Study on a Method to Improve Vital Statistics and Family Planning Simultaneously Among Maternity Cases

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ABSTRACT

To demonstrate and assess the possibility of improving simultaneously vital statistics and family planning in urban and rural Korea, a action-cum-research project was conducted for a period of one year, from May 1966 to April 1967, over the area covering Kimchun city and a part of surrounding Kumnung Gun, Kyongsangbuk-do province, Korea. As the method of study, a sterilized simple delivery kit was distributed to the expectant mothers in the experimental areas, and its effects on the reporting of vital events such as births and deaths and the acceptance of family planning were compared with the same in the control areas without such an action program. A single delivery kit contained one vinyl sheet for covering and one for lying on, one cotton sheet, a pair of scissors, one foot of thread, two pieces of gauze, a piece of soap, a weight scale and one doubled envelope.

From the study, the system of distributing simple hygiene delivery kits to all expectant mothers in an area is an effective method of obtaining accurate statistics of births. It is also effective in the reduction of infant mortality, which, in turn, promotes acceptance of family planning in rural Korea.

INTRODUCTION

In Korea, vital registration is far from complete and accurate, and only one third of the annual births and about half of deaths were reported and registered in the year of occurrence (BOS 1965). This creates problems not only in estimating the natural increase of population, which is vitally important in assessing the national family planning program, but also in planning public health administration in Korea.

The main reason of such underreporting is that, apart from vital statistics administration, the public does not feel any need for the reporting of vital events as soon as they occur except for identification of their surviving children or for burial permit of the deceased (EPB 1964, BOS 1965). Therefore, it is necessary to devise a method which gives the public the motive to report vital events as they occur. Such a method should also be economically feasible and worth while to the extent that the public funds will be invested in its operation for the sake of people’s welfare.

In this connection, the delivery kit distribution system is considered to be a method of study for such a possibility under the following assumptions:

1. As most of deliveries occur at home without the aid of the medical profession, and under unsanitary conditions, the provision of sterilized delivery kits to expectant mothers would be accepted by villagers. This would create the need for reporting of expected births to obtain such
supplies.

2. The responsible persons assigned to the
distribution of kits in the villages would help
not only the local office in collecting informa-
tion on vital events, but also expedite the report-
ing of births and deaths on time. This could
prevent a long delay of reporting.

3. Such use of the sterilized kit would prevent
various infections such as tetanus of the new-
born, and would contribute to the reduction of
infant mortality.

4. Such reduction of infant deaths would
eventually give security to parents from experi-
ence of longer survival of the new-born, which,
in turn, would promote the acceptance of family
planning practice.

This conception led to this study to test the
above hypotheses as a way of improving and
integrating MCH, family planning and vital sta-
tistics simultaneously as a part of general health
services at the local health center level.

METHOD AND PROCEDURE

In order to fulfil the study objectives, exper-
imentation was set up based on the "before-
after" experimental design in both urban and
rural areas, which were devided into an experi-
mental area, a control area I and a control area
II respectively, having the following experimen-
tal practices:

1) In the Experimental area, delivery kits
were provided for expectant mothers through
kit holders distributors, who then reported the
vital events of the village to the local study
center.

2) In the Control area I, the delivery kit dis-
 tribution system was not practiced, but a village
woman was assigned as a reporter of vital events
of the village to the local study center.

3) In the Control area II, neither delivery kits
nor a reporter was provided. The study areas
and population are shown in the Table 1.

Before launching the action program, a pre-
paration period for the field study was instituted
from December 1, 1965 to April 31, 1966. Field
activities such as assignment and training of de-
 livery kit holders, preparation of delivery kits
and formulation and printing of reporting forms
were carried out.

Then for a period of 12 days, beginning Fe-
bruary 11, 1966, a "before" survey was carried
out on attitudes toward the use of delivery kits
and various practices related to delivery care in
the related study areas to collect various baseline
informations and data to be used for the field
activities and training programs, and afterwards
for a comparison study of "before" and "after"
the experimental period.

