# NIGERIA
## Development or
## Underdevelopment

?

### (Selected Seminal papers)

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## Chapter Eleven

# HEALTH, EDUCATION AND POPULATION IN NIGERIA'S DEVELOPMENT CALCULUS: THEORY AND EVIDENCE

## INTRODUCTION:

The significance of health and education in the development process of any economy needs no emphasis. On the other hand, the role of population depends on the stage of development of an economy. Nevertheless, it is apparent that the quality of a country's growth and development to a large extent depends on the state of health of the populace and the level of education.

The deteriorating state of Nigeria's social services and her bad performance in the provision of basic needs demands a re-appraisal of health, education and population in the country's development matrix. This has to do with the distributional effects of government efforts on health, education and population. Government for the most part is the supplier of health and educational facilities and in so doing indirectly influences the quantity and quality of the country's population. Health, education and population are closely related. The population has to be educated and part of the education involves the creation of health personnels (doctors, nurses, medical technologists, etc.) and only healthy people can produce, that is, can contribute to national income. The interrelationships must be dynamic in order for an economy to continue to grow. If the quality of health and/or education declines then population (labour force) and national output will decrease, ceteris paribus.

This paper argues that it is the efficient combination of health, education and population that stimulates aggregate output and development. The conventional inputs like capital, labour, etc. do not make explicit the importance of health, education and population in model of health, education and population in the development process. Consequently, this paper develops a model of Health, Education and Population (H.E.P) and utilizes the model in examining the place of H.E.P in Nigeria. The work is organized thus:

Section 1 briefly deals with the theory and develops the model. In section 11, we examine some evidence based on published works as well as comparing the situation in Nigeria with other developing countries. Section 11, analyses government policy and offers concluding remarks.

## SECTION 1: A PRIORI THEORIZING:

In recent times, economists and other social scientists have dwelt increasingly on the relation between economic development and population growth. However, it is not easy to separate cause from effect, that is, does economic development accelerate or retard population growth or is the reverse the case. There is present in the literature, at least three principal approaches to the economics of population analysis:

(a)     the theory of demography transition
(b)     the Malthusian population trap and
(c)     the new microeconomics of fertility (Kuznets, 1974; Schultz, 1974; Cochrane, 1975; Todaro, 1981; Becker, 1981; Easterlin, 1980).

The theory of demography transition is an attempt to explain that today's developed countries did pass through the so-called three stages of modern population history. Stage one summarizes the time when the developed countries experienced a stable or slow growing population due to a combination of high birth rates and an almost exact high death rate. Stage two took place when modernization coupled with improved public health methods, better diets and higher incomes resulted in a pronounced reduction in mortality. This gradually raised life expectancy from under 40 years to over 60 years in the now developed nations.

*"However, the decline in death rates was not immediately accompanied by a decline in fertility. As a result the growing divergence between high birth rates and failing death rates led to sharp increases in population growth compared to past centuries"* (Todaro, 1981, pp. 181.

Therefore, stage two marked the commencement of the demographic transition, the transitions from stable to rapidly increasing population. Stage three takes place when the forces and innuendoes of modernization and development cause fertility to begin to decline so that invariably failing birthrates converge with lower death rates resulting in little or no population growth.

The Malthusian population trap with all its derivatives centers on the inevitable population level as perceived by Rev. Thomas Malthus. He argued that while population grew geometrically the means of subsistence grew arithmetically. Consequently, the 'trap' reflects that population size that can just be supported by the available means, whatever the criticisms against Malthus his work was insightful in calling attention to the problem(s) of population explosion.

The microeconomics approach centers on the family sizes decision making in which individual levels of living becomes the main determinant as to whether a family will have more or fewer children. This approach is derived from the theory of consumer behaviour in which the agent (household) attempts to maximize satisfaction given a set of preferences for a range of goods subject to his own income constraint and the relative prices of all goods. Since these approaches form a part of our model, we will postpone detail explanation for now.

However, population in whatever form must be trained and utilized for economic development. It is population that constitutes the human resource of an economy. We have argued elsewhere that the development of man is a necessary and sufficient condition for economic take-off and development (Ekpo, 1986).

Human resources constitute the ultimate basis for wealth of nations. Capital and natural resources are passive factors of production; human beings are the active agents, who accumulate capital, exploit natural resources, build social, economic and political organizations and carry forward national development. Clearly, a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else (Harbison, 1973, p.3).

