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A QUALITATIVE INVESTIGATION OF FACTORS INFLUENCING USE OF IRON FOLATE TABLETS BY PREGNANT WOMEN IN WEST JAVA: A SUMMARY OF FINDINGS

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EXECUTIVE SUMMARY

This report presents the results of qualitative research to investigate the factors influencing compliance with iron supplementation of pregnant women, part of a larger operations research project to reduce maternal anaemia in Indramayu, West Java. Research results provide information on the acceptability of a proposed alternative method for community distribution of iron tablets to pregnant women, and behavioral and attitudinal factors which influence pregnant women's use of iron tablets, and communication channels.

One hundred thirty in-depth interviews were conducted in the project areas, Gabus Wetan (experimental) and Sliyeg (control). Pregnant women, husbands and elder women family members, traditional birth attendants (dukun bayi), midwives (bidan), and health center (puskesmas) doctors were interviewed in March and April 1991. Household trials were also conducted among pregnant women, to determine the acceptability of iron tablets after a ten-day use period.

Major research results include:

- Maternal anaemia is not perceived as a priority health problem by pregnant women, their families, or traditional and modern maternal care providers.

- The "dukun bayi depot" model for community distribution of iron tablets to pregnant women (tablets dispensed from the dukun bayi's home) is more acceptable than house-to-house distribution by dukun bayi.

- There is some community-level resistance to the concept of distribution of iron tablets by dukun bayi, since they are not currently perceived as a source of "modern" medicines or health information.

- Some dukun bayi were hesitant to accept the proposed role of house-to-house distribution of iron tablets to pregnant women due to their present workload providing maternal and newborn care. They were more receptive to distribution of tablets when pregnant women visited their home.

- Factual knowledge of maternal anaemia, its relationship to maternal and neonatal health, and the need for and benefits of iron supplementation for pregnant women is low at the community-level and among traditional and modern maternal care providers.

- Side effects of iron supplementation (constipation, nausea, change in color of stools) and undesirable tablet characteristics (smell, taste) are common causes of discontinuation of iron tablet use. Social support from family influentials and maternal care providers can increase continuation of therapy.

- Pregnancy and related problems are not discussed openly in the family or community. Pregnant women's activities outside the home and paddy field, and their exposure to mass media other than radio is limited.

Recommendations suggested by the research for the design of the community-based distribution of iron tablets and communication strategy include:

- Attention must be paid to addressing expressed resistances by the community and the dukun bayi to the "dukun depot" model. This means assuring uninterrupted supply of iron tablets, minimizing recording requirements, training dukun bayi in motivation and education, integration of tablet distribution into routine prenatal visit schedule and content of care, and issuing some form of identification cards to participating dukun bayi.

- General awareness creation and motivation is required for all target groups about maternal anaemia and iron supplementation for pregnant women. A special focus should be on husbands, whose knowledge of maternal anaemia is lowest and potential influence on compliance with iron supplementation greatest.

- Factual information about the more technical aspects of maternal anaemia and its relationship to maternal and neonatal health along with how to motivate women to take iron supplements should be provided to formal and non formal maternal care providers.

- Face-to-face communication and radio should be used. All communications should display sensitivity to the widespread reluctance for open discussion of pregnancy-related problems.

- Expressed concerns about acceptability, legitimacy and authority of the dukun bayi to distribute iron to pregnant women should be addressed as part of the communication component.

I. BACKGROUND

A. Maternal Anaemia and Iron in Indonesia

Maternal mortality in Indonesia is high compared to other countries in Southeast Asia, with estimated maternal mortality rates (MMR) ranging from 150 to 780/100,000 live births, depending on study location. As in most developing countries, the majority of maternal deaths in Indonesia result from hemorrhage, sepsis or toxemia. Although the role of maternal anaemia in deaths resulting from hemorrhage has not been clearly demonstrated, in one hospital-based study in urban Indonesia, the MMR for anaemic women was substantially higher (70/10,000) than for non-anaemic women (19/10,000).

Pregnant women in Indonesia had the lowest hemoglobin levels among five Southeast Asian countries included in one study (World Health Statistics 1982). One of the objectives of the Indonesian Ministry of Health's current five-year plan is reducing the prevalence of anaemia from 70 to 40 percent (Pelita IV, 1984). Yet the prevalence of anaemia is still as high as 73.7 percent according to the Household Health Survey (1986). In Indonesia, anaemia is generally more common among pregnant women than adult women in general, and increases with higher parity and maternal age (HHS).

Poor absorption of dietary iron due to rice-based diets appears to be an important contributing factor to maternal anaemia in Indonesia, with prevalence of anaemia higher in areas where rice, rather than cassava, is the staple food. In Thailand and Burma, two other countries in the region with rice-based diets, anaemia among pregnant women was reduced by 50 percent through prenatal ferrous sulfate supplementation (Charloenlarp, 1988). In Indonesia, although over 70 percent of pregnant women are anaemic, it is estimated that only about one-third currently receive iron tablets during pregnancy.

The effectiveness of efforts in Indonesia to make iron folate supplementation available to pregnant women, and to reduce maternal anaemia, depends primarily on:

- availability of iron tablets through the government primary health care [illegible]
- awareness of the need for and benefits of iron tablets among women and families at the community level;
- adequate use of the prenatal health services (or other mechanisms) through which iron supplementation is available to pregnant women;

compliance with daily use of iron tablets by women throughout their pregnancy.

In the Indonesian setting, where approximately 80 percent of all births take place at home assisted by a traditional birth attendant, iron supplementation is included as part of the prenatal care services offered to women through the government health system. The MOH recommends that pregnant women make at least four prenatal visits to the community health center (puskemas) or community health post (posyandu). From 50 to 80 percent of pregnant women do attend puskemas or posyandu for prenatal care at least once during their pregnancy. Almost all pregnant women in rural areas also visit the TBA, or dukun bayi, usually during the fourth and seventh months of pregnancy.

According to national policy, iron supplements are distributed at puskemas to all pregnant women, beginning in the third trimester of pregnancy. Usually this is in the form of packets containing thirty tablets of 200 mg. ferrous sulfate plus 0.25 mg folic acid, an inexpensive preparation provided by UNICEF. However, other iron and iron-folate formulations are also available, and are sometimes distributed at puskemas.

Distribution of iron folate tablets to pregnant women also takes place through posyandu, but is less reliable than puskemas. One study of knowledge attitude and practice related to posyandu in West Java showed that although 25 percent of mothers attend posyandu, only 16 percent received iron tablets there. This is due in part to inadequate provision of prenatal care at the posyandu level (posyandu is open just one day per month), unavailability of iron tablets and lack of use of posyandu by pregnant women.

Another frequently cited barrier to reducing maternal anaemia is poor compliance with use of iron tablets by pregnant women who do receive them. Dislike of tablet characteristics such as size, color, or taste, and discomfort from side effects such as nausea or constipation, are commonly considered to discourage pregnant women from continued use of iron tablets throughout pregnancy. The role of such factors in compliance with iron supplementation during pregnancy has not been systematically studied in Indonesia. Recently, an intervention study in four provinces (Central and East Java, South Kalimantan and South Sumatra) demonstrated the positive effect of routine health education in reducing maternal anaemia.

However, to date, there is inadequate information available about the attitudes and perceptions of women, families and communities regarding maternal anaemia and iron supplementation of pregnant women in the Indonesian setting. The study described below provides the opportunity to develop and evaluate the effects of interventions to address both the service system and

demand/compliance factors which influence pregnant women's use of iron supplements.

B. Project Overview

1. Project Design and Objectives

A 21-month operations research (OR) project, "Improved Iron Folate Distribution to Alleviate Maternal Anaemia" is being conducted by the Center for Child Survival/ University of Indonesia. This study is funded by the MotherCare project, and receives technical assistance through MotherCare from The Population Council and The Manoff Group. This OR project is an add-on to a larger project of the Center for Child Survival, "The Indramayu Health and Family Planning Prospective Study".

The prospective study developed and employs a community-based sample registration system (SRS) covering 10,000 households in two adjacent districts (kecamatan) in the regency of Indramayu, West Java. The SRS collects quantitative data on fertility, family planning and child survival, and maternal health in the project kecamatan. Additional data collection activities in the project areas, such as the qualitative research described in this report, are intended to provide complementary information from which appropriate interventions can be developed and implemented. One intervention study, to promote proper breastfeeding practice and increase the use of safe contraception during lactation, has been completed.

The second intervention study in the Indramayu study area, the OR project to reduce maternal anaemia , has three major objectives:

1. Assess the status of maternal health problems and use of prenatal health services in West Java, and the knowledge, attitudes and practices related to these problems among health workers and the community.

2. Measure the effectiveness of two interventions:

   - Addition of an alternative community-based method of distribution of iron folate tablets to pregnant women;
   - communications that improve compliance with iron pill taking that incorporates improved health education materials developed through a social marketing approach;

3. Assess the utility of the SRS for the identification of pregnant women, complications of pregnancy, and neonatal mortality.

The OR project time frame is as follows:

First six months (October 1990 - March 1991): Design instruments and implement qualitative research.

Second six months (April - September 1991): Begin alternative distribution of iron tablets and design and produce IEC materials.

Third six months (October 1991 - September 1992): Add the communication component in both study areas.

Final three months (April 1992 - June 1992): Complete and evaluate project.

2. Role of Qualitative Research in Project

The qualitative research described in this report will provide information for the design of both interventions to reduce maternal anaemia:

a) The design of the protocol for the community-based distribution of iron tablets to pregnant women.

Several possible methods of community-based distribution of iron tablets to pregnant women have been proposed by project staff. Iron tablets could be made available at the community health post (posyandu), or at the home of the village midwife (bidan). Traditional birth attendants (dukun bayi) could serve as a "depot", distributing tablets to pregnant women who customarily visit during the prenatal period. Dukun bayi might instead visit the homes of pregnant women to distribute tablets. Small local market stalls (warung), which currently sell popular remedies for common problems of pregnancy, could be used as a distribution point. The acceptability and feasibility of each of these options, as determined by the qualitative research, will guide project staff in selection of the distribution method and development of the distribution protocol.

b. The development of a communication strategy and IEC materials.

Specific information which details the anaemia-related attitudes, beliefs and perceptions of pregnant women, and the barriers and motivating factors which determine their use of iron tablets will be used to develop more effective methods of health education for pregnant women. Understanding the level of awareness of maternal anaemia and the degree of importance attached to it by family members, and providers of maternal health care (both formal and traditional) who influence health decision-making during pregnancy is also important for design of a comprehensive communication strategy.

II. QUALITATIVE RESEARCH DESIGN AND METHODOLOGY

A. Research Objectives

The objectives of the qualitative research are to :

1. Identify the behavioral, attitudinal and other factors which affect pregnant women's use of iron-folate tablets.

2. Document current channels of distribution of iron tablets to pregnant women and determine the relative acceptability of several proposed alternative methods of iron tablet distribution.

3. Determine the acceptability of iron tablets among pregnant women through household trials.

4. Explore the level of awareness and attitudes toward maternal anaemia and iron supplementation in pregnancy among formal and non-formal maternal health care providers (doctors, midwives and traditional birth attendants).

5. Identify sources of pregnancy-related information and family and community members who potentially influence use of iron tablets in pregnancy (husbands, elder women and others), and document their knowledge, attitudes and practice related to maternal anaemia and iron supplementation in pregnancy.

