

PD-ARH-554

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INDONESIA TRIP REPORT # 11

JULY 5 - 23, 1993

**Barbara E. Kwast, PhD, MCommH, MTD
Women's Health Advisor
MotherCare/John Snow, Inc.**

**Report Prepared for the
Agency of International Development
Contract #DPE-5966-Z-00-8083-00**

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ACKNOWLEDGEMENTS

The MotherCare Women's Health Advisor is indebted for advice and support to Drs. Ken Farr, Ratna Kurniawati and Michael Linnan at USAID/Jakarta, the staff of the Regionalization Project of Padjadjaran University, Bandung and the staff of the East Java Safe Motherhood Project in Dr. Soetomo Hospital. This trip took place during the month that the Regionalization Project (Bandung) and the East Java Safe Motherhood Project had to prepare their final project report with as much data analysis as was feasible. All staff put in many extra hours at night and during the week-end in analyzing and collating data. The products would not have advanced so much without this extra effort and hard work.

Special thanks are expressed to:

Dr. Mary Jo Hansell -- MotherCare Research Coordinator, Indonesia, for the arrangements for several consultants assisting the projects during the last month and her untiring efforts in the various projects;

Drs. Anna Alisjahbana, James Thouw, Sutedja, Hadiyana, Yanti of the School of Medicine, Padjadjaran University, Health Research Unit;

Dr. Swandari and Staff of the Ministry of Health;

The IEC team, especially Suzanne, Inuk and Yudi Nugraha who have put in so many extra hours to contribute the latest data to the final report;

Mrs. Claudia Williams -- MotherCare Consultant, for the analysis of referral data;

Dr. Ny. Hedy B. Sampurno, Deputy Director of MCH, Kabupaten DT II Sumedang, the Health Center, Polindes Staff and the TBAs and families who cooperated with all the interviews and data collection;

and Dr. Poedji Rochjati and the Staff of the Department of Obstetrics and Gynecology, Dr. Soetomo Hospital, Surabaya, for the enormous work done within such a short period.

I. EXECUTIVE SUMMARY

A. Purpose of the Trip

Dr. Barbara E. Kwast visited Indonesia from July 5 - 23, 1993, in order to:

1. Assist with verification and methods of perinatal data collection and analysis of sweep 1, 2 and 3 in implementation and control area of the Regionalization Project in Tanjungsari.
2. Review data analysis and organization of write-up for publication by Drs. A. Alisjahbana and J. Thouw.
3. Review data analysis of the Surabaya Project with Dr. Poedji Rochjati (July 19 - 22).

B. Field Activities

All activities were focused on facilitating analysis and writing of final reports and planned articles for publication from the projects. Therefore, this trip report reflects findings as contained in the final reports rather than the data available during the last week of B.E. Kwast's visit which ended one week before the final reports were to be despatched to MotherCare, Arlington on 29th July, 1993.

1. Perinatal Mortality Data and the Sweeps, Tanjungsari

It was previously decided to take the period January 1992-June 1992, as a baseline for the outcome indicator of perinatal mortality for the regionalization project (c.f. Indonesia Trip Report #10, Dr. M. Koblinsky). Due to technical errors in data collection from which the PMR could not be calculated, repeat visits were made to households where infant deaths occurred to verify exact dates of deaths. In spite of adjustments in calculations, the PMR in the implementation area was higher than in the control area according to results from sweep I. Sweep II showed a decline in the PMR in both implementation and control area, but was markedly greater in the control area.

Rigorous verification of data collection and calculations were made with Drs. Hadyana Sukandar, statistician of the research unit. This included a field visit to the control area and discussions with the interviewers and supervisors about definitions used and observations of interviews both by Drs. Hadyana and Kwast. The steps in this process are discussed in the main body of the report.

*** Final Results: Perinatal mortality (singletons only)**

Sub-district	Sweep I	Sweep II	Sweep III
Tanjungsari (implementation)	47.67	39.61	35.75
95% CI (33.92-61.42)	(27.73-51.50)	(24.87-46.62)	
Cisilak (Control)	41.10	32.26	44.97
95% CI (22.50-59.69)	(17.17-47.34)	(26.17-63.76)	

2. **Review data analysis and draft articles for publications by Drs. Anna Alisjahbana and James Thouw**

a) **Dr. Anna's**: Do transport and communications improve accessibility of maternity services and reduce perinatal mortality.

After review of data available to answer this questions, it was concluded that the title of the paper should be changed to read:

An integrated village maternity service to improve referral patterns and perinatal mortality in a rural area in West-Java.

Does it change people's behavior and attitudes.

The reason for the change is mainly because data on transport and radio use for all pregnant women during prenatal, delivery and postnatal periods are unavailable. Detailed data are available for referrals during labor, but the number is small and for 30% the ambulance was not used.

Mrs. Claudia Williams was hired as a consultant to collate data on referral together with Dr. Swandari. This information together with perinatal mortality will form the core of Dr. Anna's paper. The period from June 1992 to May 1993 will be taken for analysis because the majority of the polindes were operational by June 1992.

b) **Dr. James'**: Does the Provision of Maternity Services closer to the people improve use of services per se.

Drs. Thouw, Sutedja and Hadyana worked together as a team on this paper and the data were reviewed twice with the writer.

Results from this paper, comparing utilization of maternity services in the implementation and control area show that the use of birthing homes for prenatal care increases over time. The proportion of deliveries is lower in the intervention area compared to the control.

Interestingly, women in the control area access the health centers more for prenatal care than

in the intervention area, but for delivery women make less use of the formal maternity services.

This paper analyses trends in utilization in three months periods from January 1992 through May 1993. Significant is the increase of referrals by TBAs from the community to the birthing homes over time, for women both during pregnancy and labor/delivery.

The writer attended two meetings of the entire team of the Regionalization project, the second of which was taken up by formulation of lessons learned and recommendations for the final report. The several drafts of the final reports were reviewed and discussed.

Mrs. Claudia Williams and B.E. Kwast had an opportunity to discuss the data analysis on maternal referrals, which shall form the core of Dr. Anna's paper.

The final Low Birthweight report has been submitted to USAID, Jakarta and MotherCare, Arlington in July 1993.

3. Review data analysis of the Surabaya Safe Motherhood Project with Dr. Poedji Rochjati.

Presentations of data analysis available to date of all components of the study were made and discussed. The post-survey was completed and data are being entered. Field surveillance of risk scoring will continue until the end of July. Data are entered on an ongoing basis.

Eighteen maternal deaths and 215 perinatal deaths were identified and of these, 13 maternal deaths and almost 200 perinatal deaths enquiries are complete. Of the 18 maternal deaths, 9 were due to postpartum hemorrhage and delivered at home. Six of these were scored high risk and only three were low risk.

The results of the risk scoring show that 73 % are low risk, 24% are high risk and 3% are very high risk. The women identified at high risk are to be assessed by a nurse-midwife at the onset of labor to determine whether they can deliver at home or are to be transferred. This policy will remain problematic as long as there are not enough nurse/midwives posted to the villages.

Dr. Wasis Padianto clearly shows in the cost study analysis, that the fee for TBA services is the lowest and one-sixth of that charged by the nurse-midwife.

The final project report was nearing completion on B.E. Kwast's departure.

C. Follow-up Activities and Recommendations

1. Regionalization

The final report, draft articles for publication (four) and the appendices will be forwarded by DHL to MotherCare/Arlington on 29 July, 1993.

MotherCare will comment on draft articles upon which the authors can submit these for publication to the intended peer review journals.

Dr. Alisjahbana will verify that data analyses from the same data sets correspond between work done by Drs. Hadyana and Dwi, both statisticians in the Medical Research Unit.

Dr. Yanti's perinatal enquiry has 20 stillbirths less reported by the interviewers than are contained in the data set from the community-based questionnaires. Dr. Anna will verify.

Corrections in referral data compiled by Mrs. Williams will be made by Dr. Swandari before inclusion into Dr. Anna's paper.

A full write-up with information on the KAP post-survey will be undertaken by the social marketing team during the coming months.

2. East Java Safe Motherhood Project

As agreed during Drs. Anderson and Koblinsky's visit in March 1993, data analysis and final write-up of results will be carried over into MotherCare II. This was also discussed during debriefing with Drs. Ken Farr and Mike Linnan at USAID, Jakarta on 22 July, 1993. Dr. Mike Linnan will follow-up progress with data analysis in Surabaya.

II. FIELD ACTIVITIES

A. REGIONALIZATION PROJECT

1. Perinatal mortality data and sweeps

In order to verify the perinatal mortality data from Sweep I and II in both the intervention (Tanjungsari) and comparison (Cisalak) areas really compulsive counts and checks were made to get an explanation and account for differences between areas and sweeps.

a) Births and deaths registration

The consideration to using only sweep data to compare groups for PMR seems a good decision as the reporting is more complete than the surveillance system. The latter only includes women at first contact identified before 28 weeks pregnancy and therefore some women are excluded from surveillance, which are subsequently registered through the sweep.

Another reason for missing women for interview for surveillance purposes may be differences in reporting of pregnancies and births in intervention and control areas. Tanjungsari has been used as a research and surveillance area for over 7 years. Researchers and people have established mutual trust and reporting is neither sensitive nor threatening anymore. There appears to be a closer collaboration between kaders (Village voluntary workers) and the traditional birth attendants (TBAs) for reporting of births and deaths in the implementation area compared to the comparison area. The proportion of TBAs attending meetings at the health centers is greater in Tanjungsari than in Cisalak (30-40%). TBAs and kaders in both areas receive very small gifts for reporting births and deaths within 24 hours of occurrence but this system is much better known in Tanjungsari. There are some very remote and inaccessible places in the comparison area where TBAs and kaders are less active in registration of pregnancies, births and deaths. This impression is supported by the fact that sweep findings show that 5.3% of those women who delivered their baby were not interviewed in Cisalak, compared to 1.0% in Tanjungsari (c.f. Table 2. in Sweeping data and reports by Drs. Hadyana - Appendix 3).

The sweep included all households with eligible couples or eligible women, in both intervention and comparison areas. All sweeps were consistent in this approach and never was there any sampling of households. It should be noted that there are hardly any unmarried women in both areas, but births to unmarried women if they occurred, were included.

Because the form for sweep I and II did not differentiate between first week and first months infant deaths, houses where an infant deaths occurred during the first 42 days of life were revisited to collect the data which make the calculation of a PMR possible. In order to avoid having to revisit houses after sweep III, the form for data

collection was changed (Appendix 4). It will be noted that the column for END is labeled '0-6' days. There even seemed to be some confusion among the project personnel whether day 7 is included in the first week deaths. All staff have been alerted to the definition of END and Drs. Hadyana said that he would be careful with the inclusion of day 7 in the perinatal mortality.

The writer had an opportunity of talking to interviewers and supervisors in the comparison area and of observing several home interviews. The new form presented some difficulties and guidance on the registration of multiple births was necessary. Written guidelines to which supervisors and interviewers could refer when in doubt were unavailable.

In order to get an idea about completeness of birth registration, the number of expected births can be calculated from a national birth rate and the actual population of the survey areas. Based on the total population of Tanjungsari (+ 90,000) and a birth rate of 26/1000, the expected number of pregnant women for one year was 2340, while the control area with a population of 43,237 and the same birth rate, the expected number of pregnant women was 1124. Looking at the sweep data, 965 singleton births were registered in the control area for one year and 2340 in the implementation area. Depending on when the census was taken and fluctuating birth rates in different areas, the recording of actual births during the sweeps comes nearest to the expected number during sweep II in both control and implementation areas (control: 527 of 562 expected; implementation: 1035 of 1170 expected). In both areas the registered number of births is considerably lower than the expected in sweep I (control: 438 of 562 expected; implementation: 923 of 1170 expected). In sweep II the number for the control area are 467 of 562 expected and in the implementation 1119 of 1170 expected. The validity of these calculations can be questioned in the absence of reliable demographic data.

b) Definition of births, miscarriage and stillbirth

There appeared to be some discrepancy between, PIs, statistician, supervisors and interviewers regarding the definitions of births and miscarriage. PIs and supervisors in Tanjungsari take 20 weeks gestation or 500 Gms as distinction between birth and miscarriage. The interviewers have been using this definition during previous studies and have apparently adhered to this even though the statistician taught 7 months (28 weeks) as cut-off point. When asked what women would use as criteria for birth as distinct from miscarriage, it was stated that they knew "whether the months were enough". In the comparison area, supervisors and interviewers used 6 completed months as cut-off point.

When asked who defines whether a baby is stillborn, it was generally true that the TBA would inform the woman that her child was deceased, even though the woman and not the TBA is the respondent in the sweep and for the surveillance. When asked how the TBA diagnoses a stillbirth, it was evident that she decides on whether there

are signs of life. The TBAs have not been taught to feel the apex beat to establish whether there is any sign of life if the baby does not breathe or move after birth.

Table 14 in Drs. Hadyana's report shows a striking difference in the number of stillbirths and early neonatal deaths between control and implementation area. It is puzzling, that there is very little difference in the actual number of early neonatal deaths between control and implementation areas even though the population of the implementation area is double that of the control area. The number of stillbirths is four times higher in the implementation area compared to the control except in sweep III when the registered stillbirths are doubled compared to Sweep II. It is possible that recording changed in the control area. It is also possible that a newborn is diagnosed as stillborn in order to avoid blame when a baby was born alive but died soon after births.

c) Calculation of perinatal mortality rates

Because these differences in definition could influence the calculation of PMR, birth weights of stillbirths and neonatal deaths were checked from the verbal autopsies. The number of stillbirths and neonatal deaths of 1000 Gms are few and those babies less than 1000 Gms are very few. One worrying factor is that the number of stillbirths reported by interviewers to Dr. Yanti for verbal autopsies is 20 in number less than the total in the surveillance system. There is hardly any discrepancy regarding early neonatal deaths between the two data sources. In addition, Dr. Yanti has changed some of the diagnoses of stillbirths to neonatal deaths and vice versa on the basis of the enquiry. Caution needs to be exercised in using data from the verbal autopsies and those from the questionnaires for the same purpose as a few rigorous cross-checks are required. This again supports the decision to use the sweep data for PMR.

The question of **multiple pregnancies** had not been addressed in previous sweep results. It now transpired that the first baby of multiple pregnancies had been included in both the numerator and denominator, but not the second one. Recalculating the PMR with all babies included changed the rates considerably upwards.

After consultation with Dr. Mark A. Belsey, Programme Manager of MCH/FP in WHO, Geneva, a rate was calculated for singletons and twins separately. We were advised that if the rates showed considerable variation (because of usually worse outcomes of twin births), the PMR for singletons should be used as outcome indicator.

Conclusion:

A thorough attempt has been made to get as much information about methods of data collection, differences and biases both in data collection and in characteristics between implementation and comparison areas and in definitions used.

B.E. Kwast was no longer in Bandung when the results of sweep III were collated and thus they could not be discussed with the team. However, The writer thinks that the data collection and reporting system in Tanjungsari may be more complete and accurate due to long exposure of the population to researchers. Taking singleton PMRs, there seems to be a downward trend over the 18 months period even though the differences are not statistically significant.

The PMR of Sweep I and II is lower in Cisalak than Tanjungsari but increases in Sweep III above the level of sweep I in Cisalak and that of sweep III in Tanjungsari. The fact that the PMR was lower initially could be due to under-reporting of events. The rise in PMR for the period of sweep III could be because of better reporting particularly as it is higher than the PMR for Sweep I during the same seasonal period in the previous year (December to June, 1992).

If stillbirth and early neonatal deaths rates are calculated separately, interesting differences between Cisalak and Tanjungsari are evident:

Area	Sweep I	Sweep II	Sweep III
<u>Tanjungsari</u>			
Stillbirth rate	28	26	20
END rate	20	14	20
<u>Cisalak</u>			
Stillbirth rate	14	11	28
END rate	27	21	28

The stillbirth rates in Sweep I and II are much lower in Cisalak than Tanjungsari and the reverse is true for the early neonatal deaths rates. This may be a question of definition and categorization. Looking at the data this way could suggest that reporting in the comparison area improved for Sweep III. Segregating perinatal mortality in this way may have programmatic implications, but as both are constituting the numerator and denominator a shift in definition does not affect the calculation of PMR.

The writer suggests that the PMR in the control area not be used for comparison purposes in the regionalization project, but that solely the PMR of Tanjungsari is used, even though a trend over 6 months periods for PMR as an outcome indicator is questionable where so many other factors have an impact in the project area.

2. Draft Papers for Publication

a) Dr. A. Alisjahbana

The title for Dr. Anna's paper was changed to read:

An integrated village maternity service to improve referral patterns and perinatal mortality in a rural area in West Java. Does it change people's behavior and attitudes.

Results to be included in this paper are as follows:

- * **distribution of births by birth attendant, place of delivery and perinatal mortality**
- * **patterns of referral, compliance with referral and perinatal mortality**
- * **causes of complications and referral patterns**

The outline for this paper has changed several times during the writer's stay in Bandung. As the referral data, analyzed by Mrs. Claudia Williams and Dr. Swandari are to form the core for this paper and Mrs. William's final report was received in Bandung on 17 July, definitive decisions on the content and the time periods to be used were made on 18 July, the day of the writer's departure to Surabaya. Dr. Anna has put a lot of work into this paper during the last two weeks before the final report was due. The draft paper as contained in Appendix has an enormous amount of valuable data. However, the paper needs to be more focused and shortened as there is enough information for two publications with additional analysis. Dr. Anna requested B.E. Kwast to continue working with her on this paper and it will be a pleasure to do this. Dr. Anna has been promised further comments by both Drs. Koblinsky and Kwast by the end of August, 1993. The intention is to write this publication for the Journal of Health Policy and Planning.

b) Dr. James Thouw's paper

Does the provision of maternity services closer to the people improve use of those services.

Drs. Thouw, Sutedia, Hadyana and Kwast had two meetings regarding the data analysis, interpretation of data and format for this paper. It is intended for publication in the International Journal of Obstetrics and Gynecology.

Dr. James finalized this paper and submitted it with the final report (c.f. Appendix).

Results show an increase in referrals over time of women both during the prenatal and delivery period by TBAs to Birthing homes (19.6% to 53.9% and 17% to 33.3%

respectively). There also appears to be a slight shift from home deliveries to institutional births in the implementation area when home births of implementation and control areas are compared (84.9 versus 95.8%). The establishment of birthing homes, which also provide prenatal services by a nurse-midwife increases professional prenatal care at village level in the implementation area, while a markedly greater proportion of women seek prenatal care in a health center in the control area. The proportion of women delivering in health center, hospital and private facilities is greater in the implementation than in the control area. This may be due to greater availability of services and also greater awareness of the population about risks of complication and safer delivery place. However, the latter has not been explored in this paper.

Dr. James is awaiting further comments by Drs. Koblinsky and Kwast. The final draft is in very good shape. It needs some verification of inconsistencies in data between text and tables and clarification of significance testing. Some editorial changes could tighten up and shorten the discussion.

3. The Final Report

The final report has been written according to the MotherCare guidelines, including the summary Table. The report is contained in Appendix .

B. EAST JAVA SAFE MOTHERHOOD PROJECT

1. Field implementation

This project is progressing very well and an enormous amount of work has been achieved.

Data collection on risk scoring by kaders was ongoing until the end of July. Data entry is ongoing and shall be completed in August. Analysis will take place from September and plan for a publication may be realized towards the end of 1993.

Dr. Poedji has conducted a survey among health and village personnel on the acceptability of the risk scoring system and activities related to the promotion of this system at village and district level. The results are very favorable and encouraging for expansion of the program.

2. Data analysis

The post-survey over a nine months period was completed in July and data are being entered into the computer in Surabaya. The advanced SPSS.4 program was not yet available to the team, but Dr. Mike Linnan will help to acquire this as soon as possible. Data cleaning and analysis can then proceed at a greater pace.

The enquiry into maternal deaths and perinatal deaths is ongoing and very revealing. Hospital staff stated that they had not realized that 50% of maternal deaths actually occur at home. The rank order of causes of maternal deaths is the same as in other developing countries with postpartum hemorrhage (PPH) as the leading cause. Nine of the 18 maternal deaths were due to PPH: 6 women were classified as high risk and 3 as low risk. All nine women died at home with the TBA attending the delivery. The high risk women should have been attended by a midwife if she deemed home delivery suitable and she could probably have given emergency obstetric first aid in this situation where the TBA could not have provided such emergency care.

The Principal Investigator is concerned that the short period of the project intervention will not show as great an impact as might have been achieved after two years of implementation. The PI was reassured, because even if impact could not be used as a measurement of success, impressive efforts at advocacy, policy and intervention level had been made which would be sustainable and replicable. Perinatal mortality data are problematic as an impact indicator as in the East Java project just as in the West Java project, the PMR results from the pre-survey in the control area is lower (20.04) than in the implementation area (34.51). Added to this finding, is the fact that the data collection from the outcomes of the risk scoring show a higher PMR (42.7) than the pre-survey (34.5) in the intervention area. Again, this may reflect better reporting because of the intervention.

The risk scoring system shows 71% in the low risk category, 26 % in the high risk and 2 % in the very high risk. Risk scoring for the pre-survey was done retrospectively and corresponds regarding the high risk pregnancy (26.9 versus 26.3 %). There is a slight shift from 5.3% for very high risk pregnancies in the pre-survey in the intervention area to 2.0% during the risk scoring. Retrospective risk scoring for the control area is almost exactly corresponding with the risk scoring proportions in the intervention area. Analysis of data comparing place of delivery and risk scoring is not yet available. Considering a data set of about 9,000 births during the risk scoring intervention, much will be learned from the analysis.

Linking of women who have had a risk score applied with the post-survey questionnaire has not been effected. A special note needs to be made about the fact that 80% of pregnant women were reached with the risk scoring which is a fine achievement. However, from the post-survey, we will not know who the 20% of women were outside the risk scoring and this may present a problem relative to analysis of important variables pertaining to outcome. Those 20% not reached may have worse outcomes as they are too difficult to reach and have great constraints in accessing services.

3. The final report

The project final report was discussed and results which were available at that point were as much as possible included.

C. USAID Mission Meetings

Briefing and debriefing meetings were held at the USAID Mission in Jakarta on 6 and 22 July respectively.

Dr. Mike Linnan was present at the debriefing when two particular points were raised. The first about the national policy meeting which is to take place at the beginning of 1994 according to previous discussions (c.f. Indonesia Trip Report #10 Dr. M. Koblinsky), the reason being that by that date detailed analysis of the East Java Safe Motherhood Project would be available. Dr. M. Linnan would prefer for this meeting to take place during September 1993, during the last month of MotherCare I, but that may not be feasible because of administrative reasons. The second point is the further support for Dr. Poedji's data analysis and write-up. Dr. Linnan will provide this support but would welcome consultant input from a MotherCare II project.

III. FOLLOW-UP ACTIVITIES AND RECOMMENDATIONS

1. Regionalization

The final report, draft articles for publication (four) and the appendices will be forwarded by DHL to MotherCare/Arlington on 29 July, 1993.

MotherCare will comment on draft articles upon which the authors can submit these for publication to the intended peer review journals.

Dr. B.E. Kwast has been requested by Dr. Anna to continue to work on her paper.

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Corrections in referral data compiled by Mrs. Williams will be made by Dr. Swandari before inclusion into Dr. Anna's paper.

A full write-up with information on the KAP post-survey will be undertaken by the social marketing team during the coming months.

2. East Java Safe Motherhood Project

As agreed during Drs. Anderson and Koblinsky's visit in March 1993, data analysis and final write-up of results will be carried over into MotherCare II. This was also discussed during debriefing with Drs. Ken Farr and Mike Linnan at USAID, Jakarta on 22 July, 1993. Dr. Mike Linnan will follow-up progress with data analysis in Surabaya.

APPENDIX 1
CONTACT LIST

CONTACT LIST

INDIVIDUALS AND ORGANIZATIONS

Country Telephone Code: 62
Jakarta City Telephone Code: 21

GOVERNMENT

1. Ministry of Health (Depkas)
Jl. Rasunan Said, Kuningan

Directorate General of Community Health
Jl. Prapatan 10
Telephone 377-697

Dr. Lemeina--DG
Dr. Nardo Gunawan--FH
Pesawat 3200
Telephone: 5201595/8/9
492-379 (home)

(Dr. Suaina--ex; new appointment not yet made--Puskesmas)

Dr. Bidi Astuti--Posyandu

Sonia Roharjo--Integrated Health/Family Planning
Directorate Gizi (Nutrition)
23A Jl Percetakan Negara
Telephone: 414-705
414-609
414-693

Litbangkes

Jl. Percetakan Negara 29
P.O. Box 1226
Jakarta Pusat

Dr. Sumarmo--Director
Telephone: 414-214
414-266-228

Dr. S. Gunawan--Secretary, NIHRD
Telephone: 413-933

2. **BKKBN (National Family Planning Coordinating Board)**
Jl. M.T. Haryono #9-10
P.O. Box 186
Jakarta 10002
Telephone: 819-1308
Telex: 48181 BKKBN IA

Dr. Haryono Suyono
Telephone: 819-4650 or 3083

Dr. Ny S. P. Pandi--Deputy Director for Research and Development

Dr. Andrew Kantnor (ext. 266)
Telephone: [REDACTED]

DONOR AGENCIES

1. **USAID**
Jl. Medan Merdeka Selatan 3
Jakarta Pusat
Telephone: 360360

Kenneth Farr
Chief, HIRD/PH

Mike Linnan
Jl. Jambu 28
Menteng-Jakarta
Telephone: [REDACTED]

Ratna Kurniawata (ext. 2143)
Telephone: 780-6319

2. **Ford Foundation**
Jl. Tama Kebon Sirih I/4
Telephone: 366-705

David Winder--Representative
Jl. Wijaya 9/15
Kebayoran Baru
Telephone: 711-914

Cynthia Myntti
Jl. Hang Lekiu III/10 (near Mira Sera Restaurant, across from Triguna School)
Kebayaron Baru
Telephone: 773-152

3. **UNICEF**
Wisma Metropolitan 11, 10th floor
Kav 31, Jl. Jend. Sadirman
P.O. Box 1202/JKT
Jakarta 10012
Telephone: 5705816
5781366

Mr. Anthony Kennedy
Representative
Telephone: 570-5514 (direct)
[REDACTED]

Dr. A. Samhari Baswedan
Programmed Coordinator--Health
Jl. Ale Raya #5
Rempoa, Aputat
Jakarta [REDACTED]

4. **UNFPA**
Jl. Thamrin 14
Telephone: 312308

Dr. Jay Parsons
Telephone: 327902 (direct)

5. **WHO**
Jl. Thamrin 14
P.O. Box 302
Jakarta
Telephone: 321308

Dr. Mona Khenna (ext. 270, 272)
Telephone: [REDACTED] [REDACTED]
549-2619

ORGANIZATIONS

1. **BKS-Penfin** (Coordinating Board of Indonesia Fertility Research)
Jl. Makmur No. 24
Bandung 40161
Telephone: (022) 87825
Fax: (022) 87825

2. Pusat Penelitian Pembangunan Gizi (CDRN)
Jl. Dr. Semern (Semboja)
Bogor, Java
Telephone: (0251)-21763

Dr. Darwin Karyadi

Telephone: [REDACTED] [REDACTED]

3. Perkumpulan Perinatologi Indonesia (Perinasia)
(The Indonesian Society for Perinatology)
Jl. Tebet Dalam I G/10
Jakarta 12810
Telephone: 829-9179
Telex: 46024 Public IA Attn: Hadi
Fax: 341-534

Dr. Gulardi--First Chairman

Telephone: [REDACTED] [REDACTED]
334-009 (hospital)

Dr. Hadi Pratomo--Project Director (Peggy--wife)

Telephone: [REDACTED] [REDACTED]

4. PATH
Tifa Building, 11th Floor, Suite 1102
Jl. Kunigan Barat No. 26
Jakarta 12710
Telephone: 5200737
Fax: 5200621
Telex: 62581 FIFA IA

Leona D'Agnes--Country Representative

Telephone: [REDACTED] [REDACTED]

5. Yasasan Kusuma Buana (YKB)
Jl. Asem Baris Raya Blok A/3
Gudang Perluru--Tebet
Jakarta Selatan

Mailing Address: P.O. Box 25/KBYTT
Jakarta Selatan

Firman Lubis--Executive Director

Telephone: 829-5337 (work)
[REDACTED]

6. **The Population Council**
Gedua Jaya
Jl. M.H. Thamrin 12
Jakarta
Telephone: 327508
Fax: 328051
Mailing Address: P.O. Box 20/JKSA
Jakarta 10350 A

Gouranga Dasvarma--Associate
Jl. Duta Indah III/TL-10
Pondok Indah
Jakarta
Telephone:
327-992 (work)
331-844

Bangkok
Telephone: 662-253-9166 or 251-7066
Fax: 662-253-6318

7. **Center for Child Survival (CCS)**
Dr. Alex Papilaya
University of Indonesia
Kampus FKMUI
Depok, Indonesia

Telephone: 727-0014 / 727-0037

Dr. Endang Achadi
Dr. Ranthu
Telephone: 727-0154 (Center for Health Research)
Fax: 727-0153

8. **Save the Children Federation**
Jl. Sumenep 7
Jakarta 10310
Telephone: 331471
Telex: 46024 INDSAT IA

Donna Sillan--Program Manager (consultant)
Telephone: [REDACTED] [REDACTED]

9. Dr. Michael Dibley
Gadja Mada University
P.O. Box 236
Jogyakarta 55001
Telephone: [REDACTED] [REDACTED]
(0274) 5088 (work)
Fax: (0274) 5039
10. Dr. Anna Alisjahbana
Direcktur Bagian Penelitian University of Padjadjaran
Fakultas Kedokteran Department of Child Health
University of Padjadjaran
Jl. Pasir Kaliki 190 (Behind Nuclear Medicine)
Bandung, Java Barat
- Telephone: (022) 87218 (Direct)
(022) 849543 ext. 262 Padjadjaran University
[REDACTED] [REDACTED]
Fax: (022) 434297
- Home address:
- Telephone:
- Dr. James Thouw
Direcktur Bagian Penelitian University of Padjadjaran
Fakultas Kedokteran Department of Child Health
University of Padjadjaran
Jl. Pasir Kaliki 190 (Behind Nuclear Medicine)
Bandung, Java Barat
11. Pengurus Pusat Ikatan Bidan Indonesia
(Indonesia Midwives Association)
Jl. Johar Baru V/13D
Kayuawet
Jakarta Pusat
Telephone: 4142114
- Mrs. Samiarti Martosewojo (Past President)
12. F.A. Moeloek, M.D., Ph.D.
Vice President
Indonesian Society of Obstetrics and Gynecology
Tromol Pos 3180
Jakarta Pusat
Indonesia
Telephone: 320286

