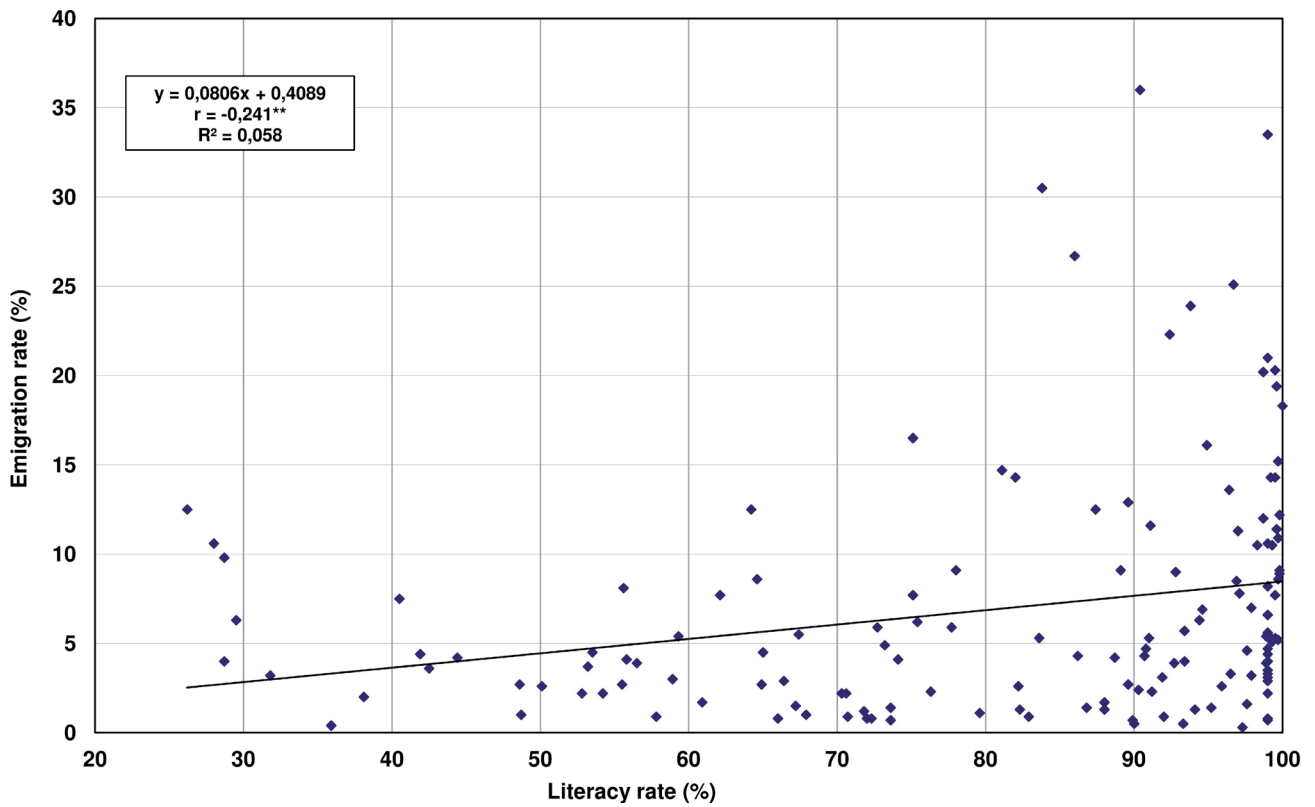


Fig. 2 Relationship between literacy rate and the level of emigration by world's countries 2009.
 Source: PRB 2009, HDR 2009

