

# Twelve years on: women's literacy in a Nicaraguan municipality

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It is well known that a strong positive correlation exists between maternal education – especially literacy – and indices of health among children. The mechanisms at work in this association, however, remain largely speculative. Circumstances idiosyncratic to Nicaraguan Literacy initiatives since 1979 present a unique opportunity to investigate the link between the literacy of mothers and the health of their children. While much has been written about the Literacy Crusade itself, considerably less information is available about subsequent adult educational provision during the revolution. Virtually nothing has been written in English about the lasting effects of Sandinista literacy initiatives in Nicaragua. This paper reports early work in the literacy component of a project investigating the relationship between maternal literacy and children's health. It outlines the overall design and reports briefly the main literacy results of the pilot phase of a two-year project being undertaken in the environs of Masaya, Nicaragua.

## Introduction

This paper reports early work in the literacy component of a project addressing the relationship between maternal literacy and children's health. It outlines the overall design and reports briefly the main literacy results of the pilot phase of a two-year project funded by the UK Government and conducted in the environs of Masaya, Nicaragua.

Much has been written about Nicaragua's National Literacy Crusade (CNA) of 1980, although considerably less is available in English on the programme of popular basic education for adults (PEBA) which followed the CNA (Torres 1983, 1986; Arnové 1986; Lankshear and Lawler 1987). Even less work has been done on the lasting effects of literacy initiatives in Nicaragua during the revolutionary period of 1979–90. Yet it is important that an assessment of these be made. This paper represents the beginnings of such an assessment.

Robert Arnové and Anthony Dewees (1991: 1–2) claim that 'research . . . can play

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an important role in illuminating the potential and limitations of education to contribute to . . . social change . . . and the ways in which . . . national policies affect the lives of particular historical subjects (workers, women, peasants, and ethnic minorities) in concrete situations'. They support studies 'that convey insiders' views and provide a forum for individuals and collectivities to voice their own perceptions of how education has or has not worked to empower them'. We endorse this view and advance the ideas which follow in the spirit of such inquiry.

### Background

Within eight months of overthrowing the regime of Anastasio Somoza Debayle in July 1979, and in the context of an economy and infrastructure largely laid to waste by the insurrectionary war, the government mobilised and trained 95,582 students, teachers, and others for a five month intensive literacy campaign (Arríen and Matus Lazo 1989).

A literacy census conducted in 1980 indicated that 50.4% of the population over ten years old were illiterate (Ministerio de Educación 1980). This clearly presented a major obstacle to social, economic and political development. Moreover, the manifesto of the Sandinista National Liberation Front had pledged years earlier that upon the defeat of Somoza there would be 'a massive campaign to immediately wipe out illiteracy' (cited in Borge *et al.* 1982: 16).

Official figures released after the formal examination at the end of the campaign claimed that as a result of this massive social intervention 406,056 men and women had become literate. This reduced the official literacy rate to 12.9% and within the 10-15% range stated as a campaign goal by the campaign co-ordinator, Fernando Cardenal (Cardenal and Miller 1980: 6).

Literacy efforts did not begin and end with the CNA, however. In the years that followed Nicaragua embarked on an ambitious programme of adult education (PEBA) to consolidate the gains of the CNA, and to offer a 'second chance' at literacy to those illiterate adults who had not participated in the original crusade. The PEBA reached a peak attendance in 1983, with an official enrolment figure of almost 190 000 students (Torres 1986: 15).

Inevitably there has been some recidivation of literacy. Ongoing participation in adult education was not helped by the economic sanctions imposed on Nicaragua by the U.S. or by the escalating civil war, which together undermined economic and social conditions, forced cutbacks in development programmes, and reduced confidence in the prospects of education actually enhancing the material conditions of the poorer sectors. Even without such difficulties a certain degree of recidivation would be expected in any programme, no matter how good. Nevertheless, at 25%, the official illiteracy rate in 1985 was still less than half the 1979 figure (Instituto Nicaraguense de Estadísticas y Censos 1989: 70).