13. **Professor Sulaiman Sastrawinata**
Executive Director
Coordinating Board of Indonesian Fertility Research
Jalan Makmur No. 24
Bandung 40161
Telephone: 87825
Fax: (022) 87825

14. **Azrul Azwar**
IDI (Indonesia Association of Physicians)
Samratulangi No. 29
Jakarta
Telephone; 321066
337499

15. **Jim Dillard**
Jl. Hang Jebat IV/1A
Kebayan Baru
Jakarta Selatan
Telephone: 720-3425

16. **Jim Woodcock**
Telephone: [REDACTED] [REDACTED]

17. **Carrie Hessler-Radelet**
Jl. Bangka 8B
Hs. A/2
Kebayaran Baru
Telephone: [REDACTED] [REDACTED]

18. **Mary Jo Hansell/Carl Serrato**
Jl. Kemang Utara #23A
Bangka
Jakarta Selatan
Telephone: [REDACTED] [REDACTED]
Fax: 799-0851 (manual)

19. **Kelly O'Hanley**
Telephone: 799-9275

20. **Saatchiad Saatchi**
Jl. Sungai Sampas 3
#12 House No.
Telephone: 739-3364

21. **Sentosa Jaya**
(photocopy)
Jl. K.H. Wahid
Hasyim No. 133A
Telephone: 380-1429
(Jenny)
22. **Joy Polluck**

62-21-333-729
Jl. Tehik Betung 8
Menteng, Jakarta
10310
23. **Dr. Poedji Rochjati**
Department of Ob/Gyn
Dr. Soetomo Hospital
Jalan Dharma Husada No. 6-8
Surabaya 60286
Telephone: 22-40061
Fax: 31-40061
- Dr. Agus Abadi**
Dr. Marsianto
Dr. Hanny Sumampow
Dr. Benny Soegianto
Dr. Wasis Budianto
Dr. Slamet Rahadi
24. **Dr. Ny. Hedy B. Sampurno**
Deputy Director, MCH
Sumedang
- Dr. Quinn**
Cilembu Health Center
25. **Dr. Ridwan Josoef**
CDC/Atlanta
26. **Dr. Fasli Jalal**
Chief Bureau for Health and Nutrition
National Development Planning Agency
BAPPENAS
Jl. Taman Suropati 2
Jakarta 10310
Telephone: 334379
Fax: 3105374

27. Dr. Soewarta Kosen
Departemen Kesehatan R.I.
Badan LITBANGKES
Jl. Percetakan Negara 29
Jakarta 10560
Telephone: 414146
414226
414228

APPENDIX 2
WORK SCHEDULE
Dr. B.E. Kwawt

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APPENDIX 2

Work Schedule: Dr. B.E. Kwast July 3 - 23, 1993

July 3, Saturday

9:00 am -- Departure, Washington, DC

July 4, Sunday

6:00 pm -- Arrival, Hong Kong

July 5, Monday

12:30 pm -- Arrival, Jakarta

July 6, Tuesday

10:00 am -- Briefing USAID

12:00 pm - 3:30 pm -- Travel by car to Bandung

July 7, Wednesday

8:00 am - 5:00 pm -- UNPAD; Project staff meeting, working with Dr. Hedy (paper 3)

July 8, Thursday

7:30 am - 4:00 pm -- Field trip, Cisalak, observing Sweep 3, meeting with Kaders, Supervisors and Dr. Hadyana

7:00 pm - 10:30 pm -- Review referral data with Mrs. Claudia Williams

July 9, Friday

7:00 am - 12:00 pm -- Review Referral data
-- Review Draft Final Report
-- Review Sweep data

5:00 pm - 10:00 pm -- Review Dr. James & Anna's Papers

July 10, Saturday

8:00 am - 2:00 pm -- Discuss Draft Final Report with Drs. Anna & James
-- Discuss analysis tables for Paper 2 with Drs. James, Sutedja and Hadyana

July 12, Monday

8:00 am - 4:00 pm -- Meeting with IEC team, Claudia Williams & Dr. Anna on Paper 1
-- Review data with Dr. Swandari (radio & transport)

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July 13, Tuesday

8:00 am - 5:00 pm -- Review of paper outlines for TAG Collation of Data for Ambulance/radio use for referrals

July 14, Wednesday

8:00 am - 12:00 pm -- Staff meeting Regionalization Project: Lessons learned & recommendation for Final Report

July 15, Thursday

8:00 am - 5:00 pm -- Perinatal data analysis, Referral data review

July 16, Friday

8:00 am - 1:00 pm -- Visit Tanjungsari and Gunungmanik Polindes

1:00 pm - 3:00 pm -- Staff farewell

3:00 pm - 6:00 pm -- Work continued

July 17, Saturday

8:00 am - 10:00 am -- Final Report

10:00 am - 7:00 pm -- Review analysis with Drs. James, Sutedja, and Hadyana

July 18, Sunday

8:30 am - 10:00 am -- Discuss paper outline with Dr. Anna

11:00 am -- Depart to Surabaya

July 19, Monday

9:00 am - 5:00 pm -- Presentation of data of Safe Motherhood project & cost study to date

July 20, Tuesday

9:00 am - 5:00 pm -- Review Final Report

July 21, Wednesday

8:00 am - 12:00 pm -- Review Final Report

2:30 pm -- Depart to Jakarta

July 22, Thursday

1:00 pm - 4:00 pm -- Debriefing USAID

July 23, Friday

11:00 am -- Meeting Dr. M.J. Hansell, Prof. S. Samil

3:00 pm -- Departure Indonesia

APPENDIX 3
SWEEP REPORT
Drs. Hadyana

**REPORT OF SWEEPING OF DEMOGRAPHIC EVENTS
IN CISALAK AND TANJUNGSARI SUBDISTRICT
1992 - 1993**

BY : HADYANA SUKANDAR

**REGIONALIZATION OF PERINATAL CARE PROJECT
SCHOOL OF MEDICINE, PADJADJARAN UNIVERSITY**

B A N D U N G

I. INTRODUCTION

I.1. Background

Preparation of the study on "Regionalization of Perinatal Care" was started since 1991, and interviewing of pregnant and delivering women started in January 1992.

This study was carried out in Tanjungsari subdistrict in Sumedang regency as the intervention area and in Cisalak subdistrict Subang regency as the control area.

This study was done by using 5 kinds of questionnaires i.e. for women 7 months pregnant, at birth, 7 days, 28 days and 42 days post partum.

Interviews were done by 6 supervisors, 4 in the intervention and 2 in the control area. Besides that, 72 cadres were interviewing in the field, 50 in the intervention and 22 in the control area. These interviewers were selected by the village head coming from the respective area/village fulfilling the requirements as suggested by the research team in Bandung. However not all interviewers have fulfilled the requirement as requested, such as some of them were inexperienced in the field of health in the community. Another constraint has been which is rather difficult to achieve was their heterogenous level of education they have had. Those in the intervention area the majority were from junior high school whereas those of the control area were from the senior high school. Although all interviewers were trained before starting, and in the field they were monitored by the supervisors, but apparently their capability in the field were not as expected, many escaped the interviews.

Thus, the question arises, whether what they have achieved has been in accordance to what was expected i.e. nobody has escaped the interview. That has been the reason of conducting "sweeping"

1.2. Purpose of Sweeping

1. Till how far are the interviewers able to do their job collecting data by questionnaires of pregnant and delivering mothers.
2. To identify problems experienced by the interviewers in collecting data by questionnaires.
3. To know the data quality by sweeping carried out by the interviewer.

1.3. Sweeping : time & Execution

Due to limited personnel, sweeping was done by the interviewer monitored by the supervisor from July 1 1992 until finished, approximately 2 weeks. The purpose has been to know the number of eligible couples, and demographic changes during 6 months (Jan 1 up till June 30 1992) including number of births, neonatal deaths, maternal deaths, still births and miscarriages, : also the number interviewed/visited by the interviewer based on number of cases.

1.4. Method of Sweeping

As known in demographic data collection there are two kinds of errors especially on age information, i.e called "age heaping" or "digit preference" and "shifting". In the village if people are asked of their age, they oftenly give an answer ending with 0 or 5, for example a mother 42 years of age, it could be she prefers so say 40 or 45 or may be 50 years.

Whereas with "shifting" is meant in answering the age it is always higher or lower depending on the condition, for instance a mother having already many children and does not want to be pregnant again she could have answered is already old i.e 50 years, while in reality her age is 40 years.

Thus, to prevent not registering mothers of eligible age, the following procedure of sweeping has been used :

- first, register all eligible couples in the study area of the interviewer's working area. This could originate from the RW or RT head, Posyandu Cadre, from sub FP Post of the RW or from the village FP personnel. This was done to make the interviewer's job easier and quicker to do the sweeping from house to house.
In case the interviewer does not have the list of names of eligible couples, then if doing sweeping from house to house he has to write down/ask the name of the eligible couple taking a lot of time, not yet speaking of mentioning their age as mentioned above, or something has been overlooked or forgotten. Besides no data from other sources are not available, sweeping and eligible couples registration are done by house to house visits.
- Secondly, house to house sweeping and matching of names with those of the first method (in case the eligible couple was not registered, this should be added in the list). Then demographic occurrence during the last 6 months should be requested. The next column should be checked whether it was interviewed or not. To register the demograyhic changes give the check (V) sign in the respective column which should be the last occurrence. For

instance during the last 6 months a mother becomes pregnant and delivered a baby, and it was a still birth, then the next column of death of the child should be checked V (sweeping form see appendix).

1.5. Pre-testing

Prior to sweeping pretesting should be done by the investigator together with the supervisor. The purpose is to try out the questionnaire and to find out the technic of sweeping that could be done by the interviewer. From the results of pretesting in 2 study areas each in 3 selected RTs, not any source of data of eligible couples could be obtained. In the place of the RT head the registration was complete, in an other RT there was no register of the community available, this may happen due to education factor. Besides that, other constraints in the field is coming straight to the people without a list of names, it is very difficult to meet them because they generally work in the field at most see the head of the HH after 14.00 o'clock. Thus, it was decided to prevent that a member of the eligible couple, is missed/forgotten during the first visit, registration of eligible couples should be done in each RT in the sweeping form. Then, during sweeping those who were visited should be given a special sign (-) or (V) for those who experienced demographic changes (pregnancy, delivery or death).

II. RESULTS OF SWEEPING I

The results of sweeping done by the interviewer, after previous checking on a meeting, can be seen in the table below : -

Table 1 : Number of births, pregnancies and deaths based on sweeping during the period of January 1 - June 30, 1992

	SUBDISTRICT	
	CISALAK	TANJUNGSARI
1. Number of villages	13	27
2. Number of RT's	246	808
3. Number of eligible couples	6,674	17,076
4. <u>Still pregnant</u> on June 30, 1992	466	1,063
5. Number of <u>life births</u> and <u>still alive</u> till June 30, 1992	408	857
6. <u>Deaths</u>		
- babies	26	46
- mothers	3	2
- still births	6	27
- miscarriage	2	14

Table 2 : Number of pregnancies already/not yet interviewed

	SUBDISTRICT	
	CISALAK	TANJUNGSARI
1. <u>Number of subject still pregnant</u>	466	1,063
- Number already interviewed	347 (74.5%)	834 (78.5%)
- Number not yet interviewed	119 (25.5%)	229 (21.5%)
2. <u>Reasons not yet interviewed :</u>		
Duration of pregnancy		
1 month	-	7
2 months	20	60
3 months	24	79
4 months	18 (19.7%)	39
5 months	21	21
6 months	9	7
7 months	7	7
8 months	10 (4.7%)	8
9 months	5	1
10 unknown	5 (1.1%)	-

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Table 3 : Number of births already/not yet interviewed

	SUBDISTRICT	
	CISALAK	TANJUNGSARI
1. Number of births	408	857
2. Number already interviewed	337 (82.6%)	675 (78.5%)
3. Number not yet interviewed	71 (17.4%)	184 (21.5%)
4. <u>Reasons not yet interviewed :</u>		
1. Born before the study	49 (12.0%)	175 (20.4%)
2. Baby's age 1 month (do not know that she was in birth)	1 (0.2%)	1 (0.1%) (transferred)
3. Baby's age 2 months	12 (2.9%)	-
- not at home	7	
- transferred	1	
- just known	4	
4. Baby's age 3 months	4 (1.0%)	2 (0.2%)
5. Did not know is already born	5 (1.2%)	(transferred) 1 (0.1%)
6. Transferred (baby's age not informed)	-	5 (0.6%)

Table 4 : Number of deaths already visited

	SUBDISTRICT	
	CISALAK	TANJUNGSARI
I. <u>Infant death</u>		
1. Number of deaths	26	46
2. Already visited/ interviewed	20 (76.9%)	37 (80.4%)
3. Not interviewed because of :	6 (23.1%)	9 (19.6%)
- died before the study was initiated	5 (19.2%)	9 (19.6%)
- location too far	1 (3.9%)	-
II. <u>Maternal death</u>		
1. Number of maternal death	3	2
2. Already visited/ interviewed	2	2
3. Not interviewed because died before the study was done	1	-
III. <u>Still birth</u>		
- Number of still birth	6	27
- Still birth before the study was done	3	4
- already interviewed	3	23
IV. <u>Miscarriage</u>		
Number of miscarriages	2	14
- miscarriage before the study	2	9
- miscarriage already interviewed	-	5

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From Table 1, it can be noted that the infant death during a period of 6 months in Cisalak subdistrict was 59.1 and in Tanjungsari subdistrict it was 49,5 per 1000 births. Whereas the maternal death in Cisalak and Tanjungsari subdistrict was subsequently 681.8 and 215.0 per 100,000 births.

From Table 2, the percentage of 7-9 months old infants that escaped interview was 4.7 % in Cisalak and 1.5 % in Tanjungsari. The reasons as given by the interviewer in Cisalak was : (n = 22):

- refused to be interviewed (1 pers)
- questionnaire not available any more (1 pers)
- distance too far (8 pers)
- seldomly at home (4 pers)
- new comer (1 pers)
- did not realize she was pregnant (7 pers)

From Table 3, it can be seen that those who delivered their baby but were not interviewed (as they should be) was 5.3 % in Cisalak, 1.0 % in Tanjungsari. Whereas as far as death was concerned, all were interviewed except for one infant death in Cisalak that was not visited (n = 26) due to far location to interview the mother.

As previously mentioned, before sweeping all eligible couples in each RT were interviewed and registered. The source of these informations are presented in Table 5. As can be seen from Table 5 information could be obtained not only from one source. In Cisalak mostly were from RT head, whereas in Tanjungsari mostly from personnel of RW. Sub KB (36.2%) and Cadre Posyandu (24.1 %), and from the people in the community themselves (by home to home visits) in Cisalak 12.2 % in Tanjungsari 25.4 %.

Table 5. Source of household information data according to number of RT's

Source of information	Subdistrict Cisalak	Subdistrict Tanjungsari
1. RT head	83 (33.7 %)	37 (4.6 %)
2. Personnel of FP village	58 (23.6 %)	50 (6.2 %)
3. Personnel of Sub FP RW	27 (11.0 %)	292 (36.2 %)
4. Cadre Posyandu	25 (10.2 %)	194 (24.1 %)
5. RW head	13 (5.3 %)	26 (3.5 %)
6. PLKB	10 (4,1 %)	-
7. Others	30 (02.2 %)	205 (25.4 %)
Total RT's	246 (100 %)	306 (100 %)

Annotation : Others means : from home visits/from the community itself.

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Supervisor's Report of Rechecking

To evaluate the validity of the interviewer's work, rechecking was done by the supervisor by selecting 3 RT's from each village at random. The number of eligible couples at the selected RT's represent approximately 10% of the total number of eligible couples. Results of rechecking by the supervisor can be seen in table 6.

Table 6. Results of Rechecking of Sweeping in 2 Study Areas

Variable	Result		Validity (%)
	Supervisor	Interviewer	
I. Eligible Couple :			
- Cisalak	1131	1080	95.5
- Tanjungsari	1846	1837	99.5
II. Pregnancy :			
- Cisalak	93	85	91.4
- Tanjungsari	144	133	92.4
III. Delivery :			
- Cisalak	86	85	98.8
- Tanjungsari	117	115	98.3
IV. 1. Infant Death			} 100.0
- Cisalak	5	5	
- Tanjungsari	7	7	
2. Stillbirth			
- Cisalak	1	1	
- Tanjungsari	2	2	
3. Maternal Death			
- Cisalak	1	1	
- Tanjungsari	-	-	
4. Miscarriage			
- Cisalak	1	1	
- Tanjungsari	1	1	

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From the above table 6 it can be clearly seen that the validity of the interviewer's job is high. For mortality the validity is 100 %, for delivery and the number of eligible couples the validity in both areas was > 95 %. Whereas for the number of pregnancies the differences between interviewer and supervisor was 8.6 % in Cisalak and 7.6 % in Tanjungsari (validity was 91.4 % and 92.4 %) the majority was due to differences in time of visit. During sweeping by interviewer the respondent was not sure with her answer of her pregnancy because it was still a young pregnancy, but when the supervisor visited her one month later she was able to say that she was pregnant. (See table 7.)

Table 7 : Differences in number of pregnancies as noticed by the supervisor but not by the interviewers in two study areas.

Pregnancy Age	Cisalak (n = 8)	Tanjungsari (n = 11)
1 month	-	3
2 months	-	1
3 months	3	4
4 months	3	1
6 months	1	1
7 months	1	1

III. Conclusions and Suggestions

Conclusions :

From the results of sweeping by the interviewer on the demographic changes during the last 6 months (January 1 till June 30, 1992) the following conclusions could be drawn :

1. There were still cases who were not interviewed by the interviewer in the 2 study areas :
 - a. those who were 7 mos and more pregnant 4.7 % in Cisalak and 1.5 % in Tanjungsari.
 - b. For deliveries it was 5.3 % in Cisalak and 1.0 % in Tanjungsari.
2. For fatal cases, deaths during the study period almost all have been interviewed/visited, except for one infant death in Cisalak that was not visited (n = 26), due to the far distance to visit/interview the mother.
3. By rechecking by the supervisor the validity of the sweeping done by the interviewer was significant high (> 95 %), except for pregnancy there were still 8 respondents in Cisalak (8.6 %) and 11 in Tanjungsari (7.6 %) who were notified by the supervisor but were not by the interviewer.

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Suggestions :

1. Sweeping in the future (end of year 1992), the technic that should be used by the interviewer (because the names of eligible couples are already known) is to use the source of family data from the informant again. This is based on the sufficient high validity and the relative small budget used for that purpose.
 2. Only new eligible couples should be added in the list of the already registered eligible couples which can be obtained from the RT/RW data or the village and also directly when sweeping.
- NB : As a follow-up of the sweeping the evaluation team has suggested the interviewer to interview those cases that have fulfilled the requirements which escaped previously.

Questionnaire Sweeping (July 1992)

Village : _____
 Subdistrict : _____
 RT/RW : _____/_____

Village code : _____
 Subdistrict code : _____
 Interviewer : _____
 Supervisor : _____

Source of HH data :

1. RT head
2. RW head
3. Cadre Posyandu
4. Personnel village FP
5. Personnel sub FP RW
6. Others

Date of registration: _____/_____/_____
 Household data day mo Yr

Date of Sweeping : _____/_____/_____
 day mo Yr

Serial Number	House Number	Name of head of the HH	Name of housewife of eligible couple (≥ 15 - ≤ 49 yrs)	Last 6 months *) (Jan 1-June 30 1992)			Visited by interviewer		Annotation
				Pregnancy (if yes, how many months)	Deli-very	** Death	Yes	No	
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
.									
.									
35.									

Note : *) if yes give V

**) code for death : 1. Infant death
 2. still birth
 3. miscarriage
 4. maternal death

RESULT OF SWEEPING (PERIOD OF JULY 1 - DECEMBER 31, 1992)

Table 8. Number of births, pregnancies and deaths based on sweeping during the period of July 1 - December 31, 1992

	S U B D I S T R I C T	
	Cisalak	Tanjungsari
1. Number of villages	13	27
2. Number of RT's	246	808
3. Number of eligible couples	7124	17813
4. <u>Still pregnant</u> on Dec 31, 1992	420	1075
5. Number of deliveries*)	535	1049
- Number of <u>life births</u> <u>and still alive</u> till Dec 31, 1992	511	973
- Number of <u>Deaths</u>		
- Babies	18	46
- Still births	6	30
- Mothers	2	3
- Miscarriage	7	14

*) included first baby (for twin cases)

Table 9. Number of pregnancies already/not yet interviewed

	S U B D I S T R I C T	
	Cisalak	Tanjungsari
1. Number of subject still pregnant	420	1075
- Number already interviewed	320 (76,2 %)	852 (79,3 %)
- Number not yet interviewed	100 (23,8 %)	223 (20,7 %)

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2. Reasons not yet

interviewed :

Duration of pregnancy

1 month	-		6	
2 months	13] (19,3 %)	49] (19.6 %)
3 months	24		79	
4 months	19		44	
5 months	13		16	
6 months	12		17	
7 months	11] (4,5 %)	7] (1,1 %)
8 months	3		4	
9 months	5		1	

Table 10. Number of births already/not yet interviewed

	S U B D I S T R I C T	
	Cisalak	Tanjungsari
1. Number of births (still alive till Dec, 31, 1992)	511	973
2. Number already interviewed	506 (99,0 %)	956 (98,3 %)
3. Number not yet interviewed	5 (1,0 %)	17 (1,7 %)
4. Reasons not yet interviewed :		
1. Not at home	3	2
2. Does not know that she was in birth	1	2
3. Transferred	1	7
4. No information	-	5
5. Respondent was sick	-	1

Tabel 11. Number of deaths already visited

	S U B D I S T R I C T	
	Cisalak	Tanjungsari
<u>I. Infant death</u>		
1. Number of deaths	18	46
2. Already visited /interviewed	17 (94,4 %)	43 (93,5 %)
3. Not interviewed because of :	1 (5,6 %)	3 (6,5 %)
- No information	1	3
<u>II. Still birth</u>		
Number of still birth	6	30
- Already interviewed	6	27 (90 %)
- Not yet interviewed	-	3 (1 no information 2 just known)
<u>III. Maternal death</u>		
1. Number of maternal deaths	2	3
2. Already visited /interviewed	2	3
<u>IV. Miscarriage</u>		
Number of miscarriage	7	14
- Miscarriage already interviewed	6	6

Infant death divided by age of death for sweeping I and II.

Table 12. Infant death divided by age of death

	Sweeping I (till 30 June 92)	Sweeping II (1 July - 31 Dec 92)
1. <u>Cisalak</u> :		
- Number of deliveries	440	535
- Number of infant death	26	18
- death 0 - 7 days	12	11
- death 7 - <28 days	4	2
- death 28 - 42 days	2	2
- death > 42 days	8	3
- Number of still birth	6	6
1. <u>Tanjungsari</u> :		
- Number of deliveries	930	1049
- Number of infant death	46	46
- death 0 - 7 days	18	18
- death 7 - <28 days	3	4
- death 28 - 42 days	4	4
- death > 42 days	21	20
- Number of still birth	27	30

Note : Number of deliveries, included first baby (for twin cases)

Calculation of PMR From Sweeping

In addition to the use of 5 different types of questionnaires, the "Regionalization of Perinatal Care" study also included the implementation of Sweeping. One of the Sweeping objectives is to calculate the Perinatal Mortality Rate (PMR) every 6-month period. During the course of the study, 3 sweepings were conducted: the first sweeping was carried on in July 1992 to record all demographic events (birth and death) which occurred during the period of January 1 - June 30, 1992; the second one was done in January 1993 to record the data from July 1 - December 31, 1992; and the third one was carried on in early July 1993 to record the data from January 1 - June 30, 1993. All the sweeping results are presented in this paper.

The PMR was then calculated from the collected data using two different ways:

- a. by taking the number of twin deliveries into account
 - b. without taking the number of twin deliveries into account
- This should be separated because the risk of infant death due to twin deliveries in both area (intervention and control area) were quite high.

Number of twin deliveries in both area of study are as follows:

Subdistrict	Sweep I*	Sweep II*	Sweep III
I. <u>Cisalak</u>	2 pairs	8 pairs	8 pairs
Outcome:			
- Live birth	4	16	10
- Still birth	-	-	3
- Death 0-7 days	-	-	2
- Death 10 days	-	-	1
II. <u>Tanjungsari</u>	7 pairs	14 pairs	6 pairs
Outcome:			
- Live birth	12	14	5
- Still birth	2	6	2
- Death 0-7 days	-	8	3
- Death >42 days	-	-	2

Note :

*) First baby has been calculated in the report of sweeping

From the table of PMR calculation (Table 13 and 14), it could be seen that by taking the number of twin deliveries into account, the PMR in Cisalak (control area) for the first, second and third period were 40.72; 31.31 and 53.83 per 1,000 births respectively, whereas in Tanjungsari were 49.09; 51.74 and 39.79 per 1000 births.

If the number of twin deliveries is taken out from the calculation, the result shows an increase for the period II from 51.74 ‰ (with twins) to 39.61 ‰ (without twins) and period III in Cisalak from 53.83 ‰ (with twins) to 44.97 ‰ (without twins).

From these results, the calculation of PMR without taking the number of twin deliveries into account seems to be better to look at the decreasing impact on PMR.

RESULT OF SWEEPING (I, II, III)

Table 13. Number of live births, stillbirth and infant deaths in two areas (With twins)

Area	Sweeping I	Sweeping II	Sweeping III
I. <u>Cisalak</u>			
Total deliveries	442	543	483
- Total live births	436	537	467
- Number of stillbirths	6	6	16
- Number of deaths			
0 - 7 days	12	11	10
7 - <28 days	4	2	5
28 - 42 days	2	2	4
PMR (⁰ /00)	40.72	31.31	53.83
95 % CI (⁰ /00)	(22.32-59.12)	(16.66-45.96)	(37.73-73.93)
I. <u>Tanjungsari</u>			
Total deliveries	937	1063	1131
- Total live births	909	1030	1106
- Number of stillbirths	28	33	25
- Number of deaths			
0 - 7 days	18	22	20
7 - <28 days	3	4	8
28 - 42 days	4	4	16
PMR (⁰ /00)	49.09	51.74	39.79
95 % CI (⁰ /00)	(35.26-62.92)	(38.42-65.06)	(28.39-51.18)

Table 14. Number of live births, stillbirth and infant deaths
in two areas (Without twins)

Area	Sweeping I	Sweeping II	Sweeping III
I. <u>Cisalak</u>			
Total deliveries	438	527	467
- Total live births	432	521	454
- Number of stillbirths	6	6	13
- Number of deaths			
0 - 7 days	12	11	8
7 - <28 days	4	2	4
28 - 42 days	2	2	5
PMR (⁰ /00)	41.10	32.26	44.97
95 % CI (⁰ /00)	(22.50-59.69)	(17.17-47.34)	(26.17-63.76)
I. <u>Tanjungsari</u>			
Total deliveries	923	1035	1119
- Total live births	897	1008	1096
- Number of stillbirths	26	27	23
- Number of deaths			
0 - 7 days	18	14	17
7 - <28 days	3	4	8
28 - 42 days	4	4	16
PMR (⁰ /00)	47.67	39.61	35.75
95 % CI (⁰ /00)	(33.92-61.42)	(27.73-51.50)	(24.87-46.62)

APPENDIX 4
DATA COLLECTION FROM SWEEP III

APPENDIX 5

**AN INTEGRATED VILLAGE MATERNITY SERVICE TO IMPROVE REFERRAL
PATTERNS AND PERINATAL MORTALITY**

Dr. A. Alisjahbana

An Integrated village maternity service to improve referral pattern and perinatal mortality in a rural area in West-Java. Does it change people behaviour and attitudes?

A. Alisjahbana, Swandari Djoyo, R. Dharmayanti, Mintardaningsih Susan Dida, Isbanun Prabantinah, Judi Nugraha and B. E. Kwast.

1. Introduction

In developing countries a woman's risk of dying as a result of pregnancy is more than 20 times than in developed countries. In developing countries more studies on the specific problem are hospital based and very few longitudinal studies on the pattern of pregnancy related morbidity are available from rural areas.

Since the national meeting held in Indonesia on June 1988 to promote safe-motherhood, Indonesia has committed itself to participate in the Safe-Motherhood Initiative (SMI). It was noted that Indonesia had the highest maternal mortality among the Asean countries. To decrease maternal mortality and improve maternal health services the Government of Indonesia decided to train 18 000 village midwives within the last five year development plan. Another 18 000 midwives will be trained in the following five year plan (1994-1999). By the year 2000, each village in Indonesia will have access to a midwife. Her working place will be the birthing home at the village; an integrated health service post with delivery care. At this place she will work together with the traditional birth attendants (TBA) and community volunteers to provide services for mother and child.

The process of obtaining medical care by women with obstetric complications begins with the recognition of danger signs. Access to such information and understanding of the gravity of symptoms, such as bleeding or prolonged labor, help the women and her family to seek timely treatment. On the other hand people are also aware that there is not much the medical facility can do for her when there is no trained doctor and midwife available, there is a shortage of antibiotics and equipments are frequently out of order.

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The physical distance between people and medical care in developing countries is a problem that will take a substantial amount of time, money and political will to solve (Thaddeus and Maine (1990). Considering the geographic condition of the area the creation of birthing homes is an attempt to move health services to the most peripheral level. These birthing homes are located in the villages near a road that can be reach by a four wheel drive vehicle.

"Regionalization of Perinatal Care" describes an intervention study currently carried out in Tanjungsari a subdistrict in rural West-Java. The goal of the project is to develop a comprehensive maternal health care program by applying limited efforts to improve maternal and perinatal health services through a health system approach. Including in the limited efforts are the following activities:

1. upgrading existing facilities to ensure the availability of maternal health services (one with caesarean section and surgical family planning facility)
2. investing in an emergency transport system, one 4-wheel drive vehicle for the whole subdistrict so that more women can reach the existing services.
3. establishment of birthing homes in villages and installation of radios in birthing homes and health centers and the referral hospital.
4. strengthening all community-based services so that prenatal and uncomplicated delivery care is readily available by training all traditional birth attendants.

