

Cohort Infant Mortality Rate of Gunwee and Hapchun Counties and an MCH Center in Taegu

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1985년 4월 1일부터 1987년 3월 31일 사이에 경상북도 군위군에 거주하는 49세이하의 가임여성들과 1987년 3월 1일부터 1988년 2월 28일 사이에 경상남도 합천군에 거주하는 49세이하의 가임여성들 그리고 1985년 4월 1일부터 1987년 3월 31일 사이에 대구시 남구 모자보건센터에 분만을 위해 찾아 온 모든 임신부들을 대상으로 이들에게서 태어난 출생아들을 두 군지역에서는 생후 1년간 그리고 모

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자보건센터에서 출생한 경우는 생후 27일간 추적하여 영아사망률과 신생아 사망률을 각각 조사하였다.

조사기간중에 군위군과 함천군에서 출생한 1,359명의 영아들 가운데 생후 1년 동안에 17명이 사망하여 농촌지역의 영아사망률은 출생아 1,000명당 12.5이었다. 총 영아사망중 신생아사망이 82.4% 그리고 신생아 후기 사망이 17.6%를 차지하였다.

대구시 남구 모자보건센터에 내원한 산모들에게 태어난 6,001명의 출생아들 가운데 4,834명(80.6%)만이 생후 27일까지 추적되었는데 이들 중 36명이 사망하여 신생아 사망률은 출생아 1,000명당 7.4명이었다. 추적된 산모와 추적 안된 산모의 특성 및 신생아 체중을 비교한 결과 현저한 차이를 나타내지 않았다. 신생아 후기 사망률의 비를 6:4로 가정했을 때 모자보건센터에서 출생한 영아의 영아사망률은 출생아 1,000명당 12.3명으로 추정되었다.

군위군과 함천군의 영아사망률과 대구시 남구 모자보건센터에서 관찰된 신생아사망률, 영아사망의 사망시기별 분포와 영아사망원인 그리고 저체중아출생률을 고려할 때 1985년부터 1988년 사이의 한국의 영아사망률은 출생아 1,000명당 12에서 15명일 것으로 추정되었다.

Key Words: *infant mortality rate, neonatal mortality rate, low birth weight incidence rate, pregnancy wastage*

I. Introduction

Infant mortality rate has long been considered as index of the level of health of a community or a country. High rates are associated with low socio-economic conditions, poor environmental hygiene, limited medical facilities and resources and concomitant inadequate prenatal and natal care, and low utilization of services even those areas where medical care is available (Park, 1979)

Korea has made a remarkable economic development in the last two decades which made it possible to improve the standard of living that includes nutrition, housing condition, medical care, etc. However, infant mortality rate was estimated to be 32.6 per 1,000 live births in 1985(Ministry of Health and Social Affairs, 1986) which was over three times higher than the rates of the similar developing countries in the region (WHO, 1987).

There is no accurate data for infant mortality in Korea. Available data were results of sample surveys, fertility surveys, and statistical estimates based on various sample survey results. The results of sample surveys in a limited area were summarized in table 1. The rate was 104.8 per 1,000 live births in 1951~1953, 57.2 in 1961~1965,

42.2 in 1971, and 36.3 in 1979.

Mean of infant mortality rates obtained from three fertility surveys done in 1971, 1974 and 1976 (Park and Park, 1981) were lower than those rates reported by the sample surveys. The latest survey done is 1988 (Han, 1989) showed a remarkably lower infant mortality rate than those obtained from the earlier surveys and the government's estimates (Table 2). Lower rate could be due to the sampling method; fertility survey was done on a national representative sample which included urban area while most of the infant mortality studies were done in rural areas and sample for fertility survey might have omitted high risk mothers (maternal death) whose pregnancy outcome was poor.

The government has used a statistical estimates based on the various survey data and the estimated rates decreased at a constant rate (Table 3). The rate estimated by the government seems to be too high for the improved standard of living in Korea and few studies for the infant mortality have been done since 1980. This study was conducted to obtain a reliable infant mortality rate in rural area and in the low economic class population of urban area from which the rate for whole country could be better estimated.