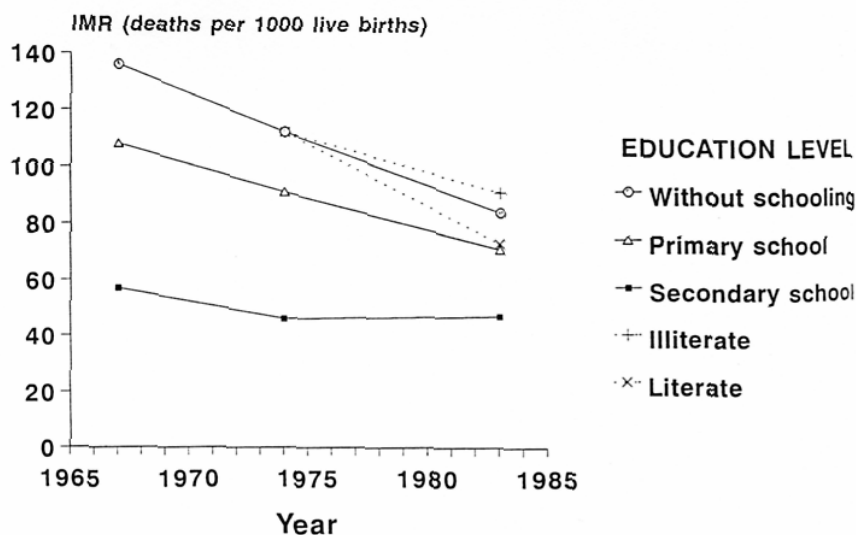
It is a legitimate question as to what the illiteracy rate would have been without the CNA and PEBA. In Nicaragua, as in most Central American countries, the illiteracy rate had been falling gradually from the 1960s. If the recognised rate of decline is extrapolated through 1985, Nicaraguan illiteracy would have stood at about 45%. On the face of it, official figures suggest that even with recidivation Nicaragua's literacy initiatives during the revolution years were highly successful.

### A research possibility: maternal literacy and children's health

One implication of official figures is that approximately half the Nicaraguan adult women who were illiterate in 1979 became literate as a result of the CNA and PEBA. In general, these women were not from privileged backgrounds and most seemingly received little or no formal schooling as children. Consequently, they present a good opportunity to investigate the impact of *maternal literacy on child health*, free from most of the confounding effects of wealth and privilege. It is well known that indices of health among children correlate closely with maternal education, and literacy in particular. In fact, according to Grosse and Auffrey (1989: 281-97), 'the association of literacy and health is found in such a variety of conditions . . . that an understanding of the mechanisms of this effect should stand high on a scientific research or policy analysis agenda'.

What is not established, however, is the extent to which this reflects maternal education serving as a proxy for social class, cultural capital, and other likely components of the education-health equation that place the children of schooled women at a lower risk of death and disease than those of their illiterate peers. Does maternal literacy have an independent positive influence on children's health? Might literacy campaigns be an effective - and cost-effective - intervention for improving children's health in Third World countries? If maternal literacy does have an independent effect on children's health levels, what are the mechanisms operating to this end?

One previous study has demonstrated the potential Nicaragua presents for addressing these questions. The Latin American Center for Demography (CELADE) analysed the trend in Nicaraguan infant mortality by maternal education, separating the group of women with no formal schooling into those who are literate (presumably mainly through the CNA and PEBA) and those who are illiterate (see figure 1). Three points stand out:



Source: CELADE (1988)

Figure 1. Infant mortality rate by level of maternal education

1. Infant mortality has fallen rapidly in Nicaragua during the past two decades.
2. There are marked differences in infant mortality between the different levels of maternal education.
3. The infant mortality rate among children of mothers in the group who became literate through adult education is virtually identical to that of the group with primary schooling. (see Figure 1)

It is the third point that is most significant. Not only is infant mortality among children of mothers who became literate through adult education lower than among children of illiterate mothers but, in addition, if the socioeconomic status of the illiterate and adult educated groups of mothers is presumed to be similar the data implies that female education *on its own* can improve child survival significantly.

Two questions bear close inquiry. First, can qualitative differences in children's health, short of mortality, also be seen to reflect the same pattern? Second, can *literacy* be separated out as a component of education, and its effectivity explained?

### **The maternal literacy and child health study: design and scope**

#### *(a) Aim and Phases of Study*

The study is designed to examine the link between child health and maternal literacy by comparing the morbidity and mortality of children in three groups of mothers. One group comprises illiterate mothers, the second mothers who became literate through formal schooling, and the third mothers who became literate through the CNA and PEBA.

There are two phases in the inquiry. The first focuses on quantitative aspects of the hypothesised association between maternal literacy and children's health. This employs epidemiologic and demographic methods. If it is assumed that prior to the CNA the illiterate and adult literate groups were similar in relevant respects, then subsequent differences found in rates of child morbidity and mortality between the 'adult educated' and 'illiterate' groups will mainly represent the impact of adult literacy interventions; differences between the 'adult educated' and 'formally schooled' groups will reflect the effects of other socioeconomic factors.