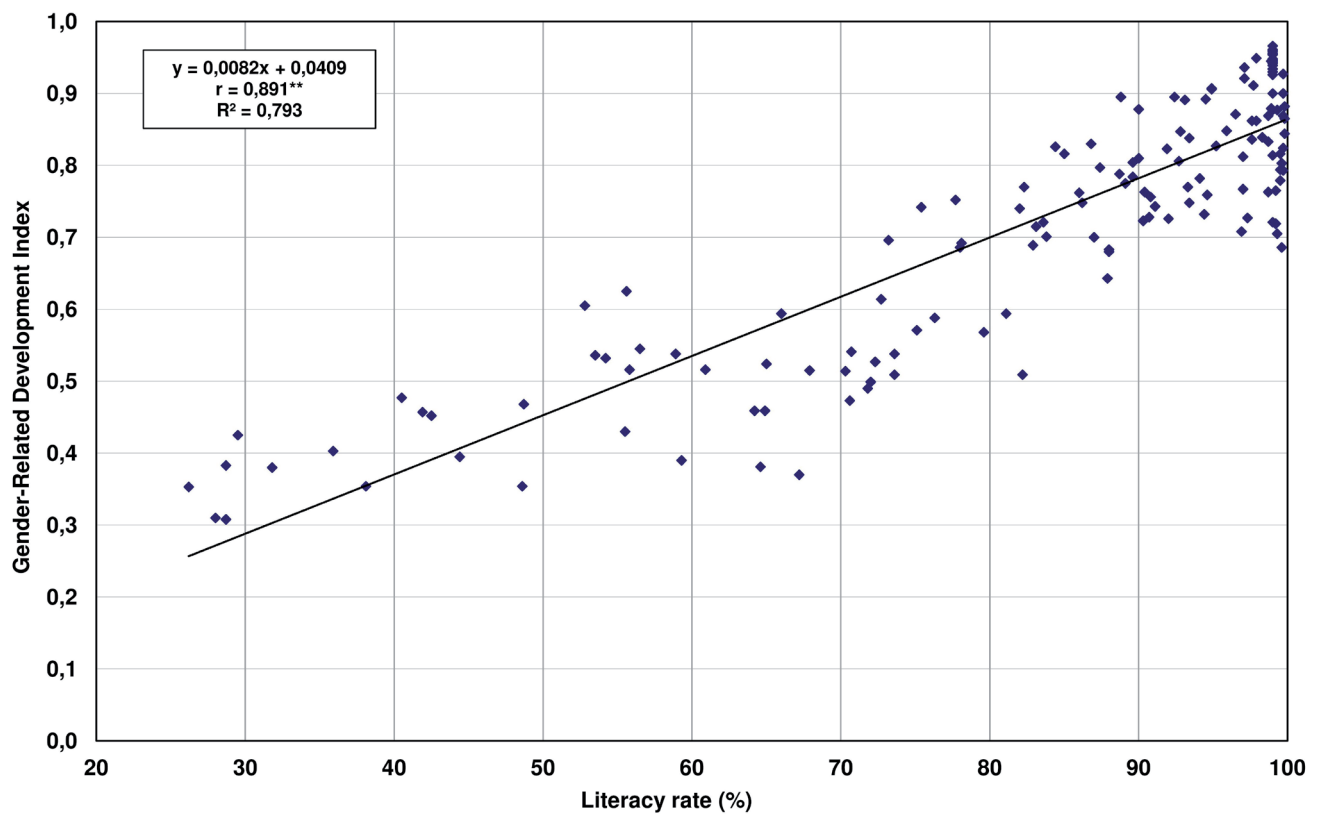


Fig. 3 Relationship between literacy rate and Gender-Related Development Index by world's countries 2009.
 Source: PRB 2009, HDR 2009

armed conflict (HDR, 2009). Due to a lack of resources, these migrants rarely travel very far and frequently settle right beyond the borders of their home country (does not necessarily entail a migration to a country with a higher HDI). In such case, the influence of education on rates of migration cannot be verified.

According to a Nepalese study (Williams 2006), the achieved level of education influences migratory behaviour of both men and women. A man who has completed 1 year of formal education has a 1.06 times higher chance to migrate than a man without any formal education. A man with 5 years of education has 1.34 times the chance and a man with 10 years of education has 1.79 times the chance of an uneducated man. However, in terms of school attendance, men who never started school attendance are 1.5 times more likely to emigrate, for women; the chance is 2.33 times higher.

3.3 Gender inequality

The most significant behavioural changes affected by education are to be found in the field of cultural patterns. Education significantly improves the status of women, who in countless societies lack even the most basic of rights. The under-education of women in particular often has very negative consequences for the development prospects of a country.

Figure 3 sheds light on the relationship between education (here represented by the level of literacy) and the gender equality index (Gender-Related Development Index, GDI). GDI is calculated as an aggregate value of gender equality in three aspects of the Human Development Index: possibility of a long and healthy life (health), knowledge (education) and adequate living standard (GDP). A GDI value of 1.00 indicates an absolute equality between genders in all three dimensions of human development (HDR 2009). The graph then demonstrates the positive correlation of the two variables – the higher the literacy rate in a country, the closer such country is to achieving gender equality in health, education and living standards.

The growth of female education has a large impact on a number of social activities. In very general terms, it could be argued that education helps to combat the myth that women should be confined to their households. Literate women become actively engaged in the labour market and earn money, which significantly contributes to reducing gender inequality. Women who work and earn money contribute financially to the life of the household, which increases their position and status (Asfaw and Admassie 2004). Salary provides women with freedom and independence and their potential can develop more easily than is the case for women without economic resources of their own.

Public education can also help in the struggle for greater gender equality. According to Geo-JaJa et al. (2009),

countries which have undergone market reforms with significant cuts to public education, exhibited a clear tendency towards a negative ration of boys and girls enrolled in schools. This further confirms the role education has in terms of reducing gender inequality.

A number of studies concern themselves with the influence of mothers' literacy on their children. According to Borooah (2004), daughters of illiterate mothers tend to be discriminated – they are 5 per cent less likely to receive inoculation. Similarly, their caloric intake is 5 per cent less likely to be equivalent to the caloric intake of the sons.