6. Identify communication channels/ media preferences for use in dissemination of anaemia related IEC.

B. Topic Areas

A review of the international and Indonesian literature on iron supplementation in pregnancy and on maternal anaemia assisted in the formulation of the major topic areas to be explored. These include:

- attitudes toward pregnancy in general, and aspirations for pregnancy outcome;
- awareness of the relationship between maternal anaemia and complications of pregnancy and childbirth;
- perceived risk, severity and susceptibility to maternal anaemia;
- experience with iron use, conditions of use and acceptability of tablet (benefits and side effects);

- source of iron tablets and information about tablet use;
- traditional and self care practices for pregnant women at the household and community level;
- barriers to use of iron tablets;
- current utilization of proposed sources of iron distribution; and
- media exposure and preferences, daily activities, and other potential communication channels.

C. Research Design

1. Methods

Qualitative research for social marketing combines market research and anthropclogical techniques to document practices and trends and the beliefs and perceptions which shape them. Information collected as part of the formative research to guide program development relied primarily on two qualitative research techniques: in-depth interviews and household trials (intervention testing).

Although the sample size for qualitative research is relatively small, it is carefully chosen, and several methods are used to confirm results. Information obtained from qualitative research cannot be quantified, subjected to tests of statistical significance, or easily extrapolated to other populations with different characteristics.

In-depth Interviews

Five population categories and various segments were selected for:

- pregnant women,
- husbands of pregnant women;
- elder women in the families of pregnant women,
- midwives (bidan) at both puskesmas' and posyandus and puskesmas; and
- traditional birth attendants (dukun bayi).
- pregnant women with and without previous experience taking iron tablets in pregnancy;
- trained versus untrained TBAs.

Draft interview guides for each category of interview were prepared, translated into Bahasa Indonesian and revised after pretesting in the project area prior to conducting the interviews. Some of the interviews for pregnant women, dukun

bayi, husbands and elder women family members were conducted by two-person teams, one of whom also spoke the local form of Javanese dialect.

The interviews with pregnant women and dukun bayi were recorded on cassette, as they were the lengthiest and most detailed. In some cases, members of the research team returned to re-interview respondents after preliminary analysis of the written interview documentation or the tapes indicated that further probing might yield additional clarification.

The numbers of interviews conducted exceeded the number suggested in the original qualitative research plan. Although it is not a condition of qualitative research design that respondents be selected equally to represent the two study areas, project staff felt that there might be significant differences in results from the two study areas. This was anticipated because there are differences in the activities of the puskesmas and posyandu regarding iron distribution in the two areas. In the experimental area, there is some limited community-based distribution of iron tablets, and thus increased exposure to iron supplementation, already in place.

Therefore, half of the interviews for each segment were conducted in the OR project's experimental area (Gabus Wetan) and half in the control area (Sliyeg). Ten thousand households of approximately 25,000 total households in the study area are registered in the SRS study.

The total number of interviews conducted were:

- pregnant women: 42

Respondents chosen were at least in their second trimester of pregnancy, as according to MOH protocol, puskesmas iron distribution begins in the third trimester of pregnancy. Therefore, women in earlier stages of pregnancy would not be eligible for iron supplementation in the Indonesian setting, and would not be expected to have iron tablet experience in their current pregnancy.

- husbands: 20

- elder women family members: 20

"Elder women", for the purposes of this research, is defined as any female family or extended family member living in the household with a pregnant woman who is older than the pregnant woman herself, and might thus be consulted as an influential in pregnancy-related advice seeking or decision-making. This category could thus include older sisters, mothers, mothers-in-

law, grandmothers, etc.

- dukun bayi (TBAs): 21

It is estimated that there are a total of 90 dukun bayi attending home births in the project areas. Thirty-five of the 45 residing in Gabus Wetan have completed a training course and return monthly to the puskesmas for resupply of safe birth kit.

- bidans (midwives): 7

This represents all of the midwives in the MOH system in the project areas.

- puskesmas doctors: 2

This represents all of the doctors in the MOH system in the project areas.

It was initially planned to interview volunteer community health workers (kaders), but none were identified by research staff as active in the project areas.

Household Trials

Household trials may be employed to test the acceptability of proposed new behaviors or concepts, to determine the ability and willingness to change practices, and the conditions under which the desired change is most likely to be adopted. Often, this step follows, and is based on results of focussed group discussions or in-depth interviews conducted earlier in the assessment phase. In this research, however, household trials were conducted prior to the detailed analysis of the in-depth interviews. This could be done because the focus is primarily on one key behavior change: improved use of iron tablets in pregnancy. In order to generate information on the acceptability of the actual iron tablet among pregnant women, limited household trials were conducted.

The household trial took place in two stages. Initially, twenty-five pregnant women, residing in both the experimental and control areas, who had no or limited prior experience with use of iron tablets in pregnancy, participated in the trials. Pregnant women satisfying the selection criteria were identified from among pregnant women who participated in the in-depth interviews.

If they agreed to participate, each woman was given a two-week supply of iron tablets, and a brief explanation of how and why the tablets should be taken. Return interviews were scheduled ten days later to determine the women's actual use of and reactions to their trial experience with iron tablets, as well as their willingness to continue taking them. Actual return

interviews took place six days post-distribution.

Preliminary analysis of the follow-up interviews revealed an unexpectedly high attribution of beneficial effects of iron tablet use in such a short trial period, as well as an unusual consistency of responses among respondents. This seemed particularly significant since these same women had demonstrated very low levels of anaemia-related knowledge during the in-depth interviews.

This led us to reexamine the design of the trials to better understand these results. Two explanations emerged:

1) since the concept tests were conducted among women who had participated in the interviews, responses reflected "contamination" from the interview process;

2) the introduction used by interviewers during the initial household trial visits contained cues which influenced the women's answers.

To confirm and clarify the initial results, five additional household trials were conducted under slightly different conditions. The distribution interview introduction was modified slightly, to remove all but essential information on possible side effects. Also, special effort was given to identify and recruit pregnant women with minimal iron tablet experience residing in the project area, but who had had no contact with other activities related to the iron compliance aspects of the study research.

Through the combination of qualitative methods such as depth interviews and household trials, pregnant women and their communities are given the opportunity to contribute to the content and style of educational materials targetted to them, as well as to voice their opinions based on their own personal experience with the new behavior(s) being recommended.

2. Time Frame/Research Team

The 130 in-depth interviews and initial series of household trials of 25 women were conducted during the two-month period of March -April 1991, and preliminary analysis of results was completed during April and May. Five additional household trials took place in early May.

The research team was composed of seven staff members from the Center for Health Research/Center for Child Survival, University of Indonesia, several of whom are based in the project areas. All field activities were supervised by the principal investigator and co-investigator, and coordinated by the field

supervisors responsible for overall prospective study activities for each project area.

The research team participated in a brief training session prior to conducting the interviews, to review qualitative research techniques and discuss the underlying principles and information priorities for each topic area of the in-depth interviews.

III. MAJOR RESEARCH RESULTS

A. Key Characteristics of the Sample

Pregnant Women

Almost all of the 42 pregnant women interviewed were between 18 and 35 years of age. About half of the women had one or two children, one-fourth had three or more, and one-fourth had no previous childbirth experience. Over two-thirds of the women had at least one contact with the formal prenatal care system during the current pregnancy. Almost all of the women are semi-literate and work daily in nearby rice fields.

Dukun Bayi

Most of the dukun bayi interviewed were between 40 and 50 years old, without formal education and illiterate. The average length of service as a traditional birth attendant was between five and ten years, but some women had been assisting at births for up to 30 years. Only three had not received training from the Ministry of Health.

Elder Women

Almost all of the 19 elder female family members interviewed were between 35 and 40 years old, with no formal education. Most worked daily in the rice fields nearby.

Husbands

Most husbands were between 25 and 40 years old, and had an average of three years formal schooling. Most were farmers or workers in the rice fields and a few were traders.

B. Knowledge, Attitude and Behavior regarding Pregnancy and Maternal Anaemia

Several general attitudes toward pregnancy occur almost universally among all categories of respondents interviewed. Pregnancy is seen as a joyous and natural event, and fears and anxiety about pregnancy and childbirth are minimal. Most types of intervention which are commonly associated with pregnancy and birth in developed countries, including in some cases prenatal care, are not perceived as essential in Indramayu. More attention is given to a woman during her first pregnancy. The experienced pregnant woman is "calm". Many of these attitudes extend to, and influence, use of iron supplements by pregnant women.

1. Symptoms of Anaemia and Perceptions of Risk

Pregnant Women

- Most pregnant women had heard about anaemia (kurang darah). However, more than half of pregnant women interviewed could not spontaneously explain anaemia, or relate its symptoms. When probed about specific symptoms of anaemia, the most commonly mentioned were dizziness and fatigue, although these were regarded as a normal part of pregnancy.

- Some women knew about postpartum hemorrhage, but did not relate it to anaemia. Large amounts of blood loss also appear to be accepted as a part of normal childbirth, and do not cause alarm. Transport to the puskesmas for treatment is the most common response if hemorrhage becomes severe.

- Most pregnant women did not know what causes anaemia. Only traditional preventive measures are known. Some women attribute symptoms of anaemia , and also occurrence of postpartum hemorrhage, to spiritual causes (kesamper setan), and kiai (religious leaders) are frequently consulted for traditional remedies.

Dukun Bayi

- Knowledge about all aspects of anaemia is much greater among trained dukun bayi. Most untrained dukun bayi had no response, or answered "don't know". Trained dukun bayi named paleness of eyes and tongue, weakness, tingling or numbness and sleepiness as signs and symptoms of anaemia. However, they also named nausea, talking to yourself, and forgetfulness, as signs and symptoms.

"I saw her tongue, nails and skin were pale."

- Causes of anaemia mentioned include: lack of appetite and poor nutrition.

- Ways to prevent anaemia were seen to be: drinking more water, eating properly (commonly described as 4 healthy, 5 perfect", the widely promoted food group nutrition slogan) including green vegetables and fruits, avoiding salty and spicy foods, and going to the puskesmas for check-ups.

- Trained dukun bayi knew more about maternal health problems associated with anaemia, naming "no power when giving birth", longer labor, weaker contractions, general weakness of mother and newborn, and excessive bleeding. One respondent used "soaking through more than the usual two sarongs" as a measure of bleeding severity. Characteristics of the newborn's cry (weak or delayed) were also associated with anaemia. Among those untrained dukun bayi who responded, a thin weak mother and baby and death in childbirth were named as anaemia-related problems.

- Most dukun bayi, trained or untrained, would send a pregnant woman with anaemia to the posyandu/puskesmas for treatment with iron tablets or "injection from bidan". Dietary recommendations included more milk, less salty foods, avoiding "jengkol" (a strongly scented green bean).

Elder Women

- Most elder women could not describe signs or symptoms of anaemia, or its relationship to maternal health problems. When probed for specific symptoms, they named paleness, numbness or tingling, and fatigue. Some women also mentioned signs not related to anaemia, such as swelling of ankles.

- Some elder women felt that they had anaemia at some time in the past. They treated their own anaemia with Javanese jamu or a drink made from coffee, salt and saffron. Foods such as marus (dried chicken blood), eggs, or milk were also used.

Husbands

- Although some husbands had heard of kurang darah, most did not know about causes of anaemia, specific symptoms, or the relationship between anaemia and maternal health problems. Some had heard that anaemic pregnant women are commonly weak, dizzy or lack appetite.