In the second phase, scheduled for 1993, ethnographic techniques will be used to interpret and explore in greater depth the findings from the first phase, in an attempt to identify the mechanisms through which maternal literacy impacts on child health and survival.

#### *(b) The Study Site*

The Department of Masaya, with a population estimated in 1985 as 207 000, was chosen as the study site. Geophysically the smallest Department in Nicaragua, it has the highest population density, at 300 persons per square kilometre. Some 47% of its people live in rural areas, which is about the average for the country as a whole. Masaya was chosen for several reasons.

1. Prior to the CNA 48% of women there were classified as illiterate, making it easy to obtain both the schooled literate and illiterate cohorts of mothers.
2. Masaya had one of the most active and successful adult education

- programmes during the 1980s. This maximises the ease of identifying women who became literate through the CNA and PEBA.
3. Since the population is quite homogeneous economically and culturally, the indicators used to measure socioeconomic factors should have some general applicability.
  4. Masaya has a relatively good road system, making almost the entire zone accessible throughout the year.
  5. The 1980 literacy census identified 25,314 women within the age range of 15-34 years in the Department. If Masaya is roughly typical of the country as a whole, some 12 000 of these should have become literate through adult education, sufficient to find an optimal random sample of 1,000 women aged between 25 and 49 years to form the adult educated cohort.<sup>1</sup>

(c) *The Sample: Phase 1*

The sample is being drawn from women aged 25-49 who have given birth to live infants and have given verbal consent to participating in the study. The aim is to find 1,000 adult educated women identified by self-declaration and a simple reading and writing test, the first item in the initial interview questionnaire.

Each of these women will be matched by age (in five year intervals) to one or two illiterate mothers and one or two school-literate mothers, all from the same neighbourhood. Matching by neighbourhood is a good way to remove some of the confounding effects of various social and environmental factors such as rural/urban residence, access to health services and, to some extent, socioeconomic status. Thus each 'adult literate' woman will define a single matched set containing either three or four subjects, making 1,000 matched sets with a total study population of three to four thousand women. (see Table 1)

**Table 1. Matching frame for study sample**

	<i>Adult Literate</i>	<i>Illiterate</i>	<i>School Literate</i>
No. of subjects	1	1	1
	1	2	1
	1	1	2

(d) *Method: Phase 1*

Anthropometric indicators are being used as proxies for the general health status of the children under five years old. Protein-energy malnutrition, besides being a major health problem in its own right, is closely related to other causes of child morbidity. Malnutrition is both a cause and a consequence of high rates of diarrhoeal disease (see for example, Sepulveda *et al.* 1988: 365-76; Schorling *et al.* 1990: 728-35). Thus it often is a useful indicator of general child morbidity in countries like Nicaragua where there are high rates of infectious disease. Anthropometric indices are also good predictors of child mortality (Ebrahim 1983). Each child's age is being recorded and measurements taken of mid-upper arm circumference, height and weight. The field-workers have been carefully trained in these measuring techniques and in administering the interview questionnaire, which accommodates the reading and writing tests.

information-seeking through verbal response, and the various measurement items. Confounding variables and potential effect modifiers are being recorded during the interview. These include such factors as the number of children in the household, the total number of persons – including extended family – living in the dwelling, room density, access to health services, the type of water supply and availability of sanitation facilities, and socio-economic status. A random sample of 5% of the households will be revisited twice to control the quality of data collection and to obtain measures of repeatability. Field-workers are accompanied periodically by the study investigators to identify any problems and maintain the quality of data collection.

The measures of child health status will be related statistically to the literate status of mothers to establish the quantitative association between literacy and health, which is the aim of the first research phase.

(e) *The Sample: Phase 2*

Having established the existence, magnitude, and directness of the link between maternal literacy and child health, the underlying mechanisms and processes by which the CNA and PEBA impacted on child health and survival will be studied. Anthropological methods of data collection will be necessary for testing many of the hypothesised mechanisms and processes.

Since ethnographic research is time-consuming, only relatively small numbers of subjects can be investigated. Subjects must be selected in a manner that ensures the information collected from each contributes maximally to hypothesis generation or testing. The proposed method involves, in the first instance, looking closely at the subsample of women in each of the three groups whose lastborn child has died (provided that this child was born during the last ten years).

