The main sources of information on infant mortality in Algeria
أهم مصادر البيانات لدراسة ظاهرة وفيات الأطفال الرضع في الجزائر

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ملخص :

نستعرض في هذا المقال أهم مصادر البيانات الخاصة بدراسة ظاهرة وفيات الأطفال الرضع في الجزائر، كما نقدم الإحصائيات الناجمة عنها قصد المقارنة بينها للتأكد من مصداقيتها حتى يتسنى لنا القيام بتقييم موضوعي لمستويات هذه الظاهرة.

نحاول في هذا البحث تقديم وصف دقيق لكل مصدر من هذه المصادر المتوفرة في الجزائر.

تتوفر الجزائر على أربعة مصادر أساسية لدراسة وفيات الأطفال الرضع و هي: بيانات مصلحة الحالة المدنية، تعداد العام للسكان و السكن، المسوح الوطنية الخاصة بالمجال الصحي و البيانات الصحية التي تنتجها المصالح و الهيئات الصحية.

إن عملية تقييم هذه المصادر تظهر مزايا و نقائص كل واحد منها، مما يستدعي الحذر من قبل الباحث عند استعمالها.

الكلمات المفتاح : وفيات الأطفال الرضع؛ مصادر البيانات؛ تسجيلات مصالح الحالة المدنية؛ تعداد السكان؛ مسوح؛ إحصائيات صحية.

Abstract:

This article discusses the major sources of data on infant mortality in Algeria and presents statistics derived from these sources in order to evaluate its completeness and compare the results obtained and conclusions based on the exploitation of each data source.

In this paper we try to describe the different data sources which are available in Algeria.

We also reveal that quantities of data potentially useful are gathered.

In Algeria, registration of vital events, regular periodic censuses, national sample surveys and health statistics are the most well-known sources of data for infant mortality analysis, but many of them aren't subjected to analysis.

Some of these information's are very useful for the study of infant mortality tendencies. Any problems of interpretation are often arising because the statistics which are usually collected by health services present bias that sometimes it is difficult to eliminate.

As clear from the comparison of these different sources that each of them has advantages and inconveniences.

Keywords: Infant mortality - data sources – vital registration – census – sample surveys – Health statistics

I- Introduction :

The availability and the quality of the data in the study of infant mortality were the central importance, as was widely recognized at the different researches which were conducted on the subject. The data that formed the basis of current views on the decline in infant mortality could not provide satisfactory answers to many fundamental questions.

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The four main sources of information on infant mortality in Algeria are population census, vital registration, health statistics and national sample surveys.

II-The vital registration:

The problem of vital registration as the main source of statistical data in infant mortality studies deserves a treatment with its importance.

II.1. Registration problems of civil status

The origin of modern vital registration in western countries dates back to the 15th century. Practice of registration of vital events took root progressively at different times in different countries. In almost all economically developed countries vital registration is spontaneous, universal and complete. It took more than a century for these countries to come to this stage and to become statistically developed countries. There are few countries in the developing world which are statistically developed.

In Algeria, civil status is regulated from 1882, but its development will relatively slow. It will provide for long time, only partial and incomplete results to be exploited. It was not until 1980s and 1990s that the coverage of births and infant deaths to know a clear improvement without achieving exhaustiveness, which remains a goal to reach.

Indeed, two main problems arise. The first, relating to the declaration or the late declaration of events, arises mainly in the case of live births and infant deaths.

The delay in reporting of a live birth or infant death is related to several factors: the indifference, the ignorance, the neglect and the distance of civil status services. It was found during the study we conducted in 2004 in the department of Mostaganem (Wilaya)[1]that parents who reside in the sparse area do not regularly declare the children who born at home and dead before expiry of the notification period of live births allowed by law (3days)[2]

Parents feel no interest to declare birth, much less death, especially since they do not find difficulties to bury the body without burial permit in the family cemetery)[3]. Because the cemeteries in sparse area are mostly neither kept nor closed as required by regulations on the matter[4]. These dead children early are not visible in either register of births or in the register of deaths.

The second problem concerns the difference between recording location and place of residence of the individual concerned by the event (problem of domiciliation).

Indeed, if one is based on the civil status data, there will be an overestimation of births and deaths in municipalities which are equipped in health infrastructures (hospitals, clinics, maternity hospitals…) and consequently, an underestimation of these events in municipalities that are not equipped. This makes the analysis of infant mortality at municipal level based on data taken by place of registration very difficult if not impossible. Beyond the quality of information of civil status [5] that remains incomplete, the delay between the event and its reporting, or, in the space, between the location and home parents concerned, introduces a difficulty for the researcher. It's unfortunate in this context that the National Statistics Office (NSO) does not proceed, like the statistics institutes around the world, to second ranking of deaths and births according to the place of habitual residence of deceased or child's parents. This would restore just a little bit the consistency between the numerator and denominator (mortality rate).

