

ORIGINAL ARTICLE

Perinatal Mortality and Morbidity in Rural West-Java, Indonesia Part I : Vital Statistics Based on Cross-Sectional Surveys

by

A. ALISJAHBANA*, R. PEETERS** and A. MEHEUS**

(From * The Hasan Sadikin Hospital/Medical School, Padjadjaran University, Department of Child Health, Bandung, Indonesia, and

** The University of Antwerp, Epidemiology and Community Medicine, Antwerp, Belgium)

Abstract

The first part of this article gives the summary result of 4 cross-sectional surveys conducted in 3 rural villages in West Java. It is expected that these surveys provide the researchers with more precise data on perinatal mortality and its associated causes in order to plan and implement the Tanjungsari Intervention Study (1986- 1990). This comprises a mapping and numbering survey, and a census survey. Based on a sampling frame of 7964 houses, a systematic sample (one in eleven) was drawn for the Household and for the Married Women Surveys. The survey results yield some basic demographic indicators (table 1), occupational information and data on education. Also data on environmental health and vital statistics are presented. It is shown that the crude birth rate is 40 per thousand and that the estimated infant mortality rate reaches a figure of 120‰. Furthermore, during individual interviews data was collected on characteristics, attitudes habits as well as on reproductive behaviour, of all married women under 50 years of age.

Introduction

Perinatal mortality and morbidity is an important health problem, especially in developing countries where the early childhood years are the period of greatest health risk. Perinatal mortality is an indicator of the health status, of pregnancy wastage and also reflects the quality of health care.

In Indonesia, existing data on perinatal mortality and morbidity is unreliable, especially in rural areas. There is gross under-reporting of births and of health outcomes related to infants partly due to the fact that most deliveries in rural areas are home deliveries and because of a lack of awareness by the community of the need to report births and deaths.

The national official birth rate in Indonesia is 40 per thousand (Sistem Kesehatan Nasional, 1981).

There are no official statistics on the rate of still-births. Perinatal mortality is expected to range between 40-60 per thousand births.

Besides concern over the perinatal mortality rate it is felt that the incidence of low birthweight (LBW) is a major problem as well. There is no doubt that LBW is an ex-

Materials and Methods

The study area was chosen in conjunction with the local health authorities. Three rural villages in the subdistrict of Ujung-Berung situated at approximately 15 km from Bandung, a major urban centre, were selected.

It has already been mentioned that official figures may be subject to under-reporting especially in rural areas. Only a fraction of the total deliveries reported in the 3 selected villages took place in the Community Health Centre (Pusat Kesehatan

cellent health indicator in a community.

Both parts of this article present results of several surveys on perinatal mortality and morbidity as well as on LBW in a rural setting. It was expected that the results of this study would yield more information on the extent of the problem and on factors playing a major role in perinatal mortality, morbidity and LBW. This data can be useful in the planning of intervention studies. At this moment (1987) the Tangjungsari Intervention Study (TIS) is being implemented. Similar surveys have been carried out in four other countries of South-East Asia (Birma, India, Srilangka and Thailand) and a summary report has been published (Perrera & Lwin, 1984). This part of the article is primarily concerned with the results of four cross-sectional surveys. Part II will deal with the longitudinal survey.

These cross-sectional surveys provide demographic information, data on health, socio-economic and environmental conditions, details on all women in the reproductive period as well as on pregnant women at the time of the collection of data.

an Masyarakat: PusKesMas). Three quarters of these are reported by TBAs; the other quarter by trained midwives. It is obvious that these figures cannot reflect the full amount of deliveries which is expected to be 1800 a year (calculated from an estimated total population of 45.000 and the national birth rate of 40 per thousand).

A team of 25 interviewers (nurses) mapped and numbered the houses and paid home to home visits completing a questionnaire form. The nurses were recently gra-

duated and received an interviewer training.

Directly after completing the census they collected additional information on a (systematic) sample of 799 households (one in 11) about environmental conditions (including socio-economic data), vital events within the last 12 months (needed to estimate birth and death rates) as well as specific information (pregnancy history, health practices, ...) on ever married women less than 50 years living in these households. It

was expected that during the household census 750 women would be found pregnant.

In summary the research consists of 4 different cross-sectional surveys: 1. Mapping and Numbering Survey; 2. Census Survey; 3. Household Sample Survey; 4. Married Women Sample Survey. Each one of these has its place in the research chronology and is intended to yield its own results and conclusions. Therefore they will be discussed separately underneath.