Educated people find it easier to get better jobs. In certain cases, this has a fundamental impact on gender equality, especially the growth of women's social status. According to the Population Council (2001 cited in Geo-JaJa et al. 2009) and Blackden and Bhanu (1990 cited in Geo-JaJa et al. 2009), every year of formal education increases a woman's salary by 10–20%.

A study from Thailand (Nakavachara 2010) demonstrated that an increase in women's education helped to bring about a significant decrease in the uneven rewarding of men and women for their work – whereas in 1985, an average male worker would earn 34% more than an average female worker, in 2005, this difference amounted to only 9%. We need to keep in mind, however, that the decrease in inequality has also been facilitated by an overall increase in female participation in the workforce, where women have come to form a majority.

On the other hand, possible negative impacts of female literacy may include a decrease in the amount of time mothers spend with their children, since women who do not go to work tend to spend more time caring for their children (such as a longer nursing period) (Leslie, 1988).

3.4 Demographic behaviour and trends

Rise in the status of Woman is often reflected in a declining fertility rate. Figure 4 displays the apparent negative correlation between the rate of literacy and the Total fertility rate for countries in the world. Numerous studies (McCrary and Royer 2006; Grimm 2005; Roth and Ngugi 2005) confirm that the higher a level of education a woman achieves, the lower on average tends to be the amount of children she gives birth to.

Osili and Long (2008), for example, argue that every extra year a woman spends educating herself decreases her fertility by 0.26 (for children born before the age of 25). Educated women are more likely to plan their families – increasing levels of education are also accompanied by a higher percentage of women using some kind of birth control (Murthi 2002). A study conducted in Pakistani slums (Sarmad et al. 2007) documents that 61% of literate women use some form of contraception, but only 38.5% of illiterate ones adopted such measures. The fertility rate of literate women then stood at 2.7 children per

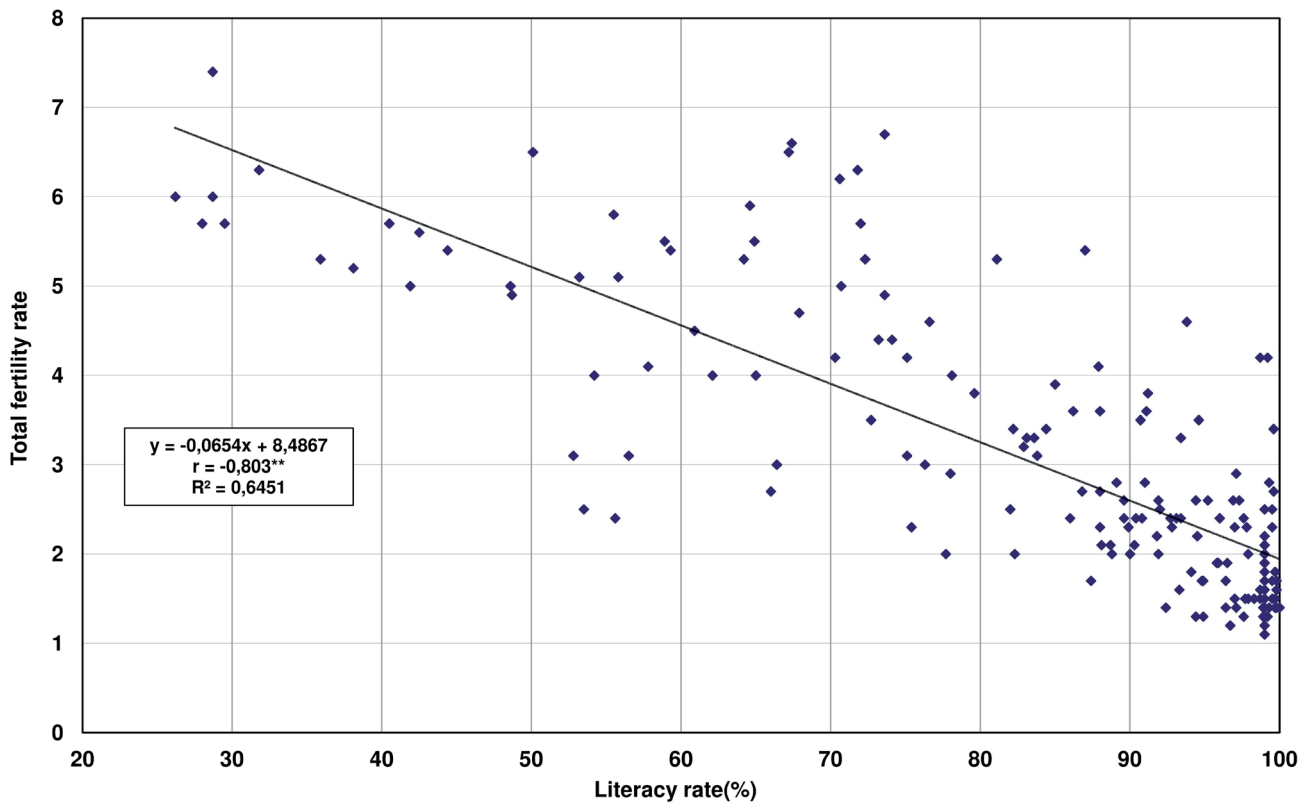


Fig. 4 Relationship between literacy rate and total fertility by world's countries 2009.
Source: PRB 2009, HDR 2009

