RISK APPROACH IN FAMILY HEALTH
Design and constraints in intervention studies

1. INTRODUCTION :

Considering the need to develop new strategies to improve maternal and child health all over the world and especially in developing countries, WHO convened a meeting of consultants in Geneva in December 1974. The objective of the meeting was to develop a simple methodology for a systematic approach in various settings towards the best utilization of skilled manpower and resources to deal with high risk groups.

In 1976, the division of Family Health of WHO and the Institute of Community Medicine of Hacettepe University agreed to collaborate in research project on developing and evaluating risk approach strategy for maternal and child care. It agreed that the study would be carried out in the Etimesgut and Çubuk health Districts which are field training and research areas of the Institute of Community Medicine.

In November 1976, WHO/Family Health organized a mini task force meeting in Geneva to discuss the research design for a risk Approach Strategy project in Turkey. It was recommended that the research project should have two phases, i.e. the pilot and the main study.

The pilot study was carried out between March and June 1977 and the results were reported in the second mini task force meeting in Ankara in September 1977.

The main study was started in January 1978. Data collection from pregnant women was completed at the end of June 1981 and on infants in December 1981. That on toddlers is still going on and will be completed at the end of 1983.

2. OBJECTIVES of the STUDY :

2.1. To develop a new local strategy for mother and child care based on risk approach by preventing undesirable or poor outcomes (identification of risk indicators and groups at risk) .

2.2. To develop intervention strategies for women and children at risk.

2.3. To establish a better maternal and child health care system by reallocation of resources.

3. PURPOSE of the PILOT STUDY :

3.1. The preparation of the forms, working instructions, methods of data collection, processing and tabulation and pre-testing these basic documents in the field.

3.2. To train service and research staff and test the intervention strategies.

3.3. To test the acceptability of the project by public and staff.

4. DESIGN of the MAIN STUDY :

Eleven health centres out of fourteen in Etimesgut and Çubuk Districts were chosen for the evaluation of risk approach strategy was implemented in five of these centres, Kazan, Yenikent, Yiğitli, Akyurt and Kışlacık. This group of health centres will be called the "Experimental group" hereafter. The other six health centres, which are Ergazi, Yapracık, Ortabereket, Yenice, Y. Çavundur and Akkuzulu, comprise the "Control group" .

4.1. Information About the Study Area

There are 163 villages in the study area. The average population of the villages in 400. The main occupation of the villagers is farming and there are no marked socio-cultural differences among the communities between the experimental and control areas. The population of the experimental group is about 33 000 and control group is about 34 000. In brief, health centers, staffed by a medical officer, a public health nurse, a sanitarion and village midwives, serve populations of 5000 to 10 000 and are linked to the regional hospitals. Inturn, services are provided in the villages by sub-health stations manned by village midwives/auxiliary nurses serving 2000 to 3000 inhabitants.

4.2. Study Universe

The study universe consists of

a) All pregnant women detected in 1978,1979 and 1980

b) All children born in 1978, 1979 and 1980

4.3. Main Study

The main study was started by preparing and revising forms instruction and manuals indicating the risk factors and scores according to the experience gained from the pilot study. Detailed technical instructions for interventions were also prepared. In the study area physicians were trained by the staff members of the Institute of Community Medicine and they were informed about the objectives of the study and given some refresher training in MCH care as well. The responsibility for training ANMs was given to health centre physicians.

The training programme included :

a) Theoretical education
b) Discussions of questionnaires
c) On-the-job training

5. TRAINING PHASE of the PROJECT :

5.1. Preparation of Forms, Instructions and Manuals for the Study and Control Areas

Based on available knowledge and their professional experience Drs Oral and Akin prepared brief manuals for ANMs as guides to detect risk factors.

These manuals listed the risk indicators and scores for pregnant women and children as well as suggesting the type of interventions for each case. The danger of each risk factor to mother and child was also explained.

5.2. Organization of Training

Training of the health personnel for this project was carried out only in the study area. Drs Oral and Akin trained the five physicians in the study area for the new approach in MCH care including how to detect the risk indicators, the interventions for pregnant women and children and the forms and questionnaires to be used.