2. Material and methods

The study design was a longitudinal study of pregnant women over a 15 months period from March 1 1992 to May 1993 inclusive in an implementation area (subdistrict Tanjungsari) and control area (subdistrict Cisalak). Both areas are located in West-Java and the distance between both areas is about 60 km. So the probability that contamination of intervention activities may occur is less. In the study area, the first 8 months were used for preparation, improving the knowledge, skills and practices of TBAs and health personnel. Interventions were the following:

1. Training physicians and village midwives on danger signs and appropriate case management in pregnancy, labor and delivery and the postpartum period, including the

newborn.

2. Home based maternal record and action record
3. Training TBAs in detection of pregnancy complications and taking appropriate action (referral).
4. Improve knowledge of women and the community of danger signs during pregnancy and delivery and comply with advice for referral through social marketing activities
5. Improve accessibility of women to health care through development of birthing homes, communications (radios) and transportation (ambulance).
6. Social marketing of the use of birthing homes

Data were collected on an ongoing basis on pregnant, parturient and postpartum women in order to evaluate the effect and impact of the integrated village maternal services in Tanjungsari. A total of five questionnaires were used. The first was administered to each pregnant women as soon as the pregnancy was reported before 7 months gestation; The second within 24 hours of birth, the third at 7 days postpartum, the fourth at 28 days and the fifth at 42 days postpartum. In this way a complete recording of births, deaths and complications was to be achieved. Forty seven female interviewers and 4 male supervisors who were graduates from the social science faculty were employed. Usually the TBA reported a newly identified pregnant woman to the cadre (village volunteers) for the first interview. The interviewers thus had a list of pregnant woman who they were responsible for the interview again at birth. However, the TBA also reported births she attended, ideally within 24 hours, to the interviewers.

For the purpose of comparative analysis of this paper the observation period is divided into two periods: 6 months before the intervention from June 1992 through November 1992 and 6 months after intervention from December 1992 to May 1993. The rationale for this decision is that all interventions, the training of TBAs and health care providers, development of birthing homes purchase of equipments including the social marketing campaign for the birthing homes were completed at the end of the November 1993.

Data entry and analysis were done at the Health Research Unit of the School of Medicine, Padjadjaran University/General Hospital Hasan Sadikin. D.survey was used for data entry and SPSS.4. for analysis of the data. The analysis was descriptive.

3. Results

The result of the study in the intervention and control area will be described in four section e.g. distribution of births by birth attendants, pattern of pregnancy complication of women, pregnancy outcome in particular the perinatal mortality rates and lastly the referral pattern including compliance and noncompliance to referral. Information on the use of the ambulance and radios for referrals from the birthing homes will be discussed.

Table.1 Overview of pregnancy outcome of all registered women during study period (June '92-May'93)

Pregnancy outcome	Intervention area		Control area	
	n	%	n	%
Miscarriage	15	0.7	16	1.6
Lost pregnancies	-	-	-	-
Deliveries (singletons)	2210	98.2	984	97.2
Twins (pairs)	26	1.2	12	1.2
Lost to follow-up	46	2.1	13	1.3
Total registered	2251	100.0	1012	100.0

An overview of pregnancy outcome in the both study area of all registered pregnancies in both areas can be seen in table 1. The number of singletons, twin pairs were almost the same for both areas. Miscarriage were more reported in the control area although the difference was not significant. In fact the number of miscarriage may be misleading because of not all pregnancies were followed from the early signs of pregnancy. For the purpose of the analysis of this paper only singleton births will be included. The total number of women in Tanjungsari and Cisalak for women with singleton birth during the study period were 2210 and 984 respectively.

3.1 Distribution of births by birth attendant

All respondents were classified by birth attendant as can be seen on figure 1. In the intervention area there were more deliveries by health personnel than in the control area. This is due to the higher percentage of deliveries by midwives, although the difference is still small.

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Interesting are the findings of percentage of deliveries by place, here a clear change from home delivery to institutional deliveries (health center and hospital) can be seen. The change is also due to deliveries at the birthing homes. Unfortunately the number are still too small to see significant differences (figure 2).

Figure 1.

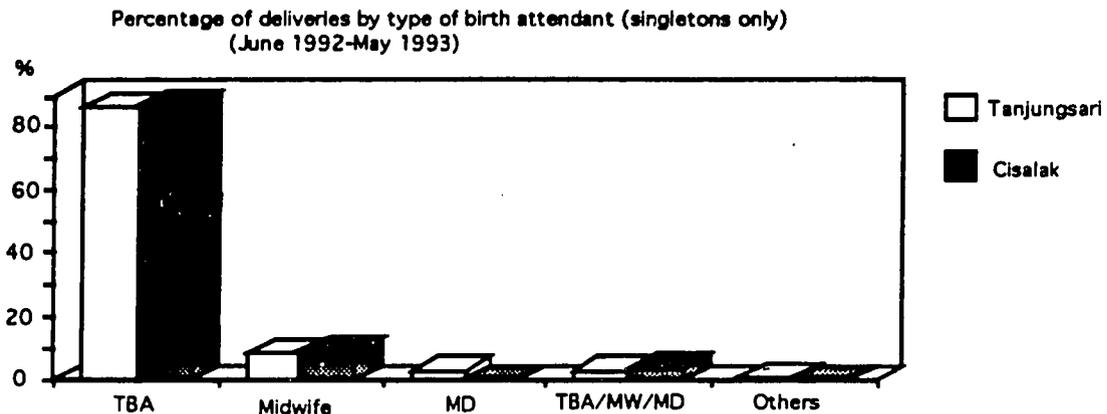
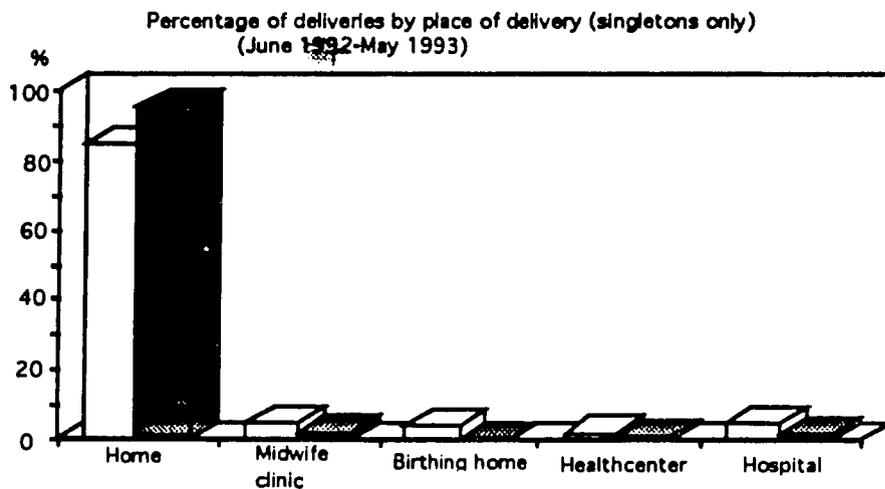


Figure 2



4.2. Pregnancy complications in both areas

To discuss pregnancy complications, the pregnancy cycle will be divided into three period; the antepartum period, the delivery period and the postpartum period (Figure 3 and 4) Pregnancy complication was recorded from women in both study areas using the ongoing

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questionnaires conducted by field interviewers. The questions were related to complications during the prepartum, delivery and postpartum period. The classification of complications for antepartum morbidity were ; bleeding, fever > 3 days, heavy coughing and edema (of hands and face). For the delivery period the following criteria of complications were used; Malposition, extended labor, convulsions, heavy bleeding, fever and infection (foul smelling discharge). Postpartum complications includes; bleeding, fever, infection (foul smelling discharge), lack of blood and light headness (anemia). Figure 3. shows that during pregnancy and delivery women in the study area were reporting less morbidity compared to the control area.

Figure 3. Percentage of women with pregnancy complication by birth attendant and period of study in Tanjungsari

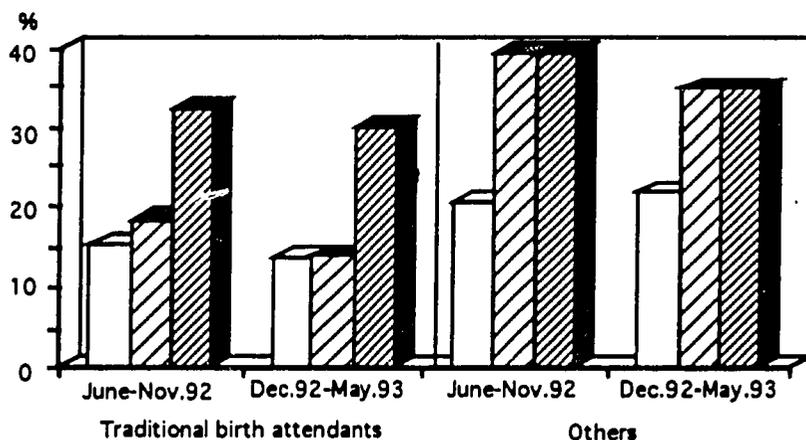
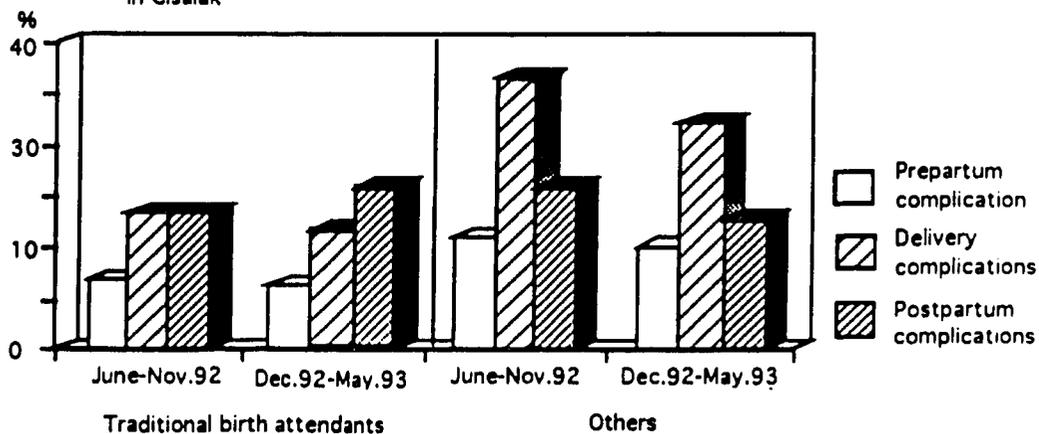


Figure 4 Percentage of women with pregnancy complication by birth attendant and period of study in Cislak



In figure 3 and 4, women were divided by birth attendant and period of observation. Birth attendant were the TBAs and included in others are the formal health care providers. Due to referrals the group others have higher percentage of complications. In the postpartum period there were more complications reported in the intervention group. In the post intervention period the percentage of complications was lower for both group.,the difference however was not significant. More general data on morbidity pattern of women in each study areas can be seen in table 2 and table 3.

Table 2 Number of pregnancy complications per woman and stage of pregnancy/delivery (Tanjungsari)

Number of complications	Prepartum		Delivery		Postpartum	
	n	%	n	%	n	%
(-)	1778	80.5	1785	80.8	1485	68.7
1	360	16.3	332	15.0	484	22.3
2	64	2.9	72	3.3	149	6.9
3 +	7	0.3	20	0.9	46	2.1
Total	2209	100.0	2209	100.0	2164	100.0
Need for referral	431	19.5	424	19.2	679	31.4

Table 3 Number of pregnancy complications per woman and stage of pregnancy/delivery (Cisalak)

Number of complications	Prepartum		Delivery		Postpartum	
	n	%	n	%	n	%
(-)	845	85.9	719	73.1	688	70.8
1	119	12.1	186	18.9	197	20.3
2	17	1.7	56	5.7	55	5.7
3 +	3	0.3	23	2.3	31	3.2
Total	984	100.0	984	100.0	971	100.0
Need for referral	139	14.1	265	26.9	283	29.2

Mothers in need for referral were those who reported to have had one or more risk condition during pregnancy, labor and postpartum period. The prepartum period shows the lowest and

the postpartum period the highest number of women in need for referral. More than 19 percent of women in the intervention area were complaining of one or more complications in the delivery period and more than 30 percent in the postpartum period. In the control area there were more women complaining of complications in the delivery period compared to the intervention area. In both areas postpartum complications were higher compared to other stages of pregnancy. There is some weakness in this way of analyzing the data because one woman may have the same complications at one or more stages of pregnancy or labor. Table 4 and table 5 may give a better view of the incidence of pregnancy related complications among women during a particular period.

Table 4 Incidence of complications among pregnant women during period of pregnancy and delivery (number of pregnant women in Tanjungsari) N= 2210

Symptoms	prepartum		delivery		postpartum		total	
	New cases	%	New. cases	%	New cases	%	New cases	%
Hemorrhage	77	3.5	183	8.3	11	0.5	271	12.3
Prolonged labor	-	-	10	0.5	-	-	10	0.5
Fever >3 days	127	5.7	68	3.1	290	13.1	485	21.9
Convulsion	-	-	49	2.2	-	-	49	2.2
Foul discharge	-	-	49	2.2	83	3.8	132	5.9

() percentage from total women.

* One woman may have more than one symptom.

Table 5 Incidence of complications among pregnant women during period of pregnancy and delivery (number of pregnant women in Cisalak) N= 984

Symptoms	prepartum		delivery		postpartum		total	
	New cases	%	New. cases	%	New cases	%	New cases	%
Hemorrhage	29	2.9	42	4.3	7	0.7	78	7.9
Prolonged labor	-	-	87	8.8	-	-	87	8.8
Fever >3 days	25	2.5	58	5.9	82	8.3	165	16.8
Convulsion	-	-	48	7.0	2	0.2	50	5.1
Foul discharge	-	-	98	9.9	16	1.6	114	11.9

() percentage from total women.

* One woman may have more than one symptom.

In both areas, hemorrhage and fever were the main complaints during the prepartum period. During the delivery period women in the control area were reporting more complications compared to the intervention area except for hemorrhage which is more in the intervention area. In the postpartum period there were more women in the intervention area who complain about fever >3 days. While in general there were more hemorrhage and fever >3 days in the intervention area, foul discharge and convulsion were also higher in the control area.

3.2. Pregnancy outcome

Included in pregnancy outcome is the perinatal mortality rates. Perinatal mortality rates will be presented from several point of view; the birth attendant, the place of delivery, by mode of delivery and lastly the birthweight specific mortality rates.

Perinatal mortality by type of birth attendant

Because of the birthing homes and referral some women may have more than one birth attendant. MDs as birth attendants are mainly in hospital or health center deliveries serving women referred from home or birthing homes (table 6 and table 7).

Table 6 Number of perinatal deaths by area and birth attendant June'92-Nov.'92)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
TBA	955	26	14	41.9	457	2	11	28.4
Midwife	84	2	2	47.6	35	2	-	57.1
MD	21	4	1	238.0	2	-	-	-
TBA/Mw/MD	34	6	-	176.5	22	1	2	136.4
Others	9	-	-	-	3	-	-	-
Don't know	-	-	-	-	-	-	-	-
Total	1103	38	17	49.8	519	5	13	34.7

Table 7 Number of perinatal deaths by area and birth attendant (Dec.'92-May'93)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
TBA	948	13	9	22.2	402	8	5	32.3
Midwife	88	-	4	45.5	50	1	1	40.0
MD	41	6	1	170.7	1	-	-	-
TBA/Mw/MD	24	2	2	166.7	10	3	-	300.0
Others	5	-	-	-	2	-	-	-
Don't know	1	-	-	-	-	-	-	-
Total	1107	21	16	33.4	465	12	6	38.7

By comparing the both study areas and study periods, one striking difference is the perinatal mortality of infants delivered by TBAs in the intervention area a reduction in PMR of almost 50 % is found in the post intervention period. In the control area there was a slightly increase in the PMR of infants delivered by TBAs. For midwives, MDs and TBA/Midwife/MD, there was also a reduction in PMR especially of infants delivered by MDs. The higher rates here is because the women were referral cases. The total PMR shows a reduction of more than 30 percent in the intervention area while in the control area the PMR had increase slightly

Perinatal mortality by place of delivery

Perinatal mortality by place of delivery can be seen in table 8 and 9. Also here a decrease perinatal mortality rate in the home deliveries was found in the intervention area and almost no difference in the control area. Compared to the control area there were more deliveries in health facilities in the intervention area. Perinatal mortality did not differ much in MD and midwife clinics probably due to the higher number of referral cases. This is also shown in the hospital deliveries. In Tanjungsari perinatal mortality was higher in birthing homes compared to home deliveries in the pre-intervention period and no perinatal deaths were reported in the post intervention period. This is probably due to the referrals of high risk cases to higher levels of care and the easy accessibility of transportation. However the number of deliveries at the birthing homes were too small for statistical analysis.

Table 8. Perinatal mortality by area and place of delivery(June'92-Nov.'92)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
Home	934	28	13	43.9	501	3	13	31.9
MD/midwife-clinic	48	2	-	41.7	7	1	-	142.9
Birthing homes	52	-	3	57.7	-	-	-	-
Health center	16	-	-	-	3	1	-	333.3
Hospital	52	9	1	192.3	8	-	-	-
Don't know	1	-	-	-	-	-	-	-
Total	1103	38	17	49.9	519	5	13	34.7

Table 9. Perinatal deaths by area and place of delivery(June'92-Nov.'92)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
Home	944	13	9	23.3	440	10	6	36.4
MD/midwife-clinic	56	-	3	53.6	16	-	-	-
Birthing homes	18	-	-	-	-	-	-	-
Health center	25	-	1	40.0	1	-	-	-
Hospital	57	8	3	192.9	7	1	-	142.9
Don't know	7	-	-	-	-	-	-	-
Total	1107	21	16	33.4	465	12	6	38.7

Perinatal mortality by mode of delivery

In mode of delivery is included; the position of the baby such as vertex and breech or transverse. For some cases the case was entered twice such as transverse position and C section, therefore the total number of women is more than the total number reported in the study (table 10. and 11). In "others" is included vacuum extraction and forceps delivery. The result shows that perinatal mortality of breech deliveries decreases almost 50 percent in the intervention area and no difference was found in the control area. The perinatal mortality of infants in vertex position had also decrease more than 25 per cent in the intervention area and not in the control area.

Table 10 Number of perinatal deaths by area by mode of delivery(June'92-Nov.92)

	Intervention area				Control area			
	N	SB	END	PMR	N	SB	END	PMR
Vertex	1060	24	16	37.7	501	4	11	29.9
Breech	37	12	1	351.4	18	1	2	166.7
Others	25	4	1	200.0	12	1	1	166.6
CS	11	4	1	454.5	1	-	-	
Total	1133	44	19	55.6	532	6	14	18.8

Table 11 Number of perinatal deaths by area by mode of delivery (Dec.'92-May'93)

	Intervention area				Control area			
	N	SB	END	PMR	N	SB	END	PMR
Vertex	1064	16	13	27.3	454	8	6	30.8
Breech	33	4	2	181.8	10	3	-	300.0
Others	23	4	1	217.4	4	2	-	500.0
CS	12	2	2	333.3	1	-	-	
Total	1132	26	18	38.9	469	13	6	40.5

Birth weight specific perinatal mortality rate

For calculating birth weight specific mortality (BWSM) rate, infants were grouped according to birth weight e.g. 1000-<2500 grams (low birth weight), 2500-<3000 grams (deficient birth weight) and more than 3000 grams (favorable birth weight). This classification was recommended by Puffer & Serano (1987). The result of perinatal mortality by birth weight is handicapped by the higher number of unknown birth weight in stillbirths (table 12). In the study area post intervention BWSM for infants between 2500-<3000 grams had decrease more than 50 % while in the higher weight group the difference was smaller. The changes in perinatal mortality in the control area is not consistent in all birth weight groups

e.g. the mortality of infants <2500 had increase while in the higher birth weight group the decline in mortality rate was more.

Table 12 Birth weight specific perinatal mortality rates* pare and post intervention

Birthweight (grams)	Perinatal mortality rates			
	June 1-Nov.'92		Dec. '92- May '93	
	Intervention	Control	Intervention	Control
<2500-	114.6	34.5	105.9	75.5
2500-<3000	24.4	5.7	8.5	6.7
≥3000	20.9	16.3	12.7	4.0
Unknown birthweight	1000.0	545.7	687.5	800.0

* per thousand births

Note: Unknown birthweight

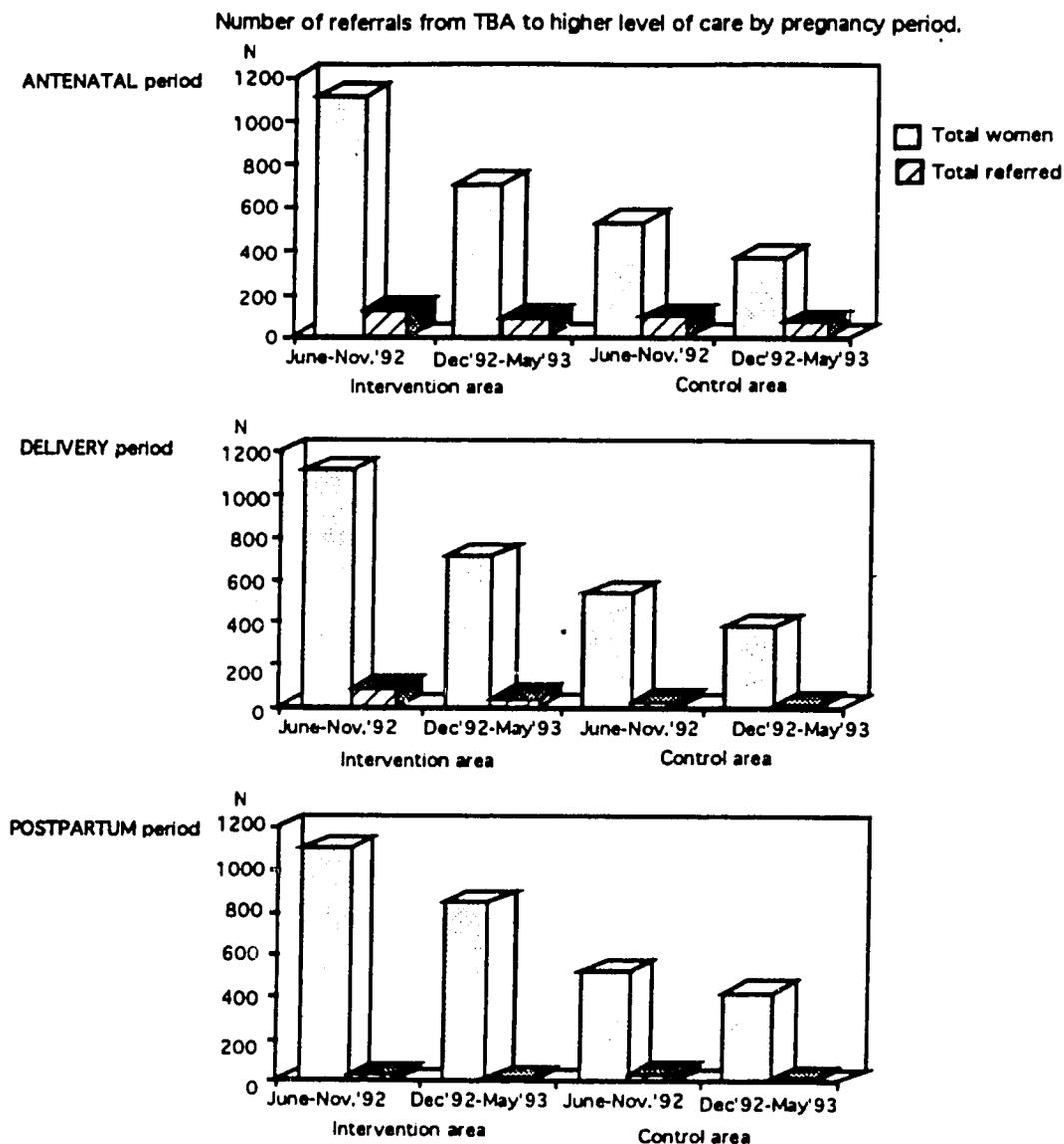
3.3. Referral pattern, compliance and non-compliance

Referral is an indicator of effect measurement (Reynolds and Gaspari, 1985), a comparison of percentage of referrals between the groups of birth attendants and stage of pregnancy can be seen in figure 5. A comparison between the number of referrals in both groups and in some instance according to period of observation is shown.

The number of referrals was highest in the antepartum period in the pare-intervention area. The same pattern was found in the control area. The same result was found for the delivery period more referrals were found in the pare-intervention period compared to the post- intervention period. The postpartum period have in general the lowest number of women referred although more women were referred from the intervention area.

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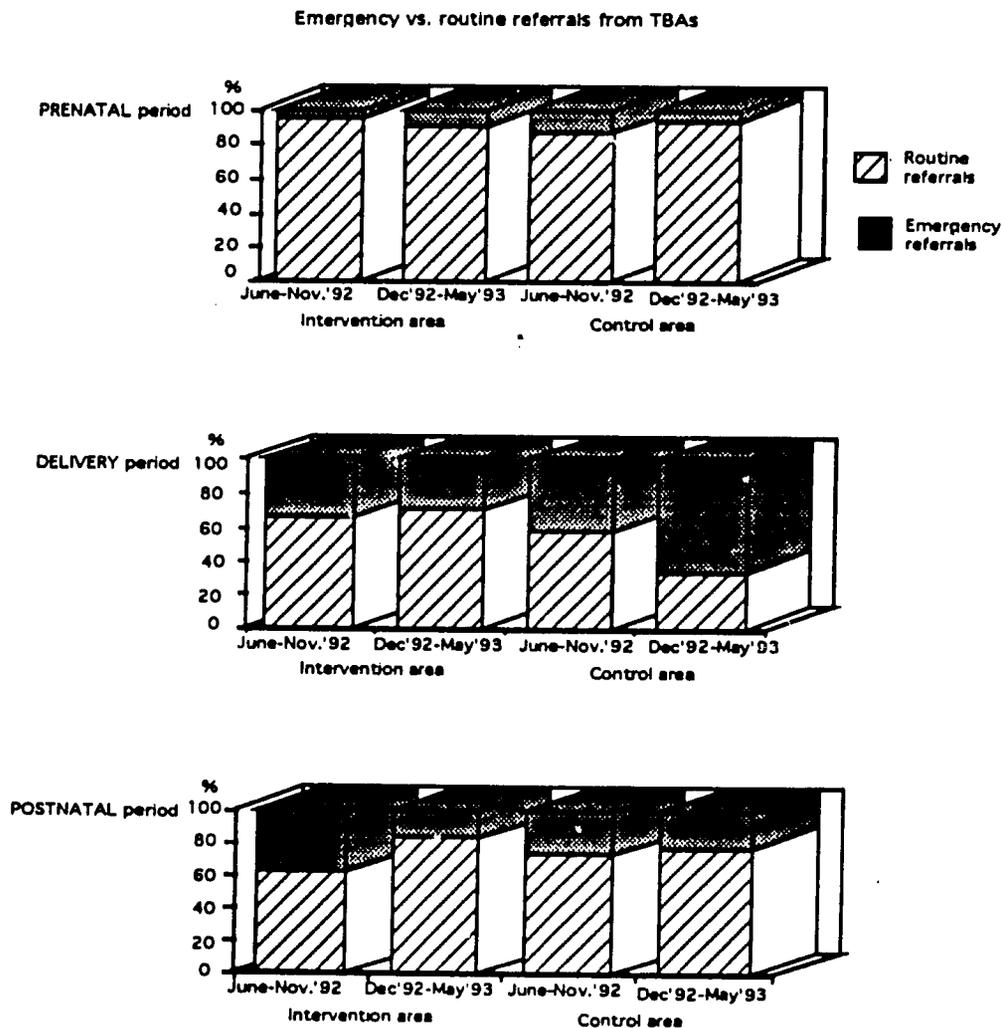
Figure 5.



The referrals by TBAs were divided in emergency referral and routine referral. Two period of observations were compared; the pre- and post-intervention period (figure .6) As can be seen, in the prepartum period there were more routine referrals compared to emergency referrals, the percentage of emergency referrals was slightly higher in the control area during the pre-intervention period. During the delivery period the percentage of

emergency referrals increases in all both areas, but the percentage was lower in the intervention area. However the numbers were too small for statistical analysis. In the postpartum period the percentage of emergency referrals was higher in the pre-intervention area compared to the post intervention period.