Mapping and Numbering Survey

The major purpose of the mapping and numbering were to guarantee full coverage of the census survey and to compute a sampling frame from which sampling units for further research could be drawn.

Based on the sampling frame of 7964 houses, a systematic 9% sample (one in eleven) was drawn for the Household and Married Women Surveys. The sampling units being houses, 799 units were drawn

of which the household heads were interviewed. If the house was occupied by more than one family the household head of the first family was interviewed. Also in these households all ever married women below 50 years of age were interviewed.

Although mapping and numbering were carried out at the same time as the census, the latter results will be reported underneath under a separate heading.

Census Survey

Table 1 shows in summary a few basic background indicators of the survey area.

Table 1 : *Some basic population background indicators of the survey area (Census survey, 1978)*

Median age	17.9 years
Percentage 15 years	44.4 %
Percentage 5 years	16.2 %
Female/male ratio	102.1 %
Number of married women < 45 years	6.753
Women in reproductive age (15-44 years)	16.7 % of total population

Occupational distribution using the International Labour Organization (ILO) classification showed a high percentage of farmers and unskilled labourers (respectively 27 and 17% of all males over 15 years). Particularly in the age-group over 45 years farming is the main source of income. Unemployment is high in the younger age-groups (74% of all males aged 15-19 and 16% of all males between 20-29).

Table 2 : *Number and percentage of women aged 15-44 years reporting as currently pregnant, by age group (Census Survey, 1978)*

Age in years	Total number ever married	Number pregnant	Percentage pregnant
15 - 19	809	130	16.1
20 - 24	1709	245	14.3
25 - 29	1327	172	13.0
30 - 34	969	93	9.6
35 - 39	1144	84	7.3
40 - 44	795	23	2.9
Total	6753	747	11.1

The next two cross-sectional surveys are on a sample of 799 households and on 599 over married women living in these households. Family characteristics, type of household, socio-economic level, sanitary and environmental conditions and vital events during the last 12 months were

Household Sample Survey

The average number of persons per household was found to be 5.1 with a mean number of children being 2.3 per household. The socio-economic background of

among the variables studied in the sample of households. Married women under 50 years of age were interviewed in detail regarding their maternity and pregnancy histories; questions included also their health practices, habits and attitudes towards immunisation and family planning.

the sample households was evaluated on the basis of the following variables: house ownership, living conditions (based on observation of building material such as

Education showed a high percentage (23%) of children aged 6-14 without any education at all. There were no noticeable differences in this between sexes. The percentage of married population by sex showed that more than 90% of the female population married before they reach 25 years. One of the aims of the census was to identify pregnant women that could be followed-up in the longitudinal survey (table 2).

bamboo, stone or brick) and the availability of certain consumer goods (such as furniture, kerosene lamp, radio, bicycle, television, motorbike) as well as the source of light (electricity, petromax, kerosene, others). Most houses were lighted with kerosene (65%); 59% of the household were considered to have an average standard of living, and 89% of the respondents owned their house.

Variables used to evaluate sanitation and environmental conditions were source of water (artesian bore, well, pond, spring, pipe, stream) and type of latrine (WC, pit, pond, river, open field). Most households in the sample (46%) use a well as a source of water, followed by a spring (32%). The most prevalent latrine types are the river

(43%) and pond (29%). The pond, which is very popular in West-Java, was found to be used as both a source of water and as a latrine in many instances.

Table 3 shows the main vital events that occurred during 12 months prior to the survey. The definitions of all the rate are sometimes problematic. The distinctions between a spontaneous abortion and a stillbirth, and between a stillbirth and a live-birth which dies very soon after birth e.g. are often difficult to make, and different authors often use different definitions. In this text we use the definitions put forward by Newell (1986). The crude birth rate is 40.5 per thousand (total births per total population).

Table 3 : *Vital events collected retrospectively (12 months) during interview (Household Sample Survey, 1978)*

Number of households in sample	799	
Sample population	3.900	
Number of live-births	149	} 158
Number of still-births	9	
Crude birth rate (per thousand population)	40.5	
Still-births per thousand total births	56.9	
Number of abortions (spontaneous as well as induced)	12	
Abortion rate per thousand total births	75.9	

Table 3 shows that pregnancy wastage (abortion and still births) is high in this area and that the abortion rate exceeds the still birth rate. The crude death rate is 13.6 per thousand population.

This results in a natural population increase of 24.6 per thousand. The death rate for under fives is 80.5 ‰ or more than five

times the crude death rate. The infant mortality rate was calculated using the Brass method (United Nations, 1983) and showed a figure of 120‰ live births. All these figures are calculated from deaths occurring during 12 months prior to the interview (table 4).