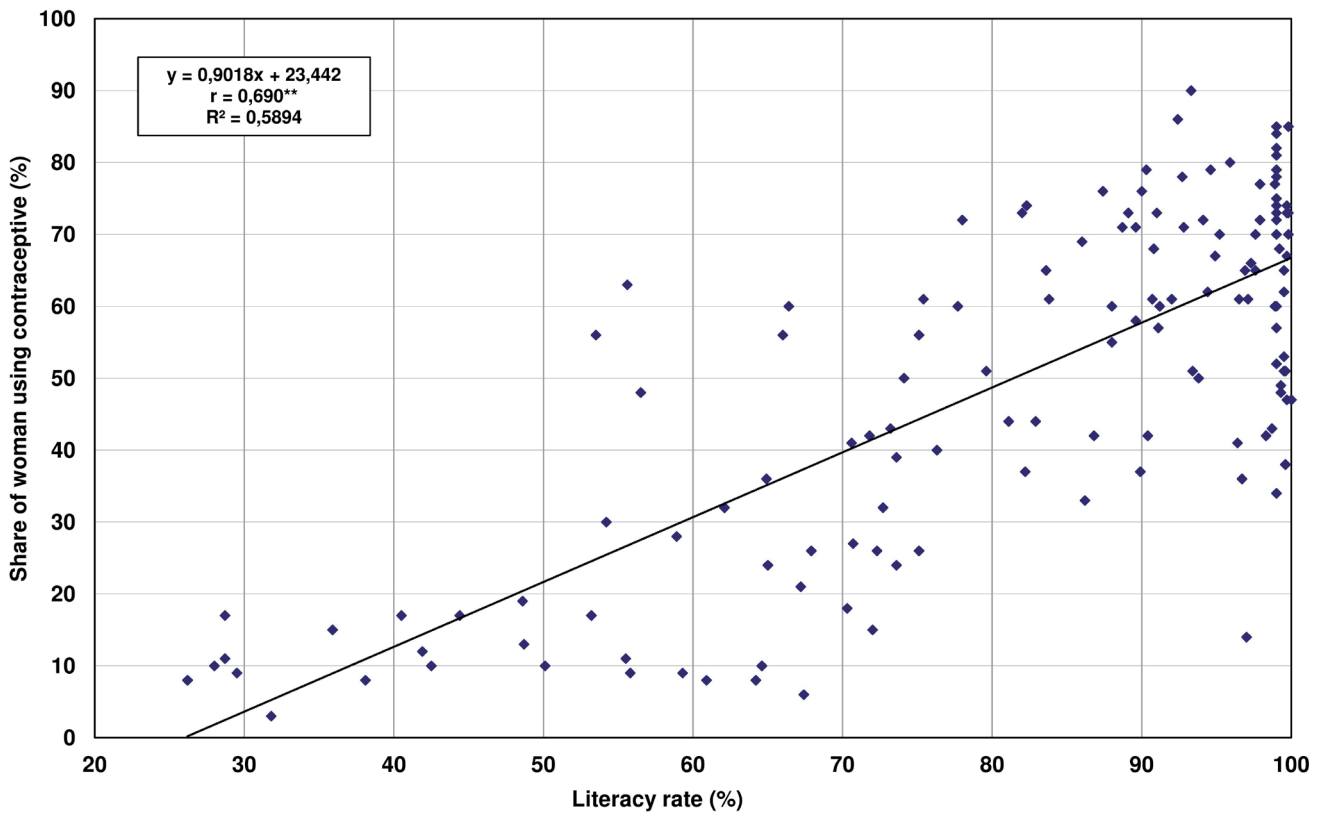


Fig. 5 Relationship between literacy rate and the share of women using contraceptives by world's countries 2009.
Source: PRB 2009, HDR 2009

woman, whereas illiterate women gave birth to 4 children on average.

Family planning has a serious impact on the lowering of fertility, as well as the delay of sexual activity. Therefore, educated women possess a greater reproductive autonomy than women without education (Basu 2002).

Educated women tend to plan their lives better, including the most expedient time to have children – longer education proportionately affects the age in which a woman enters marriage or the length of the intervals between pregnancies. Every year of school attendance, according to Breierova and Duflo (2002), delays the age of marriage for a woman by 0.38 years.

Aside from this, a decline in fertility is vital for an improved financial security of many households. High fertility needs to be put in the context of considerable costs associated with raising a child. Moreover, children from big families have a much smaller chance of attending school, because their family cannot afford it (Hanjra et al. 2009).

Figure 5 captures the connection between literacy and the share of women using contraceptives. For the developed countries, the share of women using contraceptives oscillates around 80%. These countries are located on the right side of the graph. The least developed countries, on the other hand, are located on the left side of the graph and their share of women using contraceptives reaches less than 20%. Again, a general assertion can be made that increased education fosters a growing number of women who protect themselves from unwanted pregnancies by contraceptive measures.