The "before" survey was done for 2,888 house-
holds in the 37 sample clusters, which were
drawn from both experimental and control areas
by cluster sampling technique. In the 2,888 sam-
ples households, a total of 2,123 eligible women
were interviewed by 40 research workers who
were given intensive training beforehand, and
they completed enumeration of 97.9% of households
and interviewing 94.3% of eligible women.

The actual field action program of the delivery

<table>
<thead>
<tr>
<th>Area</th>
<th>Dong or Myun</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kunnung Gun</td>
<td>Experimental area</td>
<td>Nongso, Gamchun, Joma myuns</td>
</tr>
<tr>
<td>Control area I</td>
<td>Kaeryuog myun</td>
<td>14,109</td>
</tr>
<tr>
<td>Control area II</td>
<td>Kusung myun</td>
<td>9,334</td>
</tr>
<tr>
<td>Kimchun City</td>
<td>Experimental area</td>
<td>Sungmoe 1, 2, Yongdoo, Moam Dongs</td>
</tr>
<tr>
<td>Control area I</td>
<td>Pyunghwa 1 Dong</td>
<td>6,194</td>
</tr>
<tr>
<td>Control area II</td>
<td>Pyunghwa 2 Dong</td>
<td>3,250</td>
</tr>
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</table>

kit system was conducted during 12 months from May 1, 1966 to April 30, 1967 in the experimental areas, starting with giving information and education to the residents about the availability of delivery kits and the method of using them. Then the kit holders tried to classify the number of pregnant women by expected delivery month. To them the kits, sterilized at the provincial hospital, were distributed one week prior to the expected date. The kit holders and the assigned reporters of vital events reported birth and death events monthly to the field research center as they were observed. Besides, prenatal care was provided to pregnant women and family planning services also were provided to the child bearing women in the areas.

After the experimental project was completed on April 30, 1967, an “after-survey” was carried out for an evaluation of the action program results for a period of 10 days beginning May 10, 1967. The survey design was the same as that of the “before survey.” The survey was completed by enumerating 2,728 households (95.9%) and interviewing 1,911 eligible women (90.9%).

While the above activities were in progress, work of matching vital events found in the “before” and “after” surveys against the actual civil registration was carried out to assess the extent and reason of delayed reporting or neglect in performing this duty.

RESULTS

Technique and Practice of Delivery Aid

Place of delivery: At the time the kit program started, most of the mothers reported their last delivery had occurred at their own or their mother-in-law’s home (98.2% in rural, 96.8% in urban areas). Those who were delivered in hospital turned out to be only 0.4% and 2.6% in the rural and urban areas respectively. However, during the period of the action program the percentage of hospital deliveries increased a little in both rural and urban areas (to 2.5% from 0.4% in rural, 6.4% from 2.6% in urban areas).

Attendance at delivery: Among those who attended the last delivery, mother-in-laws made the largest percentage (44.1% in urban, 24.5% in rural areas). On the other hand, deliveries attended by either medical doctors or midwives were only 2.2% in the rural area, and 29.2% in the urban area. It is suprising to learn that 29.9% of deliveries in the rural area and 17.1% in the urban area had no attendant at all. However the percentage of deliveries carried out without any attendant decreased during the action program, and instead the deliveries with professional care increased, in both rural and urban areas.

Attitude toward the use of delivery kit: Those who wanted to use sterilized delivery kits were 67.9% in rural and 74.4% in urban areas, and those who did not want them were 28.5% and 22.8% respectively. The major reasons attributed for their desire to use them were that they are sanitary and sterilized and cost free. As to the reason for not wanting use of kits, the first was that they didn’t expect any more child births.

Utilization of delivery kits: During the one year kit distribution program at 82.5% of the total deliveries in rural and at 33.8% in urban areas the kits were actually used. This was quite an unexpected phenomenon when we recall the percentages of those who had wanted to use them at the “before” survey (67.9% in rural, 74.4% in urban areas). This might mean that the activities of the kit distributors were less efficient in the urban area than in the rural area where there are more close social contacts between neighbours.