This remark certainly is not important at the national level, but it is fundamental as soon as one goes down to a geographical or administrative level finest (region, department, municipality…).

Furthermore, the information that is available on both birth and death certificated however are limited and often badly filled, and we must turn to other sources in order to understand under what circumstances evolved infant mortality and current characteristics thereof [6].

It goes without saying that aggregation of such data, flowed and inadequate does not establish accurate statistics and thus to calculate reliable demographic indicators.

Moreover, another pitfall impairs reliability of statistics inherent births and infant deaths, especially early death[7]. It's about false stillborn.

Strictly speaking, the correct analysis of infant mortality requires from the demographer reinstatement of these births, improperly recorded as stillborn, to both live births and deaths and this, in order to rectify the calculated mortality rates.

In some countries this rectification process is used (the case of France) through statistical bulletins relating to stillborn which contain questions about the status of newborn. Indeed, these questions will recover the stillborn has shown signs of life to add to both live births and deaths and have, consequently, rectified mortality rates. In the case of Algeria, we don't there yet, especially as this rectification process remains unclear the fact that the question about the new born breathing is mostly unanswered, which leaves a doubt as the quality of stillborn. In other words, the distinction between stillbirths and early infant deaths is difficult, if not impossible, to do on the basis of registrations made at civil status level.

Despite difficulties of appreciation, this issue of false stillbirths was discussed in the context of research works, where we tried to appreciate the extent of this phenomenon and its impact on the quantification of the actual level of infant mortality.

II. 2. Coverage of demographic events

Generally, when we speak about civil status, reference is often made to the term of "coverage" for designating the proportion of registered events.

As already indicated, registration of civil status does not cover demographic events in their entirety, leading the National Statistics Office to make correction on the basis of rates coverage by sex, for all the demographic events.

As shown in the table below, coverage rates have progressed substantially.

Table (1) : Coverage rates of civil status

Year	Deaths	Infant Deaths	Births
1970	60.6	60.7	86.8
1977	63.8	63.8	92.8
1981	81.6	77.3	98.7

The source : ONS. Statistiques Publications trimestrielles Numéro 18, 1989.

It should be noted that these rates haven't been changed since 1981. In one its publications[8], the N.S.O affirms that events coverage rates were revised in late 2002 from the results of the 1998 Population and Housing Census, and the Algerian Survey of Family Health 2002. Only the document does not specify the new values of revised rates, under the pretext that the survey in question is a sample survey, and therefore, it's premature to talk about final coverage rates for births and deaths, because, according to N.S.O, confidence interval should be taken into account. In order to ensure this, National Population Survey, initially planned in 2000, should allow an accurate estimate of the data on demographic events and identify demographic indicators relating to it more precisely.

Based on these new rates established, N.S.O carried out an review of number of births and infant deaths registered in the civil status office and correct at the same time birth rates, death rates and infant mortality rates during the last ten years.

We noted above the deficiencies characterizing the civil registration. However, it would be absurd to reject completely the usefulness of this last as capital source of information. In fact, a number of interesting statistical results and some notable studies[9] were only possible from statistical series provided by civil status.

Based on births and deaths certificates, established on occasion of the recording of these events, N.S.O undertakes an annual comprehensive survey (exhaustive exploitation) concerning, among others, births and infant deaths. It is noteworthy has the legal authority to compile national vital statistics. Statistics on births and deaths are compiled from monthly returns sent to the N.S.O directly by the municipal civil records offices located through the national territory.

The N.S.O publishes reports of vital statistics annually. This publication incorporated all available data on live births, deaths, marriages for all municipalities and departments of the country. Tables in the publication are given in four sections; the first one contains estimated population and summary tables giving crude rates for all events. The remaining three sections cover tables on births, deaths and marriages.

As for as regarding the infant mortality and owing to the under-registration problem, the N.S.O makes corrections based on the coverage rates by event and sex, established in 2002, then we calculate the corrected infant mortality rates by sex.

To conclude, we can say that civil status, despite the imprecision and bias in events coverage, remains an important source in assessment of levels of infant mortality, and that the organization of the system represents the main obstacles to improving coverage, and the problem will not be solved through minor reforms.