Table 1. Infant mortality rates per 1,000 live births reported by sample surveys, 1946-1979

Study period	IMR	No. of birth	Study population
1946~1950	113.8	1,678	Total households, Gaejung Myun, Okgu County
1951~1953	104.8	887	Total households, Gaejung Myun, Okgu County ¹⁾
1954~1959	82.9	14,325	Sample survey, rural areas in Korea ²⁾
1961~1965	57.2	8,442	Total households, 5 islands in Okgu County, ³⁾ total households, Chungwoong Myun, Imsil County, ⁴⁾ and total population, Namweon Up ⁵⁾
1962~1964	35.5	9,455	Sample survey, Seongdong Gu, Seoul ⁶⁾
1966	58.2	584	Sample survey, urban poor area in Seoul ⁷⁾
1971	42.2	2,083	Registered women in MCH, Kyungsan County ⁸⁾
1975~1977	24.7	486	Total population, Seunwon & Naega Myun, Ganghwa County ⁹⁾
1979	36.3	3,302	Total population, Gunwee, Okgu and Hongchun Counties ¹⁰⁾

1) Lee YC et al, 1970 2) Park HJ, 1962 3) Kim KS, 1970 4) Kim Ks, 1970 5) Lee SJ et al, 1968
6) Kwon EH et al, 1965 7) Kwon EH, 1967 8) Lee SK et al, 1972 9) Kim KS & Lee BM, 1977
10) Cho YH, 1981.

Table 2. Infant mortality rates (per 1,000 live births) in 1945-1987 estimated by four fertility surveys

Birth year	1971 study		1974 study		1976 study		1988 study	Mean IMR
	No. of live birth	IMR	No. of live birth	IMR	No. of live birth	IMR		
1945~49	2,568	134.3	937	160.1	555	153.2	—	149.2
1950~54	3,272	101.5	1,667	108.0	1,397	84.5	—	98.0
1955~59	5,106	64.2	3,158	60.2	3,060	62.4	—	62.3
1960~64	5,846	57.6	4,288	57.6	4,378	55.3	—	56.8
1965~69	5,302	53.8	4,605	49.9	4,885	46.3	—	50.0
1970~74	—	—	3,522	43.7	5,147	36.3	—	40.0
1974~75	—	—	—	—	—	—	28.4	—
1976~79	—	—	—	—	—	—	23.3	—
1980~83	—	—	—	—	—	—	13.8	—
1984~87	—	—	—	—	—	—	14.7	—

* : 1970. 1. 1~1973. 6. 30

Source : Park JB, Park BT, 1981 for 1971, 1974 and 1976 studies.

Han SH, 1989 for 1988 study.

II. Methodology

This was a follow-up study for three groups of mothers and their infants. The first group was all the married

women under 50 years of age residing in Gunwee County, Kyungpook Province. The second group was all the married women under 50 years of age residing in Hapchun County, Kyungnam Province. The third group was all the pregnant women who came to the MCH Center of South District

Table 3. Infant mortality rates (per 1,000 live births) estimated by the Ministry of Health & Social Affairs, 1962~1985

Year	IMR	Year	IMR	Year	IMR
1962	69.0	1970	53.0	1978	38.5
1963	66.5	1971	51.3	1979	37.6
1964	64.1	1972	50.0	1980	36.8
1965	61.8	1973	45.0	1981	35.8
1966	60.0	1974	41.0	1982	35.0
1967	58.2	1975	41.4	1983	34.2
1968	56.4	1976	40.4	1984	33.3
1969	54.5	1977	39.5	1985	32.6

Note : From 1975, new method of estimation was used.

Sources : Economic Planning Board, 1979, Ministry of Health & Social Affairs 1982 and 1986.

Health Center in Taegu for delivery and their infants.