Effect on the Completeness of Reporting of Vital Events

The crude birth and death rates: Through retrospective survey as a part of the “after” survey conducted in May 1966, the number of
births and deaths occurring during the one year period from May 1, 1966 to April 30, 1967, in the experimental and control areas were enumerated to get birth and death rates in the sampled area. The crude birth rate, according to the survey results, in the urban area was around 28.0 per 1,000, while that of the rural area was about 32.0 per 1,000 except for two rural townships. There the remarkable low rates might be partly due to the particular nature of the age structures in the area concerned, but can mainly be attributed to the fact that about 40% of the eligible women in the districts have been practicing effective family planning methods such as IUD. Vasectomy is also used. The death rate in the urban area was about 7.4 per 1,000 except in one Dong, where the sample population size was smaller than the other district, and around 8.0 per 1,000 in the rural area. Even though there were some variations in the rates, the birth and death rates derived from this sample survey were approximately those of vital events actually occurring in the areas during the past one year.

Matching of the reported vital events against the actual events enumerated in the sample survey areas: The following table is the result of a comparison between the enumerated data through the “after” survey and the reported events by the delivery kit holders in the sample study areas.

In the rural area, the kit holders in the experimental area covered 92.1% of the total birth events enumerated in the same area. In the control area I, the rates of the birth reporting by the assigned reporters are shown as 61.0%. Therefore, in the experimental rural area, we can easily conclude that the difference in percentage (an increase of 30%) is due to the additive effects of the assignment of the kit holders plus the use of delivery kits. On the other hand, judging from the same comparison made in the urban area (46.7% and 47.4%), the role of the kit holders in urban areas does not seem to have had any noticeable effect in improving the rates, and in the control area I they reported about the same level as did the reporters without utilizing delivery kits.

As for the death events, in the rural area, the experimental area indicates the rates of death events reported by the kit holders as 64.0% of the total deaths, while, in the control area I, the rates of the same are shown as 94.4%. The reason why the experimental rural area showed a lower ratio was due to the fact that the kit holders in the experimental area turned in reports after making an inquiry of the family number in order to fill in the information in the death report form. However the reporters in the control area I mostly happened to be Dong-chiefs, so that they could immediately report death events from the available information in the Dong office without making further inquiries of such unhappy events. In the urban area, on the contrary, the experimental area showed a

<table>
<thead>
<tr>
<th>Area</th>
<th>Population</th>
<th>Birth</th>
<th>Death</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Enumerated</td>
<td>Reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>by survey</td>
<td>by kit-holder</td>
</tr>
<tr>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>5,400</td>
<td>151</td>
<td>139</td>
</tr>
<tr>
<td>Control I</td>
<td>1,944</td>
<td>41</td>
<td>25</td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>2,030</td>
<td>60</td>
<td>28</td>
</tr>
<tr>
<td>Control I</td>
<td>1,031</td>
<td>19</td>
<td>9</td>
</tr>
</tbody>
</table>
much higher percentage than the control I (86.7% vs. 33.3%). This may be explained by the fact that the urban population is less reluctant to talk about a deceased in the family than rural people, and more reports were made by the kit holders of the experimental area. Also the reason why the control area I had an extremely low rate of reporting was due to the lukewarm attitude taken by the kit holders in this particular sample area.

Effect on the time of vital events registration

Time of registration: The vital events of birth and death in previous five years (January 1, 1961~December 31, 1965) before starting the action program were enumerated in the “after” sample survey, and were studied to see the number of events and when those events were actually registered. This indicated that around 57% of the births during the five years were registered in the civil registration office, and the remaining 43% were not reported. However, among the registered 57%, only 20% were reported within 13 days (the legal time limit); 21%, over 13 days and less than one year; and the rest (16%), after one year. As for deaths, 75% of the deaths for the same period were not reported, and only 25% of them were registered in the civil registration office. We notice the phenomenon that the reporting rate of deaths is much lower than that of births. Among the 25% reported deaths, 15% were registered within 10 days, the legal time limit, and the rest were mostly reported within one year after the event. Here we notice the fact that there were more cases of entire omission and less delay in reporting deaths than those of births.