- Most husbands knew only traditional remedies for anaemia. These include eating dogmeat, and drinking Javanese jamu or mixtures like young bamboo, brown sugar and ginger or adding soysauce, brown sugar, and salt to coffee.

Bidans/Doctors

- Doctors and bidans estimate that well over half of pregnant women they see are anemic, as evidenced by physical signs such as pallor, "yellowness" or fatigue. One bidan distinguished between kurang darah (low blood) and severe anaemia (pepetan). She felt only severe anaemia could be detected by methods currently available to them (Talquist paper).

- Doctors and bidan agreed that despite its prevalence, they do not consider anaemia a program priority. Priorities are increasing the demand for prenatal care and, among midwives, increasing safe, attended deliveries.

- The first prenatal visit is usually in the second trimester of pregnancy. Most women visit the puskesmas only if there are problems, or to arrange a midwife-attended birth. Iron-folate is routinely given to pregnant women attending for prenatal care beginning in the third trimester. Iron tablets are distributed in 30 tablet packets, one per day for one month. Only about one quarter of women return for resupply of tablets.

- The puskesmas doctors report that they routinely instruct women on use and side effects of iron tablets. Bidan instructions to pregnant women at time of iron tablet distribution are limited to how to use the tablet, and to take all the tablets. Motivation or information on benefits or side effects are not a part of normal procedure for most bidans. The primary message in iron/anaemia education routinely provided at prenatal clinic includes increasing consumption of green vegetables, but bidans feel these are not available in the area.

- Many bidans could not fully describe the benefits or side effects of iron supplementation in pregnancy. Their knowledge is non-specific, and replies were similar to those of pregnant women themselves, in content and orientation.

- Perceptions of bidans and doctors of the reasons for non-use or discontinuance of iron tablets include : side effects like nausea, misconception that iron causes hypertension, and "laziness". Bidans think most pregnant women consider anaemia and its symptoms as a normal part of pregnancy.

- The doctors and bidan were not aware of any traditional remedies/practices related to anaemia.

<u>In Summary</u>:

Knowledge of anaemia and its signs and symptoms is universally limited among pregnant women, their husbands, families as well as untrained dukun bayi. Signs and symptoms of other pregnancy problems are commonly confused with signs of anaemia.

Recognition of the maternal complications associated with anaemia is also universally low, with alarmingly passive acceptance of severe blood loss, probably resulting in delayed initiation of trained assistance.

Maternal anaemia is not considered a priority problem, even among community/district level providers of formal maternal care.

Although trained dukun bayi exhibited substantially higher knowledge of almost all aspects of maternal anaemia, some of their knowledge and advice is not medically sound, especially nutrition advice. Untrained dukun bayi could particularly benefit from additional information.

Bidan counselling about iron tablets and anaemia is not comprehensive, and omits information about side effects and motivation about benefits which could encourage pregnant women to continue taking iron.

These results confirm the importance of developing a communication strategy specifically targetted to increase awareness of the significance of maternal anaemia within each target group, including formal and traditional maternal care providers.

2. Knowledge, Attitude and Behavior Related to Iron Supplementation of Pregnant Women: Perceptions of Iron Tablets

Pregnant Women

- Most pregnant women knew about iron tablets when the tablets were described to them by interviewers. Most could not explain the reasons why pregnant women should take iron, or benefits of iron tablets. Although they had been told to take the tablets by bidan at the puskesmas/posyandu, they were not told (or possibly did not remember) why to take them.

- Some pregnant women took the large red iron tablets commonly supplied at puskesmas, others were given smaller grey (UNICEF iron-folate) and yellow (B-complex) tablets. In Gabus Wetan, most women began taking iron tablets between four and five months of gestation. In Sliyeg, women reported beginning tablets at seven months. The manti (male auxiliary health worker) who distributes iron tablets there believes they are not required until the seventh month of pregnancy.

- Half of pregnant women interviewed did not take iron during the current pregnancy. They cited lack of money (although tablets are free and transport inexpensive), and lack of information or "pressure" (social support) to do so.

- Some women who had received iron tablets from bidan stopped taking them. Many were told by friends that taking iron tablets (or any tablets) during pregnancy can make the baby bigger. Fear of a bigger baby was commonly mentioned as a reason for stopping iron supplementation, as a bigger baby is not a desirable pregnancy outcome. Other superstitions or fears occasionally uncovered included that the baby might disappear, or since it was so big, be eaten by mice. Additional reasons for discontinuance included forgetfulness, "laziness" or "ran out of tablets".

- All women agreed that the tablets smell bad, and taste fishy. Dislike of the taste or smell was a common reason for discontinuance. Some who continued despite bad taste and smell took the tablet with banana, although most women swallowed the tablet with water only. Some women said they would prefer a "sweeter tasting" tablet.

- Some women who continued taking iron tablets despite side effects or problems of taste/odor did so " because they had been told to do so by bidan", or because they felt better after taking the tablets.

- Many women, primarily those who perceived benefits of treatment, said that they had returned to puskesmas for resupply of iron tablets "because they felt better".

Dukun Bayi

- Most untrained dukun bayi could not respond to questions about iron tablets. Many trained dukun bayi had heard of iron tablets, some from pregnant women themselves. Some cited their training course as their source of information.

- Reasons for use of iron tablets in pregnancy given by trained dukun bayi were: - " for mother and baby to become healthy, easy birth, no hemorrhage, low blood or add blood". Again, untrained women could not answer.

- Some dukun bayi included advice to obtain and take iron tablets from puskesmas/posyandu in their care of pregnant women. Several did not, because "there were specific officers who suggest that pregnant women visit posyandu for this".

- Few dukun bayi had actually taken iron tablets themselves. Many are well outside childbearing age, but some said they were afraid of the tablets, of becoming fat, of side effects such as nausea and headache. Perceived benefits of iron tablets among the few who had been given iron for medical problems included the disappearance of "dizziness, weakness, numbness and muscle pain" and "not so quick to get angry".

Elder Women

Most elder women did not know about the need for iron tablets in pregnancy. Some had heard about it from a bidan at posyandu/puskesmas, from dukun bayi, or because pregnant relatives were taking it. Although some women stated that iron is useful for "the health of the baby and strength of the mother", most did not know why to take or how to use iron tablets.

Most elder women were not interested or enthusiastic about iron supplementation for pregnant women. They are unconcerned about the common symptoms of anaemia which iron can alleviate, as " pregnant women have always felt these things" and "we have traditional herbs and treatments (jamu) for these things which have always worked well enough for us in the past".

Only a few elder women had taken iron during their own pregnancies. Ideas about how and for how long to take the tablets varied, from once per day for a month to three times daily for twelve days. A starting date for taking iron tablets at five months of pregnancy was commonly recognized. Some general beneficial results such as " feel healthier" were most commonly reported.

Husbands

Husbands knowledge about iron for pregnant women was generally higher in Gabus Wetan. A few husbands had heard of iron tablets, and knew that it could be obtained at posyandu. Some knew it was "to build blood, prevent weakness and dizziness".

Some husbands, more in Sliyeg, believe that pregnant women do not need to take iron if they are not sick, and that how many tablets should be taken is dependent on the severity of the sickness. Some said that their wives did not take the tablets they were given, because they felt healthy. A few knew their wives had complained of nausea when taking the tablets.

In summary:

Knowledge of both the need for and benefits of iron supplementation of pregnant women is low among pregnant women themselves, and their families and influentials. Dukun bayi knowledge of both topics is also low, but with substantially higher levels of basically sound information among trained dukun bayi.

Social support may be able to overcome personal resistances of pregnant women to taking iron tablets. However, they currently receive inadequate motivation to accept and continue use of iron

tablets, both from formal maternal care providers and from family influentials and respected individuals in their community.

Husbands' knowledge of the need for iron supplementation is lower than all other categories interviewed. Men rarely use puskesmas/posyandu, which is the major source of iron information for most women. Special attention to creating awareness among husbands and men in general is required.

Pregnant women's knowledge of iron tablets includes many concerns about side effects and sequelae (both those associated with and distinct from effects of iron supplementation) and product characteristics (size, taste and smell of tablets).

Communication materials should address the women's concerns directly with special attention to allaying fears such as producing bigger babies. Promotion of means to minimize side effects, such as minimizing gastric distress by taking tablets with meals, can be included in communication strategies. Tablet providers should be encouraged to discuss possible side effects at time of distribution.

There is a clear definition of roles and responsibilities among respondents, especially dukun bayi and elder women, regarding who are proper distributors/motivators for iron tablets. These need to be clarified and the "lines of iron authority" redrawn to allow greater acceptance of alternative distribution of a modern medicine by lay community members.

C. Acceptability of Iron Tablet: Household Trial Outcomes

Among 30 pregnant women given a one week trial of iron tablets:

- Almost all women took all of the tablets which were given to them.

- Almost all women reported constipation, which they found extremely disturbing, and change in color of stools. Many complained of metallic aftertaste. Some mentioned nausea, vomiting, sweating or headache.

"I took only nine tablets and then stopped because of fishy smell and taste."

- Most women preferred the small size of the UNICEF/study iron tablet to the larger red tablet sometimes available through puskesmas. The smaller tablets were easier to swallow.

"The pill is small...so easy to swallow."

- All women found the fishy odor and taste of the tablet unpalatable.

"It smells and tastes fishy... I don't like it."

- Most women swallowed the tablets with water, or water and brown sugar. Some took it with cake, or banana to mask the scent.

- More than half of women reported benefits after taking the tablets, most commonly described their feelings in general terms. Others reported increased appetite, extra energy, no dizziness.

"I feel different after taking it so because of that I like to eat more and can sleep well."

"I feel fit (enak) and now I like to eat very much."

"I feel healthy--all my body is right and my pregnancy feels good."

- More than half of women, primarily those who experienced benefits, expressed willingness to continue iron tablets. However, they preferred that the tablets continue to be delivered to them, as the trial tablets had. Some women who experienced benefits said they would go to puskesmas or posyandu for resupply. Most said they preferred obtaining the tablet from the dukun bayi, when that possibility was suggested to them.

"It's better to go to dukun bayi because it's nearer."

"If it's free and you give it to me, I'll take it."

• A much larger number of women from Sliyeg than from Gabus Wetan expressed willingness to continue taking the tablets. However, women from the Sliyeg area were fearful of attending puskesmas/posyandu for resupply, as they "fear injections".

• Very few women agreed to accept more tablets after the return interview. Again, this was primarily due to their dislike of side effects.

"I don't like it because my feces turns black...when it is not black anymore, I begin to take the pills again."

"I'm afraid my blood will also turn black."

• Even among women who perceived beneficial effects, many women said they would not continue the tablet. The main reason given for discontinuation was dislike of the fishy taste and odor. Some women said that they would stop because of fears that "the blood becomes too much". (There is some confusion between correction of "little blood" by taking iron tablets and the dangers of "adding blood", which women think will cause "high blood pressure".

• When asked why they had finished all of the trial tablets, despite side effects noted, most women replied "because they had been told to do so", it is assumed by the interviewer.

• Some pregnant women participating in the trials had spontaneously discussed the tablet with other pregnant women. Many had been advised by these friends to stop taking the tablet, mostly due to side effects. There was also some suspicion as to why "strangers were giving pills to pregnant women".

• Some women who discussed receipt of the tablets with friends suggested that their friends try them. Most friends refused after hearing about constipation and the fishy taste and smell.