Educated women are better able to care for their children – understand doctor's instructions, allow their children to be inoculated or provide them with better quality food (Buor 2003). All of this helps to reduce infant or child mortality. Silles (2009) claims that one year spent in school increases the likelihood of being in good health by 4.5 to 5.5 per cent (depending on the exact approach towards measuring health).

Family planning and contraception use have further impacts on the lives of women – aside from the direct effect of protection from unexpected pregnancies, they positively affect the health of both adults and children. There is a negative correlation between the incidence of disease and the level of education (Vandemoortele and Delamonica 2000). The use of condoms reduces the risks of sexually transmitted diseases (e.g. HIV/AIDS). Furthermore, the reduction of incidence of such diseases is further facilitated by education through a delayed age of sexual activity and a lesser amount of sexual partners.

It has also been confirmed (Ozalp et al. 1999) that more educated women frequently use combined peroral contraception, whereas less educated women prefer condoms and intrauterine devices.

The influence of education on the use of contraceptives is also recognisable among men. According to an Ethiopian study (Tuloro et al. 2006), literate men use

contraceptive measures 3.7 times more often than illiterate men.

However, the achieved level of education does not guarantee a positive change in women's behaviour. The positive effect can 'wear off', as some studies have documented. For example, if the woman lives in a secluded rural area, upon the completion of the relevant educational level (primary level, in this scenario), she may simply return to entrenched stereotypical behavioural patterns and the effect of education can simply evaporate (Buor 2003). This risk is further exacerbated if the woman lacks the opportunity to practice her new-found knowledge and gradually regresses back into illiteracy. The quality of the educational institution also plays an important role in preventing or abetting such occurrences.

Education affects reproductive behaviour in other ways, too. A more educated woman is more likely to choose a partner who is better able to provide for their children (Breier and Duflo 2002). Also, literate women are less likely to enter relationships with their relatives.

Education also affects the issue of preferential attitudes towards the gender of expected children. In a number of (predominantly developing) countries, the child's gender is an issue of concern, with boys being uniformly preferred. This attitude can be altered through a painstaking process of which education is an integral part (Murthi 2002)

3.5 Health of inhabitants

Education should definitely be considered among the principal factors affecting people's health and hygiene. Illiterate persons tend to have an unfavourable view towards modern medicine and remain dedicated to their traditional healing practices. Education helps to remove this barrier and promotes the use of modern medicine and methods.

Figure 6 expresses the negative correlation between the level of literacy and infant mortality. Generally, it can be asserted that with a rising level of education in a country, infant mortality declines. Infant mortality serves as a very useful indicator of development, since it reflects the health conditions within the researched area. Some studies (Glewwe and Miguel 2007) have confirmed that ill health and diet reduce the length of school attendance in years, as well as the amount of time children spend by studying and school preparations.

Education also plays a pivotal role in the combat against one of the most devastating diseases in the (not only) developing world – HIV/AIDS (Vandemoortele and Delamonica 2000). Lack of understanding (especially among women) represents the greatest risk in terms of contracting the disease. Illiterate women are 3 times more likely to assume that a healthy looking person cannot be HIV positive. Similarly, illiterate women tend to be 4 times more likely to believe in the inevitability of

