EFFECT OF MATERNAL AND CHILD HEALTH VILLAGE HEALTH WORKERS (MCH-VHW) PROGRAM ON INFANT MORTALITY

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Introduction

Although the GOBI (Growth charts, Oral rehydration, Breast feeding, Immunization) child survival campaign has promoted a broader and political awareness of child health issues, its value for primary health care (PHC) policy in developing countries has been questioned (Costello, 1981). It has been suggested that this approach to reduce child mortality through selective interventions often conflicts with national PHC programs by increasing both recurrent costs and dependence upon foreign aid. Another objection to GOBI is that its impact on child, and especially infant, mortality has been overstated.

Several authors (Costello & Tudor-Williams, 1986; Vaughan et al., 1984) have suggested that support and integration of existing PHC services is likely to be more beneficial than selective campaigns in the long-term. They are challenging, instead of marketing, GOBI, why not PEPSI (Perinatal Education, Primary health care Support, Integration).

Key Words: maternal and child health, village health workers, infant mortality
This study was intended to evaluate the impact of a maternal and child health village health workers (MCH-VHW) program on the survival of the children up to one year of age. Currently, in over 40,000 of Indonesia’s 67,000 villages, trained village health workers are working to help their community protect at children’s health. Expanding their service to include maternity care could have a significant impact on child survival in rural areas.

Methods

This study represents a continuation of a study which evaluated the effect of MCH-VHW program in reducing the perinatal mortality rate (Sahamih, 1990). The objective of this follow-up study was to determine whether improvements in perinatal survival in the intervention area had been maintained during infancy. The research hypothesis was that fewer infant deaths will be experienced by survivors in the intervention area than by survivors in the control area.

A follow-up was conducted on all survivors born to mothers incriminated on the first study to determine the survival status of the children at their first birthday.

Life table and survival analysis were used to estimate the infant mortality rate (IMR), while Cox regression analysis was used to test the significance of the intervention effect while simultaneously accounting for several baseline patient characteristics (Dixon et al., 1985).

Results

The population of the original study consisted of 1,833 births (939 in the study area and 944 in the control area). There were 37 perinatal deaths in the study area and 39 in the control area. The follow-up study included only the survivors from the study (perinatal deaths were excluded). The population of the second study therefore consisted of 902 in the study area and 985 in the control area. The follow-up was completed in 757 (83.9%) and in 783 (80.5%) for the study area and the control area, respectively. The sampling frame is illustrated in Figure 1.

![Figure 1. Sampling frame for the study](image-url)
In both areas follow-up was completed in about 81% of all survivors. Most of the lost to follow-up were due to patients migration to urban areas or transmigration to islands outside Java. Mother’s characteristics of lost to follow-up patients were similar to those of the parent population. This was also true for several infant’s characteristics. Comparisons of several characteristics of infants available for the follow-up study, except for birth order, did not show a significant difference. Variables that differed will be used as candidates for confounders to be adjusted in the analysis. Life table and survival analysis showed that IMR were 20.9 and 25.7/1000 live births in the intervention and control area, respectively (Figure 2). While the difference is not statistically significant, clinically it is considered significant because it represents an excess of 16% in IMR in the intervention area.

<table>
<thead>
<tr>
<th>Study Area</th>
<th>Control Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative proportion surviving at beginning of interval &gt; 12 months</td>
<td>0.970</td>
</tr>
<tr>
<td>Probability of dying between ages 0 and 12 months ( Infant Mortality Rate)/1,000 live births</td>
<td>25.9</td>
</tr>
</tbody>
</table>

**Test Statistics:**

<table>
<thead>
<tr>
<th>Test</th>
<th>Statistic</th>
<th>D.F.</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized Wilcoxon (Breslow)</td>
<td>0.320</td>
<td>1</td>
<td>0.571</td>
</tr>
<tr>
<td>Generalized Savage (Mantel-Cox)</td>
<td>0.316</td>
<td>1</td>
<td>0.574</td>
</tr>
</tbody>
</table>

**Figure 2. Life table and survival analysis**

The IMR for the whole population (perinatal deaths plus survivors) was estimated to be 77.5/1000 live births in the study area and 71.9/1000 live births in the control area. These are higher than the figure for Central Java Province as shown from the 1985 intercensal survey which produce an estimate 308 of 68/5,000 live births.

Stepwise Cox regression analysis showed that mother’s relative risk of infant mortality in the intervention area adjusted for these covariates was 1.22 with 95% confidence interval of 0.75 - 1.98 (Figure 3).
Relative Risk of Infant Mortality in the Intervention Area Adjusted for Mother’s Education and Age = 1.22 (95% C.I.: 0.75 - 1.98)

Figure 3. Cox regression analysis

Survival function showed that the survival of infants in the intervention area was consistently lower than, and parallel with, those in the control area (Figure 4).

Figure 4. Cox Regression analysis with mother’s education and age as covariates (log minus log survival function), Pattern for education = 6 years and age = 25 years.
Discussion

While results of the first study suggest that MCH-VIH program improves the outcome of pregnancy in the low-risk mothers, it does not seem to improve the survival of the children up to one year of age. Possible explanations include first, clinically, as neonatal mortality decreases in the intervention area, there are changes in the characteristics of neonatal survivors, some of whom would have died had they been born in the previous years. These "new survivors" are likely to be more fragile than other neonatal survivors and led to postponement rather than prevention of infant mortality. Secondly, socially or behaviorally, discontinuation of HIV's service after birth might cause reduced capability of using health services.

To be able to provide a definite answer to this phenomenon, another study is needed which incorporate social and behavioral sciences into epidemiology.

Acknowledgement

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References