• Some women forgot to take the tablets. Many women who forgot had stored the tablets in the rafters of the house.

"If I take it while eating, I remember, but sometimes after eating I must return to work quickly, so I forget."

• Other women developed strategies to help them remember. One woman who successfully took a tablet each day kept them under her pillow so as not to forget.

"I usually took contraception pill before becoming

pregnant, so I remember taking iron tablets."

In summary:

Side effects, especially constipation and metallic aftertaste, were disturbing to women, as were tablet characteristics such as fishy odor and taste and were a major reason for discontinuing iron tablets.

Passive acceptance of the trial tablets was common, but for most women did not progress to a willingness to actively seek tablets themselves following the iron trial experience. Women who experienced benefits were more likely to agree to continue.

Motivation from other pregnant women to begin or continue taking tablets is not likely to result in behavior change. Other sources of motivation, such as husbands or health providers, were indicated in other interviews as more acceptable motivators.

Acceptability of Proposed Alternative Iron Tablet Distribution

1. Current Sources of Iron Tablets

Pregnant Women

- Many women do go to puskesmas/posyandu for prenatal care. Most pregnant women feel that use of formal prenatal care, at the puskesmas or posyandu, is not important until seven months of pregnancy. Prior to that, only visits to the dukun bayi are necessary.

- Timing of initiation of prenatal care corresponded to the actual time that iron tablets are distributed at posyandu/puskesmas; in Sliyeg, this is at seven months, in Gabus Wetan at 5-6 months. Women did not spontaneously mention other reasons for prenatal care use, with the exception of TT immunization. Fear of TT prenatal immunization is much greater among pregnant women in Sliyeg, where deaths from neonatal tetanus are extremely high.

- Many of these pregnant women did not use formal prenatal care unless they were "pressured" to do so, primarily by pak lebai, the community welfare agent, or from family members. Lack of this "pressure", or social support, was frequently cited as a reason for non-use of prenatal care, as was lack of information.

- Pregnant women cited financial barriers, though not so much for prenatal care as for choosing assistance at childbirth. Bidans charge 40,000 Rp. (about $US 20) and dukun bayi charge between 5,000 - 10,000 Rp. (less than $5). Prenatal abdominal massage by dukun bayi can often be bartered for foodstuffs or other items.

- Most pregnant women go to the home of the dukun bayi several times during pregnancy, especially at four months gestation for confirmation of pregnancy, and at seven months for abdominal massage/palpation (digoleng). They see the role of dukun bayi as primarily that, and for information during the prenatal period.

- Almost all pregnant women who were using iron in the current or previous pregnancy had obtained it through the government health system. In both Gabus Wetan and Sliyeg, most women got iron from the posyandu. The remainder of women obtained iron at the puskesmas or from the bidan's home.

- No preference between receipt of tablet from puskesmas or posyandu was expressed by most women. Distance is not a formidable barrier to return for resupply in most cases, as local transportation (becak) is relatively inexpensive. In Sliyeg,

where the posyandus are not as well developed or utilized as in Gabus Wetan, some women expressed a strong dislike of attending the posyandu.

Dukun Bayi

- Most dukun bayi knew that pregnant women currently received iron tablets from puskesmas or posyandu. Trained dukun bayi were more likely to know, and listed doctor/bidan as source of iron tablets for pregnant women.

- Most dukun bayi could not name any possible difficulties pregnant women might have obtaining iron tablets. Several mentioned that the puskesmas was distant.

"Puskesmas is far from pregnant women's homes."

- Most dukun bayi provide traditional maternal care for up to four pregnant women in their communities at any given time. Dukun bayi from Sliyeg reported caring for less women, only one or two per month. Most knew of pregnant women in their areas who do not seek their services, but feel that these women may be cared for by other dukun bayi, or attend puskesmas for formal prenatal care. Many dukun bayi felt that the primary reason why pregnant women did not seek prenatal care because "they felt fine."

Elder Women/Husbands

- Most elder women felt that posyandu is the best place for women to get prenatal examinations and iron tablets, because "it is easy" and "the tablets are fresher". Puskesmas is also an acceptable source, if it is nearby. Elder women more frequently cited distance as a barrier to access than did pregnant women themselves.

- Most husbands who had heard of iron tablets for pregnant women knew that their wives had gotten them from the puskesmas, posyandu or bidan.

- Husbands felt that pregnant women should be encouraged to go to the puskesmas for prenatal care "because they are told to do so by village councils". However, they themselves saw no need for pregnant women to seek care, especially if they feel healthy.

Bidans/Doctors

- All puskesmas/posyandu staff (doctors and bidan) agreed that the government health system is the primary source of iron tablets for pregnant women, and did not know if or where women who do not attend formal maternal care obtain iron tablets.

- Midwives felt that major barriers to iron use are lack of use of formal prenatal care, and the MOH policy of iron tablet distribution through puskesmas/posyandu beginning in the third trimester of pregnancy.

- Doctors felt that limited availability of iron tablets through puskesmas (as prenatal care, and therefore iron tablets are offered only on Tuesdays) ,and lack of demand were barriers.

In summary:

The puskesmas/posyandu is the predominant source of iron tablets for pregnant women. It is also currently the most acceptable source of tablets. A combination of lack of use of formal prenatal care, limited availability of prenatal care, and limited distribution of iron tablets through the prenatal care system limits pregnant women's access to iron tablets. Distance is not an overwhelming barrier to iron tablet use, but "convenience" might further increase use, especially for resupply. Distance is perceived as a more important barrier among elder women.

If increased access to iron tablets through the existing puskesmas/posyandu system is an objective, attention could be given to strengthening those aspects of care mentioned as barriers - prenatal care only on Tuesdays, limited posyandu services in Sliyeg, and distribution of iron tablets to pregnant women only after the seventh month of pregnancy.

In the IEC component, "convenience" of nearby distribution source should be highlighted (especially in those messages targetted at elder women influentials) as distance from the source of the tablets was mentioned consistently as a deterrent.

2. Response to Proposed Alternative Iron Tablet Source

Two different alternatives for the distribution of iron tablets were presented: 1) the dukun bayi visiting the homes of pregnant women and 2) pregnant women visiting the home of the dukun bayi.

Pregnant Women

- Most women liked one aspect of getting iron tablets from dukun bayi- it would be nearby. However, they did not appear to prefer it over posyandu/puskesmas distribution if both were equidistant.

- Some women did not like the idea of going to the home of dukun bayi for iron tablets, because it was not convenient, or because they felt shy to request the tablets.

- Some women did not feel that the dukun bayi was "the

right person" to distribute iron tablets. Many felt that the dukun bayi would not be able to explain the benefits, side effects or use of tablets. Some women doubted that iron tablets would be available at the home of a dukun bayi, or that it would be the same as tablets distributed at puskesmas/posyandu.

- Among pregnant women who accepted dukun bayi as a source of iron, most expressed a preference for visiting the home of the dukun bayi over dukun bayi making door-to-door household visits. Most women were already familiar with the concept of pregnant women visiting dukun bayi, as mentioned above.

- Most women could not suggest any additional alternatives for distribution of tablets, but several recommended receipt from any " convenient" nearer source.

Dukun Bayi

- Most dukun bayi accepted the overall concept of becoming a source of iron tablets for pregnant women. However, many dukun bayi felt that they "could not diagnose anaemia", and that it was "not their job". Many dukun bayi said they were "too busy" with their normal responsibilities of maternal and newborn care, so they would not have enough time to add another task.

- Most dukun bayi preferred that pregnant women visit them to get iron tablets. Some dukun bayi would be "afraid" to visit the homes of pregnant women. Again, many said they would be too busy for house-to-house visits to distribute iron, especially since there was no incentive or compensation being offered. Some dukun bayi expressed reluctance about home visits.

> "It is the pregnant woman who needs the iron. It should be her responsibility to come and get it".

- Some dukun bayi recalled bad experiences in the past when they were distributing contraceptives. Many women were pressured to accept the contraceptives, and dukun bayi felt this resulted in bad relationship between dukun bayi and women. They would not want to see this repeated with iron tablets and pregnant women, their main source of livelihood.

- When asked if they could think of any other community based source of iron tablets for pregnant women, dukun bayi overwhelmingly felt that they were the best option. Others, like pak lebai, could motivate women to take iron, but should not be involved directly in their care.

"It has always been the job of dukun bayi to care for pregnant women."

Elder Women

- Most elder women expressed hesitation about the concept of dukun bayi distribution of iron tablets. Elder women felt that the role of dukun bayi is primarily the traditional role of massage during pregnancy.

- Among those women who felt that it would be acceptable for dukun bayi to give iron tablets, most accepted the idea because it would be "convenient", or because the dukun bayi is the primary individual in the community who is in contact with women during pregnancy. Elder women who resisted the idea did so because they felt that dukun bayi would not have the tablets, and would not know how to use (prescribe) them.

- Home visits to pregnant women by dukun bayi would not be acceptable because dukun bayi must be invited before visiting a home, and because the visitor might be "an impostor" who would somehow cause harm.

Husbands

- No husbands disagreed with the concept of dukun bayi distribution of iron tablets. However, they did not express much interest one way or the other.

Midwives/Doctors

- Most bidan and doctors accepted the concept of distribution of iron tablets by dukun bayi, because even those women who do not seek formal prenatal care see the dukun bayi at least twice during pregnancy. Some also suggested that kepala desa, pak lebai or kuwu (informal community leaders) could distribute iron tablets, since it is their duty to conduct beneficial activities in the community.

In summary:

The overall concept of dukun bayi distribution of iron tablets is conditionally acceptable to most respondents, with the "dukun bayi depot" model more acceptable than door-to-door distribution. This is primarily because visits to the dukun bayi's home are more consistent with existing traditional practice of pregnant women. Although other possible distrubtion sources were mentioned, none were as well accepted as dukun bayi.

Several specific areas of concern about dukun bayi iron tablet distribution merit special mention in both the development of the tablet distribution model and the communications program. For example, emphasis should be placed on assuring uninterrupted supply of tablets to dukun bayi, and on training to assure that they do know how to instruct women in use, benefits and side

effects of the tablets. And, the community needs to know that they are "authorized" distributors who have been trained.

The dukun bayi's fears about taking on the task of iron tablet distribution might be minimized if distribution is simplified, for example, with packaging of tablets done elsewhere, and minimal recordkeeping. Also, a clearly specified education/motivation message to accompany distribution of tablets, and thought as to how to best integrate the iron-related tasks into the normal content of the dukun bayi/pregnant woman prenatal contact could improve acceptance. A brief overview of communication skills and counselling techniques could be included in dukun bayi predistribution training.

Resistances related to the dukun bayi not being the appropriate or legitimate distribution source and to authenticity of dukun bayi-distributed tablets could be addressed in several ways. A specific type of packaging for the iron tablets could be designed, and promoted as containing the "real" iron tablets for pregnant women. Participating dukun bayi could be issued some form of identification, certificate or logo as proof of "authenticity".

Overcoming the greater resistances to the concept expressed by elder influentials - primarily that iron distribution falls outside of the traditional role for dukun bayi- should be a thrust of those communication activities targetted to them. Obtaining iron tablets from dukun bayi would thus be promoted as convenient and consistent with "approved" practice, as it is nearby and can be combined with the routine four and seven month visits.

D. Communication Channels

1. Sources of Iron/Anaemia Information

Pregnant Women

- Pregnant women rarely talk about problems of pregnancy with family, friends or other pregnant women.