In Gunwee County, 17 Myun Health Workers made a list of eligible women by village as of 1 April 1985 and visited them periodically to provide the family planning services and to detect pregnant women and births until 21 March 1987. The same list was made for Hapchun County as of 1 March 1987 and the Myun Health Workers visited them for the same purposes as in Gunwee County for a year until 28 February 1988. Any women who missed their menstruation for two months consecutively were considered to be pregnant and were registered and followed up to the termination of the pregnancy. Infants born in Gunwee County between 1 April 1985 and 31 March 1987 and in Hapchun County between 1 March 1987 and 28 February 1988 were followed up to their first birthday to check the survival. The progress of follow-up was checked by the investigator every month and the birth registration records of Myun Offices of Gunwee Country was reviewed to detect missed cases.

At the MCH Center, two nurse aides who were employed for this study interviewed all the women who came for delivery from 1 April 1985 to 31 March 1987. High risk women referred to the hospitals were traced to check the delivery outcome. At the end of the fourth week

after birth, a registered nurse employed for this study telephoned the mothers to check the survival of infants. A postcard was mailed to the mothers who could not be contacted by telephone. Follow-up to the first birthday was not attempted because of the high mobility of low economic class population in the urban area. Demographic characteristics and obstetric history of the women who visited the MCH Center for delivery but lost to follow-up were compared with those of the women who were followed up to check the selection bias.

It has been known that the women visiting MCH Center for delivery are from middle and low socio-economic classes. To examine the relative risk level of the women who delivered a baby at the MCH center compared with the women who delivered at the other medical facilities, 1,410 pregnant women who delivered a baby in 1-30 April 1987 at one of nine medical facilities (3 university hospitals, 2 general hospitals, 2 private clinics, 1 midwife clinic and 1 MCH Center) in Taegu were interviewed to obtain the demographic data and obstetric history. Birth weight of the infants was obtained from the delivery records. These characteristics were compared by category of medical facilities and the results were published earlier (Song et al, 1988).

III. Results

1. Gunwee and Hapchun Counties

During the study period 1,814 pregnant women (978 Gunwee and 836 in Hapchun) were identified in two counties. Among them 1,359(74.9%) women had live births ; 399(22.0%), induced abortions ; 43(2.4%), spontaneous abortions ; and 13(0.7%), stillbirths. The spontaneous abortion rate in Gunwee County (3.9%) was much higher than that in Hapchun County (0.6%). On the contrary, the induced abortion rate in Gunwee County (17.6%) was lower than that in Hapchun County(27.2%). There were 17 infant deaths among 1,359 live births and the infant mortality rate was 12.5 per 1,000 live births. Out of 17 infant deaths, 14 (82.4%) were neonatal death which gave a neonatal mortality rate of 10.3 per 1,000 live births and 3(17.6%) were postneonatal deaths. There was no maternal death (Table 4).

2. MCH Center

From 1 April 1985 to 31 March 1987, 6,365 pregnant

women visited the MCH Center for delivery. Among them 5, 243 women delivered at the Center and 1,122 women(17.6%) were referred to other obstetric clinics or hospitals for high risk factors. The delivery outcome was confirmed for 6,012 women out of 6,365 women because some of the referred cases were lost to follow up. There were only 11 stillbirths (0.2%) out of 6,012 births and 222 live births (3.7%) were low birth weight (2,500 gm or less). However, the low birth weight incidence rate was reduced to 1.9% according to a new definition of low birth weight (2,499 gm or less).

Out of 6,001 live births, 4,834 infants (80.6%) were followed up to the 27th day after birth and 1,167 infants (19.4%) were lost. A total of 36 infants died within the neonatal period and this gave a neonatal mortality rate of 7.4 per 1,000 live births. There was no maternal death within four weeks after delivery (Table 5).