It is human resources that ultimately influence the character and pace of economic development in any economy. The major institutional mechanism for building human skills and knowledge is the formal educational system. It is a fact that educational opportunities in developing countries have increased at least quantitatively in recent years yet such countries continue to be underdeveloped. But what would have happened if educational opportunities had not expanded?

With regards to health, there is no doubt that only healthy people can produce or even be educated in the general sense in order for them to contribute to national development. Health (quantity and quality) is very vital when it is observed that many people in developing countries fight a constant battle against malnutrition, disease and ill health. Life expectancy in developing countries is generally low (about 48 years).

The infant mortality rates, that is the number of babies who die before their first birthday out of every 1000 live births, is very high (about 155 in the least developed countries) in developing economies. For developed countries, infant mortality rate is 27. The "efficiency wage theory" relates wages to health-related productivity gains and the theory is quite appropriate for developing countries (Bliss and Stern, 1978, pp.331-398; Griffin, 1978). It has been argued that "expenditures that increase productive capacity in future periods can be considered capital formation even when they take the form of food" (Herrick and Kindleberger, 1983, p.195).

## THE HEALTH, EDUCATION AND POPULATION (HEP) MODEL:

The theorizing on HEP could be represented symbolically as:

$$y = f(H, E, P, Q) \qquad . \qquad . \qquad . \qquad (1)$$

where:

$y$ = aggregate real output or income
$H$ = quality of health services or facilities
$E$ = quantity and quality of education
$P$ = population (macro-population relation)
$Q$ = other factors.

We expect that:

$$f1(H) > o; \ f1(E) > o \text{ and}$$
$$f1(p) > o$$

where 1 represents partial derivative.

The p(population) as an argument is utilized in a macro-population-development relationship. That is, it is assumed that population growth (no population problem) increases aggregate demand which in turn stimulates increases in national output.

Assuming a linear relation, equation 1, becomes:

$$\log y = \log H + \log P \qquad . \qquad . \qquad . \qquad (2)$$

Differentiating equation (2), we have

$$d \log y = d \log H + d \log E + d \log P$$

$$\% Dy = \% DH + \% DE + \% DP \qquad . \qquad . \qquad (3)$$

If population growth is stable, that is d logP + % DP = 0 then the rate of growth of health and education must equal the rate of growth of national output. Consequently, the rate

We hypothesize the demand for health services (Hd) asx:

$$Hd \quad = \quad Hd(w, c, le, T, Z) \qquad .. \qquad (4)$$

where:

| | | |
|---|---|---|
| w | = | real wage rate |
| c | = | cost (price) of health services |
| le | = | level of education |
| T | = | tradition or culture |
| Z | = | other factors like location |

The relationships are as follows:

H'd(w) >o; H'd(c) <o; H'd(le)>o;

H'd(T) >o

An increase in real wages will increase the demand for health services. The equations are not intended to be solved, that is, they are not market clearing equations. The higher a person's level of education, the more he or she will demand modern health facilities when needed. A person without formal education may prefer a native doctor (herbalist) to a physician. Also, if real wages are low and government does not subsidize health services, a person could seek the services of a herbalist.

In most developing countries, the cost (price) of health services is very low because of its being heavily subsidized by government. Hence, price may not be a good measure of quality. In urban centers most workers are provided medical facilities in their places of work and usually these facilities are better than that of the

Government. The medical facilities whether perceived as part of the workers conditions of service or slightly subsized reduces the demand for public medical facilities. In recent times in Nigeria, the cost of medical facilities (government and private) has been very high. The absence or lack of basic drugs in hospitals has increased the cost of medical facilities to most Nigerians.

From equation (4), a person with high real wage and a University education but with very strong traditional or cultural attributes may prefer the services of an herbalist to that of a physician.

On the supply side, it is assumed that Government is the major supplier of health facilities quantitatively and qualitatively.

Hence:

$$Hs \quad = H + Hf = Hs \qquad . \qquad . \qquad (5)$$

where:

| | | |
|---|---|---|
| Hsg | = | total supply of medical facilities |
| H | = | supplies of medical facilities by Government |
| Hf | = | supplies of medical facilities by private individuals. |

In the case of Nigeria, we will assume that Hf; is quite low though it is of some magnitude in urban centers. However for the majority of Nigerians (rural dwellers), government is the principal provider of medical facilities.