Table 4 : Deaths occurring during 12 months prior to the survey by age (Household Sample Survey, 1978)

Age at death	Male	Female	Total
Within 24 hours			
1 - 6 days	1	1	2
1 wk - 3 wks	2	2	4
4 wks - 11 months	4	2	6
1 yr - 4 years	7	6	13
5 yrs - 9 years	6	8	14
10 yrs - 14 years	1	2	3
15 yrs - 44 years	-	3	3
45 yrs - 59 years	-	2	2
60 years and +	1	-	1
	3	2	5
Total	25	28	53

Married Women Sample Survey

Respondents were all ever married women (including widows) less than 50 years in the household sample. During individual interviews data were collected on their characteristics, attitudes, habits as well as their reproductive performance and behaviour towards their last child. The total number of married women in the sample was 599. Their mean age was 29.8 years with a modulus in the category 20-24 years. The educational level of married women showed that 80% had received primary schooling (either completed or not). The total number of women not having received any education increases with age and shows a total of 12.7%. Only 9.2% of the women is employed (according to the classification of the ILO) and these fall predominantly in the younger age-groups.

Habits of married women that may interfere with health have only been found in a small percentage: smoking (5%), betel chewing (5%) (particularly in the older age-group), refrainment from animal protein during pregnancy (3.7%).

Over 90% in all age-groups is in favour of breastfeeding. The same goes for attitudes towards immunization. However, only a small proportion (1.6%) of respondents reported having received anti-tetanus vaccination within one year prior to the interview. Almost 98% of all women reported never have been vaccinated against tetanus and 63% against cholera/typhoid fever. Lack of facilities, such as a field immunization programme, results in a very low coverage of women vaccinated, in spite of positive attitudes.

It is well known that in rural communities most women continue working in spite of illness; only in cases where she is unable to stay up, will a women consider herself ill. A question was asked about the number of times, during the last 12 months, the respondent was ill and confin-

ed to bed. The result was very low with a mean less than 0.29 (ranging from 0.24 for the 20-24 years age group to 0.35 for the 30-34 years age group).

Table 5 shows, for 4 different kinds of health care providers, the number of times a respondent recurred to it (all reasons).

Table 5 : Percentage breakdown showing number of visits to health care provider during 12 months retrospectively (Married Women Sample, 1978)

Health Care Provider	Number of visits (%)						Total
	0	1 - 2	3 - 4	5 - 9	10 24	25 +	
Health Centre/Hospital	77.4	14.9	5.4	1.6	0.7	0.0	100.0
Doctor	87.8	7.6	2.2	2.2	0.2	0.2	100.0
Nurse/Midwife	88.3	8.5	1.3	1.4	0.5	0.0	100.0
Dukun*	93.6	5.1	0.9	0.4	0.0	0.0	100.0

* Traditional healer.

Health care utilization data related to pregnancy and delivery were collected only for the last child as these were expected to minimize recall bias. Table 6 shows the percentages of antenatal care (defined as one or more prenatal examinations carried out by midwives/physicians of health centres or private practice) according to age groups. The proportion of women having had antenatal care was about 43%. There is a tendency in younger age groups to

receive more antenatal care. Nevertheless, TBAs were still preferred by 83% of the women for birth of their last child. Trained midwives take the second place as birth attendants (15% of all births)

The home of the women is still the most common place of delivery (in 91% of all last births reported a home delivery took place; hospitals came on the second place with 8%).

Table 6 : Percentages of married women who had antenatal care during their last pregnancy, by age groups (Married Women Sample Survey, 1978)

Age group	Reported having received antenatal care
15 - 19	
20 - 24	47.7
25 - 29	44.2
30 - 34	51.8
35 - 39	37.2
40 - 44	42.7
	28.8
All Ages	42.9 (n = 515)

Family planning behaviour and attitude are most prevalent in the higher educational group: 20% of women in higher educational group practice family planning compared to 7% of women in the no-educational groups. A positive attitude is mostly seen in the lower parity group, except for the nullipara, the explanation possibly being that this group consists mostly of the recently married younger age groups where the desire to have a child is high. The higher the parity, the lower the proportion of a positive attitude, due probably to the fact that this group is older. The figures show that less than 20 percent of the total married women were practicing family planning, although an overall of 69% had a favourable attitude.