Number of post-neonatal deaths among infants born at the MCH Center and other referred facilities was not known because they were followed up to the 27th day after birth. Out of the total 50 neonatal deaths, 41 deaths (82%) occurred within the first week after

Table 4. Distribution of pregnancies and pregnancy outcomes in Gunwee County (1 April 1985-31 March 1987) and Hapchun County (1 March 1987-28 February 1988)

Pregnancy and Outcome	Gunwee County	Haphun County	Total
Married women (15-49 years)	6,208*	7,712**	13,920
Sterilized women(including tubal ligation)	2,430*	5,110	7,540
Eligible women at midyear	2,877*	2,194	5,071
Pregnancy	978	836	1,814
Spontaneous abortion (%)	38(3.9)	5(0.6)	43(2.4)
Induced abortion (%)	172(17.6)	227(27.2)	399(22.0)
Still birth (%)	8(0.8)	5(0.6)	13(0.7)
Live birth (%)	760(77.7)	599(71.7)	1,359(74.9)
Neonatal death (per 1,000 live births)	7(9.2)	7(11.7)	14(10.3)
Postneonatal death (per 1,000 live births)	2(2.6)	1(1.7)	3(2.2)
Infant death (per 1,000 live births)	9(11.8)	8(13.4)	17(12.5)
Maternal death	0	0	0

* : Mean of 1st and 2nd years

** : Married women age under 45 years old

Table 5. Number of deliveries and delivery outcomes by follow-up status, South District MCH Center, Taegu, 1 April 1985-31 March 1987.

	1st year [*] No. (%)	2nd year ^{**} No. (%)	Total No. (%)
a. Women visited for delivery	3,536	2,829	6,365
Deliveries at MCH Center	2,880(81.4)	2,363(83.5)	5,243(82.4)
Referral to other facilities	656(18.6)	466(16.5)	1,122(17.6)
Confirmed delivery outcome	3,305	2,707	6,012
b. Live birth	3,298	2,703	6,001
Still birth	7(0.2)	4(0.1)	11(0.2)
Low birth weight(\leq 2500 gm)	130(4.0)	92(3.5)	222(3.7)
(\leq 2499 gm)	69(2.1)	47(1.7)	116(1.9)
c. Follow-up to 27th day after birth (c/b \times 100)	2,663(80.7)	2,171(80.3)	4,834(80.6)
d. Neonatal deaths	20	16	36
Neonatal death rate (d/c \times 1,000)	7.5	7.4	7.4
Maternal death	0	0	0
Lost to follow-up (b-c)	635(19.2)	532(19.7)	1,167(19.4)

^{*}: 1985. 4. 1~1986. 3. 31.

^{**}: 1986. 4. 1~1987. 3. 31.

birth and the rest 9 deaths(18%) occurred in the second through fourth week (Table 6).

Major causes of 53 infant deaths, among which 50 were the neonatal deaths, were conditions related with low birth weight, congenital anomaly, sepsis and neonatal asphyxia (Table 7).

3. Comparison of maternal characteristics and birth weights between infants who were followed up and who were lost to follow-up

Maternal age distributions of the two groups were not significantly different but slightly more mothers

who were lost to follow-up were either under 20 or over 29 years old(14.7%) than the mothers who were followed up (12.6%). Likewise, slightly more infants who were lost to follow up were either the first birth or over the fourth birth (50.8%) than the infants followed up (45.8%). Educational level of the mothers who were lost to follow-up was a little lower than that of the mothers who were followed up, 24.8% and 21.4% respectively had school education for six years or less. However, the percentages of medicaid beneficiaries were almost the same between two groups 0.4% vs 0.6%.

The percentages of mothers who had histories of stillbirth and spontaneous abortion were nearly the same and

Table 6. Distribution of infant deaths by age at death

Age(day)	Gunwee County	Hapchun County	MCH Center	Total (%)
0~ 6	6	5	30	41(82)
7~27	1	2	6	9(18)
28 \leq	2	1	*	3
Total	9	8	36	53

*: Infants were not followed up beyond 27th day after birth.