Figure 6

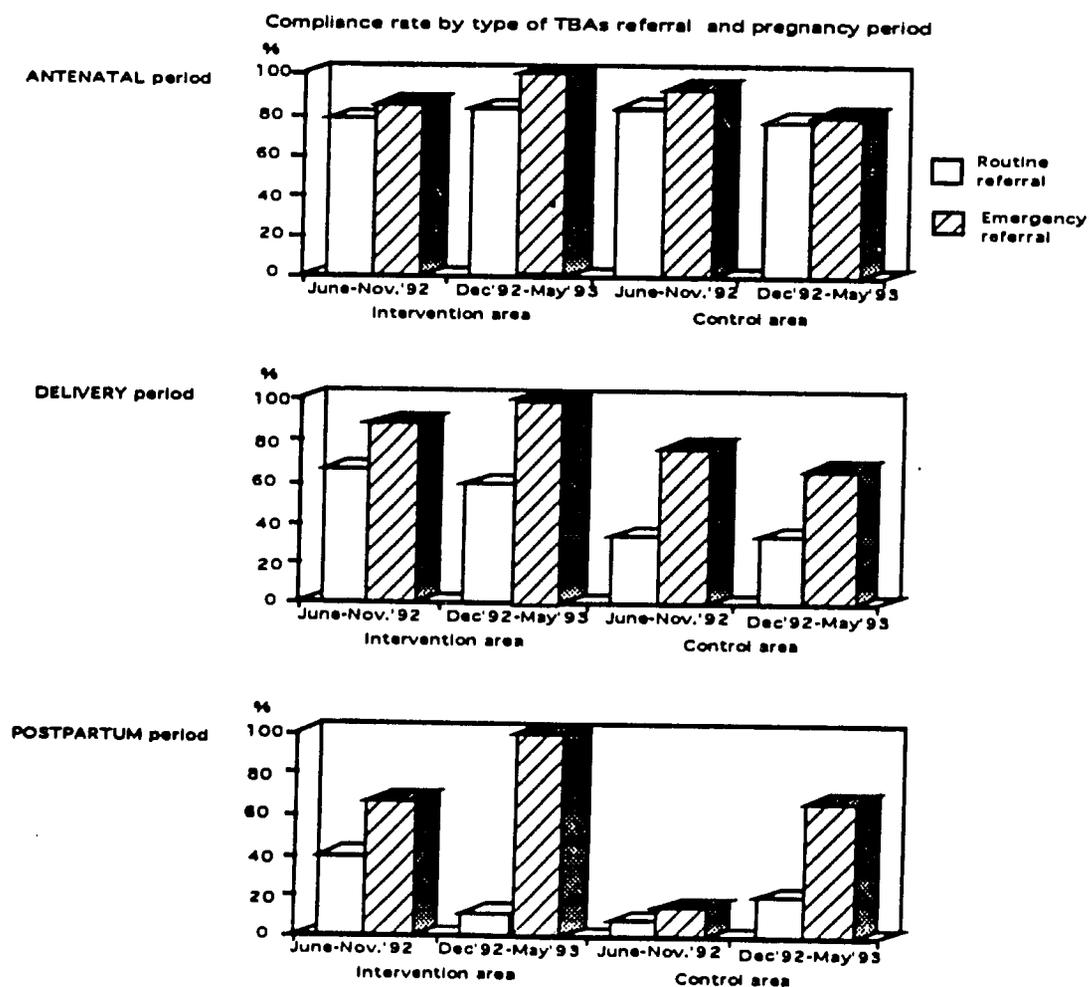


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Compliance and non-compliance.

Compliance is defined as following the instruction of the health care provider in this case the TBA (Cramer and Spilker, 1991). In the Tanjungsari intervention study the strategy to enhance compliance was to train the TBAs to motivate the pregnant woman and her family about the problems that may occur when a pregnancy was identified. How able the TBA was to motivate the clients for referral can be seen in the number of women who comply to TBAs advice (figure 7).

Figure 7.



It can be seen that at all stages of pregnancy, except during delivery, more clients of TBAs were complying to the instructions of the TBA in the intervention area. Figure 7. shows clearly that there is an increase in the percentage of women who comply with emergency referral to health facilities. In the post intervention period of the intervention area Tanjungsari, 100% of women comply to advice for emergency referral in all stages of pregnancy. This is not shown in the control area although an increase in the percentage of referrals can be seen in the delivery and postpartum period.

Figure 8

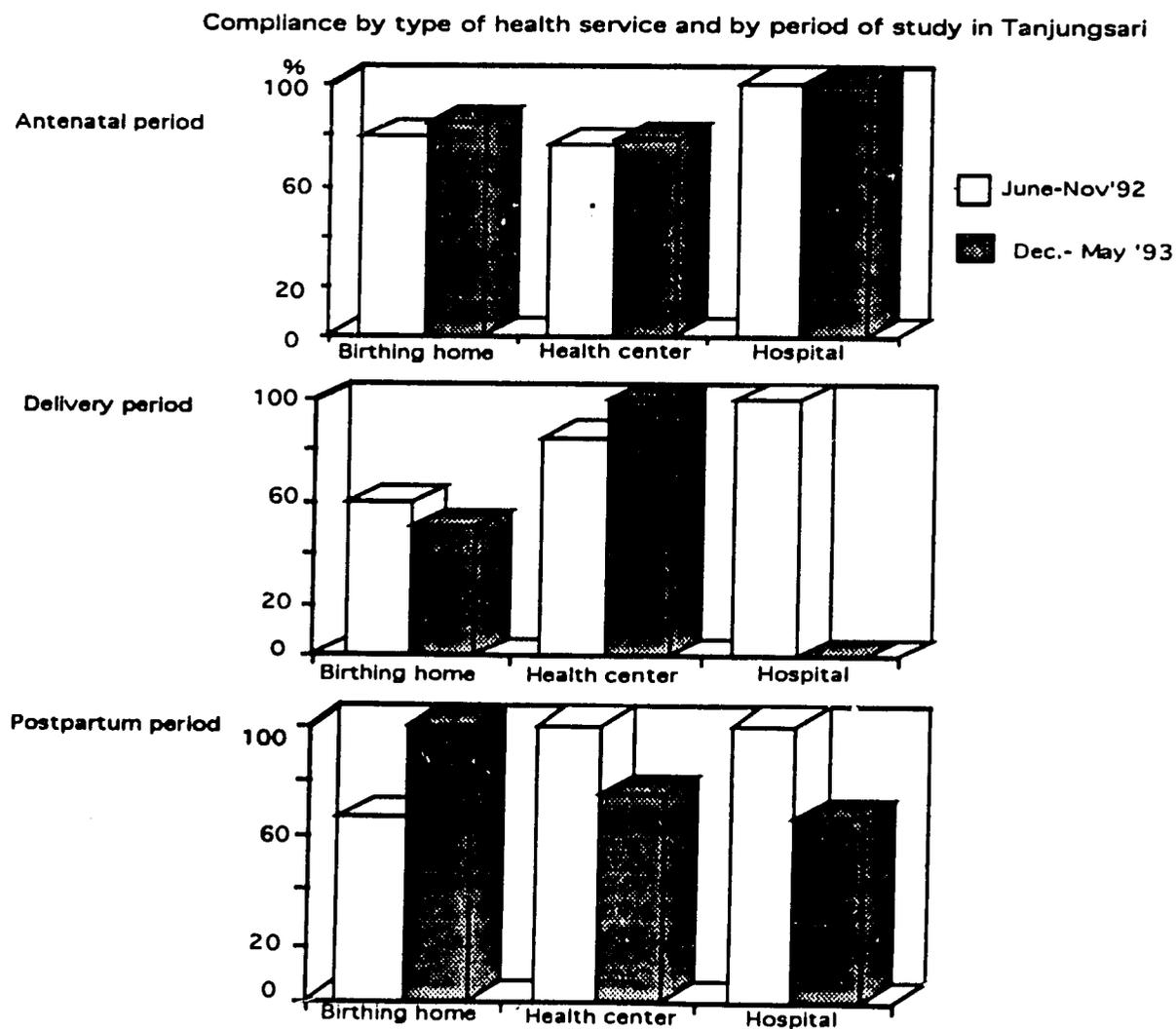
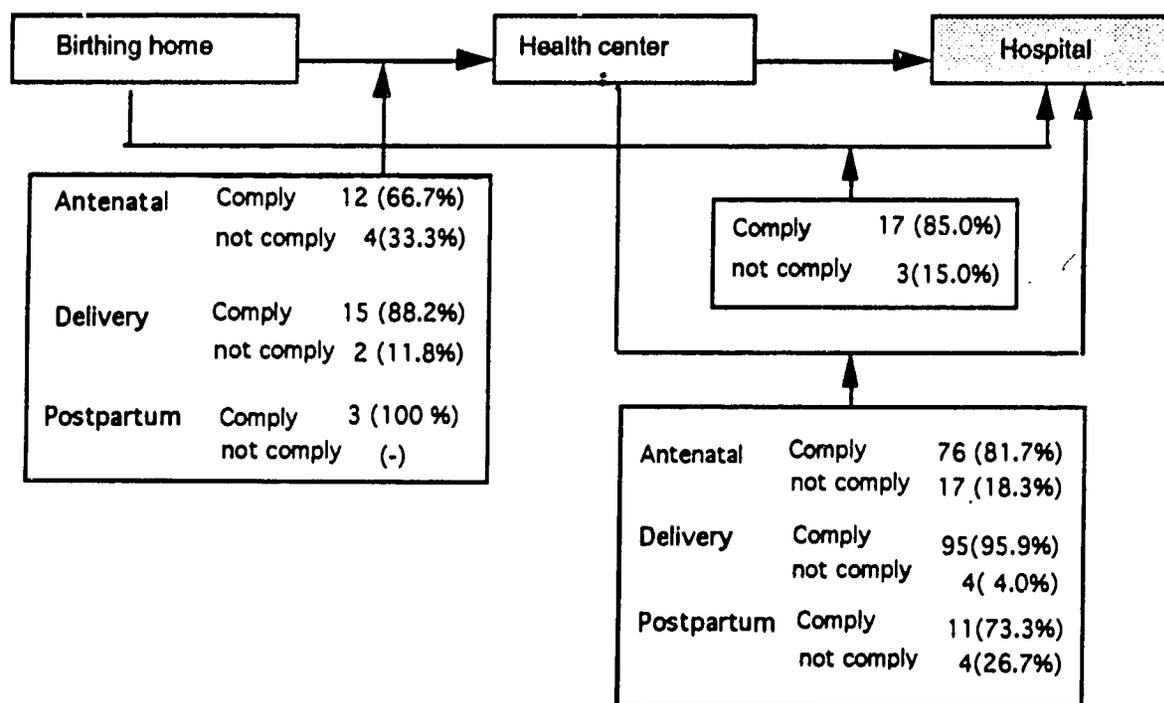


Figure .8. shows the compliance only for the intervention area Tanjungsari, the purpose is to show the role of the birthing home as a place for delivery. In the antepartum period and postpartum period women comply better in the post intervention period also in the delivery period. Compliance rate for the hospital was lowest in the delivery period and highest in the antenatal period.

An schematic overview of the compliance and non-compliance can be seen in figure .9. Although the numbers were small, in general compliance rate was high.

Figure .9.

Compliance and non-compliance of referrals from birthing homes and health centers to higher levels of care in Tanjungsari.
(June 1992-May 1993)



Perinatal mortality was also measured for referred and non referred cases the result can be seen in table 13 and table 14. For this purpose the total women in both area were used they were not divided into the pre- and post intervention period. Women who were referred had higher perinatal mortality rates compared to the non-referred women, and those who were not comply had even higher rates except in Tanjungsari.

Table 13 Delivery referrals by TBAs and number of perinatal deaths (Tanjungsari)

Referral status	N of deliveries	(%)	Perinatal deaths		
			SB	END	PMR
Not referred	2069	93.6	45	27	34.8
Referred	141	5.4	14	6	70.9
Total	2210	100.0	59	33	41.6
Comply	104	73.8	10	5	144.2
not comply	37	26.2	4	1	135.1

Table 14 Delivery referrals by TBAs and number of perinatal deaths (Cisalak)

Referral status	N of deliveries	(%)	Perinatal deaths		
			SB	END	PMR
Not referred	954	96.9	13	16	30.4
Referred	30	3.1	4	3	233.3
Total	984	100.0	17	18	45.7
Comply	18	60.0	3	1	222.2
not comply	12	40.0	1	2	250.0

In the intervention area the use of the ambulance was evaluated as a process measurement to answer the question whether any referrals were made from the birthing homes to higher levels of care and whether the ambulance and radio communication were used, the following result was found (table 15.)

Table 15 Recommended referral, compliance and use of ambulance from birthing home to health centre and hospital. Tanjungsari, June 1992-May 1993.

Stage of pregnancy	Health centre			Hospital			Total
	Ambulance (+)	Ambulance (-) comply	Ambulance (-) not-comply	Ambulance (+)	Ambulance (-) comply	Ambulance (-) not comply	
Prenatal	4	4	4	1	0	2	15
Labour	12	3	2	15	2	3	37
Postpartum	3	0	0	2	0	0	5
Total	19	7	6	18	2	5	57

The result shows that a total of 57 referrals were made at the birthing home in Tanjungsari. Thirty two (56%) were to the health centre and 25 (44%) to the hospital. Fifteen (26%) were during the prenatal period, 37 (65%) during labour and 5 (9%) during the postpartum period. Thirty seven (80%) of the 46 women who complied with referral were transported by ambulance and for all but two of the ambulance calls, the radio was used. Of the 20 referrals for which the ambulance was not used, 11 women did not comply with referral and 9 women made their own transport arrangements. Precise explanation for the latter was not available. Only for two of the women who did not use the ambulance a radio call was made. All 57 referrals can be considered an emergency. Seven of the 15 prenatal referrals were for antepartum hemorrhage. The other reasons were abortion (2), premature rupture of membranes (1), small pelvis (1) and severe pre-eclampsia (3) and one unknown reason. Thirty seven women (38%) of the 98 births at the birthing homes were referred. For 27 (84%) of the 32 accepted referrals during labour, the ambulance was used. Five women made their own arrangements. Twenty referrals were for prolonged labour (54%) and for three of these the ambulance was not used - one because of non-compliance. Other reasons for referral included twins (3), breech (1), pre-eclampsia (2), intrapartum hemorrhage (4), intra uterine death (1), fever (2), premature rupture of membranes (4). The five postpartum referrals were for postpartum hemorrhage and retained placenta.

Reasons for non-compliance

Because the numbers were very small, reasons for non-compliance were discussed for all women irrespective of birth attendant. The reasons for non-compliance can be seen in table 16.

Table 16 Reasons for non-compliance to referral by area (%)

Reasons	antepartum		delivery		postpartum	
	T	C	T	C	T	C
Not necessary			8	5	3	
Too far/no transport.			4	3	1	
Too expensive			2	-	2	
Husband not agree			1	-	-	
No care for children			-	-	5	
No time			6		7	
Too sick			9	1	4	
Health personnel came					-	
Others*			7	2	1	
Total			37	12	23	

* Mother did not go to the recommend referral place.

**Others, includes immunization.

T = Intervention area, Tanjung Sari, C = Control area, Cisalak.

Feeling too sick has the highest number of non-compliance during the delivery period, followed by not necessary and no time. In the control area not necessary shows higher numbers.

3.4. Social marketing

In evaluating social marketing campaign of birthing homes two issues are foremost : (1) Has the campaign brought about changes intended or have other factors led to change? (2) Has it brought changes that are desirable from a societal and ethical point of view, employing the right means to achieve the desired ends? To answer this questions two KAP studies on a sample was conducted in the pre- and post social marketing campaign (November 1992). The impact of the social marketing campaign was that there a change in the knowledge of the people that birthing

home is a place for delivery (23.2 % to 44%), and as a place for antenatal care (8.8% to 26.4%). There was also an increase in the knowledge of women about danger signs during pregnancy, labour and delivery. However most of the women still prefer to deliver at home instead at the birthing home. Reasons for this were, the cost, distance and the trust the people for health personnel. A cultural reason not to leave the house before 40 days after delivery is still strong. Women explained that they feel secure at home because during delivery she is surrounded by her close relatives and many people will help. They also complain that the social marketing material such as the booklet and leaflets, which were showing danger sign during pregnancy and delivery make them afraid. Others were complaining not to go to the trained TBAs because of the danger to be referred. Mothers do not like the never ended questions and administration at the birthing homes and especially at the hospital, they feel embarrassed filling in so many forms.

4. Discussion

The actual health impact of an intervention depends on many factors, some of these factors are: 1. the efficacy rate or the ability of an intervention to prevent or treat the problem; 2) accuracy of diagnostic tests to identify those who benefit from the intervention; 3) quality of care; 4) patient compliance; 5) coverage, in this case the proportion of women using the services; and 6) frequency of the health problem. All these plus cost and feasibility should be considered in planning a system for improving maternal and perinatal care (Wash et al. 1991).

Perinatal mortality rate is a rough indicator of pregnancy outcome because many factors may interfere with pregnancy outcome one of the most important factor is birth weight (Bakketeig et al. 1985, McCarthy 1991). Especially when perinatal mortality is used as an indicator for evaluation of training , the time period is also important. A significant decrease as result of an intervention usually can be seen after several years of intervention.

This study evaluate^s the impact of only 6 months after intervention, although a positive trend to lower percentage of complications were found in some stage of pregnancy and a decrease in perinatal mortality rate as well as birth weight specific mortality rates more time is still needed to have a significant positive impact of developing a comprehensive maternal care

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service.

Referral is still a problem from both sides the health care provider as well as the perception of the clients. TBAs were not referring all cases identified as high risk by criteria of complications during pregnancy, delivery and post partum period. The easy accessibility of health care through birthing homes and the ambulance have changed the referral pattern and the percentage of home deliveries to institutional deliveries. More time is still needed to have a more significant impact. The problem with the client is also a factor that has to be considered. Even when women and their family recognize danger signs and understand full well that she needs immediate care, they are also aware of another fact: namely that there is not much the medical facility can do for her when there is no trained doctor or midwife. People do not bother to seek care when they know that they probably will not be cured and that they are likely to die in the hospital, Unfortunately and despite the efforts of many dedicated and hardworking health providers, this is the state of affairs in many facilities in developing countries including in West-Java. Psychological stress for the patient is also a disadvantage of maternal transport. The patient must be taken by ambulance or an improvisation stretcher to a hospital that is often located many km from her home and is convenient for her husband and family to visit. This experience can add to the trauma of a very painful and frightening situation, such as premature labour. Losing contact with her own birth attendant and family may add to the stress. It is therefore understandable that many women refuse referral even in the event of having a better prognosis for their child. All the social, physical, psychological and attitude problems play a role whether a women will comply to health care providers advice.

6. Conclusion

- Women in the study area with complications during delivery such as malposition or extended labor are more likely to be referred by the TBA than women with the same conditions in the control area. A similar pattern was not identified for antenatal and post partum period.
- The proportion of women referred by the TBA is highest for the antenatal period and drops sharply for delivery and postpartum periods. In the birthing homes the greatest number of referral are for delivery.
- Overall, remarkably few women are referred from the birthing homes: 15 for the antenatal

period, 37 for delivery and 5 for postpartum in a one year period.

- The reputations, credibility and the client-base of the TBAs are threatened if they increase the number of referrals made specially for delivery.
- Women who accept referral for a given complication during the antenatal period may not accept a recommendation for delivering in a place other than home for the same complication. Some women seem to feel that a given risk is managed by staying at home for delivery. Traditionally, the period of labor is seen to place women in a status between life and death. The forces which keep the women in labor on the side of life may be linked to the home and the inner calm found there.
- Cost, distance and the desire to stay privately at home are still the reasons most often cited by women for non-compliance with referral to health center or hospital. Despite the availability of the ambulance distance may be an important factor as it prevents the family from staying with the women, Or women may not be fully aware that she has access to free ambulance service.

The transport of pregnant women and newborn infants between birthing homes and hospitals is recognized as an essential component of a regionalized perinatal care system. Careful planning of each step in the transport process should provide high-quality care for mothers and babies, and encourage ongoing support of the regional program.

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Acknowledgement

This study was financially supported by MotherCare, John Snow Inc. USAID grant, Subcontract No. 1659-014 . The contributions by Drs Heidi B. Sampurno, Lelly Resna, Djamiliah, Munaquine, the consultants Mrs Claudia William, Mrs. Carry Hessler Radelet, the field supervisors, field interviewers, TBAs and the women in Tanjungsari and Cisalak who were the subject of the study are gratefully acknowledged.

Appendix "An integrated village service to improve referral pattern and perinatal mortality in a rural area in West Java

General

Table.1 Overview of pregnancy outcome of all registered women during study period (June '92-May'93)

Pregnancy outcome	Intervention area		Control area	
	n	%	n	%
Miscarriage	15	0.7	16	1.6
Lost pregnancies	-	-	-	-
Deliveries (singletons)	2210	98.2	984	97.2
Twins (pairs)	26	1.2	12	1.2
Lost to follow-up	46	2.1	13	1.3
Total registered	2251	100.0	1012	100.0

Table 2 Number of deliveries by type of birth attendant (singletons only) (June 1992-May 1993)

Birth attendant	Tanjungsari		Cisalak area	
	n	%	n	%
TBA	1903	86.1	859	87.3
Midwife	172	7.8	85	8.6
MD	62	2.8	3	0.3
TBA/Mw/MD	58	2.6	32	3.3
Others	14	0.6	5	0.5
Unknown	1	0.1-	-	-
Total	2210	100.0	984	100.0

Note: Unknown birth attendant:

Table 3 Place of delivery by area (June'92-May '93)

	Tanjungsari area		Cisalak area	
	n	%	n	%
Own house)				
Grandmother house)	1878	84.9	941	95.6
TBAs house)				
Dr/Midwife clinic	104	4.7	23	2.3
Polindes	70	3.2	-	-
Healthcenter	41	1.9	4	0.4
Hospital	109	4.9	15	1.5
Others	-	-	1	0.1
Don't know	8	0.4	-	-
Total	2210	100.0	984	100.0

Prepartum

Table 4a Prepartum complication by birth attendant (Tanjungsari)

Prepartum complication	June '92-Nov. '92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Edema	87	9.2	22	14.1	97	10.3	24	14.6
Vaginal bleeding	27	2.9	8	5.2	27	2.9	14	8.5
Fever > 3days	52	5.5	10	6.5	51	5.4	14	8.5
Cough and dyspnoea	23	2.4	4	2.5	39	4.1	10	6.1
Total women	948		155		942		164	
% from total women								

Table 4 b Prepartum complication by birth attendant (Cisalak)

Reason	June '92-Nov. '92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Edema	36	7.9	10	15.6	28	7.0	3	4.6
Vaginal bleeding	13	2.9	2	3.1	9	2.3	5	7.7
Fever > 3days	9	1.9	3	4.7	11	2.8	2	3.1
Cough and dyspnoea	15	3.3	5	7.8	7	1.8	4	6.2
Total women	455		64		400		65	
% from total women								

Table 5a Number of prepartum complications per woman (Tanjungsari)

Risk factors	June '92-Nov. '92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
(-)	782	82.5	123	79.4	760	80.7	113	68.9
1	145	15.2	21	13.4	153	16.2	41	25.0
2	19	2.0	10	6.5	26	2.8	9	5.5
3 +	2	0.2	1	0.7	3	0.3	1	0.6
Total	948	100.0	155	100.0	942	100.0	164	100.0
Need referral	166	15.5	32	20.6	182	19.3	51	31.1

Table 5b Number of prepartum complications per woman (Cisalak)

Risk factors	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
(-)	393	86.4	50	78.1	350	87.5	52	80.0
1	52	11.4	10	15.6	45	11.3	12	18.5
2	9	1.9	2	3.5	5	1.3	1	1.5
3 +	1	0.2	2	3.1	-	-	-	-
Total	455	100.0	64	100.0	400	100.0	65	100.0
Need referral	62	13.6	14	21.9	50	12.5	13	20.0

n = number of deliveries.

Table 6a Did you go for prepartum referral by birth attendant?
(Tanjungari)

Agree	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
yes	88	78.6	11	78.6	86	85.2	15	78.9
No	24	21.4	3	21.4	15	14.9	4	21.1
Total	112	100.0	14	100.0	101	100.0	19	100.0

Table 6b Did you go for prepartum referral by birth attendant ?
(Cisalak)

Agree	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
yes	71	83.5	8	100.0	62	76.5	6	85.7
No	14	16.5	-	-	18	22.2	-	-
Total	85	100.0	8	100.0	81	100.0	7	100.0

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Table 7a Reasons for non-compliance to prepartum referral by birth attendant (Tanjungsari)

Reasons	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Not necessary	7	29.2	-	-	7	46.7	11	25.0
Too far/no transport	7	29.2	-	-	5	33.3	1	25.0
Too expensive	1	4.2	-	-	1	6.7	-	-
Husband not agree	1	4.2	-	-	1	6.7	-	-
No care for children	-	-	-	-	-	-	-	-
No time	7	29.2	1	66.7	-	-	-	-
Condition of cmother-	-	-	-	-	-	-	1	25.0
Others	1	4.2	-	-	-	-	-	-
missing	-	-	1	33.3	1	6.7	1	25.0
Total	24	100.0	3	100.0	15	100.0	4	100.0

n = number of women

Table 7b Reasons for non-compliance to prepartum referral by birth attendant (Cisalak)

Reason	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Not necessary	3	21.4	-	-	4	22.2	-	-
Too far/no transport	4	28.6	-	-	4	22.2	-	-
Too expensive	-	-	-	-	-	-	-	-
Husband not agree	-	-	-	-	-	-	-	-
No care for children	2	14.3	-	-	2	11.1	-	-
No time	2	14.3	-	-	-	-	-	-
Condition of mother	1	7.1	-	-	1	5.6	-	-
Others	2	14.3	-	-	2	11.1	-	-
missing	-	-	-	-	1	5.6	-	-
Total	14	100.0	-	-	18	100.0	-	-

n = number of women

Table 9a Number of complications per woman during delivery (Tanjungsari)

Number of complication	June '92-Nov.'92				Dec.92- May '93			
	TBA n	(%)	Others n	(%)	TBA n	(%)	Others n	(%)
(-)	773	81.5	94	60.7	811	86.1	107	65.2
1	145	15.3	37	23.9	111	11.8	39	23.8
2	23	2.3	19	12.3	17	1.8	13	7.9
3 +	7	0.7	5	3.2	3	0.3	5	3.1
Total	948	100.0	155	100.0	942	100.0	164	100.0
Need referral	175	18.5	61	39.4	131	13.9	57	34.8

n = number of deliveries.

Table 9b Number of complications per woman during delivery (Cisalak)

Number of complications	June '92-Nov.'92				Dec.92- May '93			
	TBA n	(%)	Others n	(%)	TBA n	(%)	Others n	(%)
(-)	339	74.5	30	46.9	307	76.8	43	66.2
1	75	16.4	25	39.1	69	17.3	17	26.2
2	28	6.2	3	4.7	20	5.0	5	7.7
3 +	13	2.9	6	9.4	4	1.0	-	-
Total	455	100.0	64	100.0	400	100.0	65	100.0
Need referral	116	26.5	64	53.1	93	23.2	25	44.2

n = number of deliveries.

Table 10a Did you go for delivery referral by birth attendant ?(Tanjungsari)

Agree	TBA		June '92-Nov.'92 Others		TBA		Dec.92- May '93 Others	
	n	(%)	n	(%)	n	(%)	n	(%)
yes	21	56.8	36	90.0	10	40.0	37	94.8
No	16	43.2	4	10.0	15	60.0	2	5.1
Total	37	100.0	40	100.0	25	100.0	39	100.0

Table 10b Did you go for delivery referral by birth attendant ? (Cisalak)

Agree	TBA		June '92-Nov.'92 Others		TBA		Dec.92- May '93 Others	
	n	(%)	n	(%)	n	(%)	n	(%)
yes	4	33.3	7	77.7	5	83.3	2	66.6
No	8	66.6	2	22.2	1	16.7	1	33.3
Total	12	100.0	9	100.0	6	100.0	3	100.0

Table 11a Number and reasons for delivery referral (Tanjungsari)

Reason	June '92-Nov.'92		Dec.92- May '93	
	TBA n	Others n	TBA n	Others n
Breech	2	11	1	3
Prolonged labor	-	11	2	13
Convulsion	1	1	-	-
Massive bleeding	7	4	3	3
Fever >3 days	1	1	-	2
Fouly discharge	-	2	-	-
Don't know	11	6	7	6

Table 11b Number and reasons for delivery referral (Cisalak)

Reason	June '92-Nov.'92		Dec.92- May '93	
	TBA	Others	TBA	Others
	n	n	n	n
Breech	-	2	-	-
Prolonged labor	2	4	4	2
Convulsion	2	2	2	-
Massive bleeding	2	3	1	-
Fever >3 days	1	3	1	1
Fouly discharge	-	1	-	-
Don't know	6	-	-	1

Table 12a Non-compliance to delivery referral by birth attendant(Tanjungsari)

Reason	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Not necessary	3	18.6	-	-	5	33.3	-	-
Too far/no transport.	2	12.5	-	-	2	13.3	-	-
Too expensive	2	12.5	-	-	-	-	-	-
Husband not agree	-	-	-	-	-	-	1	50.0
No care for children	-	-	-	-	-	-	-	-
No time	4	25.0	-	-	2	13.3	-	-
Health personnel came	-	-	-	-	-	-	-	-
Condition of mother	4	25.0	1	25.0	4	26.7	-	-
Health facility closed	-	-	-	-	-	-	-	-
Others	1	6.3	3	75.0	2	13.3	1	50.0
Total	16	100.0	4	100.0	15	100.0	2	100.0

n = number of women

Table 12a Non-compliance to delivery referral by birth attendant (Cisalak)

Reason	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Not necessary	4	50.0	1	50.0	-	-	-	-
Too far/no transport.	1	12.5	1	50.0	1	100.0	-	-
Too expensive	-	-	-	-	-	-	-	-
Husband not agree	-	-	-	-	-	-	-	-
No care for children	-	-	-	-	-	-	-	-
No time	-	-	-	-	-	-	-	-
Health personnel came	-	-	-	-	-	-	-	-
Condition of mother	1	12.5	-	-	-	-	-	-
Health facility closed	-	-	-	-	-	-	-	-
Others	2	25.0	-	-	-	-	-	-
Total	8	100.0	2	100.0	1	100.0	1	100.0

n = number of women

Postpartum

Table 13a Postpartum complications by birth attendant (Tanjungsari)

Complications	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Vaginal bleeding	125	13.3	24	15.5	1361	14.9	25	15.7
Massive bleeding	8	0.9	3	1.9	5	0.6	2	1.3
Fever >3 days	172	18.3	29	18.7	117	12.88	26	16.4
Foul discharge	47	4.9	6	3.9	42	4.6	3	1.9
Anemia	72	7.6	14	9.6	60	6.6	10	6.3
Convulsion	2	0.1	1	0.7	1	0.1	1	0.6
Total women	7=942		155		908		159	

n= number of women, one woman may have more than one risk factor
 (%) Postpartum complications in per cent from total women of the same group.

Table 13b. Postpartum complications during by birth attendant (Cisalak)

Complications	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Vaginal bleeding	62	13.6	13	20.3	81	20.8	9	14.3
Massive bleeding	4	0.9	1	1.6	6	1.5	2	3.2
Fever >3 days	56	12.3	8	12.5	37	9.5	6	9.5
Foul discharge	32	7.1	7	10.9	13	3.3	1	1.5
Anemia	41	9.0	8	12.5	22	5.6	4	6.4
Convulsion	1	0.2	2	3.1	1	0.3	-	-
Total women	455		64		389		63	

n= number of women, one woman may have more than one risk factor
 (%) Postpartum complications in per cent from total women in the same group.