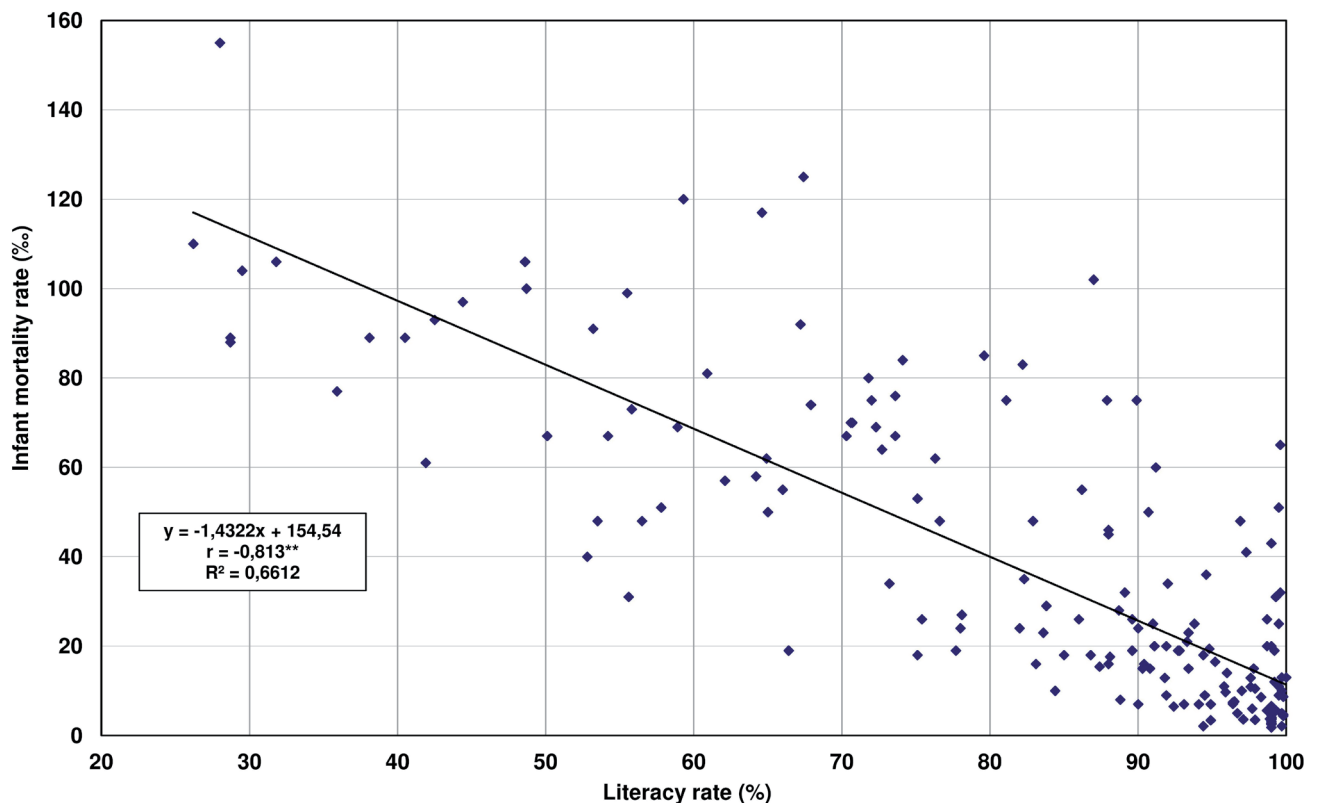


Fig. 6 Relationship between literacy rate and infant mortality rate by world's countries 2009.
Source: PRB 2009, HDR 2009

HIV/AIDS than educated women are. Illiterate women are also on average 3 times more likely to assume that HIV/AIDS cannot be passed on from a mother to her child (Vandemoortele and Delamonica 2000). According to De Walque (2007), educated women are more likely to react positively to information campaigns on HIV/AIDS.

The topic of education and decreasing child mortality has been picked up by Bhuiya and Stretfield (1991 cited in Buor 2003), who present evidence of a difference between child mortality of children of uneducated mothers and those who have completed 1 to 5 years of primary education. The chance of death is reduced by 45% for boys born to literate mothers and by 7% for their daughters. The difference made to child mortality by attending more than 6 years of school is even more pronounced – The chance of death of a child of a mother who completed 6 or more years of formal education is 70% lower for boys and 32% lower for girls. Geo-JaJa et al. (2009) assert that child mortality in the developing countries decreases by 5 to 10% for every year of the mother's education. According to Basu and Stephenson (2005), even a low education on the part of the mother significantly increases the child's chance of survival.

There are a few rare studies, which show a positive correlation between education and child mortality – e.g. Macassa et al. 2003, Adetunji 1994). This occurrence can be explained by a tumultuous situation within the country (Macassa et al. 2003), or might be related to social

pitfalls of young women, who, after the completion of their education, opt for having a child rather than searching for a job. The potential inability to find an adequate work opportunity can be psychologically rather taxing and frustrating, and this might transfer on to the child. (Adetunji 1994).

Certain studies also stress the role of the father's education on child mortality. In an analysis from Mozambique (Macassa et al. 2003), it emerged that children of fathers with primary education are 1.93 times more likely to not survive than children of fathers with secondary or university education. Children of illiterate fathers are 2.57 times more likely to die than children of fathers with secondary or university education.

Education also seems to have a positive impact on the development of progressive social norms. This way, education achieved by a group of women can affect the behaviour of other women in their community. The norm of lower fertility, which can spread throughout an entire community thanks to the influence of some educated women, might serve as an example of this. (Murthi 2002) On the other hand, in areas where education is not widespread, educated women might suffer from the very absence of norms which would legitimise lower fertility.

It seems as generally valid to accept that even a low level of education is better than straight up illiteracy, because, in certain situations, it can save lives. There have been, however, also confirmed cases when low education