The anthropologist will ask the mother carefully about the circumstances surrounding the child's death and her responses to them. By focusing on an actual event the data obtained is expected to be of greater validity than that which would be obtained by asking about a hypothetical case. This sample offers two additional advantages. First, it provides an opportunity to verify that the death actually did occur, as opposed to a mistake having been made by the interviewer who filled out the form. Second, it enables a verbal autopsy (using a standard set of questions) to obtain the child's probable cause of death (Smith and Morrow 1991). This information can later be used to analyze the mortality differences in the three groups including only deaths from preventable causes.<sup>2</sup>

The semi-structured interview carried out by the anthropologist will also attempt to rank the women in eight dimensions based on the various mechanisms hypothesised to explain the observed differences in child health. These dimensions are:

- \* Knowledge of preventable causes and curative health measures.
- \* Decision-making power within the home.
- \* Modern versus traditional attitudes.
- \* Locus of control/fatalism.
- \* Propensity to defer gratification by investing in the future.
- \* Desired family size (quality versus quantity of children).
- \* Capacity to function within bureaucratic settings.
- \* Nutritional and hygiene practice.

The anthropologist will use a variety of methods in the interview, including a vignette

to elicit the woman's 'level of fatalism'. The vignette is a story of the death of a child where the interpretation as to the cause is ambiguous. The woman is asked to state whether she feels the child's death was inevitable, perhaps an act of God, or whether it could have been prevented by some action on the part of one of the characters in the story (the mother, the husband or the hospital doctor).

This same instrument will be employed with the other members of the matched sets for each of the women whose lastborn died. The analysis will seek to identify which, if any, of the above mentioned dimensions might best explain the observed differences in child health between the three groups.

### The pilot study

A pilot study of the research project was completed in May 1992. This was conducted in the municipality of Nindirí, where approximately 10% of Masaya's population live. While the numbers at this stage are too small for meaningful analysis of the morbidity and mortality differences between the three groups of women, they nonetheless give some indication of how lasting have been the educational gains of the adult literacy work carried out between 1980 and 1992.

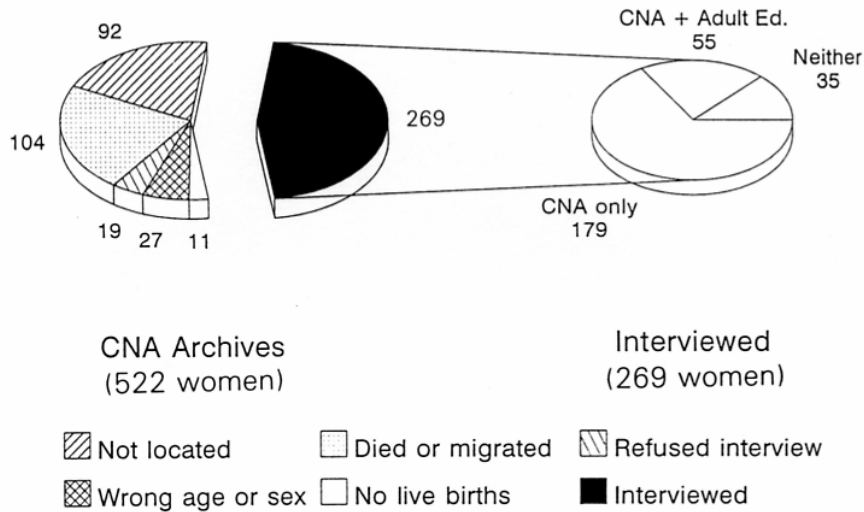
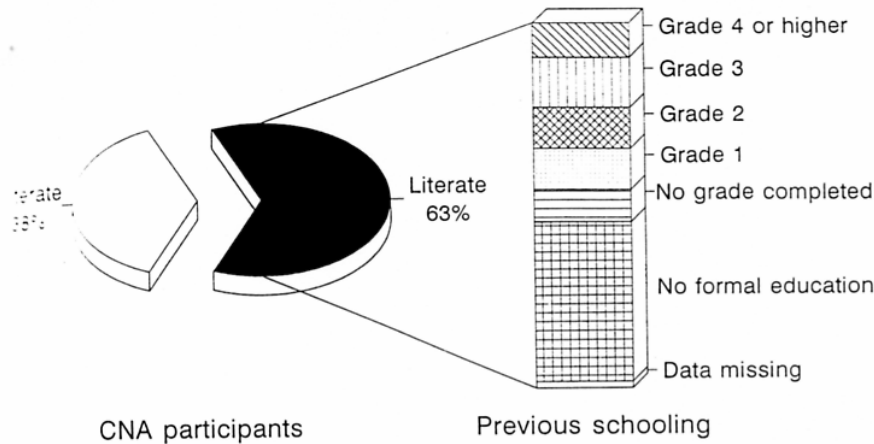