It should be noted in passing that several initiatives have already been taken by the government to improve civil registration system and promote the use and exploitation of these statistics not just for administrative and political purposes but also demographic.

The most recent initiative is launching an operation of the computerization of civil status in 2006. This operation aims essentially to computerize all actions carried out at the civil status level and to overcome all the problems hindering a well functioning to the latter and, consequently, improving both registration of demographic events and exploitation of statistics.

III- The census :

Although it is a snapshot of the population at any given time, the census is one of the main data sources, not only it exhaustively provides information on the status of the population by selected demographic, economic and social characteristics, but it also allow to estimate some of the components of this population's movement according to some methods and theoretical models and by introducing retrospective[10] questions related to mortality, fertility and migration.

Although the census is usually held once every ten years, extrapolation is used to produce demographic data for the period between censuses.

Infant mortality is one of the demographic phenomena which its evolution is appreciated from the census data based on child survival during the reproductive life of their mothers. This approach[11] is essentially to estimate infant mortality from two or three simple questions asked to women aged 15 and over. They were asked about the total number of the children they have had to the date of survey and that the children they still alive in the same reference date. It should be noted that the use of these techniques has been almost systematic in the 1970s and 1980s in countries with deficient statistics.

Algeria, which is in its fifth national population census, has not been left behind these countries and it has used these methods.

The truth is that the use of these techniques through censuses was effective only from the General Census of Population and Housing in 1987.

Indeed, for the first time the questionnaire contains particular indirect main issues about infant mortality. In this context, two issues[12] were introduced in the questionnaire an were asked to all women aged 15 and over: the number of children (live births) they have given birth so far (census date) and the number of those who are still alive.

The analysis that's ensued was not up the targets set through the introduction of these issues band was limited to global indices of fertility. With regard to infant mortality, no analysis was done and consequently no results were published. Even estimating the coverage of civil status was not possible (registration rate)[13]. This estimate was yet necessary because the rate

prevailing until then dated 1981 and did not allow a good correction of births and deaths registered at the civil registry. It seems to be mainly of poor quality of the date collected during this census.

Regarding the 1998 census, unfortunately, the 1987 scenario was repeated. In fact, the quality of both poor and uncertain information collected during the operation has allowed no operation or good analysis and even less correcting vital coverage. Poor preparation and hence defective execution of the census, with the help of political and security situation, could not provide reliable data.

In addition to the two issues in 1987, we saw the introduction of a third question inherent in the date of last birth specifying whether it is a single or multiple births.
The last census results in2008 were subject of controversy which delayed their publication to this day.

In all of this, we can say that the contribution made by the census in studying infant mortality in Algeria was almost nil, except that it has been a sample frame for the various national surveys which have directly or indirectly dealt with the infant mortality.

Our intention here, through criticism of the validity of census data, is not dismiss these assessment of infant mortality methods or to doubt their usefulness as analytical procedures, but on contrary, it is to show how great would have been the contribution of censuses of 1987; 1998 and 2008 in the study of this important component of mortality if the collected data had been exploited.

IV- National household sample surveys:

Nobody denies that sample surveys are one of the only reliable sources on morbidity and infant mortality in Algeria. Indeed, they can provide data on maternal and child health, nutrition, use of health services, knowledge and practices related to health care, overview and appreciation of health situation and determinants of infant mortality.

Many surveys cover issues related to distinctive features and socio-economic situation of respondents. Combining this information with data on the use of health care it is possible to produce important information on the links between infant mortality and its socio-economic determinants.

Sample surveys are common and effective tools production data on infant mortality rates either through detailed questions posed to women about their previous deliveries or through questions on child survival. These indirect techniques allow assessment of the level of infant mortality.

Also, sample surveys of household vary according to importance and complexity. They can be conducted in single phase (in a single pass) or in several phases; they can have multiple themes or focus on one specific theme. They can be part of international survey program (the case of the World Fertility Survey WFS) or have a national focus as an integral part of national health statistics information system and regularly producing good quality information on the health status of the population.

Over the last four decades, the sample survey has been widely used in Algeria to gather basic data on infant mortality and evaluate the effects of health programs.

Apart from the 1969-1971 multi-rounds survey (ENSP) and the Algerian National Fertility Survey (ENAF), it is the 1990s and 2000s which have experienced the largest number of surveys and studies having dealt with infant mortality. The most important are:

IV.1. Family Health Surveys:
IV.1.1. The 1992 Algerian Maternal and Child Survey (PAPCHILD Survey)

The Algerian Maternal and Child Health Survey (AMCHS) was conducted by the Algerian National Statistics Office within the framework of the PANARAB project for child development (PAPCHILD) of the League of Arab States. The AMCHS is a national representative survey. Data were collected from 6449 households and complete interviews were conducted with 5019 ever married women aged 15-49; 5081 complete interviews covered children under the age of five.