Estimation of levels and trends in the fertility pattern of the sample respondents is one of the main objectives of this survey. Special attention was given to the number of children ever born, alive or deceased. A working sheet was designed using the Malaysian study of pregnancy outcome (Federation of Family Planning) as a basis. A se-

quence of questions was asked concerning the pregnancy history, the total number of births, eliciting separately the number of children still alive and those deceased, not including abortions. Data was collected to calculate the birth intervals. The rural areas of West-Java show all the signs of a traditional society with high fertility rates accompanied with a high mortality particularly in infancy and early childhood. The following analysis of fertility and reproductive health of married women may provide an insight into the fertility behaviour of women in the survey area.

Age at marriage. Data shows that 42 percent of women were married under 16 years of age. The result may not be in accordance with the marital law in Indonesia which states that to be married a woman should be at least 16 years. Using the National Family Planning Coordination Board recommendation that females should not marry before 20 years of age, the results of the sample survey show that only 7% of all women are in accordance with this recommendation.

Current parity, or number of children ever born, as a measure of fertility refers to a cross-sectional view at the time of the interview. For the sample as a whole, the mean number of children ever born was 3.85; 8 percent of married women were childless and 45 percent had more than 3 children.

The percentage of women reporting current pregnancy is a measure of fertility in the next few months. Several sources (shyness, uncertainty, lactational amenorrhea) of bias (particularly of underreporting) can operate during the interview. It turned out that 11.1% of all married women

reported a current pregnancy. The dynamics of fertility can be seen in the age-specific fertility rates (ASFR) during the 12 months period prior to the survey (table 7). It shows that fertility among women in the 15-19 age group is already high, amounting to 172.4 live births per 1,000 women of the same age group, resulting probably from the very early age at which women marry and the relatively high proportion of married women in this age group (40.6%). The age-specific marital fertility rate (ASMFR) is, as expected, much higher than the ASFR.

Table 7 : Age specific fertility rate (ASFR) and age specific marital fertility rate (ASMFR), of women (Married Women Sample Survey, 1978).

Age-groups	ASFR (1)	ASMFR (2)
15 - 19	172.4	423.7
20 - 24	346.6	382.4
25 - 29	264.9	274.3
30 - 34	215.9	220.9
35 - 39	118.8	121.2
40 - 44	31.1	32.8
45 - 49	20.8	22.2

(1) Number of live births to women of specific ages in 1,000 women of the same age group during last 12 months.

(2) Number of live births to married women of specific ages in 1,000 married women of the same age group during last months.

The total fertility rate (TFR), being the average number of children born to a woman if she bears children at the prevailing age specific fertility rate, can be calculated by summing up ASFRs. The TFR of this sample is 5.9.

The Indonesia Fertility Survey carried out in 1976 reported a decline in total fertility rates from 6.65 in 1962-1963 to 5.29

in 1974 for West Java. Compared to other provinces on Java and Bali, West Java showed a persistently higher level of TFR and the results of this survey show an even higher level. This situation may have some correlation with early marriage which is still frequently found in West Java.

Pregnancy wastage refers to still births and abortions (including both spontaneous

and induced abortions).

The overall figure shows that pregnancy wastage in the sample of married women is 5%: it is highest in mothers under 30 and in those over 40 years of age.

The percentage of pregnancy wastage is high in parity one and decreases gradually to reach the lowest percentage in parity 3-4 but increases thereafter to reach the highest percentage in parity nine and over. There is no difference in pregnancy wastage percentage according to delivery attendant (midwife/TBA).

Estimation of *infant mortality* was obtained by applying the Brass technique and shows an infant mortality rate of 120 per thousand. The experience of child loss is

higher in mothers with high parity. On the average a women has 3.01 children still alive out of 3.85 children ever born, representing an average loss of 0.84 per women or $\pm 20\%$ of all births ($\pm 22\%$ of all live-births). This result is nearly the same compared to the Indonesia Fertility Survey (1976).

Condition of the last child. Table 8 summarizes the status of the last birth. Mothers under 20 years show a higher number of infant deaths, then it drops to rise again for the group of mothers aged 40-44 years. Overall figures show that 33% (or 18) of deceased infants ($n = 55$) died in the perinatal period, while 50% of them (or 27) died before the age of one year.

Table 8 : *Percentage distribution of last birth by age at death (Married Women Sample Survey, 1978).*

Status of last birth	Number	Percentage
Still birth	9	1.8
Live birth died at		
1 day	3	0.6
1 - 6 days	6	1.2
1 wk - 11 months	18	3.6
1 yr - 4 years	15	3.0
5 yrs +	4	0.8
Live birth and still alive	447	89
Total	502	100.0

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