5.3. Training of ANMs

The training of ANMs carried out by the previously trained health centre physicians was as follows :

a) Theoretical education : The physicians started the training programme by explaining the goals and objectives of the new approach in maternal and child health care. This theoretical teaching

was mainly carried out by going through the manuals prepared by Drs Oral and Akın, and discussing the important points about diseases, risk factors, and intervention programmes. Various related documents on health care were also given to ANMs to read. In the control area, training was given to the ANMs by the health centre physicians only for filling in the additional cards.

b) Discussion of the Forms : Each physician was responsible for the forms being used by the ANMs during the follow-up visits and had to check each form. While checking the new forms, the physicians asked questions about the decisions made by the ANMs based on their observations and examinations. For example : If the ANM has marked the column corresponding to difficult delivery, thephysician intrerogated the ANM about difficult delivery, what it meant, what happened during that delivery which was considered difficult and the intervention made.

c) Training on the Job : As a part of the training programme, the physician, the nurse, or the supervisor from the Department of Community Medicine went visiting in the field with the ANM to supervise the ANM's skill in carrying out examinations, her relationship with the families and the recommendations she was making. This type of training has proved to be very useful in analyzing the actual situation as well as the decisions made based on their observations.

5.4. Difficulties Encountered During the Training Period

In both Etimesgut and Çubuk health districts, ANMs are appointed by the Ministry of Health.

During the first six months of the project, seven ANMs left the districts and seven were newly appointed in the study area. Also in the control area seven ANMs left the districts and six were newly appointed. This was the main difficulty in the training of ANMs for the new approach in MCH care.

The evaluation of training was made by applying pre and post-training questionnaires to ANMs at the beginning of the study in November 1977. The pre-and post-training tests were given to all ANMs of both control and study areas to measure any differences in the knowledge and attitude of the two groups.

Although a special training programme was not carried out in

the control area, the mean score increased in the control area too. This was probably due to the routine training programme carried out by some specialisty from the Department who regularly visited the ANMs in study and control areas.But such contamination is inevitable.

The pre and post tests used were probably not specifically directed towards the risk approach, but more to general knowledge in MCH care. The training given to ANMs in the study area was also to some extent geared toward such general knowledge.

6. FIELD STUDY :

Field work was started in January 1978. First, all ANMs prepared the lists of married women between the ages of 15-49 in their localities andan identification number was given to each woman. This ID number was written on all forms in order to be able to combine the information in different forms.

Any household with a pregnant woman and/or child under one year of age,as described previously, was included in the study. For each household visited, the ANM filled in a household information form. During the first visit, taking into consideration the previous pregnancy history and with the first findings of the examination, the ANM decided whether the pregnant woman or the infant was under risk or not. (The risk scoring system is discussed in another section of this report.) Instruments and supplies for blood pressure, urinalysis and Hb measurements were given to ANMs as well as bathroom scales, and distributed in each village, in order to enable the ANM to measure the weights of the pregnant women and infants during each visit. Otherwise, the ANMs had to carry the scales in their bags. ANMs carried out all follow-up at homes by visiting each household. During each visit they examined each child or pregnant woman under study, then filled in the questionnaire and plotted the weight and height values on the graphs. At the end of each examination the ANM made her decision and gave her recommendations accordingly. If she thought that the pregnant woman or infant was under risk, she decided on frequent visits or to refer the case to the health centre or to the hospital.

Supervisors from the Institute of Community Medicine paid frequent visits to different health centre and discussed problems on the spot. Also during the first four months weekly meetings were orga-

nized by the health centre physicians in order to discuss the solutions of problems raised during the implementation.

7. MAJOR ISSUES, PROBLEMS AND SOLUTIONS :

7.1. Selection of Undesirable Outcomes

The risk approach is aimed at preventing and reducing undesirable or poor outcomes. The identification of the risk factors during pregnancy and in infancy requires a knowledge (identification) of certain individual or group characteristics associated with poor outcomes at the end of a given period.

At this stage of the study attempts were made to define those outcomes of recognised importance for and by community, and expressing a direct relationship with some risk factors present during pregnancy and the first year of extrauterinelife. Some of them were excessive numbers of deathsaffecting the foetus, the neonates, the infant or the mother, other were indications of a high level of morbidity. However, a series of variables coming from the study questionnaire had to be tested before the final list of outcomes. A great deal of effort was made throughout the study to obtain reliable data for numerators and denominators of selected outcomes in order to determine their real frequency and relative importance and their relationship with identified risk factors.