Education, which is a derived demand, is modeled thus:

$$Ed = Ed(Wd, Yr, Cd, Ci, T, So, Ep, Fs, V) \qquad (6)$$

where:

| | | |
|---|---|---|
| Ed = | demand for education necessary to qualify a person for entry into urban sector employment opportunities, |
| Wd = | wage and/or income differential, |
| Yr = | chance of success in obtaining job in the urban sector, |
| Cd = | direct private costs of education |
| Ci = | indirect or alternative costs of education, |
| T = | tradition or culture, |
| S = | social status or class, |
| Ep = | education of parents, |
| Fs = | family size and composition, |

V   =   other factors.

Based on equation (6), the following behavioural relations are in order:

Ed' (wd) > 0, the demand for education is directly related to the urban-rural sector wage differential. The greater the urban-sector/rural-sector income differential, the greater will be the demand for education. On the other hand, there exist an inverse relationship between the demand for education and the unemployment rate among secondary school leavers and university graduates.   A person, who successfully finishes the necessary schooling for entry into the; urban-sector employment market has a higher chance of finding a well-paid urban job than an individual without such a training. The chance of success is inversely related to the unemployment rate (e''(yr)<o)

The other relations are summarized:   E'

The direct costs of education include school fees, books, clothing, feeding, etc.  Consequently, the demand for education is expected to be inversely related to direct costs.  All things being equal, the higher the costs, the lower the private demand for education.  Also, the greater the opportunity costs (indirect), the lower the demand for education.

Individuals may demand education in order to enhance their social status or class.  Others may demand education because their parents are educated. An individual from a well-educated family may demand education for its sake and not primarily as an avenue to a well-paid job.  Family size and composition could influence the demand for education. In Nigeria, an individual from a low-income large family who is female may not be educated since traditionally males are accorded priority.

The supply of educational facilities that is, the quantity of school places at the primary, secondary and university levels is influenced mainly by political processes.  Hence, it is assumed fixed.

$$Es \quad = Es \qquad\qquad (7)$$

From the microeconomics of fertility we   state mathematically that:

$$Pd \quad = \quad Pd(T, Pc, pf, T, R, U) \qquad\qquad (8)$$

Pd   =   demand for serving children this is significant in nations like Nigeria where infant mortality rate i high,

T   =   family (house hold) income,

Pc   =   net price of children - the alternative cost of a mother's time and benefits,

Pf   =   prices of all other goods,

T   =   tradition or culture,

R   =   religion,

U   =   other factors.

The relationships among the variables are:

P'd(T)> 0; the higher the family income, the greater the demand for children

P'd(px)< 0; the higher the net cost of children, the lower the quantity demanded,

P'd(Pf)> 0; an increase in the price of all other goods relative to children, the greater the number of children demanded

P'd(T)> 0; the stronger an individual's traditional attributes in Nigeria, the greater the quantity of children demanded,

P'd(R)> 0 >; if a religious sect preaches against family planning, the greater the number of children demanded.  Also, if an individual perceives children as God's gift (often the case in most rural and even urban Nigeria) then the number of children demanded will increase,

In many developing countries there is a strong intrinsic psychological and cultural determinant of family size so that the first two or three children should be viewed as 'consumer' goods for whom demand may not be very responsive to relative price changes in their parents' decision-making process (Todaro, 1981,p.191).

In rural Nigeria, parents decide on getting extra or additional children by examining the economic benefits against costs. In such situation children are received as investment; and thus the expected, income from child labour derived from farm work is seen as benefits.  In the urban centers, the poor utilize children as hawkers-also income from child labour.

It is important to note that certain H.E.P indicators could be collapsed into a basic needs approach. That is, it could be argued that life expectancy at birth, adult literacy rate, primary school enrollment rate positively influence the growth of per capita real income or output.