Table 14a Number of postpartum complications per woman (Tanjungsari)

Number of complications	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
(-)	639	67.8	105	67.8	636	70.0	105	66.0
1	212	22.5	29	18.7	200	22.0	43	27.0
2	65	6.9	18	11.6	57	6.3	9	5.7
3 +	26	2.8	3	1.9	15	1.7	2	1.3
Total	942	100.0	15	100.0	908	100.0	159	100.0
Need referral	303	32.2	50	32.2	272	30.0	54	33.0
Actual referred	22		1		14		1	

Table 14b Number of postpartum complications per woman (Cisalak)

Number of complications	June '92-Nov.'92				Dec.92- May '93			
	TBA n	Others (%)	n	(%)	TBA n	Others (%)	n	(%)
(-)	334	73.4	41	64.0	266	68.4	47	74.6
1	73	16.1	14	21.9	100	25.7	10	15.9
2	30	6.6	5	7.8	14	3.6	6	9.5
3 +	18	3.9	4	6.3	9	2.3	-	-
Total	455	100.0	64	100.0	389	100.0	63	100.0
Need referral	121	26.6	23	25.1	123	31.6	16	25.4
Actual referred	30		2		12		-	

Table 15a Number and reasons for postpartum referral (Tanjungsari)

Reason	June '92-Nov.'92		Dec.92- May '93	
	TBA n	Others n	TBA n	Others n
Vaginal bleeding	2	-	-	-
Fever > 3days	8	-	2	-
Anemia	3	-	2	-
Foul discharge	-	-	-	-
Convulsion	-	-	2	-
Don't know	4	1	3	-

Table 15b Number and reasons for postpartum referral (Cisalak)

Reason	June '92-Nov.'92		Dec.92- May '93	
	TBA n	Others n	TBA n	Others n
Vaginal bleeding	-	1	-	-
Fever >3days	5	1	2	-
Anemia	4	1	1	-
Foul discharge	-	1	1	-
Convulsion	2	-	1	-
Don't know	10	-	8	-

Table 16a Did you go for postpartum referral by birth attendant ? (Tanjungsari)

Agree	June '92-Nov.'92				Dec.92- May '93			
	TBA n	(%)	Others n	(%)	TBA n	(%)	Others n	(%)
yes	9	40.9	1	100.0	2	14.3	-	-
No	13	59.1	-	-	10	71.4	-	-
Missing data	-	-	-	-	2	14.3	-	-
Total	22	100.0	1	100.0	14	100.0	-	-

Table 16b Did you go for postpartum referral by birth attendant ? (Cisalak)

Agree	June '92-Nov.'92				Dec.92- May '93			
	TBA n	(%)	Others n	(%)	TBA n	(%)	Others n	(%)
yes	3	10.0	1	50.0	3	25.0	-	-
No	27	90.0	1	50.0	7	75.0	-	-
Total	30	100.0	2	100.0	12	100.0	-	-

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Table 17a Reasons for non-compliance to postpartum referral (Tanjungsari)

Reason	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Not necessary	2	15.4	-	-	1	10.0	-	-
Too far/no transport	1	7.7	-	-	-	-	-	-
Too expensive	2	15.4	-	-	-	-	-	-
Husband not agree	-	-	-	-	-	-	-	-
No care for children	3	23.1	-	-	2	20.0	-	-
No time	3	23.1	-	-	4	40.0	-	-
Health personnel came	-	-	-	-	-	-	-	-
Condition of mother	1	7.7	-	-	3	30.0	-	-
Health facility closed	-	-	-	-	-	-	-	-
Others	1	7.6	-	-	-	-	-	-
Total	13	100.0	-	-	10	100.0	-	-

Table 17b Reasons for non-compliance to postpartum referral (Cisalak)

Reason	June '92-Nov.'92				Dec.92- May '93			
	TBA		Others		TBA		Others	
	n	(%)	n	(%)	n	(%)	n	(%)
Not necessary	2	15.4	-	-	1	10.0	-	-
Too far/no transport.	1	7.7	-	-	-	-	-	-
Too expensive	2	15.4	-	-	-	-	-	-
Husband not agree	-	-	-	-	-	-	-	-
No care for children	3	23.1	-	-	2	20.0	-	-
No time	3	23.1	-	-	4	40.0	-	-
Health personnel came	-	-	-	-	-	-	-	-
Condition of mother	1	7.7	-	-	3	30.0	-	-
Health facility closed	-	-	-	-	-	-	-	-
Others	1	7.7	-	-	-	-	-	-
Total	13	100.0	-	-	10	100.0	-	-

Perinatal mortality

Table 18a Number of perinatal deaths by area and birth weight (June'92-Nov '92)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
<1500	7	6	-	857.1	2	1	1	1000.0
1500-<2000	18	1	8	500.0	5	-	2	400.0
2000-<2500	132	1	2	15.2	80	-	3	37.5
2500-<3000	491	7	5	24.4	175	-	1	5.7
3000-<3500	361	5	1	16.6	180	1	2	16.7
≥3500	78	2	1	38.5	66	1	-	15.2
missing	16	16	-	1000.0	11	2	4	545.5
Total	1103	38	17	49.8	519	5	13	34.7

Table 18b Number of perinatal deaths by area and birth weight (Dec.92-May'93)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
<1500	7	1	2	428.6	2	-	1	500.0
1500-<2000	18	1	6	388.9	6	-	1	166.7
2000-<2500	126	2	4	47.6	15	-	2	44.4
2500-<3000	469	4	-	8.5	148	-	1	6.8
3000-<3500	394	1	2	7.6	180	-	1	5.6
≥3500	77	2	1	38.9	69	-	-	-
Don't know	16	10	1	687.5	15	12	-	800.0
Total	1107	21	16	33.4	465	12	6	38.7

Table 19a Number of perinatal deaths by area and birthattendant June'92-Nov.'92)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
TBA	955	26	14	41.9	457	2	11	28.4
Midwife	84	2	2	47.6	35	2	-	57.1
MD	21	4	1	238.0	2	-	-	-
TBA/Mw/MD	34	6	-	176.5	22	1	2	136.4
Specialist	-	-	-	-	-	-	-	-
Others	9	-	-	-	3	-	-	-
Don't know	-	-	-	-	-	-	-	-
Total	1103	38	17	49.8	519	5	13	34.7

Table 19b Number of perinatal deaths by area and birthattendant (Dec.'92-May'93)

	Tanjungsari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
TBA	948	13	9	22.2	402	8	5	332.3
Midwife	88	-	4	45.5	50	1	1	40.0
MD	41	6	1	170.7	1	-	-	-
TBA/Mw/MD	24	2	2	166.7	10	3	-	300.0
Specialist	-	-	-	-	-	-	-	-
Others	5	-	-	-	2	-	-	-
Don't know	1	-	-	-	-	-	-	-
Total	1107	21	16	33.4	465	12	6	38.7

(1)

Table 20a Number of perinatal deaths by area and place of delivery(June'92-Nov.'92)

	Tanjungari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
Home	934	28	13	43.9	501	3	13	31.9
MD/midwife-clinic	48	2	-	41.7	7	1	-	142.9
Polindes	52	-	3	57.7	-	-	-	-
Health center	16	-	-	-	3	1	-	333.3
Hospital	52	9	1	192.3	8	-	-	-
BBA.	-	-	-	-	-	-	-	-
Don't know	1	-	-	-	-	-	-	-
Total	1103	38	17	49.9	519	5	13	34.7

Table 20b Number of perinatal deaths by area and place of delivery(June'92-Nov.'92)

	Tanjungari				Cisalak			
	N	SB	END	PMR	N	SB	END	PMR
Home	944	13	9	23.3	440	10	6	36.4
MD/midwife-clinic	56	-	3	53.6	16	-	-	-
Polindes	18	-	-	-	-	-	-	-
Health center	25	-	1	40.0	1	-	-	-
Hospital	57	8	3	192.9	7	1	-	142.9
BBA.	-	-	-	-	-	-	-	-
Don't know	7	-	-	-	-	-	-	-
Total	1107	21	16	33.4	465	12	6	38.7

Table 21a Number of perinatal deaths by area by mode of delivery(June'92-Nov.92)

	Intervention area				Control area			
	N	SB	END	PMR	N	SB	END	PMR
Vertex	1060	24	16	37.7	501	4	11	29.9
Breech	37	12	1	351.4	18	1	2	166.7
Others	25	4	1	200.0	12	1	1	166.6
CS	11	4	1	454.5	1	-	-	
Total	1133	44	19	55.6	532	6	14	18.8

Table 21b Number of perinatal deaths by area by mode of delivery (Dec.'92-May'93)

	Intervention area				Control area			
	N	SB	END	PMR	N	SB	END	PMR
Vertex	1064	16	13	27.3	454	8	6	30.8
Breech	33	4	2	181.8	10	3	-	300.0
Others	23	4	1	217.4	4	2	-	500.0
CS	12	2	2	333.3	1	-	-	
Total	1132	26	18	38.9	469	13	6	40.5

Table 22a Delivery referrals by TBAs and number of perinatal deaths (Tanjungari)
(singletons only)

Referral status	N		Perinatal deaths		
	of deliveries	(%)	SB	END	PMR
Not referred	2069	93.6	45	27	34.8
Referred	141	5.4	14	6	70.9
Comply	104	73.8	10	5	144.2
not comply	37	26.2	4	1	135.1
Total	2210	100.0	59	33	41.6

Table 22b Delivery referrals by TBAs and number of perinatal deaths (Cisalak)
(Singletons only)

Referral status	N		Perinatal deaths		
	of deliveries	(%)	SB	END	PMR
Not referred	954	96.9	13	16	30.4
Referred	30	3.1	4	3	233.3
comply	18	60.0	3	1	222.2
not comply	12	40.0	1	2	250.0
Total	984	100.0	17	18	45.7

Table 23a Perinatal mortality by place of birth & birth attendant (June '92-May '93)Tanjungsari.

	Home			Birthing home			Health center	Hospital	Private midwife
	TBA	Midwife	Relative	TBA	Midwife	TBA/Mw			
Total births	1836	29	13	56	11	3	41	109	104
Stillbirths	39	2	-	-	-	-	-	17	1
Early ND.	21	1	-	2	1	-	1	4	3
PMR	32.7	103.4	-	35.7	90.9	-	24.4	192.7	38.5

Table 23b Perinatal mortality by place of birth & birth attendant (June '92-May '93)Cisalak

	Home			Birthing home			Health center	Hospital	Private midwife
	TBA	Midwife	Relative	TBA	Midwife	TBA/Mw			
Total births	858	78	6	-	-	-	4	15	23
Stillbirths	10	4	-	-	-	-	1	1	1
Early ND.	16	3	-	-	-	-	-	-	-
PMR	30.0	89.7	-	-	-	-	250	66.7	43.5

Table 24a Incidence of morbidity among pregnant women during period of pregnancy and delivery (number of pregnant women in Tanjungsari) N= 2210

Symptoms	prepartum		delivery		postpartum		total	
	New cases	%	New cases	%	New cases	%	New cases	%
Hemorrhage	77	3.5	183	8.3	11	0.5	271	12.3
Prolonged labor	-	-	10	0.5	-	-	10	0.5
Fever >3 days	127	5.7	68	3.1	290	13.1	485	21.9
Convulsion	-	-	49	2.2	-	-	49	2.2
Foul discharge	-	-	49	2.2	83	3.8	132	5.9

() percentage from total women.

* One woman may have more than one symptom.

Table 24b. Incidence of morbidity among pregnant women during period of pregnancy and delivery (number of pregnant women in Cisalak) N= 984

Symptoms	prepartum		delivery		postpartum		total	
	New cases	%	New cases	%	New cases	%	New cases	%
Hemorrhage	29	2.9	42	4.3	7	0.7	78	7.9
Prolonged labor	-	-	87	8.8	-	-	87	8.8
Fever >3 days	25	2.5	58	5.9	82	8.3	165	16.8
Convulsion	-	-	48	7.0	2	0.2	50	5.1
Foul discharge	-	-	98	9.9	16	1.6	114	11.9

() percentage from total women.

* One woman may have more than one symptom.

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APPENDIX 6

DATA ANALYSIS OF REFERRALS

Mrs. Claudia Williams

**Maternal Referrals
in the
Regionalization of Perinatal Care Study
Tanjungsari, Indonesia**

April to July, 1993

**Claudia Williams
MotherCare Consultant**

**Swandari Djojo
Susanne Dida
Inouk Isbanun Prabantinah
Yudi Nugraha
UNPAD, University of Padjajaran**

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Appendix E	Report by Matthew Belcher and Kirsten Lawrence Analyzing Results of In-Depth Interviews
Appendix F	Lessons Learned from Social Marketing Component

I ACKNOWLEDGEMENTS

All of the work presented in this report was collaborative. Dr. Swandari Djojo was fully responsible for the difficult task of collecting and analyzing quantitative referral data. The Social Marketing Team made up of Ms. Susanne Dida, Ms. Inouk Isbanun Prabantinah and Mr. Yudi Nugraha and collaborated on the development of the In-Depth Interview questionnaires and collected, transcribed and analyzed the results which were insightfully analyzed and written-up in report form by Matthew Belcher and Kirsten Lawrence. The skills and untiring hard work of Dr. Swandari and the Social Marketing Team added tremendously to the quality of this collaborative effort. Dr. Anna Alisjahbana provided important guiding assistance to this research effort.

Without the valuable input, guidance, and good sense of Ms. Carrie Hessler-Radelet and Ms. Mary Jo Hansell this work would never have been completed. Dr. Marjorie Koblinsky and Dr. Barbara Kwast provided invaluable direction and technical oversight for this initiative.

II EXECUTIVE SUMMARY

This report presents the results of both quantitative and qualitative research to investigate referral patterns and compliance of women for antenatal, delivery and postpartum referrals in the Perinatal Regionalization Project in Tanjungsari, West Java. Research results provide information on the impact of the project and its interventions including training for health providers, installation of birthing huts, provision of radios and free ambulance service and a social marketing campaign on the referral system, referral practices and acceptance of referrals. Project impact is measured by examining the difference between referral rates and compliance of the study area, Tanjungsari, and the control area, Cisalek. Of particular interest to this examination is whether or not referrals in the Study area are better targeted to women most in need, that is women with key complications.

Referral patterns and compliance for referrals from the Traditional Birth Attendants (Paraji) were analyzed using the answers women gave to Questionnaires one and two of the RAS series while data for Polindes and Puskesmas referrals were manually collected from client registers. Twenty-nine in-depth interviews in both the Study and the Control area were conducted with women who experienced key complications (bleeding, oedema and fever) to assess women's attitudes towards these complications, their referral history and perceptions of risk.

Major research results include:

- Women in the study area with complications during delivery such as malposition or extended labor are more likely to be referred by the Paraji than women with the same conditions in the control area. A similar pattern was not identified for antenatal and postpartum periods.
- The proportion of women referred by the Paraji is highest for the antenatal period and drops off sharply for delivery and postpartum periods. In the Polindes the greatest number of referrals are for delivery.
- Overall, remarkably few women are referred from the Polindes; 15 for the antenatal period, 37 for delivery and 5 for postpartum in a one year period.
- The reputations, credibility and the client-base of the Paraji are threatened if they increase the number of referrals made especially for delivery.
- Women who accept referral for a given complication during the antenatal period may not accept a recommendation for delivering in a place other than home for the same complication. Some women seem to feel that a given risk is better managed by staying at home for delivery. Traditionally, the period of labor is seen to place women in a status between life and death. The forces which keep the woman in labor on the side of life may be linked to the home and the inner calm found there.

- Cost, distance and the desire to stay privately at home are still the reasons most often cited by women for non-compliance with referral to Puskesmas or Hospital. Despite the availability of the ambulance distance may be an important factor as it prevents the family from staying with the woman. Or, women may not be fully aware that she has access to free ambulance service.

Recommendations:

- Future initiatives need to heighten the "sensitivity" of delivery referrals, especially from Paraji, to target women with key complications. Among interventions to improve referrals this is the area of greatest potential impact.
- Focused one-on-one counselling in the Polindes stressing the positive effects of accepting referral for women with potential delivery complications may address the problem posed by the unacceptability of the action card and other materials which use negative examples. The Polindes would have time and resources only to provide these services to women most in need; the 20% or so with key complications.
- The Postpartum period deserves greater focus and targeted programs. As demonstrated by the low proportion of postpartum referrals to the Polindes, the Paraji do not perceive that the Polindes provide useful services for women with postpartum problems.
- Initiatives for community financing of labor referrals to Puskesmas or Hospital should be explored. These could take the form of a voluntary insurance or saving scheme at the village level or a service where families can rapidly liquidate material assets.

III. PURPOSE OF CONSULTANCY

The purpose of the consultancy was to assist in the collection and analysis of data pertaining to referral for the Tanjungsari Perinatal Regionalization Project (see Appendix C). The work consisted of two components: 1) Investigation of quantitative data on referral and compliance from the RAS questionnaires and from client register data from the Polindes, Puskesmas and Hospitals in the Study and Control Areas; and 2) Exploration of perceptions of complications and reasons for compliance and non-compliance for referrals through in-depth interviews with a purposefully selected set of women with self-identified complications (bleeding, oedema etc.)

IV. CONSULTANT ACTIVITIES

A. Research Plan

Quantitative Analysis:

I) Collect Data on referral rates and compliance for referrals made from the Polindes to the Puskesmas and Hospital, and from the Puskesmas to the Hospital and examine the rates of acceptance of these referrals in both study and control areas. Data were collected for two time periods; June to November 1992 and December, 1992 to May, 1993. Since the Polindes were implemented during and previous to the first time period, we were not able to use a pre-post framework of analysis.

1. Using the Polindes records and the Second and Third RAS questionnaires make a list of all women who were referred by the Paraji to the Polindes, Puskesmas or Hospital or from the Polindes to the Puskesmas or Hospital during pregnancy, for delivery or in the postpartum period. Data were collected on the following variables:

- Time of Referral (antenatal, delivery, postpartum)
- Status of Referral (emergency or routine)
- Type of Provider making referral (bidan, paraji)

II) Analyze TBA referral rates for women with specific complications (bleeding, oedema, fever) in both the study and the control areas.

This analysis aims to examine the impact of the project on TBA referral rates for women most at risk at different stages of pregnancy. All data for this analysis were available through the RAS questionnaires.

Qualitative Analysis:

The purpose of the qualitative investigation is to sketch a richer picture of the pregnancy and birthing experience of women with key complications in both the study and the control areas. A total of 29 respondents were selected for in-depth interviews exploring factors influencing awareness of risk condition, referral and acceptance of referral. These factors include the

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respondent's:

- Perception of own risk status
- Referral history
- Understanding of reasons for referral (if she was referred)
- Exposure to Social Marketing Materials (in Study area)
- Access and acceptability of services provided at site to which she was referred
- Opinion of family decision-makers and other influencers about her risk condition and importance of referrals made.
- Previous pregnancy experience

The selection of respondents was purposeful. Respondents who experienced key risk conditions were chosen in both the study and the control area. Interview data were analyzed for evidence of differing patterns of risk recognition, care-seeking behavior, and acceptance of referral between the two areas.

A total of 29 interviews were conducted. Data from these interviews were collectively analyzed by the Social Marketing Team and analyzed and written up by Kirsten Lawrence and Matthew Belcher (See Appendix E). Relevant data and observations have been incorporated into this report to supplement the quantitative findings.

B. Research Findings: All Figures referred to in text can be found in Appendix A of this report

I Referral Rates at Different Stages of Pregnancy

- In general, women seem to receive more advice during the antenatal period than they do for delivery or in the postpartum period. This advice takes many forms; a mother in law prescribes an herbal remedy for fever, a husband suggests that his wife go to the Puskesmas to ask about her bleeding or the Paraji tells her client to go to see the Bidan at the Polindes. Even for those women who approach delivery with a distinct problem which may complicate her labor, many do not seem to receive any specific advice or referral from family, friends or village-based provider about where and how she should deliver. An hypothesized explanation for this pattern is the belief that problems and complications can be managed and treated during the antenatal period but that once a woman enters labor her fate, and any complications which may develop, cannot be controlled.
- **Referral Rates from Paraji: Figure I(a)**
The data demonstrate a striking difference between referral rates for the antenatal period, and for delivery and postpartum periods with antenatal referrals at least twice as common as delivery or postpartum referrals. The unexpectedly low rates of referral suggest a need for increased focus on appropriate referral during delivery and in the postpartum period.

Referral rates are significantly higher in the control area than in the study area for the antenatal and the postpartum periods and in the study area for deliveries. According to anecdotal data the control area may benefit from a better organized association between the TBA's and the formal health system thereby facilitating referrals.

Despite this difference favoring the control area we see higher rates of referral in the study area for deliveries. This difference may reflect the positive impact of the installation of Polindes with radio and ambulance service. A paraji may not refer a woman for delivery, despite her clinical judgement of need, if she feels that the woman does not have the means and ability to accept delivery referral. Means and ability to accept referral are increased by the provision of ambulance service and other services provided in the Polindes.

- **Referral Rates From Polindes: Figure I(b)**

In contrast to Paraji, Polindes make twice as many referrals for delivery as for the antenatal period. For 1629 antenatal visits to the Polindes less than 1% (15) resulted in referral. Paraji referral rates for antenatal period are much higher but the majority are sent to the Posyandu or Polindes, not the Puskesmas. To explain the difference in the spread of antenatal referrals between Paraji and Polindes we can suppose that many women with antenatal problems such as oedema, fever or light bleeding who may have been referred from the Paraji to Polindes will not be further referred to the Puskesmas or Hospital unless there is an acute problem. It is also possible, and indeed seems likely given the extremely low number of referrals, that referrals for non-acute problems are never registered in the Polindes books.

Polindes referral rates are much higher for delivery where 37 out of 142 or 26% of women were referred from Polindes.

Records are not maintained in the Polindes which clearly indicate the number of Postpartum visits women make but due to the cultural conscription against leaving the home for 40 days following delivery, Paraji and Kader say that there are very few visits to the Polindes by women during this period. That there are few postpartum referrals is therefore not surprising.

II Referral Compliance

- Consistently throughout the qualitative data run three threads of reasoning for non-compliance with referrals; problems of cost and distance, and the desire to remain privately at home in proximity to family member during delivery. Two quotes from the in-depth interviews illustrate:

(I did not want to deliver in the hospital because I was) worried for not having enough money, and there is a belief that giving birth is a private thing. (The) process is dirty and should be kept at home and private.

I dared not to go to Puskesmas because I had no money. It costs a lot of money and also too far away. It's cheaper to deliver at home. Also the Paraji is a relative.

Another important issue is the trustworthiness and expertise of the Paraji as compared to the Puskesmas staff. While some respondent's believe the Paraji, Puskesmas and Hospital provide ascending levels of care, others do not agree:

It's the community habit to deliver at home, helped by TBA's because it's cheaper. At Puskesmas the nurse was too young and inexperienced.

- **Compliance for Referrals from Paraji: Figure II(a)** ^{compliance?} In general, referral rates from paraji appear quite high; above 60% for delivery referrals and around 80% for antenatal. Postpartum compliance, which varies greatly between time periods and areas, appears much lower. Project implementers in Tangjungsari commonly say that women do not want to deliver outside the home even if they are referred. These data suggest that in cases where women are referred most comply. These data lend weight to the argument that the antenatal period is less needy of attention and focus than the postnatal period, where both referral rates and compliance are low.
- **Compliance for Referrals from Polindes: Figure II(b)** ^{from referrals} Compliance for Polindes referrals is very high; 100% for all referral types except those to Puskesmas during the antenatal period. The ambulance was used for 33% of the antenatal referrals, 73% of the delivery referrals and 100% of the postpartum referrals.

It is unclear how the decision is made to use the ambulance for a given referral. Is this consistent across Polindes? Is this a provider decision only? Was the ambulance not available, although requested, for some of these referrals? These questions are of special value and importance and should be addressed.

III Spread of Referrals and Compliance for each Referral Type

- **Spread of Referrals from Paraji: Figure III(a) through III(f)**

Antenatal: Figures III(a) and III(b)

In comparison with the control area, the study area has a lower proportion of antenatal referrals directed to the Posyandu (23% as compared to 57%) and to the Puskesmas (23% as compared to 42%). In the study area referrals to these locations seem to be displaced by referrals to the Polindes. This suggests that the Polindes may serve two functions for the Paraji. First of all, the paraji may send women to the Polindes rather than to the Posyandu because the Polindes is seen to have higher quality service or because it is more frequently open with the certain availability of a Bidan. Second, referral to the Polindes may be seen either as a substitute for referral to the Puskesmas or as a means to secure more certain and direct referral to the Puskesmas possibly with

use of the radio and ambulance.

The perception that the Polindes is a substitute for the Puskesmas is potentially problematic as illustrated by feedback from the community to the social marketing team. At the outset many Tanjungsari residents believed the Polindes could supply the same maternity services as could the Puskesmas. The confidence of these residents has been tested as they see many of their friends and neighbors referred from the Polindes to the Puskesmas for problems that they believed the Polindes should have been able to handle.

In the control area compliance is consistently high across referral locations while in the study area compliance is markedly lower for referrals to the Posyandu and somewhat lower for referrals to the Polindes and Puskesmas.

Delivery: Figures III(c) and III(d)

The delivery referral pattern again suggests the displacement of Posyandu referrals to the Polindes. Another striking difference is the proportion of referrals to the Bidan and Dokter Swasta; 36% of referrals in the control area and 15% in the study area. The Paraji seem more willing or able to access hospital services directly in the study area where 20% of all Paraji referrals were to the hospital as compared to 8% in the control area.

While compliance rates for referrals to private doctors and midwives and to the hospital appear similar in the two areas, the compliance rate for Puskesmas referrals is significantly higher in the study area (significance at .05 level for each of the two time periods using Pearson test of significance). The project appears to have had a real impact on women's choice of delivery location **after referral for delivery**.

Postpartum: Figures III(e) and III(f)

Again, for postpartum referrals the data show a lower proportion of referrals to the Posyandu in the study area as compared with the control. But in this case the difference is made up of a larger proportion of referrals to the Bidan Swasta/Dokter Swasta and the Puskesmas in the study area. Referrals are not being shifted to the Polindes. Only for Postnatal referrals do we see a larger proportion in the study than in the control area of referrals to the private providers by the Paraji. This pattern raises serious questions about the efficacy or awareness of postpartum services available at the Polindes.

Apart from referrals to the Puskesmas Pembantu, in both the Study and the Control area compliance is universally low for postpartum referrals, ranging from 15 to 63%. One lead to wonder whether the Puskesmas Pembantu in the Study area, which boasts a compliance record of 11 out of 11 women referred, has special services or a high-quality reputation which make it particularly attractive to women with postpartum problems.

- **Spread of Referrals from Polindes: Figure II(b)**

Except for the antenatal period referrals from the Polindes seem evenly spread between

the Puskesmas and the Hospital. For antenatal referrals 80% were made to the Puskesmas, presumably reflecting the more routine nature of these referrals.

IV Referrals for Women with Key Complications from Paraji

- **Referral Rates: Figures IV(a) through IV(d):** In an effort to assess the "sensitivity" of the referral system, (i.e. were the women most in need of referral by reason of their status referred or not), the Paraji referral data were analyzed separately for women whose questionnaire responses indicated that they had a key risk condition.¹

Overall, very few of the women with key complications are referred. In the antenatal and postpartum periods the referral rates appear similar for the control and study area and stand at roughly 23% for women with complications in antenatal period and at around 7% for those with complications in the Postpartum period. Based on these data it is fair to state that Paraji in neither area are successfully targeting women for referral who have key complications. The situation is particularly troubling for the Postpartum period.

For delivery referrals the data reveal a distinctly higher proportion of women with complications referred in the study area, where approximately 18% of the women with complications are referred, than in the control area where the figure is roughly 7%. When comparing the level of referral for both the study and control area data for each of the two time periods; June through November 1992 and December 1992 to May 1993, the difference observed is significant (at .05 level using Pearson test of significance.) This is an extremely important finding. The project appears to have had a significant influence on Paraji referrals for women who face dangerous complications during delivery.

- **Compliance: Figures IV(b) and IV(e)**
Figure IV(b) shows that compliance for antenatal and delivery referrals of women with complications is relatively high; between 70 and 90% of women referred. For these two periods there are no striking differences in level of compliance between the study and the control area.

