

An index for quantifying female education and child health in emerging economies

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ABSTRACT

Objective To construct an index to measure female education and child health in the least developed countries (LDCs) of Asia.

Methods and results The design of our index includes the variables of female education and child health defined in the goals of the Millennium Declaration. For this purpose, we used Pena's P₂ distance method for 2011, the last year for which data were available for the set of variables.

Conclusion We have proposed a territorial measure and classification of female education and child health in the LDCs of Asia. We believe that the most striking differences between countries relate to basic female education variables such as girls' primary completion rate, and female literacy.

INTRODUCTION

In 2000, the Millennium Declaration was signed at the United Nations General Assembly in New York. This document enshrined the Millennium Development Goals (MDGs) as the international community's collective commitment to create a better tomorrow for billions of people, prioritising efforts to reduce poverty and hunger; empower women; increase access to essential services like education, healthcare, clean water, and sanitation; and forge strong global partnerships for development.¹

Reducing the number of children who die before the age of 5 years is the fourth MDG (MDG 4). Reaching the MDG on reducing child mortality will require universal coverage with key effective, affordable interventions.² At the same time, systematic action is required to target the main causes of child death and the most vulnerable children.

This includes a stronger focus on neonatal mortality, which is now a driving factor in child mortality overall. Simple, cost-effective interventions such as postnatal home visits have proven effective in saving newborn lives. Emerging evidence has shown alarming disparities in under-5 mortality within countries, and these inequities must be addressed. Children born into the poorest households are almost twice as likely to die before age 5 as their wealthiest counterparts. Poverty is not the only divider, however. Children are also at greater risk of dying before age 5 if they are born in rural areas or to a mother denied basic education.¹

Further education also allows mothers access to more information on the prevention of widespread diseases such as malaria and AIDS in these areas, and in general, would permit the countries to achieve better standards of child health.³

What is already known on this topic

The improvements in child survival are seen at the very beginning of female education, whatever the initial conditions—socioeconomic, cultural, public services—and however unsatisfactory the nature of the schooling experience. A variety of datasets find a uniformly linear inverse relationship, with the risk of under-5 mortality falling by 2–5% for every additional year of maternal schooling.

What this study adds

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The improvements in child survival are seen at the very beginning of female education, whatever the initial conditions—socioeconomic, cultural, public services—and however unsatisfactory the nature of the schooling experience.⁴ A variety of datasets find a uniformly linear inverse relationship, with the risk of under-5 mortality falling by 2–5% for every additional year of maternal schooling.⁵

Education and health are strongly related. The substantial increase in education, especially of women, and the reduction of the gender gap have important implications, not only for health but also for the status and roles of women in society. The continued increase in educational attainment, even in some of the poorest countries, suggests that rapid progress in terms of MDG 4 might be possible.⁶

Thirty years of research on data collected throughout Africa, Asia and Latin America have confirmed the original findings⁷ that women's schooling was robustly associated with, and a possible determinant of, child mortality reduction in the less developed countries (LDCs) during the second half of the 20th century. The evidence shows definitively that a mother's schooling—at high and low levels of education, in cities and villages, under diverse economic conditions—is related to the chances of her child's survival.⁸ The more we learn about maternal literacy, the more it looks like an indispensable passport to life-saving services for mothers and children.



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For the LDCs, the women's path to development is the best path. Emphasis on the problems, concerns, and capacities of women is the bright hope of the development future.⁹ With increased literacy, women will be able to influence the economic, social and human aspects of their community. Education 'can enhance a society's ability to overcome poverty, increase incomes, and improve health and nutrition'.¹⁰ Education allows women to make informed choices and seek proper health care. A WHO report on Asia and the Pacific shows that female literacy rates are a strong predictor of maternal mortality rates; the more literate the female population, the lower the maternal mortality rate.¹¹

A factor that holds significant promise for improving child health levels is parental education in emerging economies.¹² Indeed, it has even been argued that parental education has contributed more to mortality decline than the provision of health services,¹³ and even small levels of education improve child survival.¹⁴

In the Cote d'Ivoire, it has been found that mother's schooling has a positive effect on child weight and height.¹⁵ In Indonesia, maternal schooling contributes to child micronutrient status directly, but also through its effects on nutrition knowledge and household expenditures.¹⁶