Valid anthropometric measures were obtained for 4331 of these children. Topics included fertility preferences and contraceptive use, breastfeeding and other given to children, childhood illness, immunization and demographic characteristics.

IV.1.2. The Algerian Investigation into the Health of the Family AIHF 2002

The Algerian Investigation into the Health of the Family is another health survey which also provides data on fertility, family planning, maternal and child health, as well as child survival and diseases. It is called PAPFAM, Arab Family Health Survey.

It is carried out by the National Office of Statistics in accordance with the draft-agreement ratified between the Arab project for health/ League of the Arab States on the one hand and the Algerian government represented by the Ministry for Hospital Reform and Public Health on the other hand.

The project is based on effective design, able to allow to the initiators policies of health to analyze and evaluate the data. It makes it possible to plan and follow the programs and the various policies of health.

This investigation was carried out on sample of 10000 household, it was extended to 20000 household for the study of the infant mortality.

IV.2. Multiple Indicator Clusters Surveys:

The Multiple Indicator Cluster Survey is a methodology by UNICEF was created in the mid' 90s in response to need of filling data gaps for indicators. Multiple Indicator Cluster Surveys or MICS surveys are typically carried out by government organizations, with the support and assistance of UNICEF and other partners. Technical assistance and training for the survey is provided through a series of regional workshops where experts from developing countries are trained on various aspects of MICS (questionnaire content, sampling and survey implementation, data processing, data quality and data analysis).

Since the mid-1990s, the MICS has enabled many countries to produce statistically sound and internationally comparable estimates of a range of indicators in the areas of health, education, child protection. MICS findings have been used extensively as a basis for policy decisions and program interventions, and for the purpose of influencing public opinion on the situation of children and women around world.

IV.2.1. The Algerian Multiple Indicator Cluster Survey MICS 1995 (MID-DECADE GOALS)

The MICS was originally developed in response to the world summit for children to measure progress towards an internationally agreed set of mi-decade goals. The first round of MICS was conducted around 1995 in more 60 countries. The sampling frame was based on the 1987 Population and Housing Census, with a sample size of 5199 households 53 per cent of whom live in urban areas and 47 per cent in rural areas.

IV.2.2. The Algerian Multiple Indicator Cluster MICS Survey 2000 (END DECADE GOALS)

A second round of surveys was conducted in 2000 (around 65 surveys), and resulted in an increasing wealth of data to monitor trends in many indicators and baseline for other indicators.

The sampling frame was based on the 1998 Population and Housing Census, with a sample size of 5247 households 47.4 per cent of whom live in urban areas and 52.6 per cent in rural areas.

IV.2.3. The Algerian Multiple Indicator Cluster Survey MICS 2006

Part of the third round MICS, the 2006 Algerian Multiple Indicator Cluster Survey was a nationally representative household survey with focus on maternal and child health. The sampling frame was based on the 1998 Population and Housing Census, with 29478 households. The survey utilized three questionnaires:

-A household questionnaire including education, economic activity, water and sanitation, and housing conditions.
-A questionnaire for individual women aged 15-49 years covering topics such as marital status, tetanus vaccination, maternal care, contraceptive use, and health literacy.
-A questionnaire given to mothers and caretakers of children under five years covering topics such as breastfeeding, immunization, and anthropometric measurements.

IV.2.4. The Algerian Multiple Indicator Cluster Survey MICS 2012

Algerian Multiple Indicator Cluster Survey MICS 2012-2013 is part of MICS4, an international survey initiative to monitor the situation of children and woman. Topics commonly covered in MICS include immunization, education, child and maternal health, family planning and knowledge of HIV/AIDS. MICS also provides data for tracking progress toward Millennium Development Goals (MDGs), particularly those related to health, education and mortality. For the 2012-2013 Algerian MICS, 38548 women ages 15-49 were successfully interviewed from 27198 household. Addionally, 14701questionnaires for children under 5 were completed by mothers or child caretakers. Men were not included in the survey sample. The sampling frame was based on the 2008 Population and Housing Census.