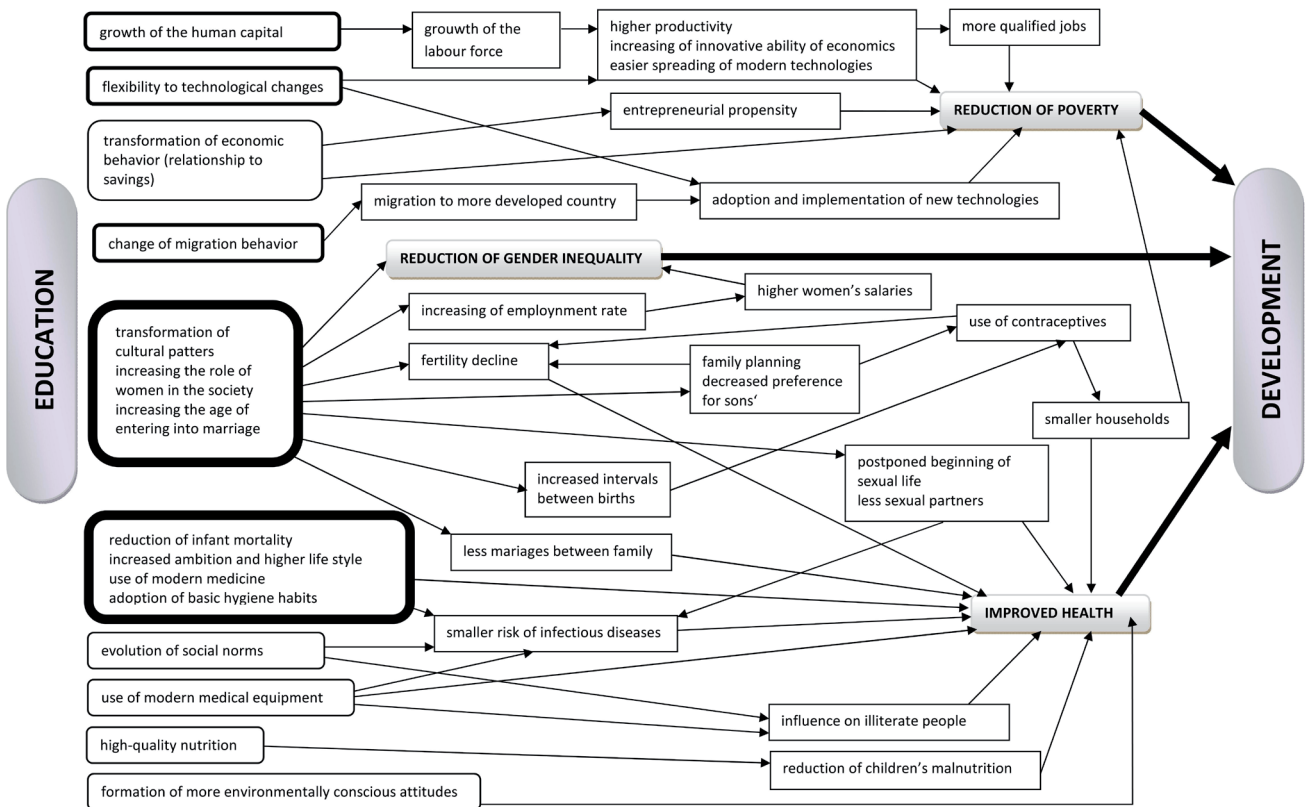


Fig. 7 The selected mechanisms facilitating the relationship between education and development. Source: author’s research

proved to be somewhat counterproductive – e.g. a study of the Brazilian slums (Kaufmann 1991 cited in Basu and Stephenson 2005) uncovered occurrences when women tried to protect their families from the encroaching cholera epidemic by washing their cutlery and food with water. They did not, however, understand that the quality of the water is also of importance, wherefore the epidemic kept on spreading even more vigorously.

4. Conclusion

Education has an undeniable impact on human behaviour. Educated persons have access to extensive opportunities to improve their lives, be it a more rewarding job, better health or higher social status. A number of works cited in this study stress the importance of even elementary education as an effective facilitator of positive developments. Even a trivial understanding of hygienic practices can save lives by tens of thousands. The knowledge of the written word then helps a person to understand the world around them and to (figuratively or literally) survive in it.

Even through education can be generally considered to be a very positive factor in the facilitation of human development, in certain cases, this assertion is not without its ambiguity. This can be demonstrated on the case of migration, where education influences people’s migratory

habits, but whether that is a positive or a negative occurrence is subject to debate.

Nevertheless, a clear majority of articles and studies from various parts of the world analysed here affirms the position of education as a chief component in the process of human development. Directly or indirectly, it influences human behaviour and subsequently contributes to human development.

Hypothesis 1 has been verified in the beginning of the individual chapters, where the relationship between education and the selected development indicators is illustrated by graphs. It is apparent that all of the presented graphs (with the exception of the rate of emigration) demonstrate a clear correlation between education and the development indicators concerned.

In terms of education and its relation to migration (literacy rate and rate of emigration), only a negligible correlation has been established. This is caused by a somewhat double-edged impact education seems to have on migratory behaviour – people with high levels of education predominate among the migrants who migrate to countries with a higher HDI in search of opportunity, whereas persons with the lowest measure of education form a sizable group of migrants engaged in forced migration due to political instability, conflicts, or natural catastrophes.