Effect on Family Planning Acceptance and the Utilization of MCH Service

Family planning (Postpartum IUD insertion program among maternity cases): Starting from October 1966, family planning services were offered by the project to the known maternity cases with emphasis on IUD insertion at the early stage of the postpartum period. In order to promote the idea of family planning, letters were sent to the mothers who recently had a delivery, asking them to come to the provincial hospital or IUD clinics near the village for the insertion. During a 6 month period, 115 or 12% of the 972 maternity women accepted IUD. Such acceptance rate was higher than the normal rate of acceptance in the national family planning program, which was about 5.3% of women who have had child-birth over the same period (6 months). This implies that the educational efforts made in family planning during the pre and post-natal period can raise the IUD acceptance rate to about twice as much than the program without such an effort.

Family planning acceptance vs. birth rate: The family planning acceptance rate was higher in the experimental area than in the control area in both rural and urban settings. This family planning acceptance rate also contributed to lowering the birth rates, as higher acceptance areas had lower birth rates. The correlation coefficient ratio was high (−0.86). This suggests that the action program with the delivery kit distribution system has also promoted family planning acceptance which in turn can reduce the birth rate. However, the cause and effect between the use of delivery kits and the acceptance of family planning should be further explored.

Prenatal care: A total of 364 pregnant women, which accounts for 37.3% of those reported, visited the Provincial Hospital to receive prenatal care. The utilization rates in detail were 47.4% and 40.3% in the Gun and City of the experimental area respectively; 32.1% and 18.8% in the same of the control area I. It is noteworthy that despite the long distance from the hospital the rates of the Gun area were higher both in the experimental and the Control I, indicating that the people would accept such services if it is available to their village.
Well-baby care after birth: The area utilization rates of the Provincial Hospital for receiving well-baby care were as follows: In the experimental area, 24.4% of the total reported births in rural and urban areas respectively; whereas in the control area, 11.5% and 12.5% visited the hospital for well-baby care. The urban districts in both areas have shown higher percentages.

Effect on infant mortality: Even though it is too early to assess the effect of the above activities on the improvement of maternal and child health, there is evidence that the infant mortality was lowered in the experimental areas in both urban and rural areas. In the rural area the proportion of infant deaths (under one year) among the births observed during a year in the experimental area was 43.7 per 1,000 live births, while it was 68.7 in the control area. In the urban area, the rate was 34.3 in the experimental area vs. 53.6 in the control area, indicating higher infant death rates in the control area without the action program. Whether such reduction in infant mortality tends to increase the family planning acceptance rate may be seen from a long term study.

**DISCUSSION**

In rural Korea, judging from the place of their last delivery and the materials and instruments they used for delivery aid, most of the mothers (more than 95%) were delivered under extremely unhygienic conditions, though a better situation exists in urban areas where about 30% of the deliveries were attended by a physician or midwife. In asking their opinion and attitude toward the use of the delivery kit, more expectant mothers in urban areas wanted to use kits than did those of rural areas. However, in the actual practice 86% of the known deliveries in rural area actually utilized the kit while only 40% in the city used it.

By using the delivery kit distribution system, 90% of the estimated total births in the village were detected and reported to the project, while only 60% of the births were reported by the assigned reporter without the kit. However, in the city, the kit holders reported births at about the same level as reporters without the kits. Therefore, we can state that collecting data of birth events by utilizing the delivery kit distribution system is especially effective in rural areas but not much more effective in urban areas. In death reporting there is no evidence that the delivery kit distribution system had any noticeable effect in raising the reporting ratio. However, this study indicates that any assigned reporter with or without the kit, turned in more than 65% of the deaths that occurred in a village if they were given some incentives to do so.

The time of this study project is too short to determine accurately the effect of the kit delivery system on the maternal and child health service, and the acceptance of family planning. Nevertheless, there is evidence that infant mortality among kit users was lower than among non-users. Also, family planning acceptance in the experimental area was more than two times higher than in the control area.

**REFERENCES**


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