Table 7. Distribution of infant deaths by cause of death

Cause of death	Gunwee County	Hapchun County	MCH Center	Total
Asphyxia	1	1	2	4
Sepsis	0	0	5	5
Pneumonia	0	1	0	1
Congenital anomaly	1	1	7	9
Jaundice	0	1	1	2
Low birth weight	0	1	9	10
Birth trauma	0	2	0	2
Unknown	7	1	12	20
Total	9	8	36	53

Table 8. Maternal characteristics and birth weight of infants born to the women who visited the South District MCH Center in Taegu for delivery from 1 April 1985 to 31 March 1987 by follow-up status.

Maternal characteristics and birth weight	Follow-up done (N=4,831)	Lost to follow-up (N=1,171)
Maternal age		
≤ 19 yr	1.2%	2.3%
20-29 yr	87.4%	85.3%
30 yr \leq	11.4%	12.4%
Birth order		
1	45.3%	50.1%
2-4	54.2%	49.2%
5 \leq	0.5%	0.7
Maternal education		
0 yr	0.5%	1.7%
1- 6 yr	20.9%	23.1%
7-12 yr	77.0%	74.9%
13 yr \leq	1.6%	0.3%
Medical fee payment		
Self-pay	96.0%	95.7%
Medicaid	0.4%	0.6%
Obstetric history		
Had still birth	0.2%	0.3
Had spontaneous abortion	5.9%	5.0%
Had infant death	1.8%	1.8%
% of C-section for index birth	1.5%	1.5%
% of Low birth weight ($\leq 2,499$ gm) infants	1.8%	2.4%

history of infant death were the same between two groups. The Caesarean section rates for the index birth were the same between two groups. The percentage of low birth weight (≤ 2499 gm) infants for those who were lost to follow-up was 2.4% while the corresponding percentage for the followed up infants was 1.8% (Table 8).

IV. Discussion

At the beginning of this study it was estimated by the crude birth rate of Korea and the birth record of the MCH Center in previous year that there will be about 2,600 births in Gunwee County in two years, 1,340 births in Hapchun County in one year, and 10,600 births at the MCH Center in two years. However, there were only 760 births in Gunwee County, 599 births in Hapchun County, and 5,243 births at the MCH Center. Such differences between expected births and observed births in two counties were due to the reduction of birth rate and lower proportion of the population in reproductive age in rural area than in urban area. Number of births at the MCH Center was decreased dramatically because of increasing coverage of the medical insurance which facilitates hospital delivery.

To check the missing in birth detection, the birth registration records of all the Myun offices of Gunwee County were reviewed for the study period. It was found that neither birth nor death was reported for the infants who had died within the neonatal period. However, there was no birth registered at the Myun office but not detected in this study. Although another survey to detect the missed births was not carried out, it was not likely to miss a significant number of births and infant deaths in this study because of a close supervision in data collection.

Pregnancies were wasted in 25.1% among which induced abortion accounted for 87.6%. The ratio of induced abortion to live birth was lower than that was found in the national fertility survey in 1985 (Korea Institute for Population and Health, 1985). This could be related with both a decreasing trend of the induced abortion ratio and the

identification method of pregnancy in this study. Since women who missed two menstruation periods consecutively were considered to be pregnant women who denied missing period but had induced abortion could be missed. A higher spontaneous abortion rate in Gunwee County than that in Hapchun County could be a response bias. It was not likely, however, that the undetected abortions and response bias had affected on the infant mortality rate in this study.

Follow-up of 760 infants born in Gunwee County and 599 infants in Hapchun County for one year showed an infant mortality rate of 11.8 and 13.4 per 1,000 live births, respectively. Considering the small number of live births in both counties and geographical difference, such difference in the rates between two counties may be a sampling variation. Both counties are rural area with similar geographic and socio-economic conditions. Thus, the infant deaths of two counties were combined without any adjustment and the combined infant mortality rate was 12.5 per 1,000 live births. This rate was about one-third of the government's estimate (Ministry of Health and Social Affairs, 1988).