Dukun Bayi

- Advice sought by pregnant women from dukun bayi is primarily related to: 1) confirmation of pregnancy and length of gestation and expected date of delivery, 2) common symptomatic complaints of pregnancy - nausea and vomiting, lack of appetite, swelling, dizziness, and pallor, and 3) later in pregnancy, abdominal massage/palpation to determine fetal position.

- Advice given to pregnant women by dukun bayi includes recommendations to: visit puskesmas/posyandu for prenatal care, tetanus immunization and "medicine", rest, eat more, and avoid salty or spicy foods. Trained dukun bayi offered more and better quality advice than untrained. Emotional concerns were also discussed with the dukun bayi, such as "benci suami" (literally,"hate husband") and ngidam (cravings, or "baby wants").

- All dukun bayi felt that they were the main source of advice for pregnant women. Dukun bayi think that pregnant women seek advice from husbands, mothers or mothers-in-law, and friends, but much less frequently. Bidans and auxiliary workers at puskesmas/posyandu are also seen as common sources of pregnancy information.

Elder Women

- Many elder women feel that it is best not to discuss problems of pregnancy, as it is not good for others to know. Others, mostly in Gabus Wetan, felt it was better to discuss problems, and therefore solve them.

- Pregnant women do not often complain to elder women about their pregnancies or related problems. Occasionally, advice about common pregnancy complaints such as nausea or back pain is sought.

- Elder women commonly offer advice about pregnancy anyway, mostly on dietary and other taboos, and recommended traditional practices (for example, special attention to housekeeping as a clean, orderly house will assure a smooth delivery).

- Elder women usually refer pregnant women with complaints to the warung, where obat (medicine) can be purchased, or to the posyandu, as it is closer than puskesmas. They also advise a visit to the dukun bayi for massage.

- Elder women feel that other good sources of information for pregnant women are dukun bayi, parents, husbands and neighbors. Bidan and kaders are also good sources.

Husbands

- Few pregnant women discussed problems, or any aspect, of pregnancy with their husbands. Occasionally, a complaint or complication requiring action is mentioned. Most husbands suggest going to the dukun bayi or bidan for treatment of these expressed problems, or drinking Javanese jamu.

- Husbands felt that dukun bayi, bidan and parents are appropriate sources of information for pregnant women.

- Husbands are the main decision-makers about health-care seeking in pregnancy and childbirth, with input from other family members.

In summary:

Talking openly about problems of pregnancy, either physical or emotional, is not an accepted practice among pregnant women, or their husbands and families. However, talking with either dukun bayi or bidan about problems is more appropriate.

Communications, especially via mass media, should reflect the sensitivity to open discussion of pregnancy-related issues. Emphasis on face-to-face communication, and information sharing at segregated gatherings, such as PKK or other meetings, may be most acceptable.

Pregnant women with minor complaints of pregnancy (and sometimes potentially dangerous complications) are frequently referred from within the family to the warung, where shopkeepers dispense traditional and proprietary medicines to pregnant women, along with advice about their use. Warung operators might be added to the current target groups receiving/distributing information on maternal anaemia. Using the warung as a source for iron tablet distribution seems possible, as they are frequently visited by pregnant women. However, use of warungs to distribute contraceptives was not popular with shopkeepers, primarily because there was no profit motive.

Husbands and families make health-care decisions for pregnant women, but do not have adequate knowledge about anaemia and iron tablets to make informed decisions.

Husbands, elder women and men should be priority target audiences, as they may have as much influence over women's use of iron tablets in pregnancy as the pregnant woman herself.

2. Media Exposure/Preferences

Pregnant Women

- Few of the pregnant women interviewed had heard about iron tablets for pregnant women from posters, radio television or print media. Some women knew about "VILIRON", an iron preparation advertised on radio, and knew that it was " to increase blood."

- Many women own or have access to radios, and although few have television in their home, most had neighbors who did. Only a few women read newspapers or magazines. Favorite radio station is Radio Cindelaras, or Leo. Favorite programs are soap operas, pop or dangdut songs. Women will change channels to follow whichever station is offering soap operas. Peak listening times for women are 8 - 9 a.m. and 4 - 6 p.m., when radio listening is usually combined with household chores. Sometimes pregnant women listen to radio with friends, but most often alone.

- They dislike radio advertising in general. If the advertisement is entertaining, like jamu advertising, it is more acceptable. A well-liked radio advertisement is for COMTREX (a cold remedy).

- Daily activities are limited, mostly to visits to the warung, and to other women in the neighborhood. At these gatherings of women, conversations center mostly around health and household problems, but rarely about pregnancy. They only occasionally attend larger markets, cinema, or traditional wayung performances. Many women participate in selamatans (neighborhood gatherings to celebrate a birth or other occasion) and some in arisan (women'savings group).

- Pregnant women work daily in the paddy fields, usually until very late in pregnancy, and often until labor actually begins. Pregnant women are not routinely excused from particularly strenuous work activities, such as harvesting.

Dukun Bayi

- Dukun bayi had not heard of iron tablets from any media. They rarely listen to radio or watch television, as "it is for the young people." As most are illiterate, they rarely read newspapers or magazines, but sometimes glance through them "to look at the pictures."

Husbands

- Husbands listen to radio from 12 - 2 p.m., then again from 5 - 9 p.m. They prefer soap opera, traditional orchestra, and listener's choice. They prefer Radio Cindelaras, Indramayu.

- Radio advertising is generally disliked. Radio promotion of iron tablets (or other medicines) would be more acceptable if it is amusing, and if it provides information about the benefits of the medicine.

- Few husbands own television, but like women, they have at least occasional access to one.

In summary:

The activities of pregnant women outside the home are limited, therefore limiting potential anaemia education through community channels. Media were not a major source of health information in general, or specifically anaemia/iron information. Although radio advertising is generally unpopular, radio exposure is highest, print media exposure lowest among all categories of respondents.

Attention should be given in development of the communication strategy to amusing, informative radio spots.

IV. CONCLUSIONS FROM RESEARCH RESULTS AND IMPLICATIONS FOR PROJECT IMPLEMENTATION

A. Applying Research Results to the Design of the Alternative Method of Iron Tablet Distribution

The following points regarding the distribution of iron tablets were learned:

- The "dukun bayi depot" model is preferable to household visits to pregnant women by dukun bayi, especially to pregnant women and dukun bayi themselves.

- Some resistances even to the dukun bayi depot model of distribution of iron exist at the community level. For example;

  - the majority of pregnant women are accustomed to using the formal maternal health care system, puskesmas and posyandu, for iron tablets. They expressed fears that tablets distributed by dukun bayi "might not be the same" or "might not be as fresh" as iron tablets from puskesmas. They also questioned the ability of dukun bayi to maintain a supply of tablets, and provide correct reasons and instructions for their use.

  - dukun bayi feel that they are already "too busy" with their customary prenatal intrapartum and postpartum care, and are wary of additional (uncompensated) tasks for the care of pregnant women. Some negative impressions of previous participation in community distribution of contraceptives linger.

  - widely held respect for existing government health systems for distribution of iron and diagnosis and treatment of problems of anaemia in pregnancy, as well as motivation for their use, appears to cause reluctance on the part of dukun bayi to become involved in activities of this type ("conflict of interest or authority").

  - the acceptability of a traditional practitioner handling "modern" medicine like iron tablets presents some conflict between traditional and modern health beliefs.

  - for some pregnant women who are attending puskesmas for prenatal care, dukun bayi distribution is additive to formal prenatal care. The relationship

between the two sources of care and tablets should be clearly defined for community members so that conflicting advice is not given.

Therefore:

These resistances can be addressed in the design of the tablet distribution strategy. Emphasis can be placed on :

- assuring that the dukun bayi receives an uninterrupted supply of prepackaged iron tablets, requiring minimal handling and preparation by the dukun bayi.

- minimizing the reporting and recording responsibilities at the dukun bayi level, and integration of iron counseling and distribution into the normal content of the customary seven-month visit.

- predistribution training to include basics of tablet use, motivation and education, as well as counselling techniques and memory aides.

- supplying some type of identification to dukun bayi participating in the distribution program, to certify "authenticity".

There are no significant resistances to distribution of iron tablets by dukun bayi among formal health care providers. Doctors, bidans and auxiliaries recognize the traditional role of the dukun bayi in the care of pregnant women, and see her as additive to their own program.

An additional finding of the research is that a small portion of pregnant women, especially in the experimental area, are satisfied with and utilizing the current health system source of iron tablets. Addressing health system conditions mentioned in the research results - content of bidan iron education, hours of prenatal service, timing of distribution of tablets- could improve acceptability and effectiveness of this iron access point.

B. Applying Research Results to the Design of a Communication Strategy

Objectives of the communication strategy include

- creating consumer demand for iron tablets
- promoting alternative source of iron tablets
- improving compliance with iron supplementation by pregnant women (proper use of tablets)

- educating formal and nonformal providers of tablets about iron supplementation for pregnant women and anaemia

The following research findings are important to the design of the communication component:

Maternal anaemia is not perceived as a health priority for pregnant women by any category of informant.

- Factual knowledge of all aspects of maternal anaemia is extremely low at the community level. There is lack of a clear definition of anaemia, its causes, and relationship between anaemia and maternal and neonatal health. Husbands knowledge is lowest but even bidans, with modern health training, cannot discuss the above concepts clearly.

- Husbands knowledge of maternal anaemia is lowest, but their influence on health seeking behavior of pregnant women greatest.

- Pregnant women's major resistances to use of iron tablets are related to 1) tablet characteristics ("fishy" taste and smell) and 2) side effects (constipation, metallic taste, nausea). Many of these seem to be minimized by taking the tablet with even a small amount of food, such as banana.

- Perceived benefits of tablet use (even the most common response of just "feeling better") and motivation by respected influentials to continue use appear to be able to overcome these resistances in many cases.

- Fears and myths related primarily to producing a bigger baby and producing "too much blood" after taking iron tablets are common among many pregnant women and other women in the community, and this significantly affects continued use of iron tablets.

- "Convenience" of the proposed alternative distribution of iron by dukun bayi is one of its biggest perceived benefits, by both pregnant women and elder women in the family.

- Concerns about the "acceptability"- legitimacy and authority- of the dukun bayi as a provider of a modern medicine to pregnant women are widespread among pregnant women, elder women and to some extent, dukun bayi themselves.

- Pregnancy and related problems are not widely discussed in the community, or even among family members in any depth. The daily activities of pregnant women outside of the house and paddy field are limited. Warungs are very commonly visited by pregnant women, not only for daily needs but as a source of some traditional remedies for problems of pregnancy.

- Exposure to radio is higher than other mass media for all informants. Most popular radio advertising is amusing and informative.

Therefore:

- Education and general awareness creation about the problem of maternal anaemia should be targetted at all levels of the community; with special attention to husbands; extended to include a focus on warung operators;

- Education and factual information about the more technical aspects of maternal anaemia and its relationship to maternal and neonatal health should be provided to formal and nonformal health providers;

- Convenience and perceived benefits such as "stronger mother" and "healthier baby" should be highlighted. Concepts such as "produces bigger babies" or "gives more blood" should be avoided or used carefully. Negative perceptions about taste and side effects can be addressed by suggesting tablet use instructions which minimize their occurrence.

- Face-to-face communication should be emphasized; content of mass media spots should display sensitivity to the widespread reluctance to express/admit problems of pregnancy; radio spots should be amusing, but some listeners (husbands) prefer they also contain factual information especially about reasons for and benefits of use of iron tablets.