The following outcomes related in the process of pregnancy and gestation were selected for this study :

- Spontaneous abortion : foestal death before 28th week of pregnancy
- Still birth : foestal death after 28th week of pregnancy
- Low birth weight (prematurity included) : newborns weighing less than 2 500 grams
- Foetal hypoxia : heart beats under 120 ar over 160 before delivery or failure to breathe spontaneously within one minute after birth
- Perintal mortality : still birth, plus early noenatal mortality
- Post-partum infection : fever lasting at least 24 hours and over 38^{o} centigrade.
- Post_partum bleeding : bleeding more than 300 cc.

Maternal deaths were not included because of their rarity in the study areas.

Outcomes selected for measuring the impact of risk approach strategy on child health were as follows :

- Neonatal mortality : death within the first month after childbirth.
- Post-neonatal mortality : death between 1-11 months of age
- Malnutrition : at least one measurement lower than 80 percent of the Turkish standard of weight for children at a given age (if more than one episode in one month it is counted as one case)
- Diarrhoea : at least one episode during the study period (if more than one episode in one month it is counted as one case)
- Pneumonia : at least one episode during the study period (if more than one episode in one month it is counted as one case)
- Frequently sick children : recorded at least once as a child frequently becoming sick.

7.2. Risk Factors

The following factors were selected among the possible risk factors considering their frequency and their relative importance. It was hypothesized that the following factors increase the probability of having an undesirable outcome :

a. For mothers, foetus and newborn

- Age of mother less than 17
- Age of mother more than 34
- Husband and wife being relatives
- Mother smokes
- Mother has a chronic disease
- The first child birth
- More than 5 births
- Having had a still birth previously
- Having had a spontaneous abortion previously
- Having had a child death previously
- Interval with previous pregnancy less than 2 years
- Placenta retention during previous deliveries
- Having had a child with birth defects

. [illegible] of drugs in the first, [illegible]nd and third trimester
. Having had an illness such [illegible]rman measles, 'flu etc. during first, second and third trimester
. Haemoglobin level less than 10 gr.
. Minima of the blood pressure, more than 85 mm/Hg
. Albumin in urine
. Multiple pregnancy
. Cephalo-pelvic disproportion
. Vaginal bleeding before labour
. Excessive bleeding during delivery
. Early repture of membrane
. Cord prolapse
. Uterine inertia
. Premature birth
. Spontaneous vaginal delivery
. Unattended delivery
. Foetal hypoxia

b. <u>For infants</u>

. Birth weight less than 2 500 gr.
. Congenital malformation
. Mother had a child death previously
. First pregnancy of the mother
. Mother had four or more pregnancies
. Interval with previous pregnancy less than 24 months
. Unwanted pregnancy
. Duration of breast feeding less than 3 months
. Mother had no primary education
. Poor living conditions
. Low economic level of the family
. New immigrants to the area
. Families having children attending school
. Disinterest of the mother in her child
. Sex of the child
. High risk ranking according to physician
. First live birth
. Suffering from malnutrition

. Diarrhoea

. Pneumonia

. Frequent episodes of sickness, as stated by mother.

7.3. Risk Scoring System

The scores given to each risk factor for women and newborns are given in Annex. The total risk factors obtained from the history of pregnancy, and from the records of ante-natal examination, delivery, and post-partum visits, and the examination of newborn were computed and recorded on the forms of ANMs. The women and the newborns are classified into three categories using the total risk scores, which are as follows :

Scores :

0	No risk
1-9	Medium risk
10,+	High risk

The guide for risk scoring in infant follow-up is given in Annexe. The children are classified into three groups according to total scores, which are as follows :

Scores :

0-4	No risk
5-7	Medium risk
8,+	High risk

8. SOURCES of INFORMATION and DATA COLLECTION

As an integral part of the at risk strategy, collection of information was planned and carried out in two stages :

8.1. Collection of Baseline Data

Both study and control areas of the risk strategy project were chosen from Çubuk and Etimesgut health districts where there is an efficient system of regular data collection, within the framework of the National Health Service Act.