Functionally,

$$y = y(Bc, A, Ec, B1) \qquad (9)$$
$$B1 = B1(A, W1, D, Ca, Dn) \qquad (10)$$

Where:

| | | |
|---|---|---|
| y | = | growth rate of per capital real income |
| Be | = | life expectancy at birth |
| A | = | adult literacy rate |
| Er | = | primary-school enrollment rate |
| B | = | addition to life expectancy |
| W | = | ratio of population with access to clean water |
| Ca | = | calorie consumption per capita |
| D | = | population per physician (thousand) |
| Dn | = | population per nurse (thousand) |

With the exception of D, it is assumed that all the arguments in equations (7) and (8) are positively related to their dependent variables. (Hicks, 1979) have provided empirical evidence on the above indicators and basic needs for 55 developing countries. All the independent variables showed the necessary signs.

The above models (equations 1 to 10) could be properly specified and tested but given the dearth of Nigeria's data especially as regards reliability and consistent data series such an exercise appears unnecessary. However, in the next section, we discuss some evidence on the subject matter derived 'adhoc' from the models above.

## SECTION II: SOME EMPIRICAL EVIDENCE:

The basic indicators on health, education and population in Nigeria with comparisons drawn from different group of countries in the world-low income and middle-income countries, middle income but oil exporters and the group of African countries South of the Sahara are in Todaro(1981). The population per physician in Nigeria has shown steady improvement in recent years. In 1981, this indicator stood at 10540. However, when compared to the rest of the world, the Nigerian situation needs improvement (Federal Office of Statistics,1978). It should be noted that most of the health personnel are located in the urban centers thus the bulk of rural dwellers have no access to medical facilities. Even in the urban centers, the quality of medical services in recent years is nothing to write home about.

It is not a coincidence that Nigeria's gross national product and/or gross domestic product which grew significantly between the middle 1960s up to the late 1970s began to show negative growth rates at the same time that health facilities deteriorated. It seems that the generally bad situation in the health sub-sector may have contributed to the decline in national product, at least intuitively.

Single summary statistic like the daily calorie supply per capita can shed light on the health condition among persons. The daily calorie requirement per capita refers to the calories needed to sustain an individual at normal levels of activity and health considering age, sex, average body weights and environmental temperature. While between 1977 and 1983, the daily calorie supply per capita in Nigeria increased significantly, it is still the lowest when compared to other groups of countries in the world. The daily calorie supply per capita in the Developed countries is around 3600 (Herrick and Kindleberger, 1983, p. 16). The absence of hunger in an economy can go a long way in increasing productivity and consequently economic development.

Another significant measure regarding health is that of life expectancy at birth. The life expectancy at birth for Nigeria stood at 48 years for men in 1984 and 51 years for women for the same period. Though marginal improvements have been made between 1965 and 1984, the country is still far behind other groups of countries in the world except those countries in Africa South of the Sahara.(World Development report,1981).

The low life expectancy of birth is another way of confirming the poor state of medical facilities in the country. There is need to ensure that the average life expectancy of the Nigerian continues to increase so as to reach that of the industrialized countries which is 74 years.That of Nigeria stands at55 years for

females and 50 years for males.(World development report,1981)

The infant mortality rate, that is, the number of infants who die before reaching one year of age per thousand live births in a given year is high in Nigeria. Looking at table 2 Nigeria has the highest infant mortality rate when compared to other groups. Other important health related indicators especially the growth of crude birth and crude death rates are far from global averages.

In the area of education, Nigeria has shown quantitative improvement especially in primary school enrollment.(see table 1.1 and 1.3). This has been achieved due to the huge expenditure allocated to the universal primary education. The problem here is the quality and direction of education. The type of education a Nigerian receives depends on several factors - religion, state of origin, states of parents, incomes of parents, etc. We have argued elsewhere that until these bottlenecks are removed and every Nigerian is given an opportunity to be educated, progress will be slow. Education should be seen as a birthright (Ekpo, 1986).

We have attempted to provide some evidence on the subject matter though the quality of data perverts a robust analysis, that is, the rigorous testing of our models. It is anticipated that in future data wl be available to enable formal testing of the models. In the next section we discuss government policies that were set in motion in an attempt to improve the situation.

## SECTION III: GOVERNMENT POLICY:

Government policy on health, education and population are well articulated in the country's various development plans and other government pronouncements.

*"In general, health sector policy during the Fourth Plan period will, within the limits of available resources pursue the goal of providing a comprehensive health care system offering promotional, protective, restorative and rehabilitative services to an increasing promotion of the population" (4ᵗʰ Plan, 1980, p. 277).*

The government policy on health involve three levels-primary or basic, secondary care and tertiary health care. The

primary or basic health care is suppose to provide basic health services in health centers, clinics, and out patient departments of hospitals in rural, sub-urban and urban areas.