- Concerns about acceptability, legitimacy and authority of the dukun bayi to distribute iron, described in the previous section, can be addressed through IEC.

Possible Behavioral Changes, Motivations and Resistances

Research results suggest to target the following groups:

Primary targets:

- pregnant women,
- women of reproductive age
- dukun bayi

Secondary targets:

- husbands
- elder women family members

Tertiary targets:

- bidans
- community members and influentials
- medical professionals and health auxiliaries

Behavioral and knowledge objectives for each group are:

Pregnant women:

- improved understanding of maternal anaemia, its relationship to maternal and neonatal health, and the importance of iron supplementation during pregnancy

- know about dukun bayi distribution of iron tablets

- visit the home of her dukun bayi at six to seven months of pregnancy to obtain iron tablets

- take iron tablets daily for duration of pregnancy

- visit dukun bayi monthly after seven-month visit for resupply of tablets

- attend puskesmas/posyandu or other information source for additional anaemia/iron education

- increase consumption of dietary iron/folate

Dukun bayi

- improved knowledge of maternal anaemia, relationship to maternal and neonatal health and importance of iron supplementation

- distribute iron tablets and recommended education to pregnant women (including motivation, use instructions, benefits, side effects, diet)

- visit puskesmas monthly for resupply of iron tablets

- attend pre-distribution training about maternal anaemia

- encourage pregnant women to return for resupply of tablets

Husbands/Elder Family Members

- increased awareness of maternal anaemia, relationship to maternal and neonatal health and importance of iron supplementation

- motivate women to obtain , regularly take, and return to dukun bayi for resupply of iron tablets

- improved health decisionmaking for anaemia related problems of pregnancy, delivery and postpartum period

Bidans/Physicians

- improved knowledge of maternal anaemia, relationship to maternal and neonatal health, and importance of iron supplementation as part of prenatal care program

- distribute iron tablets and improved education to pregnant women attending puskesmas/posyandu

- inform pregnant women of possibility of obtaining resupply of tablets from dukun bayi

- recognize severe anaemia, refer or treat

- educate, supervise and resupply dukun bayi at monthly meetings

- participate in in service training on maternal anaemia

Community Members and Influentials

- increased awareness of maternal anaemia, its relationship to maternal and neonatal health and importance of iron supplementation in pregnancy

- know about and support dukun bayi distribution of iron to pregnant women

APPENDIX A

Definitions of Indonesian Maternal Anaemia Terms

Definition of Indonesian Terms

anaemia	-	kurang darah (less or low blood)
severe anaemia	-	pepetan
hemorrhage	-	perdarahan
iron tablets	-	pill tambah darah ("adding or more blood" pills) or pil besi (iron pill)
weakness	-	lemah
fatigue	-	capek, lelah
nausea	-	mual
dizziness	-	pusing, penglihatan berkunang-kunang
constipation	-	sulit buang air besar
numbness/tingling	-	kesemutan
postural hypotension	-	tekanan darah turun ketika lama berdiri
hypertension	-	tekanan darah tinggi
abdominal massage	-	digoleng/ memijat daerah perut
dried chicken blood	-	marus
herbal drink	-	jamu
medicine	-	obat
injection	-	suntikan
paleness	-	pucat
yellowness	-	kulit menjadi kuning
craving/baby wants	-	ngidam
headache	-	sakit kepala

male paramedic	-	pak mantri
women paramedic	-	perawat
midwife	-	bidan
village midwife	-	bidan desa
traditional birth attendant	-	dukun bayi
community health post	-	posyandu
district level health centre	-	puskesmas
village	-	desa
informal community leader	-	pak lebai, pak kuwu
district	-	kecamatan

APPENDIX B

Research Protocol and Instruments

QUALITATIVE RESEARCH PLAN INDRAMAYU PROJECT IRON COMPLIANCE

Methods

Information will be collected through use of in depth interviews. Interview guides have been prepared in draft form for pregnant and recently delivered women, traditional birth attendants (dukun bayi) and kaders, and midwives (bidan) and doctors in the study area. In addition, interviews will be conducted among a small number of husbands of pregnant or recently delivered women, and among elder women family members of pregnant women, who might influence compliance with iron tablets among pregnant women.

Timeframe

The draft instruments will be pretested in the study community during February 1991, and interviewers will continue training in depth interview techniques. Revisions indicated by the pretest process will be completed by end of February.

Interviews will take place in March, over a three week period. Two interviewers will have primary responsibility for interviews of women and dukun bayi. Two additional interviewers will assist with the health staff interviews.

Sample Strategy

The project area includes approximately 10,000 households, and an estimated 1200 pregnant women according to most recent count.

A total of 30 pregnant and recently delivered women will be interviewed. Pregnant women should be in their second or third trimester of pregnancy. As current MOH policy dictates that one iron tablet daily be taken by pregnant women beginning in the sixth month of pregnancy, and continuing into the postpartum period, in the Indonesian setting, pregnant women, even in second trimester, are not necessarily eligible to receive iron through government health fcilities, and therefore would not be expected to have experience with consumption/compliance of iron tablets during the current pregnancy.

Identification information collected prior to the interview will indicate parity and level of use of antenatal care during this pregnancy. Half of interviews will be among previous users of iron , and half among non users.

Six bidans (midwives) are currently working in the study area, and all will be included in the interview process. There are two doctors who will be interviewed.

At least 10 kaders and 12 dukun bayi will be interviewed. Half of the dukun bayi will be trained, half untrained.

20 interviews will be conducted among possible influentials in the community, 10 elder women with pregnant or recently delivered women in the household, and ten among husbands of pregnant or recently delivered women.

Total number of interviews is at least 78. This number might be increased slightly if patterns of information are not readily recognizable after the planned number of interviews in each category.

Overall Research Objectives, Formative Research on Iron Compliance in Pregnancy Component:

1. To identify the behavioral, attitudinal or other factor which affect pregnant women's compliance with iron supplementation

2. To identify sources of information/advice about pregnancy within the community and influentials who could influence compliance with iron supplementation

3. To identify current channels or communication/media preferences foe use in dissemination of iron related IEC

4. To identify current channels of distribution of iron tablets to pregnant women

5. To determine the acceptability of several proposed alternative iron tablet delivery systems in the community, to both pregnant women and health providers

6. To explore the level of awareness, use and attitudes toward iron in pregnancy of both women and providers of maternal health care (formal and non formal)

7. To conduct concept testing on limited basis to get feedback from a small sample of pregnant women on iron tablet acceptability

Formative Research Topic Areas

Pregnant Women

1. Attitude toward pregnancy in general, and this specific pregnancy
   - Planned pregnancy?
   - Aspiration for pregnancy outcome, both for baby and maternal

2. Ethnomedical view of pregnancy
   - Awareness of relationship between blood and health
   - Beliefs regarding effects of low bloods
   - Blood loss on health
   - Awareness of anemia as an illness (symptoms, sequelae such as hemorrhage, LBW)
   - etiology
   - perceived succeptibility
   - severity
   - personal experience with anemia or sequelae

3. Perceived value of preventive action during pregnancy
   - self care practices
   - use of Antenatal Care
   - early care for self detected problems of pregnancy

4. Perceived value of iron supplementation during pregnancy
   - need for and effectiveness of iron tabs
   - personal experiences with iron supplementation (use, non use, duration of use)

- consequences of use/non use of iron
- other traditional or self care for treatment of anemia in pregnancy
- compatability of iron suplementation with traditional ethnomedical peactices during pregnancy

5. Circumferences of iron suplementation (prior experience)
   - attitude toward pill taking ((size, color, taste, mode of delivery (tab, cap, tonic, IM))
   - dose
   - timing
   - frequency
   - duration
   - with meals
   - How iron tabs obtained
   - from whom
   - how often
   - level of health education provided with iron tabs (treatment, instructions, comprehension/recall adherence to instructions/education)
   - Opinion of source of iron tabs (dukun bayi, bidan, kader, others)

6. Barriers to use
   - difficulties in access to ANC
   - cost transport
   - distance no tabs at posyandu
   - not given tabs
   - unaware of need for cost of tabs
   - given but not instructed in use

7. Source of information on iron/anemia during pregnancy
8. Media preferences/communication channels
9. Iron tablets distribution (concept testing)

DRAFT QUESTION GUIDE INDEPTH INTERVIEW PREGNANT WOMEN

IDENTIFICATION

1. Name :

2. Age :

3. LMP (current month of pregnancy): (should be 6 month)

4. Date of Last Birth :

5. Parity : 0 1 2 3 4 or more
6. Previous Pregnancy Outcome(s) :
   . normal
   . maternal problem ——
   . neonatal problem ——

7. Level of education/Literacy :

8. Iron tablet use :
   . never used
   . used in previous pregnancy
   . used this pregnancy

8. Antenatal care use :
   . never
   . visits this pregnancy 0 1 2 3 4 5 6 or more
   . month of pregnancy at time of ANC visit ————
   . reason for visit (s)

9. Distance from :
   . Posyandu
   . Puskesmas
   . Kader
   . Dukun bayi
   . Hospital

INTRODUCTION

I. **We would like to ask you some questions about your pregnancy (explain briefly)**
Was this pregnancy (or most recent pregnancy) planned?
Does having a baby now cause any problems for you?
What kind?
Overall, how have you been feeling during this (or previous) pregnancy?
What thought/hopes/fears do you have about your own health during pregnancy and delivery?
For the family during this pregnancy?

Do you notice any changes in your health during this pregnancy? What changes?

Have you had to change your daily activities in any way because of your health during this pregnancy? How?
Are you doing anything different since you became pregnancy? What?
Any traditional ceremonies?

Are you taking any medicines (obat), jamu, traditional remedies or other things especially for your pregnancy? What? Why?
What about your diet? Any changes in your diet? What changes? Why?

II. Do you know of any problems which pregnant women can have with their health?
Where do you usually go for advice about these problems?
What advice did you receive there?
Do you know of any problems in pregnancy caused by blood/low blood/bleeding?
If yes, what is this called? What are the symtomps?
If necessary, prompt: tired, weak, dizzy, rapid heartbeat, —— tired
- weak
- dizzy
- rapid heartbeat
- headache

Do you know any problems a pregnant women can have if she has anemia (use local name for anemia here if women has given you one)? What?
Do you know of any problems pregnant women can have if they loose blood during child birth? What?
Has this ever happened to you or anyone you know?
What do you think causes this to happen?
Is there anything you can do prevent this from happening? What?
Do you know anything you can do to cure this problems?
- self care
- dukun bayi
- household care
- posyandu
- dukun
- other

Have you ever done any of this things?
- what was the result?
- condition improved
- no change condition worsen

III. Some pregnant women take iron tablets during their pregnancy.

Have you ever heard of pregnant women taking iron tablets?
Do you know why they take them?
Where did you hear about it?
Has anyone you know taken them?
Have you taken them?
When did you first take iron?
- this pregnancy 6 7 8 9 month
- previous pregnancy
- other

When is the last time you took iron tablet?
How many did you take?
Did you stop before you took all the tablets you were given? Why?
Were there any problems which you had because of the iron tablets?
What type of problems?
If no response, prompt:
- constipation
- diarrhea
- change in color/consistency of stool
- vomiting

- nausea
- abdominal pain
- dizzy
- bad taste
- heartburn

(we will also add some conditions which are not iron related to check accurate)
Did you take the tablets with meals?
When during the day did you take them?
How many times per day?
For how many days/weeks/months?
Why did you stop?