¹ The key conditions are as follows:

Antenatal: Bleeding, Fever > 3days, Heavy Coughing, Oedema

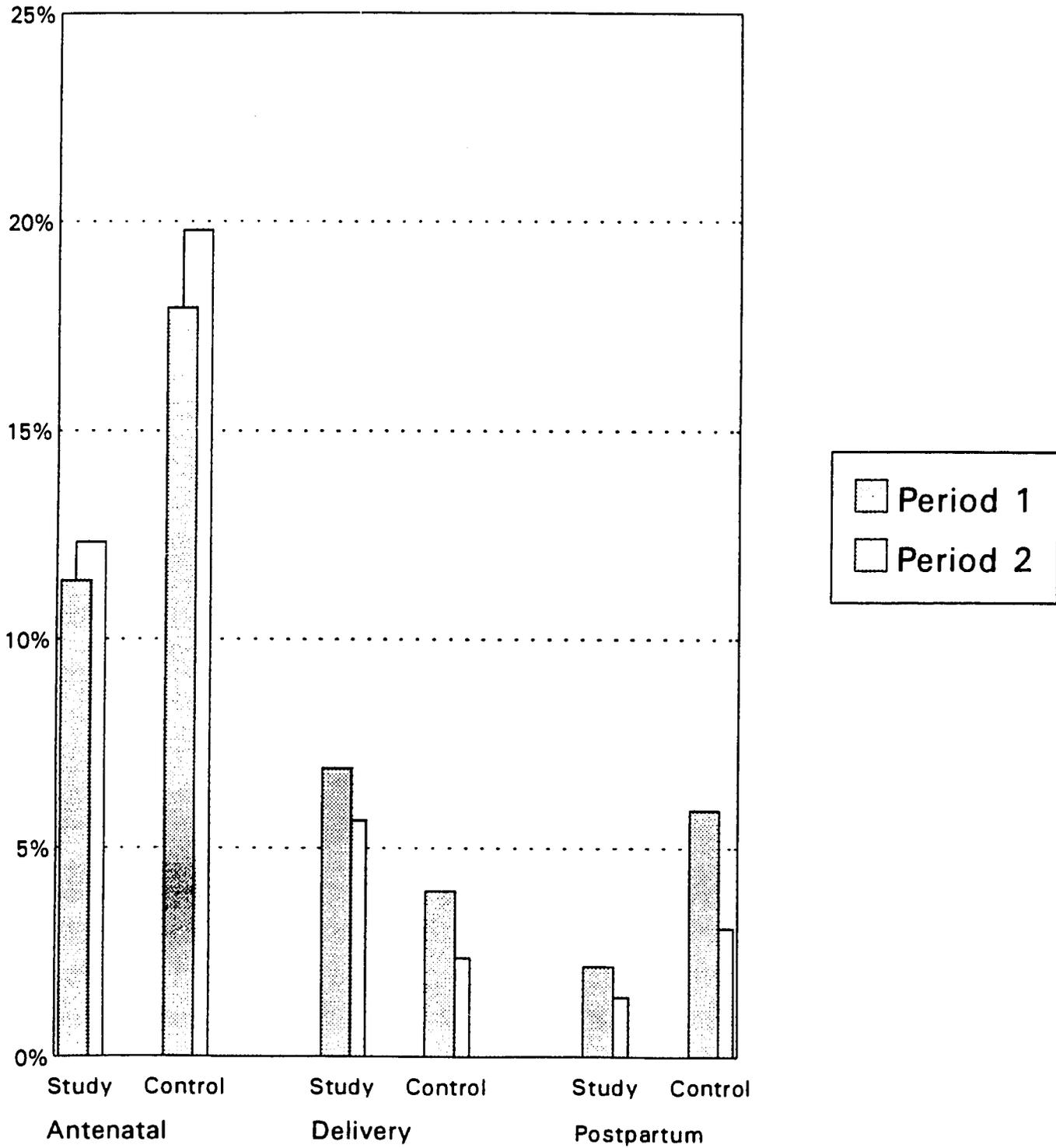
Delivery: Malposition, Extended Labor, Convulsions Before, During or After Labor, Bleeding, Fever, Infection (Foul Smelling Discharge)

Postpartum: Heavy Bleeding, Fever, Malposition, Convulsions

The data presented in Figure IV(e) are different from those in Figure IV(b) in that these data show the referral patterns for "emergency" vs. "routine" referrals classified by the reason women said they were referred, and not by the complications they said they experienced. These data show a marked increase between the two time periods and a higher overall level of compliance for "emergency" as compared to "routine" referrals in the study area. This general pattern is not apparent for the control area. These data suggest that women's classification of when a referral must be followed is consistent with the project's classification of the most important referrals, and that women are distinguishing between referrals that require action and those that do not. Taking both time periods together, the difference in compliance for "Routine" and "Emergency" referrals is most marked for delivery referrals.

Appendix A
Charts and Tables on Referral Data

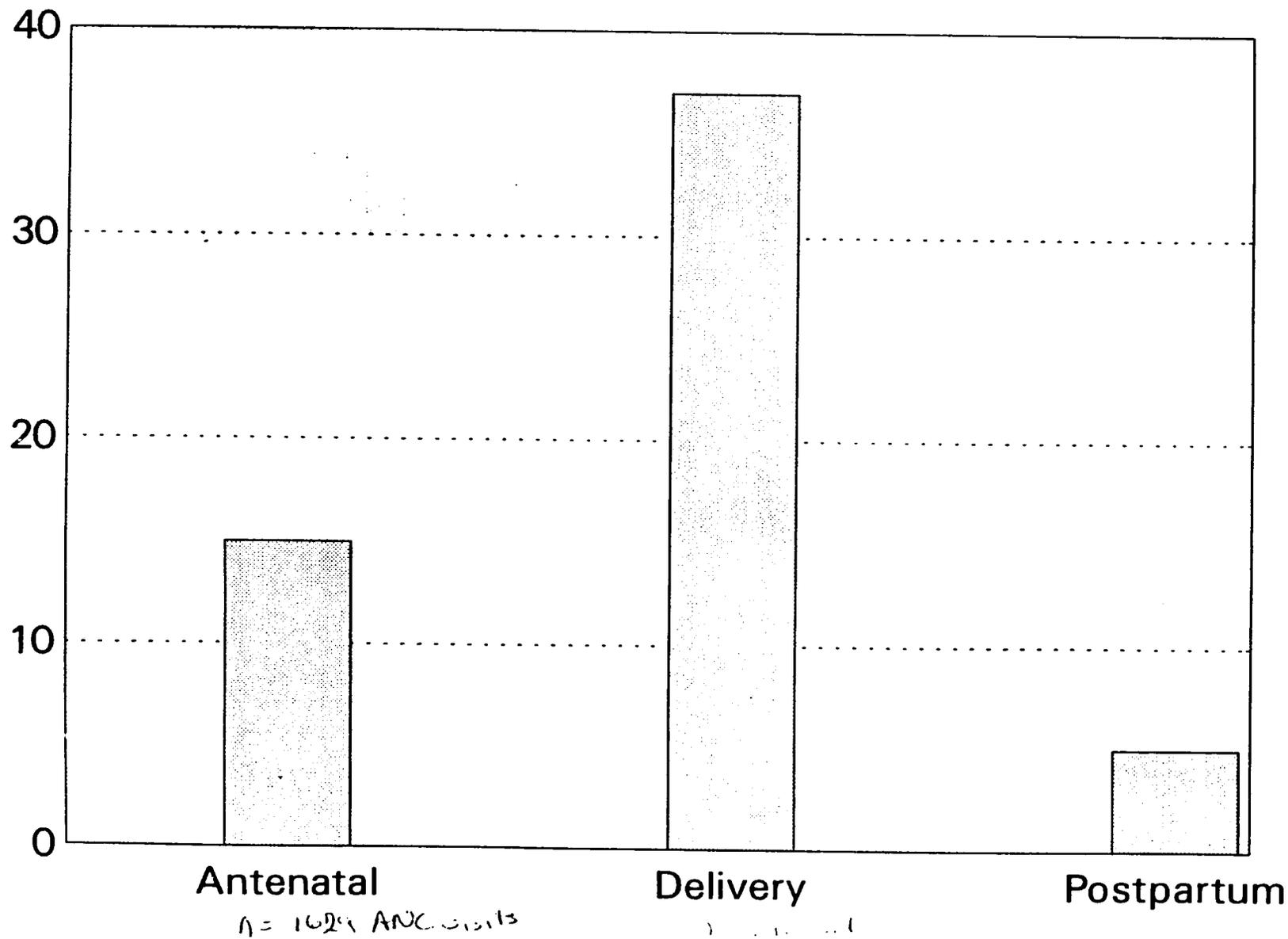
Percentage of Women Referred at Different Stages of Pregnancy Referrals from Paraji



Period 1 = June to November 1992
Period 2 = December 1992 to May 1993
Data from Perinatal Regionalization Project

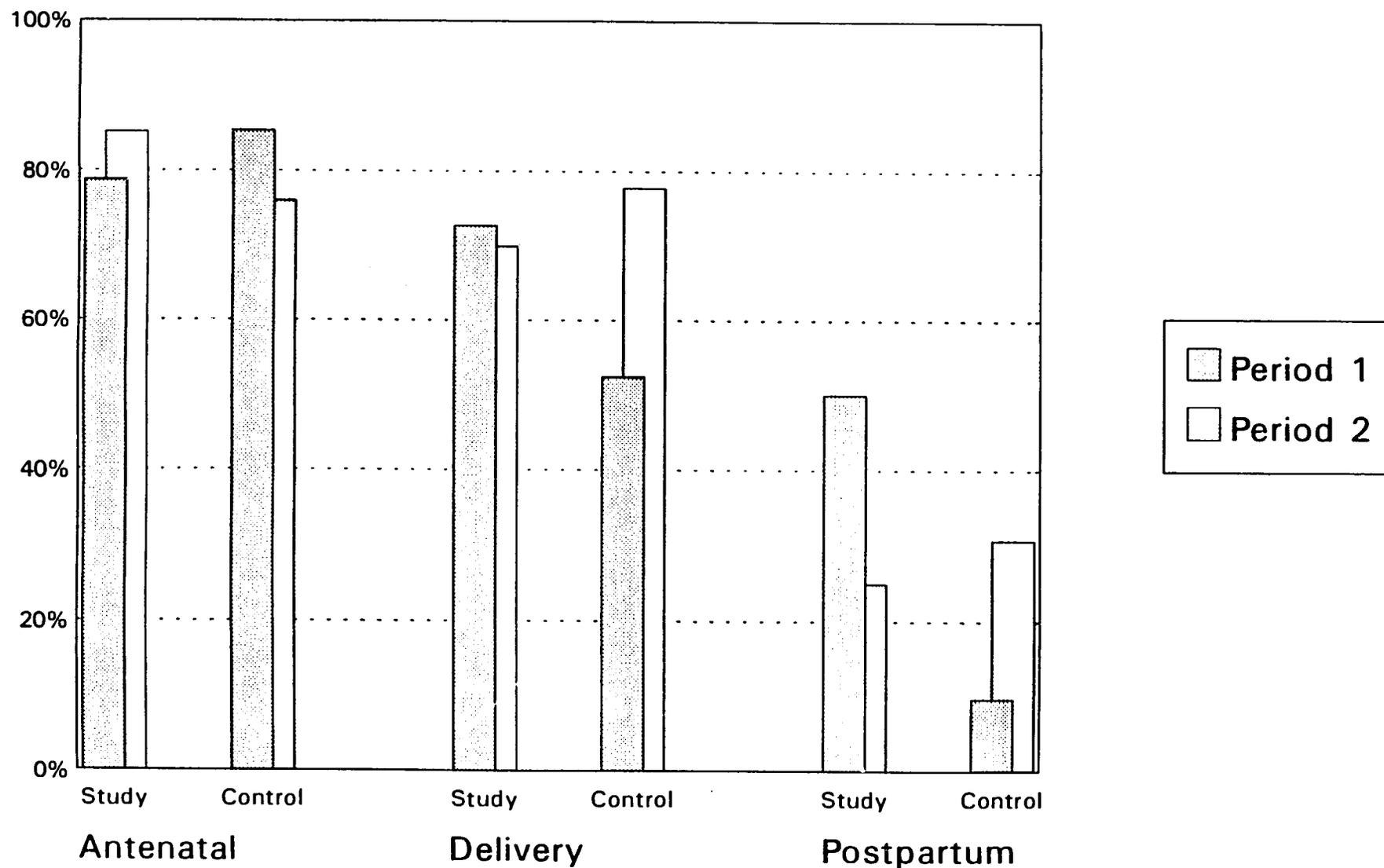
Number of Women Referred at Different Stages of Pregnancy

Referrals from Polindes June 1992 to May 1993



Percentage Compliance for Referrals at Different Stages of Pregnancy

Referrals from Paraji



Period 1 = June to November 1992

Period 2 = December 1992 to May 1993

Data from Perinatal Regionalization Project

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Referrals from Polindes

June 1992 to May 1993

Figure II(b)

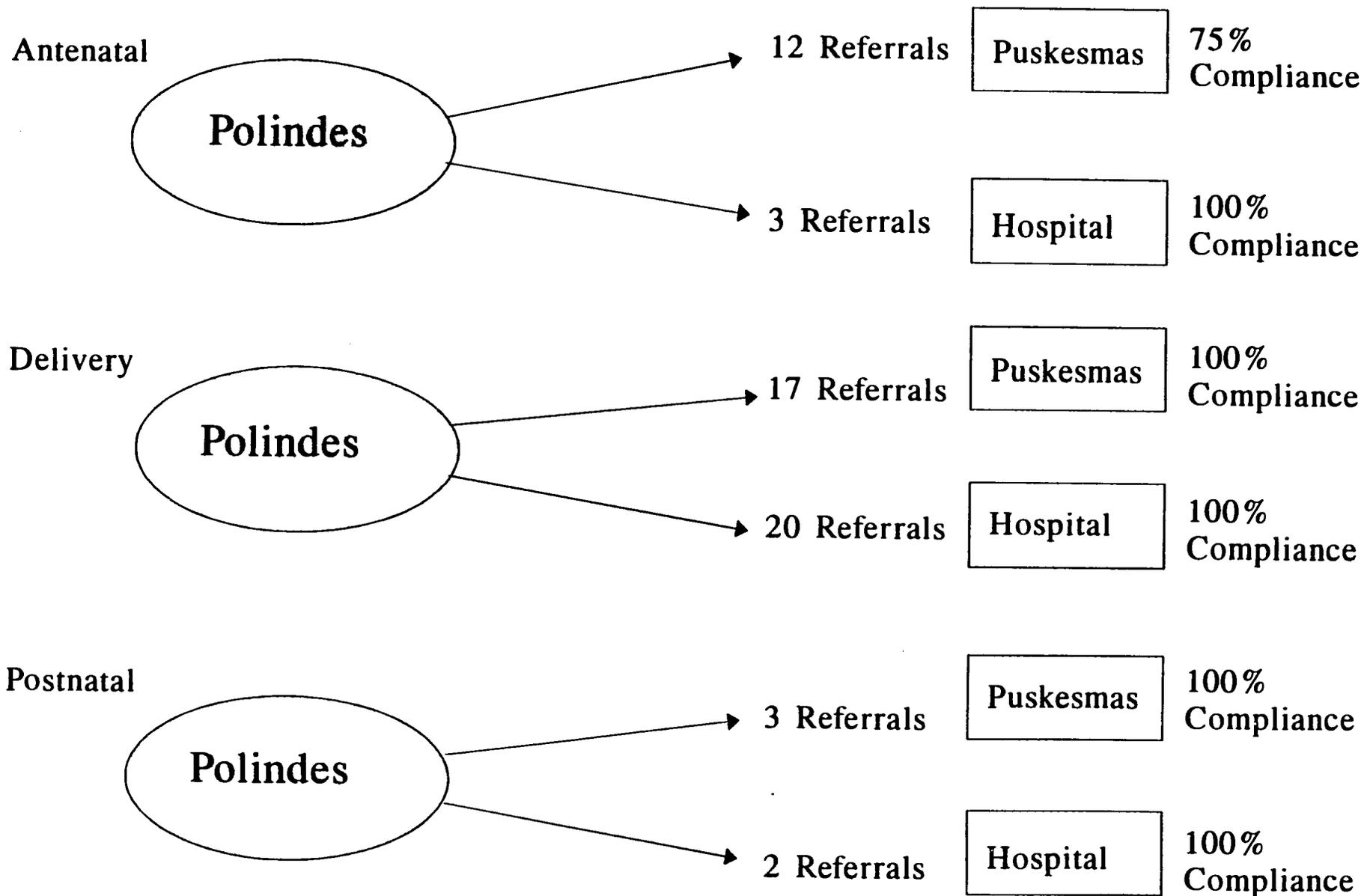
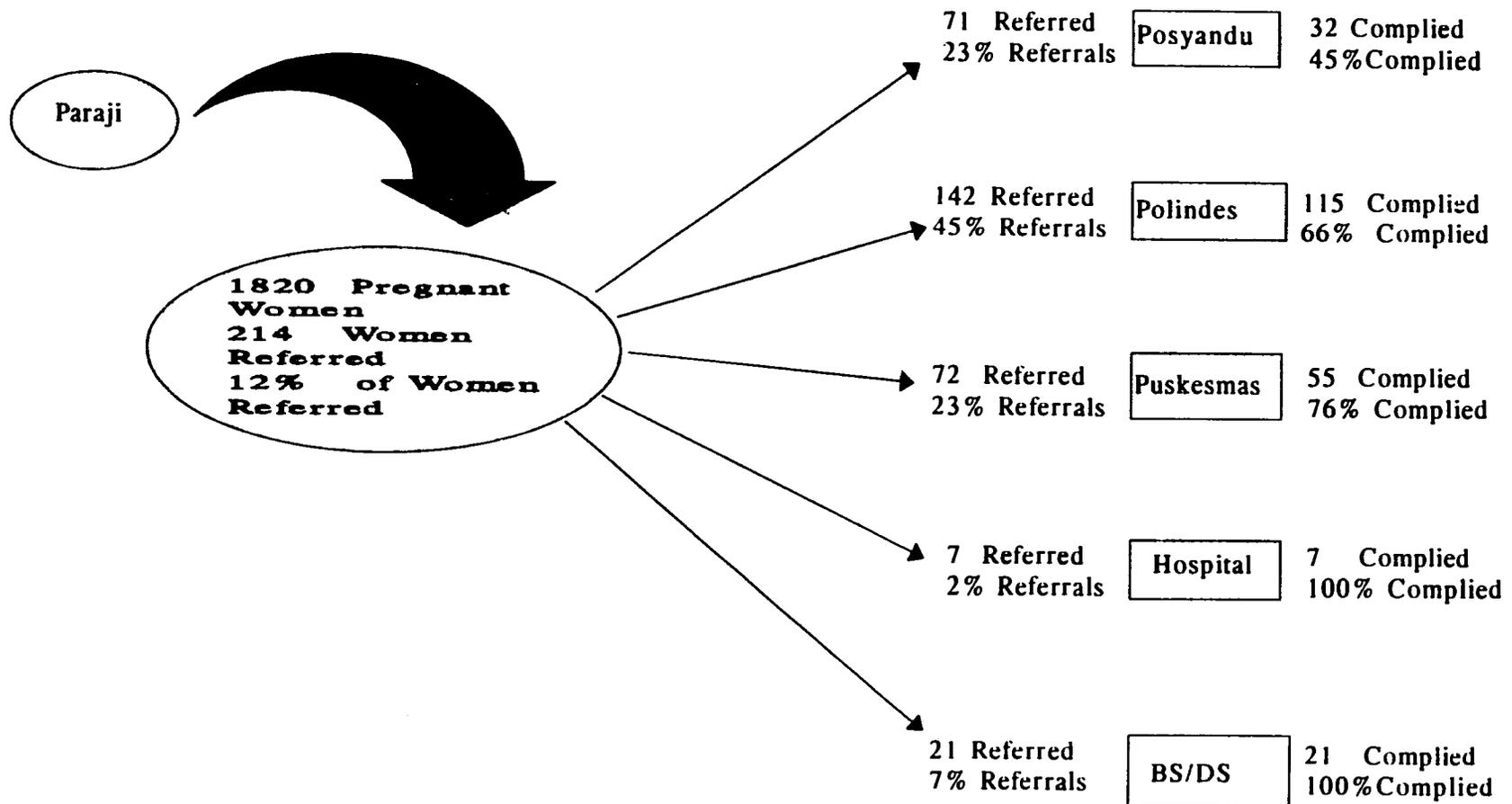


Figure III(a)

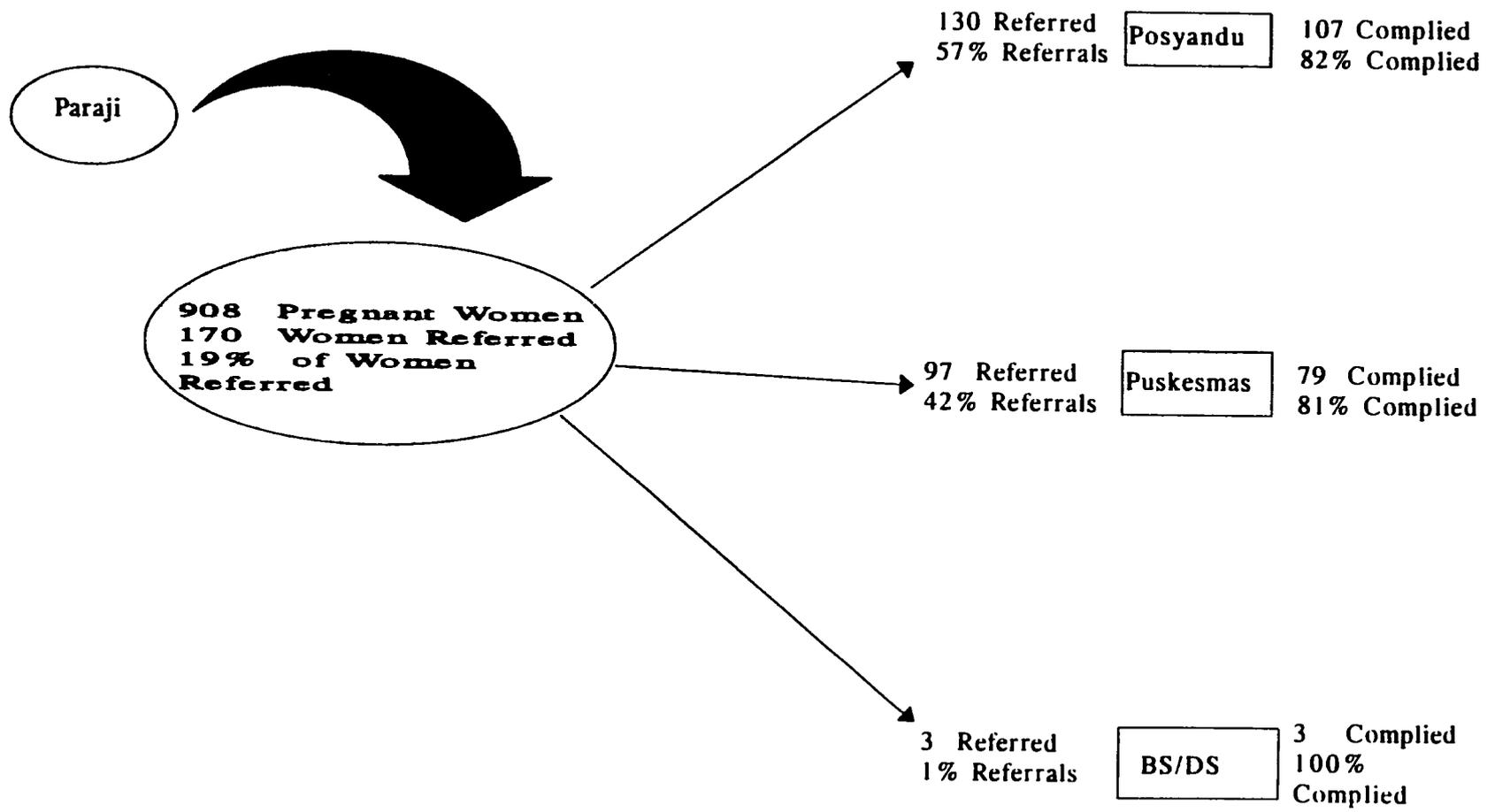
Antenatal Referrals in Study Area June 1992 to May 1993



BS = Bidan Swasta
DS = Dokter Swasta

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Antenatal Referrals In Control Area June 1992 to May 1993

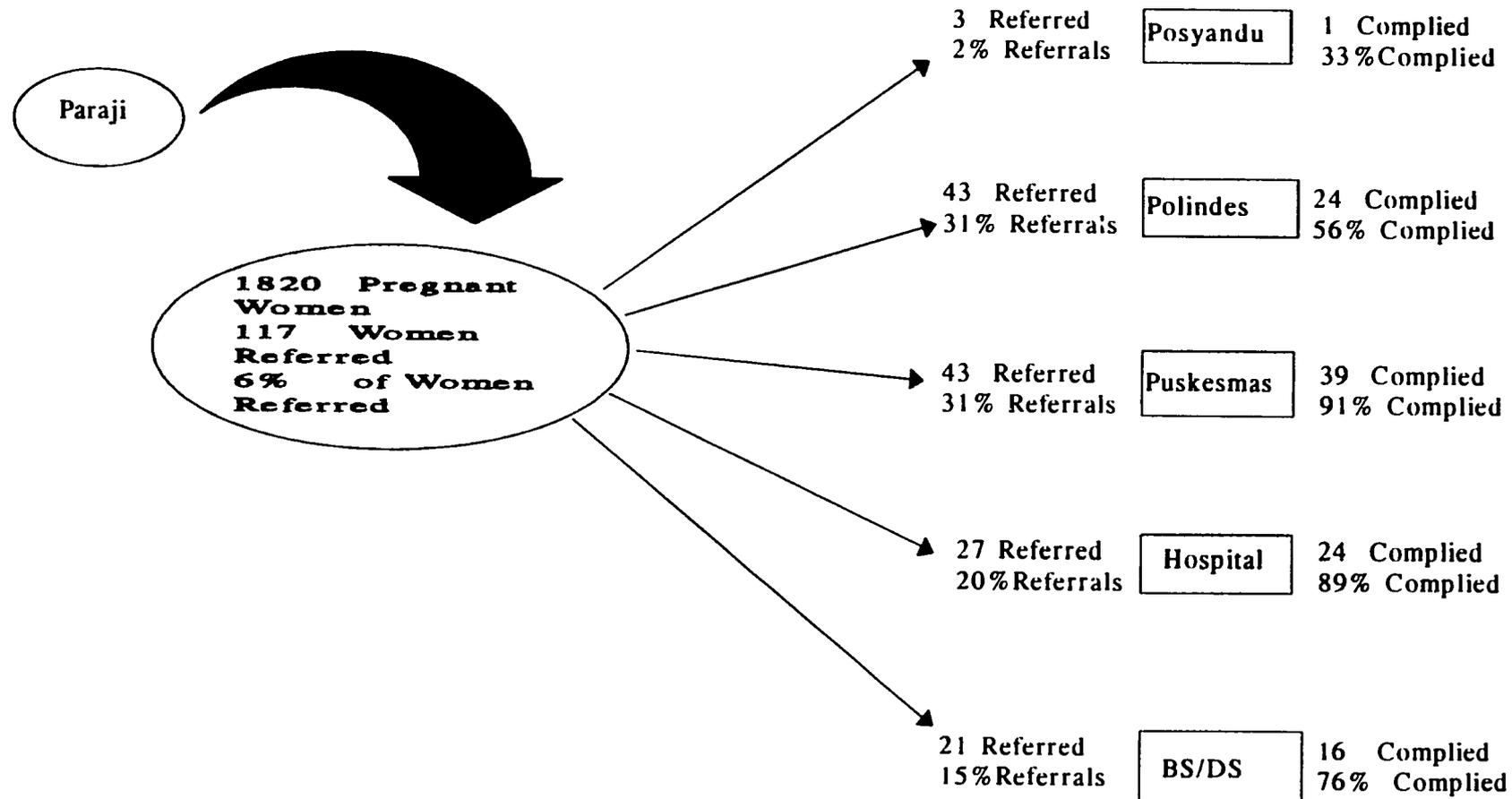


BS = Bidan Swasta
DS = Dokter Swasta

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Figure III(c)

Delivery Referrals in Study Area June 1992 to May 1993

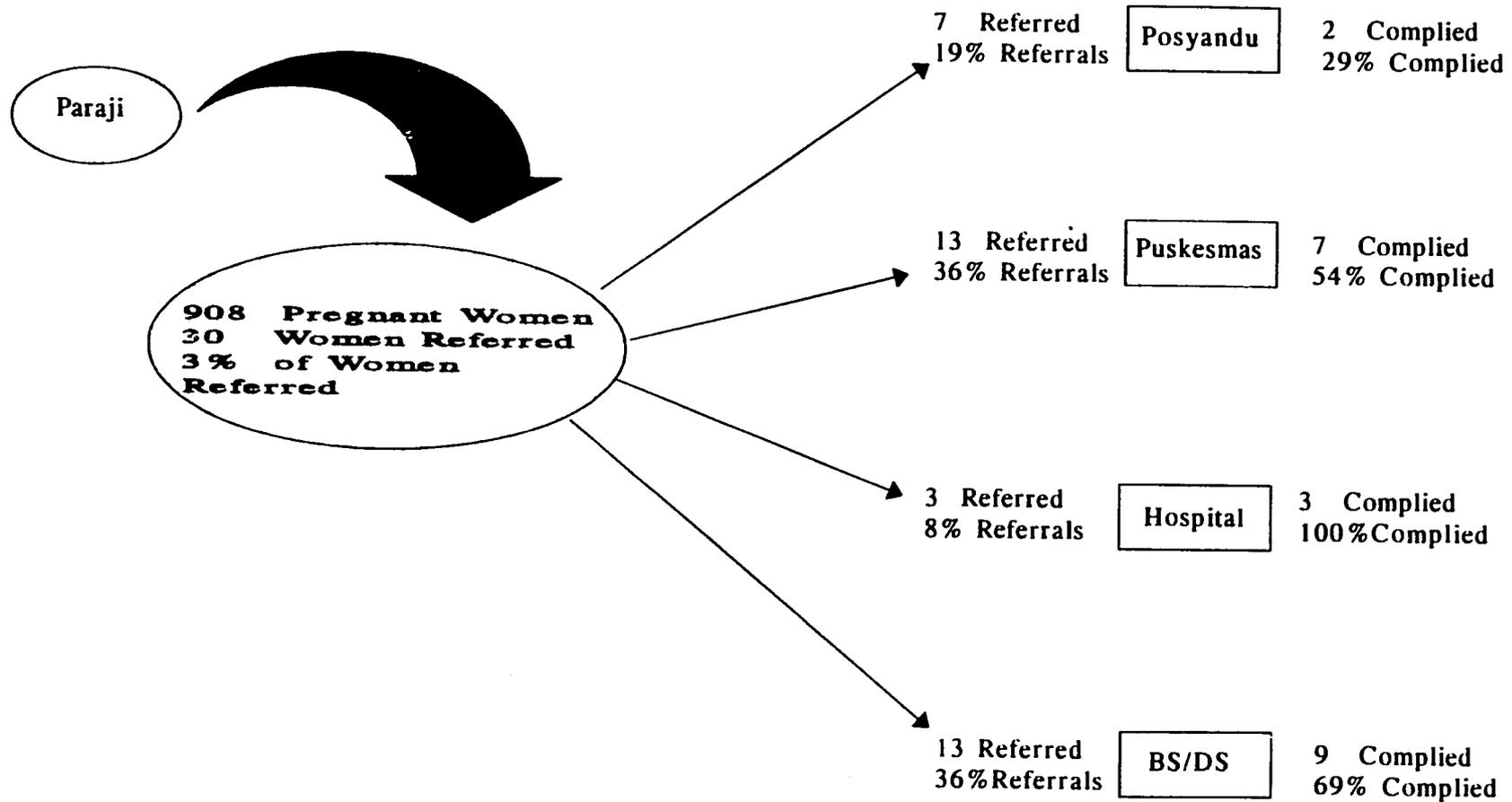


BS = Bidan Swasta
DS = Dokter Swasta

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Figure III(d)