Table (2) : Summary table of national household surveys on health

Year	Title of survey	Sample size	Representativeness	Target population	Sampling frame
1989	MMI	25442	45 Wilayas	Children 0-4 years	GPHC 1987
1990	ENS	12041	Urban/Rural	Total population	GPHC 1987
1992	PAPCHILD	6449	Urban/Rural	Mothers/Children	GPHC 1987
1995	MDG	5199	Urban/Rural	Mothers/Children	GPHC 1987
2000	EDG	5247	Urban/Rural	Mothers/Children	GPHC 1998
2002	PAPFAM	20000	17 regions	Total population	GPHC 1998
2005	TAHINA	3800	Urban/Rural	35-70 years	GPHC 1998
2006	MICS 3	29478	17 regions	Mothers/Children	GPHC 1998
2012	MICS 4	38548	17 regions	Mothers/Children	GPHC 2008

The source : N.HAMMOUDA « Aspects méthodologiques des enquêtes algériennes sur la santé ». CREAD/Algérie

To conclude, it can be said that, in the face of the census deficiencies and incompleteness of vital registration, the household surveys seem to constitute the unique alternative. However, the infant death is relatively rare event. To collect a sufficient number requires a large sample; in this case the price of the survey becomes high.

V- Health statistics:

In the health sector we manipulate a long volume of information that, unfortunately, is imperfectly exploited due to late publication and a presentation rendering its interpretation often fragmentary and incomplete.

A variety of information sources appears under the heading "health statistics", ranging from individual sheets established by hospitals and clinics to monthly reports of the different

medical services. In fact, a huge investment of time and resources is made in registers keeping and reporting. But it seems that only part of this mass of information is used and analyzed.

Indeed, the healthcare unit, whatever the type, produces continuously statistical data as part of its normal and usual activities.

Exploiting wisely of this mass of information depends inescapably on the establishment of global information system at national level, whose essential point remains the mobilization and the acceptance of all the health staff.

Currently, from medical and administrative files some countries, through data coupling technique (record linkage), can do without census and sample surveys (for example the Nordic Countries).

There are two types of health statistics in Algeria:

• Health statistics produced by health structures as part of their regular activities, such as epidemiological registries, the patient software (Logiciel Patient).

• Statistical data generated by the supports designed by Ministry of Health within the framework of the implementation of the national programs for maternal and child health, such as the Expanded Program on Immunization (EPI), the program to combat diarrheal diseases, the program to combat Acute Respiratory Infections (ARI)…

VI- Conclusion:

Clearly, the four sources which we have talked about are complementary. None is perfectly adequate; all have their advantages and disadvantages. It only supports our recommendation about general integration of gathering, analyzing and interpreting. This is not a new idea and emphasis on the establishment of health information system (FERNANDEZ PEREZ de TALENS et al. 1982) testifies to this.

This comparative and integrated approach allows control and analysis of data which derived from several sources.

One of the aims of this paper is to show that we can acquire a more complete view on infant mortality in Algeria by exploiting concurrently rather than independently the various sources of information. This argues for the integration of data related to infant mortality and joint exploitation of different data sources relating to it and this, taking into account the gaps of each source, gaps that we have previously dealt.

Referrals and references:

1. Cf. Magistere Memory of Mr M.ALEM. SABI-VAC: une source secondaire fiable pour l'analyse de la mortalité infantile en Algérie. Septembre 2005
2. Presidential Ordinance number 70-20 of 19 February 1970 relative to civil status, which is still effective. Its review is both urgent and necessary.
3. Mostly, this is still true, when the parents live in landlocked and very remote hamlets of civil registrar.
4. Presidential Ordinance number 75-79 of 15 December 1975 relative to sepulchers, and the decree number 75-152 of 15 December 1975, laying down the hygiene rules with regard to interment, transportation of a body, exhumation and reburial.
5. The purpose of this component does not consist in a critical of civil status foundation as a system, but only according to the study aspects.
6. The information carrier used (certificates of births and deaths) is not rigorously filled, particularly in regard to the social, economic and cultural variables, and the causes of death, which lets important data escape.
7. A number of births biologically alive, i.e. which have shown signs of life, but followed by death a few moments later, are recorded as stillbirths. These cases are commonly

called the "false stillborns". The infant death depends in the first instance on the notion of birth viability.

8. Série: Données statistiques "Démographie Algérienne" numéro 375. Office National des Statistiques.

9. An illustrative example is the study carried out by D.TABUTIN (PhD thesis 3rd cycle submitted in 1974). Mortalité infantile et juvénile. Travaux et Documents. Cahier numéro 77. Editions P.U.F.

10. Even these retrospective questions are not exclusive to the census, but they are also found in most surveys.

11. We are most often referring to "Brass methods" or "Brass questions".

12. It is about the thirty first and thirty third questions.

13. The census is also an opportunity to estimate the coverage rate of civil status.

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