IV. I am going to ask you a few question about the tablets:
Is there anything about the tablet which you do not like, or which makes it difficult for you to continue taking the tablet?
Probe:
- size
- taste
- difficulty swallowing
- color

Would you find it easier to take iron in some other form?
Probe:
- jamu/tonic
- injection
- other

Did you notice any change in your health or how you were feeling after taking the iron tablets?
What?
How long were you taking the tablets before you noticed these changes?
Where did you get the iron tablets?
Who gave them to you?
How often do you have to go back and get more?
Is this difficult for you?
Do you usually return to get more tablets?
Can you remember what the person who gave you the iron tablets told you about how to use them?
Probe:
- When to take
- How long to take
- How many to take
- What to do if side affect occur
- reason for iron pills
- when to return for more tabs
- explain side effects
- other

Did you follow these instructions? Why/ Why not?
Did any one else give you advise about iron/anemia in pregnancy? Who?
- bidan/nurse
- kader
- husband
- dukun bayi
- mother
- community leader
- mother in law

- female friend
- other

What did they tell you?

V. Did you ever hear about iron on the radio? TV? What did the messages say?
Have you seen posters about iron in pregnancy? at the Posyandu? Where? What did the posters say?
Can you think of any other way that would be easier for you to get iron tablets than the way you are getting them now? Which way?
Do you have any problems getting to the Posyandu or other source of iron tabs? What problems?
Can you think about any other problems with iron tablets other than those we have already discussed? Any other comments?
Do you have any iron tablets in the house now? Can you show them to me?

- type
- amount
- where stored

Do you have any other tablets or medicines in the house? Jamu, tonics or other obat? Can I see them?

VI. **Media Preference/Channels of Communication**
Do you listen to the radio?

- How often?
- What stations?
- What times?
- What are your favorite programs?

Do you usually do other things while you are listening to radio, or only listen?
Who listens with you?
Do you have a TV? Do your neighbors have a TV? How often do you watch TV? What stations? What programs? What times? Who watches with you?

How often do you read newspapers, magazines?
Which ones?
Where would you prefer to learn more about iron tablets?
When you go out of the house each day, where do you usually go ? How often do you go each week?

- market (weekly market or smaller daily market or food stalls)
- mosque
- cinema
- PKK
- selamatan
- arisan
- other

How often do you go to the posyandu? To puskesmas? To private clinic or private doctor? To dukun bayi? Apotik? Other

Is this different than before you were pregnant? How?

Concept Test Interview Guide for Pregnant Women

(to be used at return visit to same women who received 10 days of iron/folate tablet at time of initial In Depth Interview)

Greet the woman.

How have you been feeling since the last visit? Any problems?

Did you remember to take the iron tablets I left with you? Why? Why not?

How many did you take? How often? Did you take them with meals?

Do you have any tablets remaining? Can you show them to me? Count remaining tablets.

Did you notice any changes in how you feel while you were taking the tablets? What kind of changes? Problems? Benefits?

Do you remember why we told you that it is important to take iron?

What do you think now that you have tried the iron tablets yourself?

will you continue taking them throughout your pregnancy? Why? Why not?

Can you think of any reasons why it might be difficult for you to continue taking the tablets?

Did anyone in your family or any of your friends notice that you were taking the iron tablets? Did they make any comments or give you any advice? What?

Would you go to the posyandu for more iron tablets? The puskesmas?

What about going to the home of the dukun bayi for more iron tablets? Why, Why not?

Would you like me to leave some more iron tablets with you today? Why, Why not?

DRAFT DEPTH INTERVIEW GUIDE DUKUN BAYI/KADER

How many pregnant women do you usually care for/visit each month? How many are you caring for/visiting now?

Are there many pegnant women in your area who you do not care for? How many?

Are there some common problems which pregnant women usually ask your advice about? What kind of problems?

What advice do you usually give them?

Any other thingsthat pregnant women talk to you about?

Who else do you think pregnant women talk to about their health during pregnancy?

Have you evere heard of a problem in pregnant women called kurang darah (anemia)?

Can you tell me what it is? What causes it? Is there any way to prevent it?

How do you know if a pregnant woman, or any woman, has anemia?

Do you know of any problems to health which can be caused by anemia in pregnant women? Which problems?

What do you advise pregnant women to do if you think she has anemia?

Do most women follow this advice?

Are there any other things you tell them to do?

Have you heard of taking iron tablets during pregnancy? (if this was not part of the answer to previous question)

Do you know why pregnant women take them?

Do you ever tell women to take iron tablets?

If so, where do you tell them to get the tablets?

Have you ever taken iron tablets yourself? When? why? How long?

Did you notice any change in your health(how you felt) after taking the tablets?

DUKUN BAYI/KADER

How do most pregnant women you know get iron tablets now?

Do they have problems getting the tablets? What problems?

Would you be willing to distribute iron tablets to pregnant women in your area?

Do you think it would be possible for pregnant women to come to your house to receive iron tablets?

What about someone delivering iron tablets to the home of each pregnant woman? Who do you think could do that? Would you be willing to deliver iron tablets to the homes of pregnant women in your area? Why Why not?

Can you think of any other way that pregnant women could receive iron tablets?

Any other things you would like to discuss ?

DRAFT DEPTH INTERVIEW FOR BIDAN/DOCTOR

How common is anemia in pregnant women in this area? About what percentage of all the pregnant women you care for have anemia?

How do you usuallydetermine that a woman is anemic? Any reason why you use this method? Any problems with this method?

How serious do you think anemia is as a problem for pregnant women? Are there other problems that you usually see in pregnant women which you think are more serious than anemia? Which?

Are there programs for prevention or treatment of anemia in this area? Can you describe them?

In your opinion, are these programs effective?

What could you suggest to improve the effectiveness of the current program?

When you give iron tablets to pregnant women, do you give them any advice? On how to take the tablets? On why it is necessary to take the tablets? On possible side effects? Anything else you usually tell them?

Do you think the women take the tablets you give them? Why or why not? Do women usually give you any reason why they are not taking the iron tablets? Do many women return for resupply of the iron tablets throughout their pregnancy?

Do you know of any difficulties which may prevent pregnant women from obtaining iron tablets?

Do you know of any other medicines, tonics ,jamu or other traditional medicines which pregnant women commonly take? Are any of these used for anemia?

How do pregnant women receive iron tablets now? How do those women who do not attend posyandu or puskesmas obtain iron tablets?

Can you suggest any other ways or locations which might be used to distribute iron tablets to pregnant women? Who might be appropriate person to distribute iron tablets at places other than health facilities?

Any other things which might make it easier for women to receive and take iron tablets?
Can you think of any benefits or problems that might occur if iron tablets were distributed in the community , rather than only at health facilities?

ELDER WOMAN DEPTH INTERVIEW INDRAMAYU IRON COMPLIANCE

INTRO/GREETING

What is your relationship to the pregnant woman in this household?

Overall, how would you say she has been feeling during this current pregnancy?

Is it different than her other pregnancies? (if this is not her first)
How?

Does she ever tell you about problems she is having during her pregnancy? What problems?

What advice do you give her?

Is there someone else you think is good for pregnant women to talk with when they have these problems? Who? Do you send (the pregnant woman in this house) there? Does she go?

Do you think pregnant women should talk to/receive care from someone even if they do not have problems? Why, why not? Who?

Are pregnant women doing anything differently than when you were last pregnant? What? How do you feel about these new things that pregnant women do?

Are they having any problems that are different than when you yourself were last pregnant? Which?

Do you know of any problems in pregnancy caused by blood/low blood/bleeding? How would you know if (the pregnant woman in this house) had this problem?

Have you heard of a problem called anemia? Can you tell me anything about it?

Has this happened to you? To anyone you know? Do you think it is a serious problem? Is there anything that can be done to prevent this from happening? What can cure it?

Has (the pregnant woman in this house), or you or anyone you know ever done these things? What happened?

Some pregnant women take iron tablets during their pregnancy. Have you ever heard of this?

Do you know why they take iron tablets? Where did you hear about it?

Has(the pregnant woman in this house) or any woman you know taken them? Have you yourself ever taken them?

Do you know where they got the tablets?

How long did she take them?Why did she stop?

Did (the pregnant woman in this house) tell you anything about the tablets while she was taking them? What?

Did you tell her anything about the tablets? What? Where did you get the information which you gave her about the tablets?

Did you notice any change in her health while or after she was taking the iron tablets? What changes?

Do you think it is necessary for pregnant women to take iron? Why, why not?

Do you think it would be possible for (the pregnant woman in this house) to go to posyandu to get iron tablets? Why, why not?

To puskesmas to get iron tablets? Why, why not?

To the house of the dukun bayi? Why/ why not?

Where else would it be possible for pregnant women to go to get iron tablets? Why do you think this is a good idea?

Would you advise (the pregnant woman in this house) to go there to get tablets? Why, why not?

Do you think it would be possible for the dukun bayi to come here to your house to deliver iron tablets to (the pregnant woman in this house? Why, Why not?

Do you know of any other special things (the pregnant woman in this house) or other women do when they are pregnant? What things? Do you think these things are necessary?

Media/ Communication

Before we began talking, did you ever hear about iron tablets for pregnant women? Where? on radio? TV? at the posyandu or puskesmas?

How often do you go to the posyandu? Why Puskesmas? Why?
How often does(the pregnant woman in this house) go to posyandu? Why? Puskesmas? Why?

Is there a radio in your house?
How often do you listen? What station? What programs? What times?

Do you have a TV? Do you ever see TV? Where how often What programs What times?

How often do you read newspapers, magazines? Which ones?

Do you attend market? Mosque etc (use the same list from the pregnant woman media question guide here) When How often

HUSBAND DEPTH INTERVIEW INDRAMAYU IRON COMPLIANCE

INTRO/GREETING

Overall, how would you say your wife has been feeling during this current pregnancy?

Is it different than her other pregnancies? (if this is not her first)
How?

Does your wife ever tell you about problems she is having during her pregnancy? What problems?

What advice do you give her?

Is there someone else you think is good for pregnant women to talk with when they have these problems? Who? Do you send your wife there? Does she go?

Do you think pregnant women should talk to/receive care from someone even if they do not have problems? Why, why not? Who?

Do you know of any problems in pregnancy caused by blood/low blood/bleeding? How would you know if your wife had this problem?

Have you heard of a problem called anemia? Can you tell me anything about it?

Has this happened to anyone you know? Is there anything that can be done to prevent this from happening? What can cure it?

Has your wife or anyone you know ever done these things? What happened?

Some pregnant women take iron tablets during their pregnancy. Have you ever heard of this?

Do you know why they take iron tablets? Where did you hear about it?

Has your wife or any woman you know taken them?

Do you know where they got the tablets?

How long did she take them? Why did she stop?

Did your wife tell you anything about the tablets while she was taking them? What?

Did you notice any change in her health while or after she was taking the iron tablets? What changes?

Do you think it is necessary for pregnant women to take iron? Why, why not?

Do you know of any other special things your wife or other women do when they are pregnant? What things? Do you think these things are necessary?

Before we started the talking did you ever hear about iron tablets for pregnant women? Where? on radio? TV? at the posyandu or puskesmas?

How often do you go to the posyandu? Why Puskesmas? Why?
How often does your wife go to posyandu? Why? Puskesmas? Why?