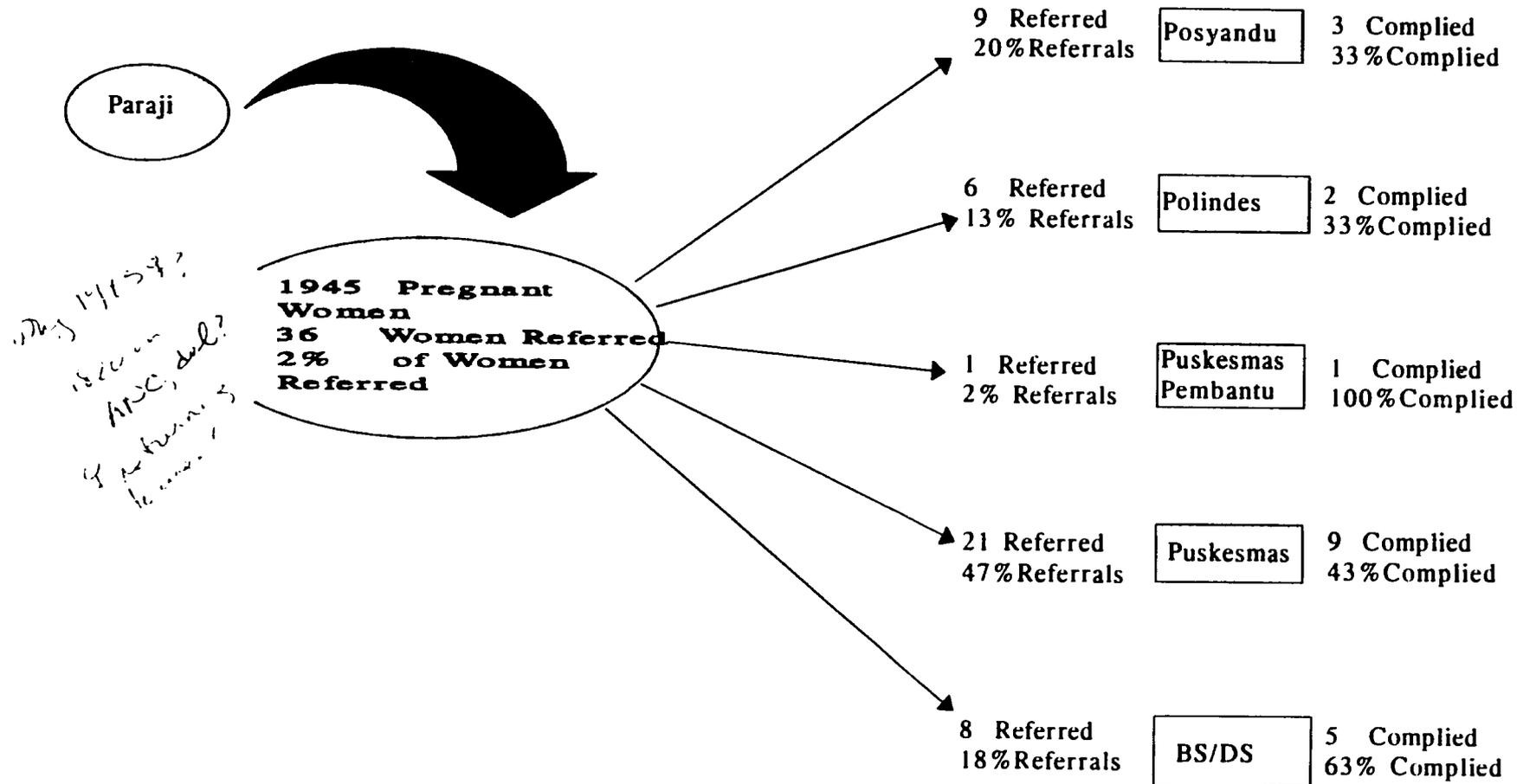
Delivery Referrals In Control Area June 1992 to May 1993



BS = Bidan Swasta
DS = Dokter Swasta

Figure III(e)

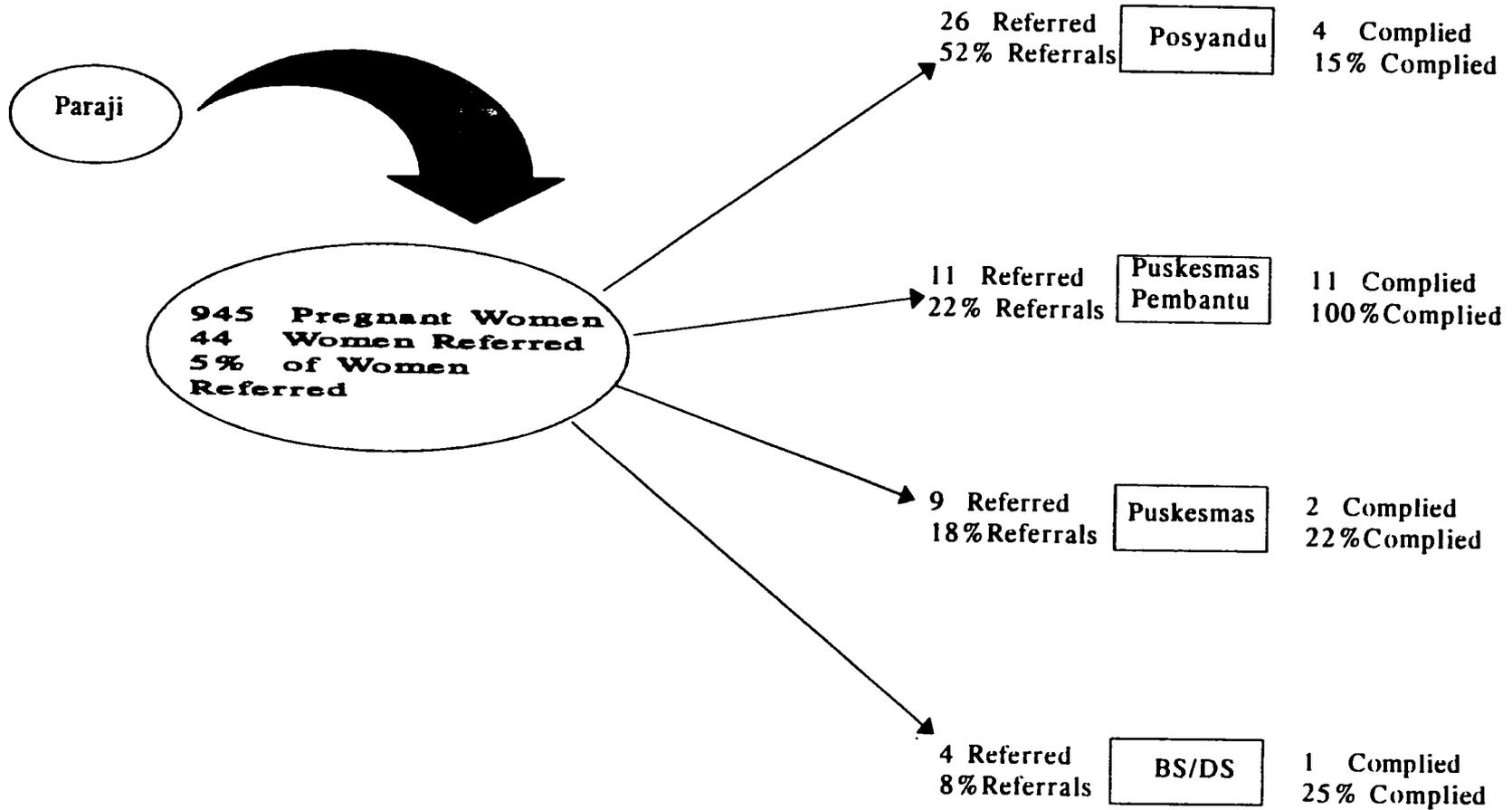
Postpartum Referrals in Study Area June 1992 to May 1993



BS = Bidan Swasta
DS = Dokter Swasta

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Postpartum Referrals In Control Area June 1992 to May 1993

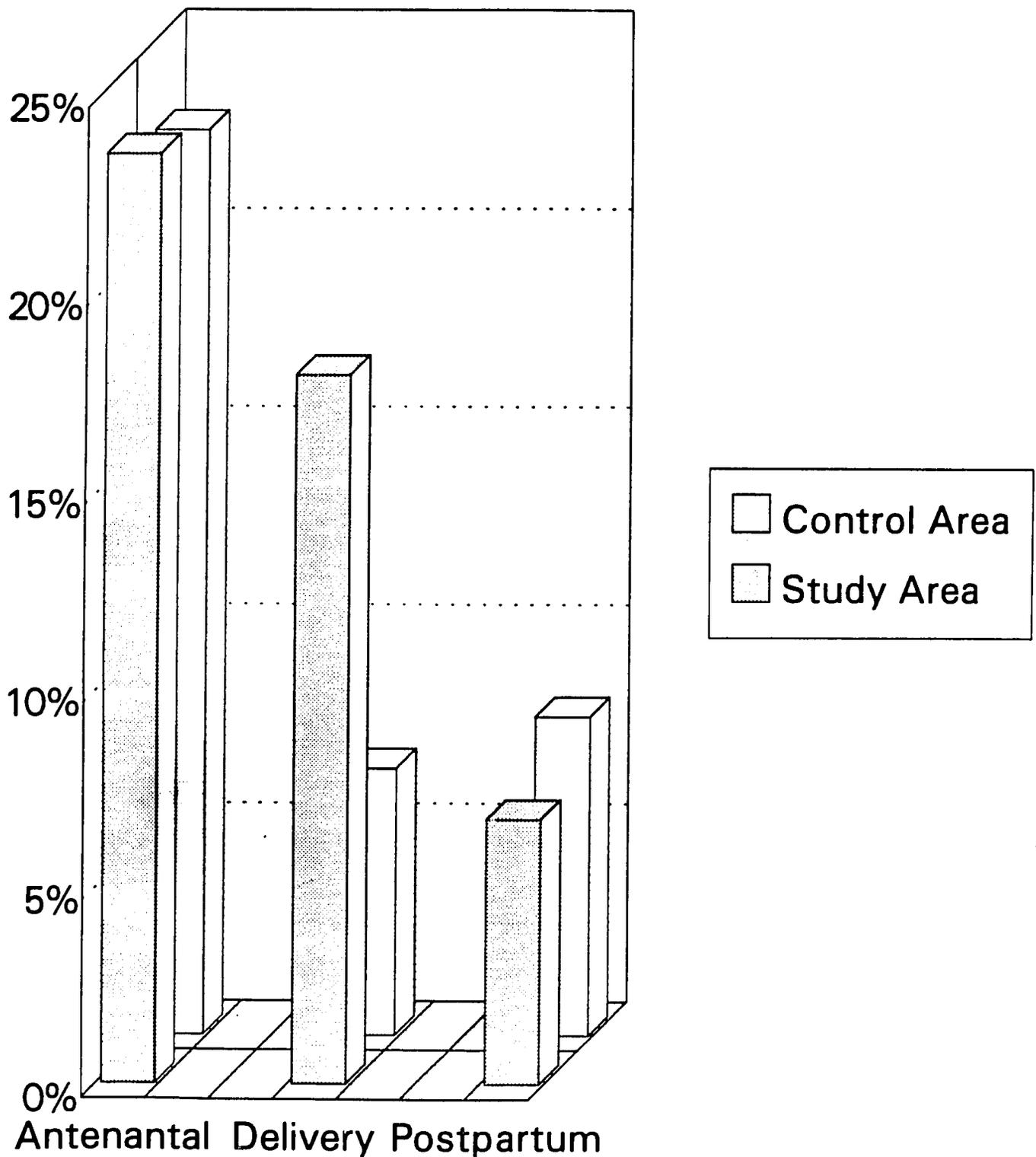


BS = Bidan Swasta
 DS = Dokter Swasta

Percentage of Women with Complications Referred

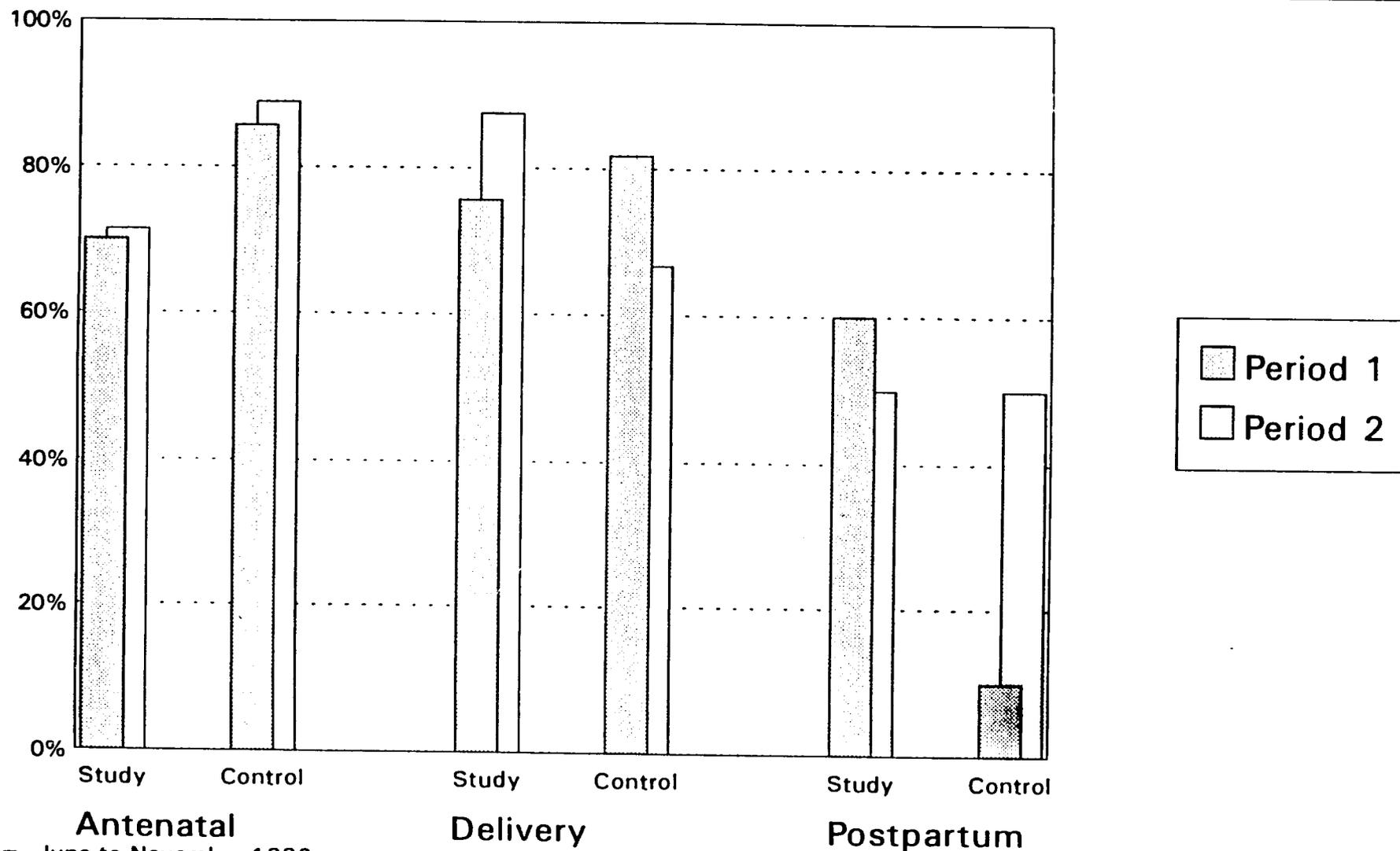
Referrals from Paraji

June 1992 to May 1993



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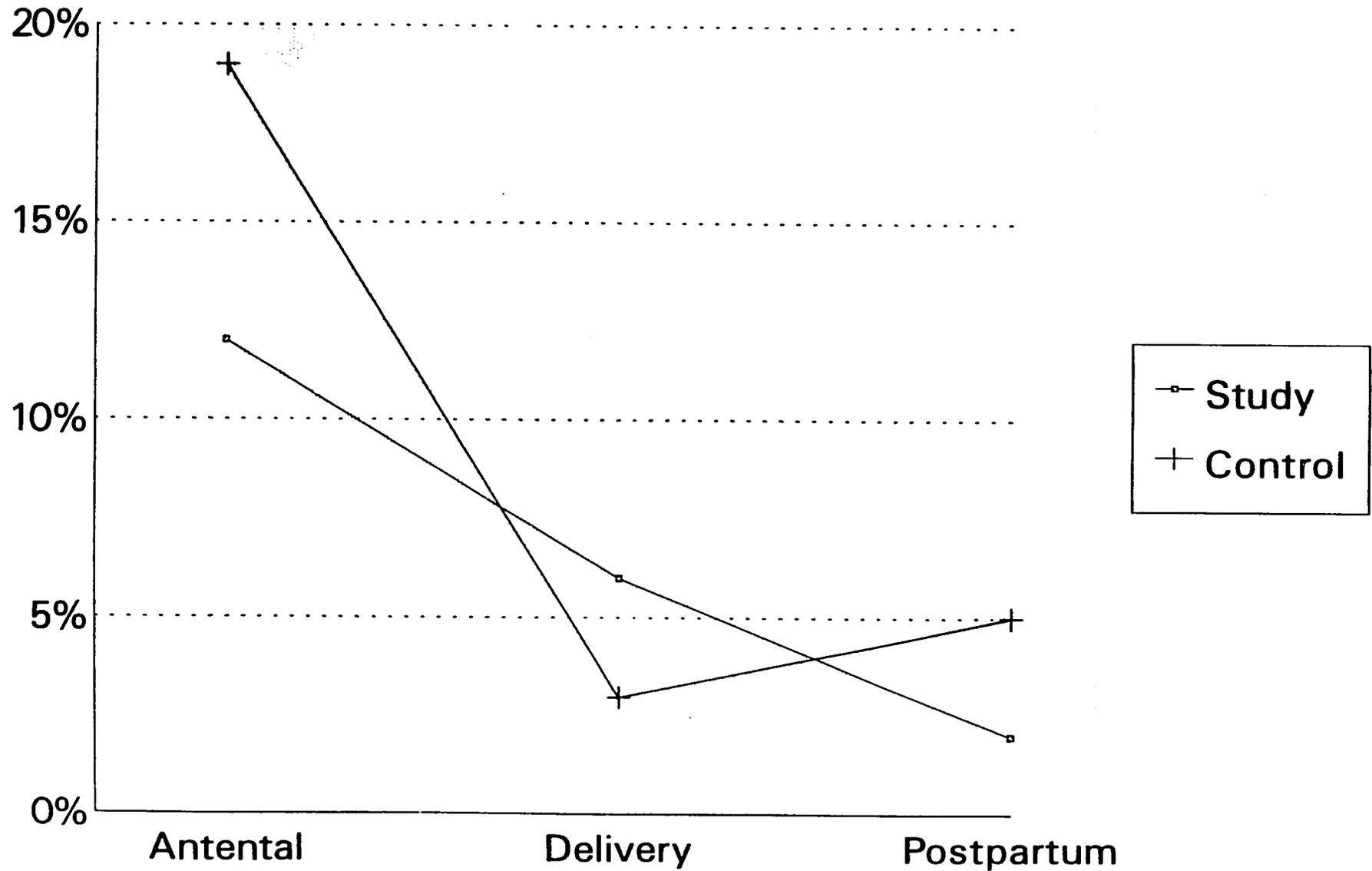
Percentage Compliance for Referrals for Women with Complications Referrals from Paraji



Period 1 = June to November 1992
 Period 2 = December 1992 to May 1993
 Data from Perinatal Regionalization Project

Percentage of Women Referred at Different Stages of Pregnancy

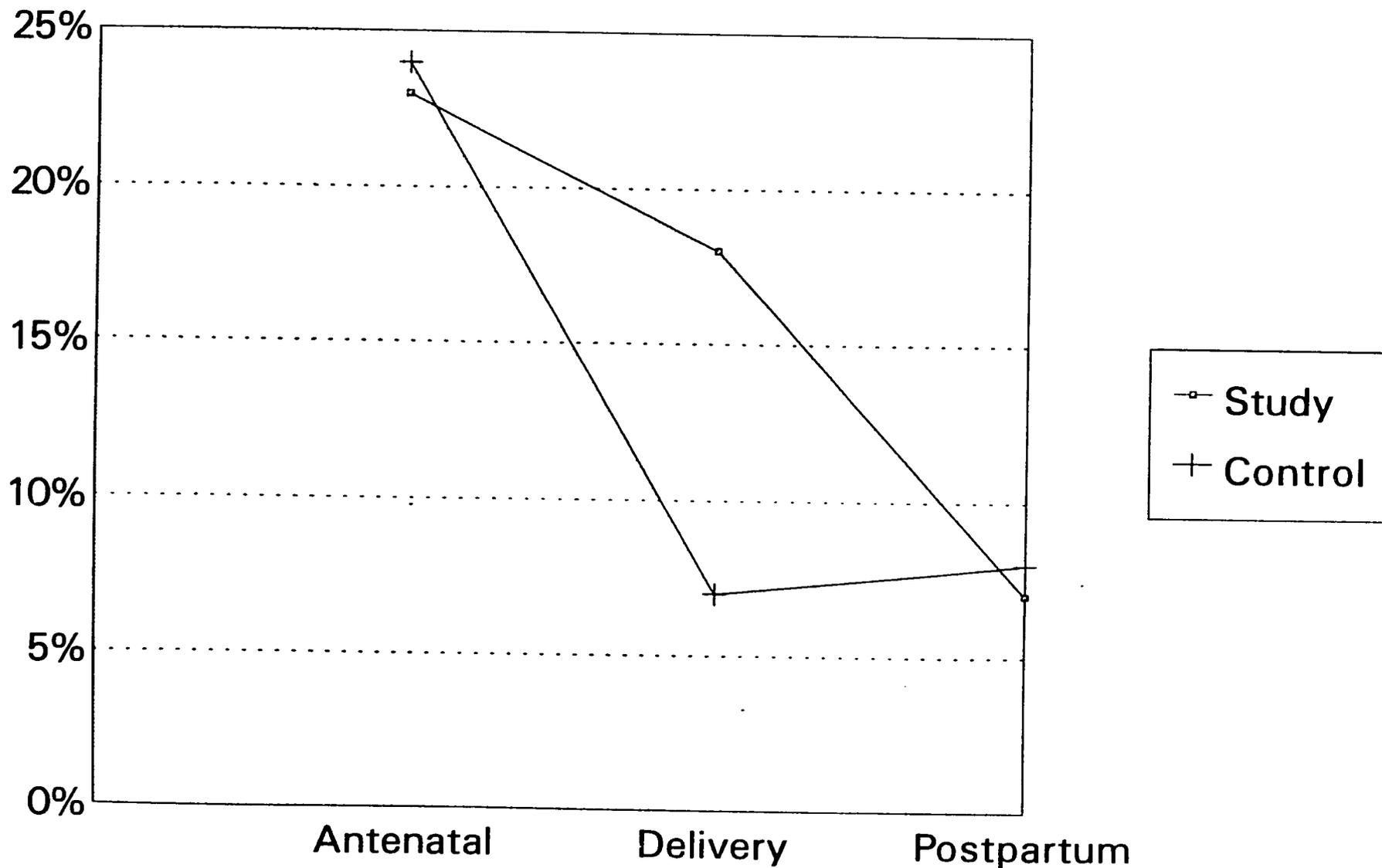
Referrals from Paraji June 1992 to May 1993



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Percentage of Women with Complications Referred

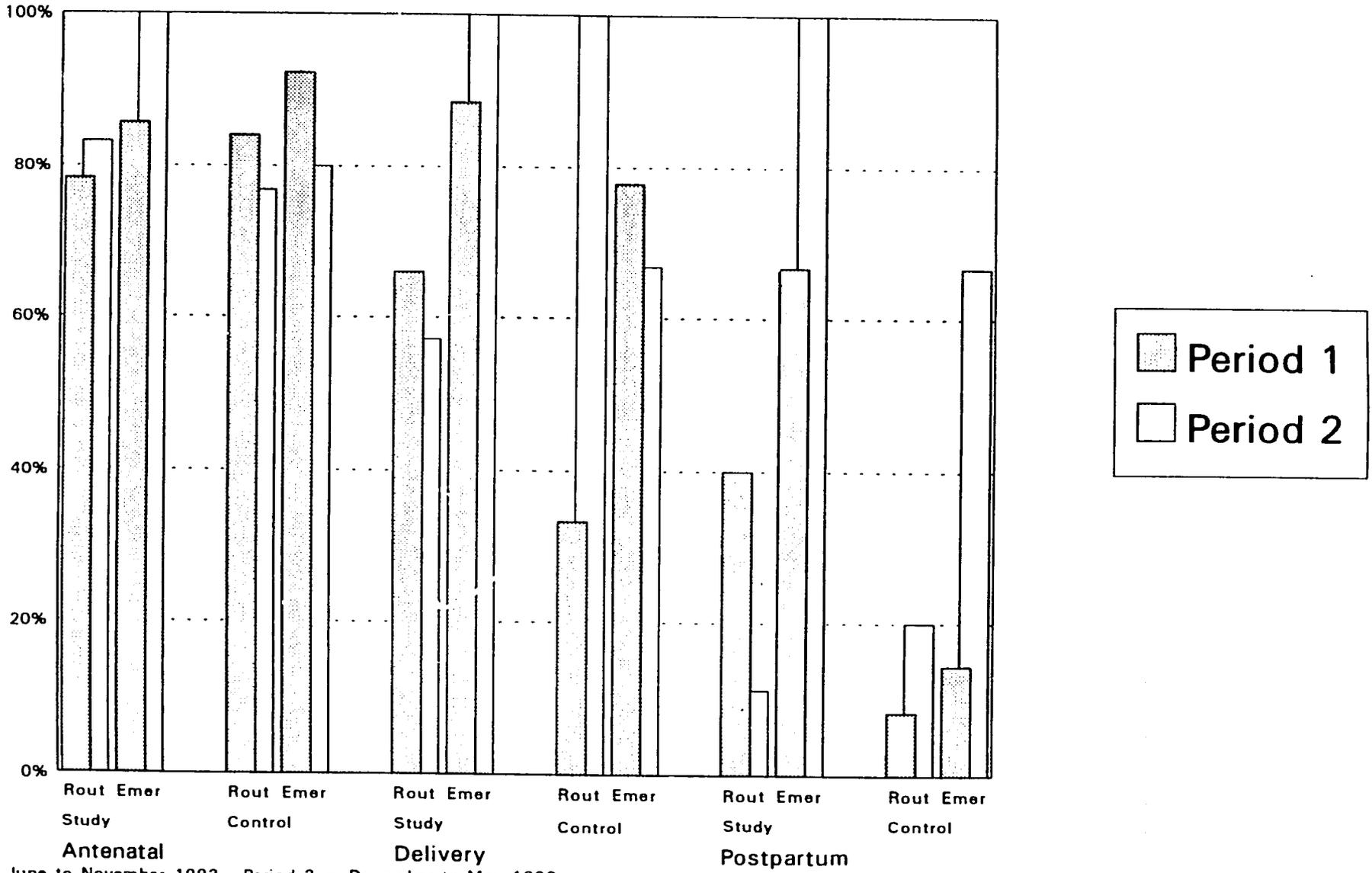
Referrals from Paraji June 1992 to May 1993



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Figure IV(e)

Percentage Compliance Comparing Routine and Emergency Referrals Referrals from Paraji



Period 1 = June to November 1992 Period 2 = December to May 1993
Data from Perinatal Regionalization Project

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Appendix B
Data Tables for Referral Data

Tanjungsari Referral Data Analysis Guide

1. Routine Vs. Emergency Referrals From Paraji¹
2. Routine Vs. Emergency Referrals From Polindes
3. Referrals from Puskesmas
4. Spread of Referrals Between Provider Types by Paraji and Compliance for Each Type
5. Referrals for High Risk Women from the Paraji
6. Use of Antenatal Visits, Delivery Facilities, Radios and Ambulance

Question: At the Polindes and Puskesmas Levels we will not be able to use the registers to make determinations of whether women are being appropriately referred. Will it be possible to make an assessment based on peer observation at a sample of Polindes and Puskesmas?

Period 1: June-Nov 1992 .