The neonatal mortality rate observed in the MCH Center was 7.4 per 1,000 live births. The neonatal to postneonatal mortality ratio of two counties was approximately 8 : 2 which was higher than those of the most developed countries such as Japan (6 : 4) and Sweden (7 : 3) (WHO, 1988). The higher ratio could be due to the small sample size. To be more conservative in estimating the postneonatal mortality rate for the infants born at the MCH Center, the neonatal and postneonatal mortality ratio was assumed to be 6 : 4. Under this assumption the postneonatal mortality rate would be 4.9 per 1,000 live births and thus the infant mortality rate would be 12.3 per 1,000 live births.

Among the infants born at the MCH Center, 19.4% of them were lost to follow-up. Comparison of the characteristics of mothers who were followed up with those of the mothers lost to follow-up showed no strong evidence for selective loss. However, slightly more mothers of lost to follow-up (2.1% points) were out of the optimum age for pregnancy (20-29 years), more mothers (5%

points) were out of the optimum birth orders (2nd-4th), and more mothers (3.4% points) were in low educational level(6 years or under) than the mothers who were followed up. There were four infants among lost to follow-up whose birth weight was under 1,500 gm while only one infant was under 1,500 gm among the infants who were followed up. Out of four infants, three were very low birth weight infants under 1,000gm whose chance to survive was slim. Even if all of these three infants had died, the infant mortality rate would be increased by less than 1 per 1,000 live births. It was presumed, therefore, that the observed neonatal mortality rate at the MCH Center had not been significantly under rated by the lost-to-follow-up infants.

It was revealed by our previous survey (Song et al, 1988) that the socio-economic status of women who visited the MCH Center for delivery was lower in general than that of the women delivered at the clinics and hospitals. However, they had less obstetric risk factors than the women delivered at the clinics and hospitals because of self-selection ; the proportions of births to the mother of 20-29 years old and in the second to fourth birth order were higher, the proportions of mothers who had history of stillbirth and spontaneous abortion were lower, and the low birth weight incidence rate was lower. It was thought that the lower obstetric risks of the women delivered at the MCH Center could have cancelled out the adverse effect of their lower socio-

Table 9. Low birth weight ($\leq 2,500$ gm) incidence rate reported by hospital based studies in 1970-1987

Year	Live birth (No.)	Low birth No.	weight (%)	Study hospital
1970~72	11,343	1,061	9.4	Severance, Weonju Gidok and Chunju ¹⁾ Yaesu Hospital -included twin births
	11,050	878	7.9	-Single births only
1971~74	6,436	467	7.3	Ewha University Hospital ²⁾
1972~76	2,500	210	8.4	Chosun University Hospital ³⁾
1975~80	4,237	542	12.8	Weonju Gidok Hospital ⁴⁾
1976~80	7,246	383	5.3	Soonchunhyang Hospital -included twin births ⁵⁾
1977~80	5,524	502	9.1	Maryknoll Hospital, Pusan ⁶⁾ - single births only
1979~80	4,600	464	10.1	Incheon Sungmo Jmae Hospital ⁷⁾
1979~81	4,991	332	6.7	Keimyung University Hospital ⁸⁾
1979~83	9,101	398*	4.4	Seoul Soonchunhyang Hospital ⁹⁾
1981~83	12,668	1,017	8.0	Dongsan, Hangang, Gangnam ¹⁰⁾ and Seongsim Hospitals
1981~86	8,210	625	7.6	Maryknoll Hospital, Pusan ⁶⁾ -single births only
1983~84	3,909	326	8.3	Kwangju Gidok Hospital ¹¹⁾
1987	875	57*	6.5	Kyungpook, Yeungnam & Keimyung Univ. Hospitals & Fatima & Catholic Hospitals ¹²⁾