Is there a radio in your house?
How often do you listen? What station? What programs? What times?

Do you have a TV? Do you ever see TV? Where how often What programs What times?

How often do you read newspapers, magazines? Which ones?

Do you attend market? Mosque etc When How often

Revised concept test Interview Guide for Pregnant Women

(to be used at follow up visit for second group of 5 women who received 15 iron tablets)

Greet the woman.

How have you been feeling since the last time I was here and left the iron tablets for you?

Did you take the iron tablets I left with you? Why did you decide to take it? why not?

How many tablets did you take? How often? At what time of day?

Do you have any tablets remaining? Can I see them? (Count remaining tablets, and notice where she kept the tablets).

Did you take the tablets with any kind of drink or foods? Which?

Were there any things about the iron tablet which you did not like? (PROBE size, color, swallowing, taste, smell,hates pills, other)

Did you notice any changes in how you feel while taking the tablets? What kind of changes? (PROBE benefits, side effects note the exact words used by women to describe)

Do you know why it is important for pregnant women to take iron tablets?

What ~~do you think~~ is your opinion now that you have tried them yourself? (exact words)

Were there any things that you liked about the pills? (if not mentioned above. PROBE for specific words, concepts)

Would you be willing to continue to take iron tablets for the rest of your pregnancy? Why, why not?

Would you go to the posyandu for more iron tablets? To puskesmas? To the dukun bayi? Some other place? Why, why not?

Can you think of any difficulties you might face if you wanted to continue taking the tablets? What would make it easier for you?

Did you remember to take one tablet each day? If yes, how did you remember. If no, why not? Where did you keep your tablets?

Would you recommend these iron tablets to some of your friends who are pregnant? Why or why not?

What would you tell them to convince them to take the tablets? (if any response, try to get exact words).

Did anyone in your family or any friends notice that you were taking thesee tablets? Did they make any comments? What comments?

Are you/ have you taken any other pills, obat, jamu, other while pregnant? Why?

You will be giving birth soon. Have you thought about your childbirth?

Have you/ will you made any plans for it? What plans?

What are you hoping most about the delivery (PROBE safe delivery, easy delivery, short labor, strength for delivery, no problems, etc. Try to note exact words.)

Would you like me to leave some more iron tablets with you today? why, why not?

APPENDIX C

Sample Matrix for Analysis of Research Results

REVISED CONCEPT TEST INTERVIEW GUIDE FOR PREGNANT WOMEN

1. How have you been feeling since the last time I was here and left the iron tablets for you?	1. Kamirah, 22, 8 months, 0 x, no education - When she took it in the first time, she complained to her family that she felt weakness, always want to sleep, can't do anything. ".. I had constipation.." So she had no feeling at all except constipation. 2. Dani, 24, 5 months, 6x, no education "..I feel healthy, all of my body is right ('enak'), and my pregnancy feels good, but I have only constipation.." 3. Taryati, 18, 5 months, 0 x, SD graduate "I feel fit ('enak') and now I like to eat very much.." 4. Caskiah,27, 6 months, 0 x, no education "I worried why pregnant women given iron pills by strange/unknown person, so I feel fear if anything happens to me.." 5. Enih, 20, 4 months, 0 x. SD graduate "I feel different after taking it (pill),so because of that I like to eat lots and can sleep well.."
2. Did you take iron tablets I left you? Why did you decide to take it? Why not?	1. Yes = 5 - Because of order

Appendix to Indramayu Research Report
Sample Materi

3. How many tablets did you take? How often? At what time of day?	1. "..I take it one each day and usually I take it after lunch" (Kamirah took 10 pills) 2. "I take one everyday after eating in the afternoon.." (Taryati took 10 pills) 3. "..I take one each day in the morning" (Dani took 11 pills) 4. "I took only 8 pills until now because I forget," "When I have breakfast half, I take it with water and continue the breakfast, but sometimes I take it when I have lunch" (Enih) 5. ".. I took it only 9 and then stopped, because of smell and taste. It made me nausea, headache.."
4. Do you have any tablets remaining? Can I see them?	1. Yes = 4 2. No = 1 because missing in the drug place (she sells any kinds medicines). She thought her sister threw it because she didn't know what pills they are. Maybe her sister thought the pills aren't useful.
5. Did take the tablets with any kind of drink or food? Which?	1. Just water/warm water = 5 Because of order

6. Were there anything about iron tablet which you did not like?	1. ".. fishy smell, but it's okey because the smell or bad taste will not be long and the pill easily to take with warm water" (Dani) 2. "It smells fishy and like iron metal taste .. I don't like it" (Taryati) 3. "The smell is fishy and make nausea.." (Kamirah) 4. "It smells fishy and the taste like fish" (Enih) 5. "It smells fishy.. I don't like it"
7. Did you notice any changes in how you feel while taking the tablet? What kind of changes?	1. "Before taking the pills I felt weakness, but now I don't feel it" (Kamirah) 2. ".. my body felt stiff ('pegal-pegal') after taking it and easily tired when just took a walk.." (Taryati) 3. Isn't weak anymore after taking it. Before that she often got headache or weakness. (Enih) 4. After taking the pills, she felt nausea, headache and always wanted to sleep. She felt her body more heavy. (Caskiah) 5. She felt fit, no part of body pained again (Dani).
8. Do you know why it is important for pregnant women to take iron tablet?	1. Don't know (without giving reason) = 2 2. Don't know because it's the first pregnancy for her. 3. Don't know because it's just first in taking iron tablet. 4. Yes, for healthy, and the blood become increase.

9. What do you think now that you have tried them yourself?	1. She will continue if she receive without pay. 2. She felt better, not vomiting or headache anymore. 3. Don't want to continue =2 4. She felt that taking iron tablet is same as take other pills. She felt nausea after taking it.
10. Were there any things that you liked about the pill?	1. "The pill is small, so easily to swallow.." (Caskiah) 2. "After taking it I felt fit" (Dani) 3. ".. I want to eat more and more.." (Taryati) 4. "I like it because it's small, make healthy and my body wasn't weak anymore" 5. She didn't know. (Kamirah)
11. Would you be willing to continue to take iron tablets for the rest of your pregnancy? Why?Why not?	1. "Yes, I will if I am permitted and the pill provided for increasing blood" (Enih) 2. "I will if you give me more (free)" (Dani) 3. "Yes, I will so that I eat very much and make healthy.." (Taryati) 4. "No, I won't because it smells fishy and make me nausea and constipation" (Kamirah) 5. No, it's smell fishy and make nausea. (Caskiah)

12. Would you go to Posyandu for more iron tablets?	1. No, because she never goes to Posyandu. She told taking the pill make nausea. (Caskiah) 2. Yes, but she went there (twice) she didn't receive iron tablets because the Posyandu was over. (Taryati) 3. Yes, so that her baby healthy. (Enih) 4. Yes, if the pills free. (Dani) 5. If there is Posyandu. (Kamirah)
To Puskesmas?	1. Prefer to posyandu, because it's nearer. 2. Enih: "It's better go to Puskesmas because there are various medicines." (When she went to Puskesmas twice, she just received vitamins, she never get iron tablets because the pregnancy isn't right time to give the iron tablets) 3. No, it's far away. 4. If she had money, it's better go to Puskesmas to check he pregnancy all at once. 5. No, it's far and didn't want to continue.
To dukun bayi?	1. "No, because I don't want to take it anymore" 2. "It's better go to dukun bayi, because it's near" 3. "I prefer to dukun bayi if there are iron tablets" 4. "No, I fear the pill is false (counterfeit) but if it comes from Puskesmas I'll take there" 5. "... dukun bayi is cheaper"

13. Can you think of any difficulties you might face if you wanted to continue taking the tablets? What would make it easier for you?	1. ".. smell fishy.." 2. Nothing, because it's received from interviewer. (she hope each month given by us some pills) 3. Don't know because do not want to continue taking it. 4. ".. it's so far, I want it near so I am not tired" 5. "Nothing, wherever isn't problem if I get it free"
14. Did you remember to take one tablet each day? If yes, how did you remember. If no, why not? Where did you keep your tablets?	1. "Yes, I did because you asked me take these tablets each day." She kept in the book place (Dani) 2. Yes, because she wanted healthy. She kept in the cupboard. (Enih) 3. "Yes, because I usually take contraception pill before pregnant, so I remember taking iron pills." (Caskiah) 4. Not everyday, because she often forgot to take it. ".. while eating I remember, but sometimes after eating I worked soon so I forgot" (Taryati) 5. "Yes, I remember because my family (Her aunt) told me to take it .." (Kamirah)

15. Would you recommend these iron tablets to some of your friends who are pregnant? Why or why not?	1. No because she doesn't associate with other pregnant women. = 2 2. Ye, she has already recommended to her friends but they didn't want to take iron tablets because they worried their faces turned black, when urinate felt pain/hurt and they also worried their blood turned black. 3. Yes, she has already recommended to her friends who are pregnant but they didn't want to take it. 4. No, because she knew that her friends also received the tablets.
16. What would you tell them to convince them to take the tablets?	1. No = 3 2. "You often receive the pills, don't you? If you take it so that you will like to eat very much and can sleep well" (But her friend didn't want to because she's afraid the pill attached on her baby). 3. "It's okey if your faces turned black, but the important thing is that the iron tablets make your blood increase.." But her friend didn't want to except when her dark stool wasn't black anymore, she continue taking the pills).

17. Did anyone in your family or any friend notice that you were taking these tablets? Did they make any comment? What comments?	1. Husband, only asked what the pill and from whom. (Enih and Caskiah) 2. Husband. He told to respondent to take the pills all. (Taryati) 3. Her aunt. She told to respondent to take the pill everyday. (Kamirah) 4. Husband,"if you are given the pills, take it until none.." (Dani)
18. Are you/have you taken any other pills, obat, jamu, other while pregnant? Why?	1. Jamu gendong for treating nausea. 2. Jamu hamil muda (1-6 months) merk "LEO" 3. Javanese Jamu for old pregnancy Sorok II for healthy. 4. Jamu sorok II (for early pregnancy/hamil muda), for body fit. 5. Never taking other pill/jamu because she never gets sick during pregnancy.

19. You will giving birth soon. Have you thought about your childbirth? Have you/will you made any plans for it? What plans?	1. After probe: She planned calling dukun or helped by dukun Wanasih at Julang Pereng although dukun bayi's house is so far but she is experienced. There is also another dukun bayi whose house is near but respondent or her friends don't want to be helped by her because the dukun often calls bidan to refer the women when she had difficulties even little difficulty. 2. Not yet. later when the baby giving birth. 3. No have any plans because the pregnancy not 9 months yet. 4. Yes, call dukun bayi Tawi (near from her house) 5. Not yet, still long time to giving birth.
20. What are you hoping most about the delivery?	1. ".. I am already too old to giving delivery so I hope I can have easy delivery.." (Dani) 2. Want short delivery, no pain and safe. 3. Safe for mother and baby. 4. Want to easily outcome and safe delivery. 5. Safe and easy delivery. After delivery want to use contraception (KB suntik).

21. Would you like me to leave some more iron tablets with you today? Why, why not?	1. "Yes, because it's easy to get and after taking it I feel better/fit.." 2. "Yes, I feel fit, want to eat much and want to be healthy" 3. "Yes, because I received without pay (free) so if you give me I'll take it" 4. "No, because it makes me nausea.." 5. "No, because it makes nausea and constipation" (She is lazy to go back again and again to toilet because her constipation)