Subsequent sections of the individual chapters then sought to illuminate the relationship between education and the development indicators through an analysis of

the underlying microfactors. Due to a strong degree of specificity of every country (or location) in the world in terms of culture, religion, demographic character or geographic location, it is impossible to formulate general conclusions, which could categorise these mechanisms into categories applicable to all countries of the world. Mechanisms can differ region to region and are locally specific. In one area of the world, a given mechanism can act as an engine of development, whereas in another place can have the opposite effect.

Figure 7 presents a simple schema of the relationship between education and the individual development indicators. It also includes the most important mechanisms involved in such relationship (selected according to the frequency of their appearance in the studied literature).

The left side concentrates mechanisms directly triggered by education. These are then connected with intermediate mechanisms through the use of directional arrows. Development then represents the final goal, which mechanisms seek to influence. This final stage, however, is directly preceded by three principal mechanisms with direct influence on development, and which stand as superordinate to the micromechanisms that lead up to them. These are: reduction of poverty, reduction of gender inequality and improved health.

Mechanisms directly affected by education (those in rounded boxes) are further divided in to three categories, which is expressed by the width of the circuit line. The wider the line, the stronger the relationship between education and the given mechanism – the more evidence has been found to substantiate such relationship. The weakest line symbolises that 3–5 studies have been found to support the relationship between education and the given mechanism, a line of average width represents the support of 6–15 studies and the thickest circuit line is reserved for mechanism supported by at least 16 studies.

The strongest relationship (37 studies) has been confirmed between education and the transformation of cultural social patterns primarily associated with the improving perception and position of women. The influence of education on the reduction of child mortality and adoption of hygienic habits also belongs among the strongest relationships (29 studies) identified during the analysis. Both mechanisms relate primary to health and hygiene – through decline of fertility, reduction of child mortality or the use of contraception etc. This topic certainly belongs amongst those most frequently discussed, since it relates directly to quality of life of an individual (and may often decide the very difference between life and death. Moreover, the issue of a growing status of women in some parts of the world (especially in the Islamic world) can be in itself rather controversial. A transformation of social structures and patterns is a complex and uneasy process, in which education plays a necessary, yet not a sufficient role.

On the other hand, the relationship between education and a propensity towards entrepreneurship, evolution of

social norms or a formation of more environmentally conscious attitudes appears considerably weaker. The less frequent appearance of these mechanisms in literature can be partially explained by their limited direct involvement with the issue of human survival, since they relate to a somewhat less fundamental field of human activity. This does not, however, imply that such mechanisms would be insignificant; they simply touch upon a slightly different area of human development.

It has been confirmed that due to the complex nature of development, no single micromechanism can be used to fully explain the relationship between education and development from a general perspective. Furthermore, based on the information obtained through the analyzed literature, it cannot be confirmed the factor of health and hygiene plays a dominant role in the relationship between education and development. After all, Figure 7 determines that the strongest relationship can be found between education and the transformation of sociocultural patterns. Therefore, **Hypothesis 2** cannot be confirmed.

Should it be required to highlight an area of human development which is affected by education and designate it as most significant, it would come down to a very subjective decision. It seems correct to assert that process of development needs to be supported in all of its aspects. Education is a principal agent in the process of development, which is facilitated by a score of mechanisms this study sought to discuss. These mechanisms, however, need to be considered as very locally specific. On its own, education is hardly sufficient – without socioeconomic, cultural and political within society, its effect can be rather limited.

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RESUMÉ**Analýza vztahu vzdělání a rozvoje**

Ve studii je diskutován vztah vzdělání a rozvoje, který je zde zkoumán na několika úrovních. Od globální, kde ho lze v rámci jednotlivých zemí zcela evidentně doložit, až na úroveň „mikromechanismů“, které za „makrovztahem“ mezi vzděláním a rozvojem stojí. Na základě rešerše přibližně 100 odborných studií jsou tyto mikromechanismy rozděleny do pěti kategorií – dimenzí lidského rozvoje (ekonomické chování, demografické chování, zdraví,

genderová nerovnost a migrace). Kategorizace přitom není snadná – jednotlivé mikromechanismy se prolínají a často lze některé z nich zařadit do více kategorií najednou, což vypovídá o jejich provázanosti. Vzdělání je naprosto zásadním činitelem v procesu rozvoje, nicméně se uskutečňuje s pomocí řady mechanismů, které je třeba považovat za lokálně specifické. V předkládané studii byl doložen nejsilnější vztah mezi vzděláním a změnou kulturních vzorců spojených především s růstem postavení žen. Vzdělání není samo o sobě dostačujícím faktorem, protože bez změn (socioekonomických, kulturních a politických) ve společnosti může být jeho vliv značně snížen.

Tereza Kocová

Charles University in Prague, Faculty of Science

Department of Social Geography and Regional Development

Albertov 6, 128 43 Praha 2

Czechia

E-mail: tereza.kocova@natur.cuni.cz

Miroslav Marada

Charles University in Prague, Faculty of Science

Department of Social Geography and Regional Development

Committee of Chairs for Study Fields and Programs

Albertov 6, 128 43 Praha 2

Czechia

E-mail: miroslav.marada@natur.cuni.cz