* : $\leq 2,499$ gm

1) Lee SI, 1977 2) Lee HK & Kim CK, 1976 3) Nam SD et al, 1977 4) Jang SH et al, 1982 5) Lee CO et al, 1981
6) Park JH & Shin BS, 1987 7) Kim KN et al, 1982 8) Chun SH et al, 1982 9) Kim Ku et al, 1986 10) Yoon YC et al, 1984
11) Sohn KY et al, 1986 12) Song et al, 1988

economic status on the neonatal health. However, the low birth weight incidence rate for the births occurred at the three university hospitals (5.8-13.0%) was significantly higher than the rate for the births occurred at the MCH Center and other clinics and hospitals. Low birth weight incidence rate has a high correlation with the infant mortality rate (Kessner et al, 1973). This suggested that the infant mortality rate of the children born at the university hospitals might be higher than that of the children born at the MCH Center, general hospital and clinics. But the children born at the three university hospitals accounted only for 14% of total births reported to Taegu City in 1987. It was also conceivable that the infant mortality rate for the children of the middle and upper socioeconomic classes in urban area of Korea would be lower than that for the children of lower socio-economic class.

Furthermore, review of the low birth weight incidence rates reported by various investigators between 1970 and 1984 showed that the rates were around 8% ranging between 4.4% and 12.8% (Table 9). All of these studies were done at either university hospitals or general hospitals where the high risk mothers might be referred. Therefore, the low birth weight incidence rate for Taegu City and for Korea would not be higher than the rate obtained from the hospital data. The percentage of low birth weight ($\leq 2,499$ gm) infants for the industrialized countries was estimated to be 7% in 1986 (UNICEF, 1989) and their infant mortality rates were between 5 and 15 per 1,000 live births (WHO, 1988).

Although the cause of death was unknown for the one-third of neonatal deaths at the MCH Center, major causes of neonatal deaths were biologic origin such as low birth weight and congenital anomaly and 82% of the neonatal death occurred within the first week after birth. This was a similar pattern of the infant mortality as observed in the developed countries (WHO, 1988). These findings suggested that the infant mortality rate of Korea estimated by the government had been unduly overestimated.

Taking such findings into consideration as the infant

mortality rate observed in Gunwee and Hapchun Counties, the neonatal mortality rate at the MCH Center, the causes of infant deaths and the low birth weight incidence rate observed at five different categories of medical institutes in Taegu, a conservative estimate of infant mortality rate of Korea would be between 12 and 15 per 1,000 live births in 1985~1988.

V. Summary

We followed up all the infants born to the married women under 50 years of age residing in Gunwee county, Kyungpook Province, between 1 April 1985 and 31 March 1987, and those born to the married women under 50 years residing in Hapchun County, Kyungnam Province, between 1 March 1987 and 28 February 1988, to their first birthday. Likewise, we followed up the infants born to the women who visited the MCH Center of South District Health Center in Taegu City for delivery between 1 April 1985 and 31 March 1987 to the 27th day after birth and obtained the infant mortality rate and the neonatal mortality rate, respectively.

There were 17 infant deaths among 1,359 live births in Gunwee and Hapchun Counties and the infant mortality rate was 12.5 per 1,000 live births. Out of 17 infant deaths, 82.4 percent were neonatal death and 17.6 percent were postnatal deaths. Out of the 6,001 live births born to the women visited the MCH Center, 4,834 infants (80.6%) were followed up to the 27th day after birth. Of these 4,834 infants, 36 infants died before the 28th day after birth and thus the neonatal mortality rate was 7.4 per 1,000 live births. Comparison of the maternal characteristics and the birth weight between infants who were followed up and those who were lost to follow-up showed no significant differences. Assuming that the neonatal and postneonatal mortality ratio had been 6 : 4, the infant mortality rate for the infants born at the MCH Center would have been 12.3 per 1,000 live births.

Taking such findings into consideration as the infant mortality rate observed in Gunwee and Hapchun Counties,

the neonatal mortality rate at the MCH Center, the causes of infant deaths, and the low birth weight incidence rate, a conservative estimate of infant mortality rate of Korea would be between 12 and 15 per 1,000 live births in 1985~1988.

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