Figure 2. Identification of women from CNA archives

The graduation register from the CNA, together with Ministry of Education censuses carried out in 1989 and 1990, and records kept by the adult education *promotores* and *coordinadores*<sup>3</sup>, were used to identify the women who were taught to read and write during the Crusade. As Figure 2 shows, many of these proved difficult or impossible to locate, and a significant proportion of those located were not suitable for the study for various reasons. Even among those who finally were interviewed, around 16% denied having ever participated in the CNA. In many cases this appears to be because their names were included as 'graduates' even if their only participation was to enrol. Not infrequently, literacy teachers - *brigadistas* - did not remain more than a few



Nindirí Municipality

Figure 3. Current literacy and previous schooling of CNA participants

days in their assigned village, but nonetheless registered their pupils as having 'conquished' illiteracy. In other cases, and it is impossible to discover what proportion, women appear to have wanted to hide from the interviewer the fact that they had been involved in one or more of the activities initiated by the previous (Sandinista) government.

Figure 3 shows the current literate status of the Nindirí women we identified who admitted to involvement in the CNA. A significant proportion (38%) of these are now literate in terms of having failed the simple 'test' at the beginning of the initial questionnaire. Some may have learned to read and write to at least the level adopted in the CNA final examination as the baseline for being literate, but through subsequent lack of use have now lost these (minimal) decoding and encoding skills. Others, it seems, never learned to read and write, yet were recorded as literate for reasons that remain unclear.

Figure 3 also shows that the majority of CNA literate has actually attended primary school for at least some period (many having completed second grade and more). Some of these women of 'mixed education' (formal schooling as a child plus adult education) would only have learned finally to handle reading and writing as adults. It seems reasonable, however, to assume that a large number of those who participated in the CNA did so in order to strengthen or consolidate an existing ability (albeit tenuous and/or minimal) to read and write. This, of course, is a good thing. But it also implies that the impact of the CNA on Nicaragua's illiteracy rate may not have been as dramatic as was originally estimated.

Even so, the success of the adult education work must be recognised. In Nindirí alone there at least 73 women within our sample range who had never attended primary school and are still literate - at least relative to our questionnaire measure.<sup>4</sup> Others became literate despite having failed to do so during their brief encounter with school. Finally, there are those who, although they had learned to read and write at school, had the opportunity to enhance or revive their reading and writing abilities.



### Comment

On the basis of the results from the Nindirí pilot study it is possible to comment in a guarded and preliminary way on the medium term success of the Nicaraguan adult literacy initiative. For all their limitations, the CNA and PEBA achieved notable success. If the Nindirí experience is typical of the country as a whole, it suggests that as many as 10 000 women within our age range probably became literate solely as a consequence of the CNA and/or PEBA and have maintained their literacy. Many more who did not fall within our sample criteria will also have maintained their ability to read and write acquired in these initiatives. Still more will have improved their literacy significantly. Subsequent work in the rest of the Masaya region will provide a clearer picture, which we will report at a later date.

As a not uncommon example of the impact that adult education has had on women's lives in Nicaragua we may observe the case of one woman living in Nindirí. Through the CNA she acquired basic numeracy skills which encouraged her to learn sewing. She explained in the interview that addition and subtraction were necessary for the measurements she uses. With her husband she purchased a sewing machine which enabled her to maintain the family with her wages after her husband lost his job. Throughout her interview she busily sewed school uniforms which she sells. Besides now being able to earn a liveable wage, she reports that her power to make important decisions within the family has increased substantially. These are early indications of some of the 'knock-on' effects of literacy which are difficult to measure but which will be subjected to closer inquiry and analysis in the second phase of the project.

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### Notes

1. Difficulties faced in locating subjects during the pilot study in the municipality of Nindirí subsequently cast doubts on the likelihood of attaining the optimal random sample identified in the research design (see results of pilot study, below). The original design statement is contained in Sandiford (1991).

2. For example, deaths due to leukaemia would be considered not preventable and therefore will not enter the mortality estimates.

3. PEBA promoters and coordinators.

4. The first item in the questionnaire interview was a simple test of reading and writing. Subjects were asked to write their name, to write a dictated phrase - e.g., 'The zanate is a national bird', 'There are fishes in the lake' - and to read a phrase which the interviewer wrote on a piece of paper. Given that Spanish is a regular language and that the CNA employed a phonetic approach based on syllable construction with an emphasis on sound rather than strict spelling accuracy, spelling 'mistakes' were allowed in the dictation, so long as the sense was clear. Subsequent interviews aimed at detecting qualitative differences in facility with print among the 'adult literate' population have employed an instrument designed to distinguish four levels of reading comprehension.

5. For a more detailed account of a similar case see Lankshear (1991).

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