In this regard, evidence from 22 developing countries¹⁷ shows that there is a strong correlation between maternal education and markers of child health: infant mortality, children's height-for-age, and immunisation status. In three African countries, children with mothers whose education level was beyond primary school were less likely to be malaria-positive, with a significant relationship between maternal education and childhood malaria infection.¹⁸ Particularly in Kenya, overall, children born to mothers with only a primary education were 2.17 times more likely to be fully immunised than those whose mothers lacked any formal education.¹⁹

In this study we develop a synthetic indicator known as the P_2 distance method,^{20–26} to measure fulfilment of the MDGs in female education and child health in the LDCs of Asia, and to analyse the disparities present in 2011, taking the MDGs as the reference, in the framework of the ongoing discussions on the post-2015 MDGs. The LDCs of Asia are considered to be in need of the highest degree of attention on the part of the international community.²⁷

This indicator permits comparisons to be made for countries in 2011 using as a baseline reference the information contained in a set of social indicators by virtue of the detailed statistical information contained in the report on the MDGs,¹ which provide a more extensive and more reliable set of statistics on MDGs 1, 2, 3, 4 and 6 in Asia.

These statistics are jointly compiled from the work of the Inter-Agency and Expert Group (IAEG) on MDG indicators, coordinated by the United Nations Statistics Division. The year of analysis is 2011, but for those variables where information was not available for that date, the nearest year was taken as an alternative.

COUNTRY CLASSIFICATION

The results show that the country with the best female education and child health in 2011 was the Maldives. The Maldives was followed by Myanmar and Bhutan, with high relative values of these countries in most of the variables analysed of MDGs, above the average distance.

In contrast, Afghanistan, Yemen and East Timor were among the countries with the worst theoretical situations of female education and child health. In this regard, given the low relative

values of these countries in most of the MDG variables analysed, their position is not surprising.

This means that the maximum inter-country distance, between the maximum and minimum value obtained, which shows that the disparities of female education and child health in the LDCs of Asia surveyed, were high in 2011.

ORDERING OF THE PARTIAL INDICATORS

Finally, the correction factor of the partial indicators, that is, the relative importance of each variable in the final indicator of female education and child health in the LDCs of Asia, has been estimated. The first variable in order of entry is 'Gender Parity Index in primary level enrolment', meaning that it contributes 100% of useful and non-redundant information for calculating the DP_2 synthetic indicator.^{28–29}

The next variable in order of entry is 'Gender Parity Index in tertiary level enrolment'. We can see that 'primary completion rate, girls' is in position 3, and 'literacy rates of 15–24 years old, women, percentage' is in position 4, so these four variables associated with the MDGs of women's education present a high relative importance in the explanation of female education and child health of the countries studied.

CONCLUSIONS

The index of female education and child health was constructed using a large number of variables defined in the MDGs of the United Nations. It is clear that much more needs to be done for MDGs to be achieved by 2015.³⁰ The aim is to further cut child mortality by 2015 by two thirds from the 1990 level.

The evidence shows definitively that a mother's schooling—at high and low levels of education, in cities and villages, under diverse economic conditions—is related to the chances of her child's survival.⁸ The more we learn about maternal literacy, the more it looks like an indispensable passport to life-saving services for mothers and children.

Pena's DP_2 distance method shows the existence of territorial disparities in female education and child health in the LDCs of Asia in 2011, according to the values of the variables studied, indicating that these countries present certain differences with regard to attainment of the MDGs. This is a quantitative synthetic indicator, which includes the characteristic of multidimensionality to allow comparisons among the LDCs of Asia.

Specifically, the values of the synthetic indicator show a considerable gap between the maximum and minimum value obtained by the best- and worst-ranked countries in 2011: respectively, the Maldives and Myanmar on the one hand, and Yemen and Afghanistan on the other. The rest of the countries are between these extremes.

The variables included in MDG 2 ('achieve universal primary education') and MDG 3 ('promote gender equality and empower women'), seem to show the highest correlation with female education and child health in the LDCs of Asia in 2011. These goals can be considered very important for driving the child health of these countries in the coming years, in the framework of the aid strategies of international organisations whose aim is to reduce territorial disparities in female education and child health in the LDCs of Asia.

Finally, universal literacy, especially among women, decreases child and maternal health risks.^{31–33} Although some encouraging advances have been made in female education in the LDCs of Asia, especially those occupying the top positions in our classification, faster progress is required to achieve MDGs 2 and 3 in the coming years, which without doubt would result in better overall child health in the LDCs.

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Competing interests None.

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