In both districts health services are provided through health centres where detailed information is collected and recorded.

a) Demographic Information

Each family living in the districts has a household information form which includes the names and the characteristics

. Infant and toddler follow-up form

Forms Used in the Control Area :

To be able to provide comparable data on morbidity, from both test and control populations, two separate forms were designed to be used together with the routine Pregnancy and Infant Follow-up Forms to be filled on each follow-up visit.

It was decided to use the Household Information Form of the study group in the control area also to obtain similar information on households of infants and pregnant women followed-up. All forms were filled-in by the ANM, checked by MDs and research assistants.

8.3 Difficulties in Data Collection

a) Staffing

In both Etimesgut and Çubuk health districts, ANMs are appointed by the Ministry of Health. The turnover rate of ANMs appointed is quite high in both areas. Since the beginning of January 1978, some health stations had no midwife and some had one for short periods of time only.

b) Distance

Villages located in mountainous areas were difficult to reach As the majority of the midwives have no transportation it meant that, especially during winter time, regular visits to these villages could not be accomplished.

c) Transportation

Within the health services system in Etimesgut and Çubuk ANMs are not provided with transportation. They either walk to villages or use public transportation such as tractors, carts or buses when available.

d) Non-avilability of Respondents

Despite the ANMs attempts to visit the household either for a regular or an additional visit, this could sometimes not be accomplished. Seasonal migration and seasonal work in the field caused difficulties in locating the respondents.

e) Missing Information

Hb tests, urine tests and weights were the most common items missing during examinations. The main objection usually came from the mothers who did not permit blood collection. In

of the household members as well as basic information about the living conditions. Health personnel, namely the public health workers, ANMs and medical secretaries are responsible for reporting and recording births, deaths, migrations, and diseases. This information is updated by visiting each household at least twice a year. At the end of each year each health centre reports the yearly birth rates, fertility rates, mortality rates, life expectancy and migration rates to District Headquarters where district statistics are prepared.

b) Epidemiological Information
For each person living in the districts there is an individual health card kept at the health centre. These cards cover information on vaccinations, periodic check-ups and results of medical examinations.

Epidemiological information is obtained from individual health cards, household forms, records of communicable diseases and death certificates.
Baseline data used in the study was based on information collected as explained above.

8.2. Forms Used in the Study

Two kinds of forms were developed.

a) Information Forms : To collect background information regarding households, and living and health conditions of the groups under study (retrospective).

b) Follow-up Forms: To collect information which would help detecting risk indicators prospectively.

The forms used in the study areas are as follows :

Experimental areas :

. Household information form
. Information on mother (for the mothers of children who were not followed-up during pregnancy and child birth)
. Information on pregnant women
. Pregnancy follow-up form
. Infant and toddler follow-up form

Control Area :

. Pregnancy follow-up form

some cases, because of the distance ANMs could not carry their weighing scales and missed weight recording at the beginning of the study before scales were distributed to each village.

Information on deliveries carried out without any assistance from health staff as well as deliveries in hospitals in Ankara was missing. However, efforts were made to visit the unassisted deliveries at home as early as possible to obtain retrospective information about the delivery.

Although it was desired to collect information on the post partum period and on newborns weekly on two subsequent visits, ANMs made one visit for both.

The new data collection system has increased the workload of ANM ragarding paperwork.

f) Completeness of Data

The cooperation received from the respondents helped to increase the percentage of completed forms. For example, 95 % of the household forms were completed.

g) Recommendations

This project is designed to identify a number of risk indicators as well as to collect information to provide a method of intervention for each risk factor defined.

For the identification of risk factors concerning mother and child health, a thorough study of pregnanacy, delivery and newborn stages as well as the environmental background should be made.

Although many of the risk indicators have been defined in dfiferent studies, it has become quite clear that in each country priority given to each factor varies and has to be determined separately. It seems essential to us that the few most important risk factors should be chosen to be used to develop intervention programmes.

In Turkey, we observed that it is probably more convenient to design two separate studies which would follow each other. The first study should be concerned with the identification

of risk factors in order to prepare a priority list of risk factors for which interventions should be developed. Then, as the second study, the most important intervention programmes should be applied and evaluated.