The central problem of government's health policy is the implementation of the usual well conceived strategies and programmes. We can only conclude intuitively that given the poor state of health facilities, government policy has not been effective. However, in terms of allocation, the absolute amount usually given the health sector seems huge though its share as a percentage of total allocation has not been impressive (Ekpo and Ndebbio, 1985). Actual public sector capital expenditure on health which stood at N35.691 million in 1975/76 use steadily and by the 1975-80 plan year N269.87 million was spent in providing capital projects for the sector (4ᵗʰ Plan, pp. 284).

In the area of education, government policy has been well articulated. In general education has always been allocated huge financial resources since Nigeria embarked on planning. Education has always ranked among the first six in terms of sectoral allocation. The country has produced manpower in various areas. However, the problem centers around the effective utilization of the abundant manpower. The present high rates of unemployment among school leavers-secondary and higher institutions demonstrates the inability of government to plan the development of the country's human resource.

At primary and secondary school system, the dual school nature poses a hindrance to any meaningful development. The dichotomy between schools for the rich and for the poor shows the pathetic nature of the problem. This is more so when schools meant for children from poor homes are ill-equipped. The consequence is the production of half-literate human beings who are essentially liabilities to the society at large. The idea of quality education for all citizens should be the corner stone of policy.

Government policy on population is merely on paper than in action. According to the 1981-85 National Development Plan, Government is aware of the close relationship between population changes and economic development. "It is fully realised that for meaningful and sustained economic development, which will have positive and visible effects on the living standards of the people of

this country to take place, population growth trends will have to be more closely monitored and shaped in a way that will make them consistent with our resource potentialities" (Fourth Plan, 1981 pp. 363). We are yet to see the realization of the above.

There has been no acceptable census since 1963 hence it becomes difficult to even predict the growth of the country's population. It seems that people's cultural attributes regarding population growth, religion and the importance of population in revenue allocation are some factors working against any attempt by Government to implement her desired population policy and objectives.

On the whole, it is difficult to properly evaluate government policy on health, education and population due to the essence of appropriate data. However, we ought to note that government policy centers more on allocation. With regards to health and education the institutional building policy can be identified but the policy has not been consistent.

## RECOMMENDATIONS:

*Based on our analysis so far, we offer the following recommendations:*

1. Government should concentrate on the provision of basic needs for the next 10 years. That is, emphasis should move from growth to development. The quality and quantity of health facilities, education and population will ultimately lead to greater productivity.

2. Education should be a birthright. Every Nigerian should be given the opportunity to be educated. It does not mean that everyone will avail himself or herself of this opportunity but it makes a difference to know that such an opportunity exists.

3. Efforts must be made to abolish the dual school system. The present situation where children from poor homes attend ill-equipped primary schools and mushroom secondary schools does not augur well for the future of this country. The dichotomy further widens the gap between the rich and the poor and the consequence of this needs no emphasis.

4. The rural areas must be transformed in order that health personnels would find it meaningful to work in rural areas.

5. The drug situation in the country must be improved. At present it is common practice not to find even the simplest drug in the country's hospitals.

6. There is need to set in motion a machinery for the collation and compilation of vital statistics especially in the areas of health and population. A health data bank is very urgent.

The above recommendations are derived generally rather than from the models specified above. Nevertheless, the recommendations are implicit in the models.

## CONCLUSION:

We tried to model the importance of health, education and population and their relationships to economic development. We provided some adhoc evidence not necessarily derived from the models to show that Nigeria was still lagging behind other areas of the world in terms of life expectancy at birth, the reduction of infant mortality rate, the required calorie intake per capita, etc. We alluded to the fact that education had improved in terms of enrollment but found it difficult to evaluate its(education) quality.

We attempted to examine Government policy on the subject matter. We inferred that Government policy seems well articulated in the country's various plan documents and that implementation was the problem. We put forward few recommendations that will improve the quality of health, education and population in Nigeria.

If nothing else, this paper has made it explicit that it is the efficient combination of health, education and population that influences the pace and character of a country's economic development. Factors like capital and labour within our framework are passive or derived inputs.