Period 2: Dec-May 1992-93

1. Routine Vs. Emergency Referrals From Paraji - Antenatal

Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Pregnant Women	1114	706	529	379
Number of Referrals From Paraji For Antenatal Period	11.4%** (127)	12.3%** (87)	18% (95)	19.8% (75)
Number (and Percentage) of Antenatal Referrals Which Were Emergency Referrals	3.5%* (7)	10.3% (9)	13.7% (13)	6.7% (5)
Number (and Percentage) Compliance for Emergency Antenatal Referrals	85.7% (6)	100% (9)	92.3% (12)	80% (4)
Number and Percentage Compliance for Routine Antenatal Referrals	78.3% (94)	83.3% (65)	84.1% (69)	76.8% (53)

¹ Based on Analyst's Classification and Woman's report of reason she was referred:

Antenatal Emergency: Bleeding, fever > 3 days, heavy coughing, oedema

Delivery Emergency: Malposition, extended labor, convulsions, heavy bleeding, fever, infection (foul smelling discharge)

Postnatal Emergency: Bleeding, fever, infection (foul smelling discharge), lack of Blood and Light-Headedness

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2. Routine Vs. Emergency Referrals from Paraji - Delivery

	Study		Control	
	1	2	1	2
Number of Women Who Delivered	1114	706	529	379
Number of Referrals From Paraji For Delivery Period	6.9%* (77)	5.7%* (40)	4% (21)	2.4% (9)
Number (and Percentage) of Delivery Referrals Which Were Emergency Referrals	33.8% (26)	30%* (12)	42.9% (9)	66.7% (6)
Number (and Percentage) Compliance for Emergency Delivery Referrals	88.5% (23)	100% (12)	77.8% (7)	66.7% (4)
Number and Percentage Compliance for Routine Delivery Referrals	66%* (33)	57.1% (16)	33.3% (4)	100% (3)

3. Routine Vs. Emergency Referrals from Paraji - Postnatal

Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Postnatal Women	1104	841	525	422
Number of Referrals From Paraji For Postnatal Period	2.2%*** (24)	1.4%* (12)	5.9% (31)	3.1% (13)
Number (and Percentage) of Postnatal Referrals Which Were Emergency Referrals	37.5% (9)	16.7% (2)	22.6% (7)	23.1% (3)
Number (and Percentage) Compliance for Emergency Postnatal Referrals	66.7%* (6)	100% (2)	14.3% (1)	66.7% (2)
Number and Percentage Compliance for Routine Postnatal Referrals	40%* (6)	11.1% (1)	8.3% (2)	20% (2)

2. Routine Vs. Emergency Referrals From Polindes

Antenatal

Data Source: Polindes Registers Puskesmas Registers	Study	
	1	2
Number of Antenatal Visits	842	787
Number of Referrals From Polindes For Antenatal Period	5	10
Proportion of Antenatal Visits Resulting in Referral	0.6%	1.2%
Number and Percentage of Referrals to Puskesmas	80% (4)	80% (8)
Number and Percentage of Referrals to Hospital	20% (1)	20% (2)
Number (and Percentage) of Antenatal Referrals Which Were Emergency Referrals	80% (4)	50% (5)
Number and Percentage Compliance for Referrals	20% (1)	100% (10)
Number (and Percentage) Compliance for Emergency Antenatal Referrals	0% (0)	100% (5)
Number and Percentage Compliance for Routine Antenatal Referrals	100% (1)	100% (5)

Delivery

Data Source: Polindes Registers Puskesmas Registers	Study	
	1	2
Number of Referrals From Polindes For Delivery Period	20	17
Number and Percentage of Referrals to Puskesmas	35% (7)	59% (10)
Number and Percentage of Referrals to Hospital	65% (13)	41% (7)
Number (and Percentage) of Delivery Referrals Which Were Emergency Referrals	100% (20)	100% (17)
Number and Percentage Compliance for Referrals	100% (20)	100% (17)

Postnatal

Data Source: Polindes Registers Puskesmas Registers	Study	
	1	2
Number of Referrals From Polindes For Postnatal Period	4	0
Number and Percentage of Referrals to Puskesmas	75% (3)	0
Number and Percentage of Referrals to Hospital	25% (1)	0
Number (and Percentage) of Postnatal Referrals Which Were Emergency Referrals	50% (2)	0
Number and Percentage Compliance for Referrals	100% (4)	0

3. Referrals from Puskesmas

Data Source: Puskesmas Registers Hospital Registers	Study		Control	
	1	2	1	2
Number of Referrals From Puskesmas For Antenatal Period	40	39		
Number (and Percentage) Compliance for Referrals	84% (42)	74% (29)		

Data Source: Puskesmas Registers Hospital Registers	Study		Control	
	1	2	1	2
Number of Referrals From Puskesmas For Delivery Period	45	42		
Number (and Percentage) Compliance for Referrals	98% (45)	93% (39)		

Data Source: Puskesmas Registers Hospital Registers	Study		Control	
	1	2	1	2
Number of Referrals From Puskesmas For Postnatal Period	4	9		
Number (and Percentage) Compliance for Referrals	100% (4)	100% (9)		

4. Spread of Referrals Between Provider Types by Paraji and Compliance for Each Type

Antenatal

Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Antenatal Referrals	127	87	95	75
Number of Referrals to Posyandu and Percentage of all Referrals	33.9%*** (43)	32.2%*** (28)	70.5% (67)	84% (63)
Number and Percentage Compliance for referrals to Posyandu	93.0% (4)	100%* (28)	83.6% (56)	82.3% (51)
Number of Referrals to Polindes and Percentage of all referrals	62.2% (79)	72.4% (63)	
Number and percentage compliance for referrals to Polindes	78.5% (62)	84.1% (53)	
Number of Referrals to Puskesmas and Percentage of all Referrals	42.5%* (54)	20.7%*** (18)	61.1% (58)	52% (39)
Number and Percentage Compliance for referrals to Puskesmas	75.9% (41)	77.8% (14)	87.9% (51)	71.8% (28)
Number of Referrals to RS and Percentage of all Referrals	3.9%* (5)	2.3% (2)	0	0
Number and Percentage Compliance for referrals to RS	100% (5)	100% (2)	0	0
Number of Referrals to Dokter Swasta and Percentage of all referrals	4.7% (6)	1.1% (1)	1.1% (1)	0
Number and Percentage Compliance for Referrals to Dokter Swasta	100% (6)	100% (1)	100% (1)	0
Number of Referrals to Bidan Swasta and Percentage of all Referrals	10.2%* (13)	1.1% (1)	2.1% (2)	0
Number and Percentage Compliance for Referrals to Bidan Swasta	100% (13)	100% (1)	100% (2)	0

Delivery

Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Delivery Referrals	77	40	21	9
Number of Referrals to Posyandu and Percentage of all Referrals	1.3%*** (1)	5% (2)	28.6% (6)	11.1% (1)
Number and Percentage Compliance for referrals to Posyandu	0	50% (1)	16.7% (1)	100% (1)
Number of Referrals to Polindes and Percentage of all referrals	35.1% (27)	40% (16)	
Number and percentage compliance for referrals to Polindes	59.3% (16)	50% (8)	
Number of Referrals to Puskesmas and Percentage of all Referrals	33.8% (26)	42.5% (17)	42.9% (9)	44.4% (4)
Number and Percentage Compliance for referrals to Puskesmas	84.6%* (22)	100%* (17)	44.4% (4)	75% (3)
Number of Referrals to RS and Percentage of all Referrals	25.4% (18)	22.5% (9)	14.3% (3)	0
Number and Percentage Compliance for referrals to RS	94.1% (16)	88.9% (8)	100% (3)	0
Number of Referrals to Dokter Swasta and Percentage of all referrals	1.3% (1)	0	4.8% (1)	0
Number and Percentage Compliance for Referrals to Dokter Swasta	100% (1)	0	100% (1)	0
Number of Referrals to Bidan Swasta and Percentage of All Referrals	20.8% (16)	10%* (4)	38.1% (8)	44.4% (4)
Number and Percentage Compliance for Referrals to Bidan Swasta	81.3% (13)	50% (2)	62.5% (5)	75% (3)

Postnatal

Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Postnatal Referrals	24	12	31	13
Number of Referrals to Posyandu and Percentage of all Referrals	33.3%* (8)	8.3%* (1)	64.5% (20)	46.2% (6)
Number and Percentage Compliance for referrals to Posyandu	37.5%* (3)	0%	5% (1)	50% (3)
Number of Referrals to Polindes and Percentage of all referrals	12.5% (3)	25% (3)	
Number and percentage compliance for referrals to Polindes	33.3% (1)	50% (1)	
Number of Referrals to Puskesmas Pembantu and Percentage of all Referrals	0	8.3% (1)	25.8% (8)	23.1% (3)
Number and Percentage Compliance for Referrals to Puskesmas Pembantu	0	100% (1)	100% (8)	100% (3)
Number of Referrals to Puskesmas and Percentage of all Referrals	50%* (12)	75%* (9)	16.1% (5)	30.8% (4)
Number and Percentage Compliance for referrals to Puskesmas	50% (6)	37.5% (3)	20% (1)	25% (1)
Number of Referrals to RS and Percentage of all Referrals	0	0	0	0
Number and Percentage Compliance for referrals to RS	0	0	0	0
Number of Referrals to Dokter Swasta and Percentage of all referrals	4.2% (1)	0	3.2% (1)	0
Number and Percentage Compliance for Referrals to Dokter Swasta	100% (1)	0	100% (1)	0
Number of Referrals to Bidan Swasta and Percentage of All Referrals	16.7% (4)	25% (3)	6.5% (2)	7.7% (1)
Number and Percentage Compliance for Referrals to Bidan Swasta	50% (4)	33.3% (1)	50% (1)	0%

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Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Deliveries (Completed Questionnaire 2)	1114	706	529	379
Number (and Percentage) of Deliveries with Key Complications	20.9%** (233)	16%*** (113)	28.7% (152)	26.4% (100)
Number and Percentage of Women with Key Complications who were Referred	19.7%** (46)	14.2%* (16)	7.2% (11)	6% (6)
Number and Percentage of Deliveries with Key Complications who were Referred During Delivery and Complied	75.6% (34)	87.5% (14)	81.8% (9)	66.7% (4)

Data Source: RAS Questionnaires	Study		Control	
	1	2	1	2
Number of Women Postnatal (Completed Questionnaire 3)	1104	841	525	422
Number (and Percentage) of Postnatal Women with Key Complications	22.6%* (250)	15.8% (133)	18.3% (96)	12.6% (53)
Number and Percentage of Women with Key Complications who were Referred	6% (15)	3% (4)	10.4% (10)	3.8% (2)
Number of Postnatal Women with Key Complications who were Referred During Delivery and Percentage Complied	60%* (9)	30% (2)	10% (1)	30% (1)

6. Use of Antenatal Services, Delivery Services, Radios and Ambulance

Data Source: Polindes Records	Study				
	1	2	3	4	5
Cinanjung # of Antenatal Visits # of Deliveries		36 2	54 2	43 4	3
Sukarapih # of Antenatal Visits # of Deliveries		38 3	29 3	32 0	30 0
Ciptuan # of Antenatal Visits # of Deliveries	9 0	12 4	10 1	27 1	35 2
Sukawangi # of Antenatal Visits # of Deliveries	- -	69 3	59 4	88 3	
Genteng # of Antenatal Visits # of Deliveries	44 0	43 7	46 17	66 5	30
Sirdangsaan # of Antenatal Visits # of Deliveries	24	36 3	35 2	48 1	46 0
Cijambu # of Antenatal Visits # of Deliveries	- -	41 13	56 5	44 8	56 6
Margajaya # of Antenatal Visits # of Deliveries	- -	45 4	91 6	52 -	29 1
Guning Manik # of Antenatal Visits # of Deliveries	- -	12 7	73 3	104 7	37 3
Haugombong # of Antenatal Visits # of Deliveries	- -	27 2	30 3	20 3	- 1

Appendix C
Framework for Data Analysis

**Framework for Data Analysis
for the Referral System of the Tanjungsari
Perinatal Regionalization Project**

**Claudia Williams
MotherCare Consultant**

**Draft Report
April 12, 1993**

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I. Background: Project Goals and Objectives Related to Referrals

A central hypothesis of the Tanjungsari MotherCare project is that appropriate and timely referral to a higher level health facility of high risk women during the antenatal period, for delivery and in the post-natal period would have a positive impact on maternal survival. To this end, the project proposal presents a variety of project interventions for improving the process and impact of referrals:

- **Social Marketing:** Improve the knowledge, attitudes and perception of the community towards use of appropriate services, risk factors and referral during pregnancy, delivery and in the immediate post-partum period. The social marketing campaign aims to influence families' choice of care strategies, especially for high risk women who had been referred.
- **Provider Training for Appropriate Referral:** Provide treatment and preventive care protocols and training to the village-level TBA's and all health personnel at the Puskesmas and hospital level plus those in the private sector, especially focused on appropriate antenatal care and on the identification, appropriate management and referral of high risk mothers and neonates.
- **Improving Communications:** All MCH huts would be linked by two-way radio with the Puskesmas and the hospital and a four wheel drive vehicle would be provided for no-cost emergency evacuations.

The referral consultant was engaged in April 1993 by MotherCare to work with UNPAD under Dr. Anna Alisjabahna's direction and in close collaboration with Dr. Swandari and the Social Marketing Team to collect and write up material from the Regionalization project related to referral with a focus on issues of client acceptance of provider referral.

The following framework for data collection and analysis on referral patterns was developed jointly by Dr. Anna Alisjabahna, Dr. Swandari, the social marketing team, Carrie Hessler-Radelet, Mary Jo Hansell and the consultant, Claudia Williams.

II. Data Needs for Impact Evaluation of Regionalization Project on Referral

The project is interested in examining the impact of the three streams of interventions detailed above on the referral system in the project's study area; the 27 villages of the Tanjungsari Kecamatan.

There are two main areas of investigation and data collection in this examination. The first is to collect and analyze quantitative data pertaining to referral patterns in the study area for the most recent period which can be compared to referral patterns and client acceptance in the control area. Secondly is to use qualitative methods to examine families' and women's attitudes

towards referral and reasons for choosing to accept or to not accept provider referrals in a variety of high-risk situations.

III. Framework for Quantitative Data Collection on Referrals

A) Collect Data on number of referrals made from the TBA or the Polindes to the Polindes, Puskesmas and Hospital and the rates of acceptance of these referrals in both study and control areas.

1. Using the Polindes records and the Second and Third RAS questionnaires make a list of all women who were referred by the Paraji or Bidan to the Polindes, Puskesmas or Hospital during pregnancy, for delivery or in the post-natal period. We will collect data on the following variables:

- Client residence (village)
- Time of Referral (pre-natal, delivery, post-natal)
- Reason for Referral
- Status of Referral (routine or acute)
- Type of Provider making referral (bidan, paraji)

2. Cross-check the list with client registers at the Polindes, Puskesmas and Hospital to assess the proportion of the village-based referrals accepted by clients. We can also identify the time-lag in acceptance of referral.

Problems: This is a complicated multi-step process. During a field visit Dr. Swandari and the Consultant tested the procedure for one Polindes and its catchment area; it took one and one half days. Based on this experience we also predict that the sample size will be extremely small. For the three month period from October to December we only identified one referral.

Timing of Data Collection: The data will be collected by Dr. Swandari with support from the Consultant from May 24 to June 15. The data collection will take approximately 15 days.

B) Analyze TBA referral rates for women with specific risk symptoms (bleeding, oedema, fever) in both the study and the control areas.

We are interested in examining the impact of the project on TBA referral rates for women most at risk at different stages of pregnancy. All data for this analysis are currently available through the RAS questionnaires. This may already constitute an element of the general analysis plan for data from the RAS questionnaires. No additional data collection is needed.

Problems: According to staff at UNPAD questionnaire data input for the months of January through March is not yet complete. We may not be able to include the most recent months, for which we would anticipate the greatest impact, in the data analysis.

IV. Framework for Qualitative Data Collection on Referrals

Through qualitative investigation we hope to sketch a richer picture of the pregnancy and birthing experience of women with key risk conditions in both the study and the control areas. A total of 30 respondents will be selected for in-depth interviews which will explore factors influencing awareness of risk condition, referral and acceptance of referral. These factors will include the respondent's:

- Perception of own risk status
- Referral history
- Understanding of reasons for referral (if she was referred)
- Exposure to Social Marketing Materials (in Study area)
- Access and acceptability of services provided at site to which she was referred
- Distance to provider to which referred
- Opinion of family decision-makers and other influencers about her risk condition and importance of referrals made.
- Previous pregnancy experience

The selection of respondents will be purposeful. Respondents who experienced key risk conditions will be chosen in both the study and the control area. Interview data will be analyzed for evidence of differing patterns of risk recognition, care-seeking behavior, and acceptance of referral between the two areas. Interviews will be divided between the study and the control areas, and among the risk conditions as follows:

	<u>Study</u>	<u>Control</u>
Bleeding During Pregnancy	5 Women	5 Women
Oedema During Pregnancy	5 Women	5 Women
Fever After Delivery	5 Women	5 Women

A total of 30 interviews will be conducted. The Social Marketing Team will work with the Consultant and Carrie Hessler Radelet to design and pre-test the questionnaire, conduct the interviews and analyze the results.

Appendix D
Questionnaire for In-Depth Interviews on Referral

Questionnaire for In-Depth Interview
Women Who Have Recently Delivered
Tanjungsari Perinatal Regionalization Project

Date:

Day:

Time:

Name of Interviewer:

Name of Respondent:

Village:

Risk Condition:

Study or Control Area:

Introduction: We would like to ask you some questions about pregnancy to help us understand the problems women face in your area.

1. Overall how did you feel during your recent pregnancy? (probe for how she may have felt and problems she had at different stages of the pregnancy).
2. Tell me about the delivery and how you felt after the delivery.
3. Do you know about any problems a woman can have before, during or after delivery which can be dangerous to her health? (prompt for bleeding, swelling and fever if the woman does not mention them)
4. How do you know about these problems? (probe for information sources: paraji, bidan, mother, relatives, puskesmas, posters).
5. Did you experienced any of these problems during your last pregnancy? (prompt for the risk condition for which woman selected)
6. What about in past pregnancies?

I would like to ask you a few questions about the _____ (risk condition) you said you experienced during/after your last pregnancy.

7. How and when did you notice _____ (risk condition)?

What was the first thing you did when you noticed _____ (risk condition)?

What did you do after that?

8. With whom did you discuss _____ (risk condition)? (probe for family, friends, neighbors)

What advice did that person give you?

9. What did you think about the advice you received? why?

10. Were you able to follow this advice?

If NO, what were the reasons you were not able to follow this advice?

If YES, what were the reasons you followed this advice?

11. Did you see a caregiver about _____ (risk condition)? (probe for TBA, Bidan, Doctor)?

If YES, what advice did that person give you?

What did you think about the advice you received? why?

Were you able to follow this advice?

If not able to follow advice, what were the reasons you were not able to follow this advice?

If able to follow advice, what were the reasons you followed this advice?

12. While you were pregnant from whom did you receive care? (ask about each one)

a) paraji (where?) (how often?) (at what stages of pregnancy?)

b) bidan (where?) (how often?) (at what stages of pregnancy?)

c) doctor (where?) (how often?) (at what stages of pregnancy?)

d) nurse (where?) (how often?) (at what stages of pregnancy?)

e) mantri (where?) (how often?) (at what stages of pregnancy?)

f) other (specify)(how often?) (at what stages of pregnancy?)

13. Did _____ (provider mentioned in 12) advise you to go somewhere else for care during pregnancy? (probe for Polindes, Puskesmas, Hospital)

IF RESPONDENT ANSWERS NO TO 13 SKIP TO QUESTION 17

14. Do you know why the _____ advised you to go to _____? If so, what were the reasons? (probe for the risk condition)

15. What did you think about these reasons? Do you think these reasons are important? Is this condition dangerous? Why or why not?

16. Did you go to _____ (place to which referred)?

a) If NO, what were the reasons you chose not to go? (probe for distance, cost, opinion about referral, fear, other difficulties in access)

Did anyone else give you advice about whether or not you should go? If so, what did they say?

b) if YES, what were the reasons you chose to go? Did anyone give you advice about whether or not you should go? If so, what did they say?

When did _____ (referring provider) tell you to go? when were you able to go? Were you able to go when they suggested? If NO, why not?

What happened when you went to _____ (place to which referred)?

Did you have any difficulties during your examination?

Were you asked to return at another time?

Were you advised to see anyone else?

17. Where did you deliver and who helped you there?

18. What were the reasons you chose to deliver at _____ (place where woman delivered)?

19. Did anyone advise you to deliver somewhere else? If YES, who? Where did they want you to go? What were the reasons they thought you should go somewhere else? (probe for the risk condition)

20. What were the reasons you chose not to follow this advice? (probe for distance, cost, opinion about referral, fear, discomfort, other difficulties in access)

21. In the days and weeks after you delivered, did anyone such as the Paraji or the bidan check how you were doing? If YES, who?

22. Did _____ (provider mentioned in 21) advise you to go somewhere else for care after delivery? (probe for Polindes, Puskesmas, Hospital)

IF RESPONDENT ANSWERS NO TO 22 SKIP TO QUESTION 26

23. Do you know why the _____ advised you to go to _____? If so, what were the reasons? (probe for the risk condition)

24. What did you think about these reasons? Do you think these reasons are important? Is this condition dangerous? Why or why not?

25. Did you go to _____ (place to which referred)?

a) If NO, what were the reasons you chose not to go? (probe for distance, cost, opinion about referral, fear, other difficulties in access)

Did anyone give you advice about whether or not you should go? If so, what did they say?

b) if YES, what were the reasons you chose to go? Did anyone give you advice about whether or not you should go? If so, what did they say?

when did _____(referring provider) tell you to go and when were you able to go?

Did you have any difficulties? What happened when you went there?

General Information

26. Age of respondent:

27. Education:

28: Job/Spouse's job:

29. Marital status:

30: How many children do you have?

31: How many times have you given birth?

32: Have you ever seen this? Where? (Show some examples of Social Marketing Materials)

Appendix E
Report by Matthew Belcher and Kirsten Lawrence
Analyzing Results of
In-Depth Interviews

Matthew K. Belcher
Kirsten Lawrence

**Qualitative Data on the
Pregnancy and Birthing Experience
of Women with Key Complications**

Through qualitative investigation, this study explores the pregnancy and birthing experience of women with key complications in both the study and control areas. For the sample, a total of twenty-nine women were selected. In an attempt to represent the experiences of women with the complications of bleeding, edema, and fever, a group of women who had experienced one of these conditions in her previous pregnancy was chosen from each of the two areas. In-depth interviews examined factors influencing their awareness of risk condition, referral, and acceptance of referral. We have identified several aspects of the study which may impact upon these factors.

INTERVIEW DATA: Knowledge of Risk Factors

Generally, women's level of knowledge of risk factors appears higher within the study group. When asked to list risk factors in pregnancy, most (13 of 15) study area respondents were able to answer spontaneously, correctly identifying at least one key risk factor. In contrast, most (10 of 14) control group respondents were unable to answer the question about risk factors, and required specific prompting. Furthermore, respondents within the control group more often characterized known risk factors as "normal" and therefore not dangerous. For example, no respondent identified edema as a risk factor while many perceived it as a routine consequence of pregnancy.

Of risk conditions identified, bleeding was the one most consistently named by both groups. Awareness of both edema and fever as risk factors was low in both groups, but appeared slightly higher within the study group. Other risks mentioned were twins, malposition, anemia, weight loss, coughing, and "anything not cured."

Sources of Knowledge

There exists a significant difference in the sources of knowledge identified by women in the study and control groups. Within the study group, the overall number of responses was much greater and women were readily able to identify specific sources. Those most commonly noted were TBAs, neighbors, cadres, and nurses. In the control group the most common responses were "no idea," "I knew after you asked," and "I just guessed."

Exposure to Social Marketing Materials

Of the 15 women within the study group, nine of the ten asked stated that they had seen the social marketing materials, and several(4) cited them as sources of knowledge without specific prompting.

Perceptions of Own Risk Status

There seems to be a significant disparity between what women denote as dangerous in pregnancy when asked, and a problem for which they are willing to seek care. For example, in the control group where no women noted edema as a risk factor, six of eight women with edema complied with a referral for antenatal care. Therefore, their apparent lack of knowledge, based on an assessment of their comprehension of risk factors, did not necessarily

translate into a lack of action. It appears that there are several factors involved in the definition of a problem as dangerous. According to women's responses, a problem may not be considered a risk if:

- * It is "curable" or treatable with medicine.
- * It does not inhibit daily activities.
- * It does not cause pain.
- * It is frequently associated with pregnancy.
- * It disappears after birth.
- * It seems inevitable.

It is therefore important to note that even those women who were unable to name "risk factors" when asked for them did in many cases seek care for those very same conditions.

Also, it seems that many women, though exhibiting clear knowledge of risk factors, minimized their own condition. For example, one woman who experienced heavy bleeding only mentioned it in association with the common symptoms of morning sickness. A second woman acknowledged that her bleeding was heavy (and therefore a risk factor) but said that it was not frequent (though she experienced 3-5 episodes per day). She decided to wait, not seeking care, in hopes that it would stop.

There may be some confusion in women's perception of bleeding as a risk factor. Prepartum bleeding is most clearly identified as being dangerous while perceptions of bleeding at delivery and postpartum bleeding are enigmatic. Postpartum bleeding was in several cases misconstrued as the normal delivery of the placenta, and thus not seen as a risk factor.

Sources of Advice Concerning Risk Condition

There was no significant variation in the sources of advice identified by the study and control groups. When women perceived that they had a risk condition, they sought the advice of many different people. From the women surveyed(29), twenty-six women received some advice concerning their condition, and there were forty-four total responses. Of those responses, twenty-two were family members, with the majority being the husband. The husband was cited with near equal frequency as all the health care professionals combined(TBA, cadre, and nurse), and therefore seems to play an important role in women's decision making. One woman commented, "he is my husband and should be responsible for my healthiness(sic)." This may exemplify a commonly held attitude based on both cultural and economic factors; the husband may play a fundamental role in a woman's access to family resources and therefore her decision and ability to seek care.

Advice in most instances took the form of referral to a formal health care facility. Rates of referral were not significantly different between the study and control groups, although informal advice(advice given by family, neighbors, friends) was more common within the study group and may reflect an overall heightened awareness of risk factors within that community. Finally, though twenty-three of the twenty-five women with prepartum complications received either formal advice(advice given by doctors, nurses, TBAs, cadres) or informal advice during the antenatal period, few(10) of them were given any advice pertaining to delivery.

Compliance with Referrals

Generally, there was a high rate of compliance with referrals in both groups. Compliance was highest during the antenatal period; of twenty-seven referrals for prepartum complications, women complied in twenty-two cases. Conversely, compliance was low during the delivery period; of ten women referred for delivery, only two complied. In nine of the twelve total cases of noncompliance for the antenatal and delivery periods, edema was the complication for which women were referred. It is unclear whether compliance rates differ depending on the source of advice, although in several instances of noncompliance women had only received advice from health care providers and not from family or friends. In some cases of noncompliance for delivery, reasons cited were cost, distance, and lack of trust in the expertise of the care provider.

Assessment of Referrals and Care Providers

In most cases, women who complied with referrals seemed satisfied with the care that they received. Women commented that the referrals were "good and useful;" these judgements seemed to be based mainly on the fact that the problems for which they sought care were resolved. Some respondents also noted that formal health care providers were "experts"--they seemed to trust their judgement and were willing to comply with their treatment plans. One woman commented, "I followed the advice because they are experienced and were willing to help me." Women's compliance may be linked as well to a definitive desire to "be healthy and have a healthy baby," according to several responses.

Choice of Birth Location

There is no significant difference between the study and control areas in terms of women's choice of birth location. Of twenty-eight respondents, nearly all gave birth at home. Furthermore, only nine of these women were advised to deliver elsewhere. Risk factors did impact upon the delivery location in that the few women who delivered outside of their homes experienced severe bleeding and thus had limited choice for delivery location. Four respondents expressed a desire to deliver at the polindes but commented that they were unable to do so because the birth was "unpredicted" or their condition required that they deliver at the hospital.

Women most frequently cited expense as the prime factor in their choice of birth location; other notable factors were the presence of family at home, distance from health care facility, and unexpected onset of labor. Some reasons cited for home birth were rather nebulous, these included "calmer," "safer," "no risk," "nicer," and "more relaxing." Additionally, there were three cases in which women said they would not go to the puskesmas for delivery because they did not feel assured that care givers would either be present or have enough experience to care for them. All of these cases were in the control area.

ANALYSIS

There are several patterns within the data which we feel represent important issues that need to be examined. First, there seems to be a difference in the perception of the term "risk condition" as held by respondents and workers in the formal health care system. In many instances women may not define as "risky" a condition for which they do understand the importance of seeking care. For these women, "risky" may only connote a condition which is severely debilitating or not readily treatable. In this sense, many key "risk factors", especially edema and fever, may not be thus identified. Hence, an assessment of women's knowledge and any effort to expand that knowledge should take into account this different definition of "risk."

Second, the role of the community seems vitally important in women's decision making and care seeking behavior. Women consistently name their families, friends, and neighbors as sources of both knowledge and advice for health care issues. In this sense, a single woman's interaction, either positive or negative, may have a profound effect on the community's perceptions as a whole and thus on other women's conceptions and actions. It seems therefore critical that efforts to alter women's care seeking behavior during pregnancy and delivery focus not only on those women but on the entire community.

Third, the antenatal and delivery periods seem to be dealt with very differently. Women receive a great deal of advice, both formal and informal, during their pregnancy and most often comply with that advice. However, around the time of delivery, advice is

in most instances nonexistent. Also, women cite as reasons for delivery at home several factors, such as cost and distance, which also may have been important during the antenatal period. It seems, though, that these factors do not deter them from seeking care at that time, but only become barriers at the time of delivery. In regards to postnatal referrals, there were so few(4) represented in the study that it would be difficult to draw any conclusions.

Lastly, the question "why do women want to deliver at home?" merits further examination. In this study, nearly all respondents chose to deliver at home, and many cite reasons that are at this point ill-defined. This finding may signify the existence of complex traditional beliefs which play a profound role in women's decision-making at delivery. We must more thoroughly explore these beliefs if we aim to alter their behavior.

Appendix E
Lessons Learned from Social Marketing Component

**Lessons Learned
from Social Marketing Component
Tanjungsari Perinatal Regionalization Project**

Social Marketing Team, Carrie Hessler-Radelet and Claudia Williams

Lessons Learned:

- **Materials with negative messages are not effective.** Women believe that by planning for or thinking about a negative event they will cause it to happen. Women do not like the Action Card, which depicts negative events for pregnant women. They like the poster which shows a happy family in the Polindes.
- **Polindes attached to the house of Paraji or Kepala Desa are used more than "stand-alone" units.** Women state that they prefer "stand-alone" Polindes but the average number of births over a nine month period in each of the "attached" Polindes was 24 as compared to 8 in the "stand-alone" Polindes.
- **The Hari Polindes campaign was an effective means to increase support for Polindes concept but was not an effective means to inform people of technical information i.e risk symptoms etc.**
- **Polindes seen as valuable because expands the availability of antenatal care.** Used extensively for antenatal care and much less for delivery.
- **In general people do not see Polindes as a comfortable place where they can be "at home".** Respondents feel the Polindes is an extension of the "bureaucratic" environment of the Puskesmas where they have to answer a lot of questions, there are many regulations, and there are not adequate facilities for the family.
- **Paraji's may feel caught between wanting to act on the advice of the project to refer complicated cases and the fact that their own reputations and credibility are threatened if they refer more clients.**
- **Initially communities believed that Polindes could provide the same service as Puskesmas.** Communities lost faith in the Polindes when they saw many difficult cases referred directly to the Puskesmas or Hospital.
- **Polindes seem to work best where there is one strong "manager" who is usually a Paraji or Kader.** This should be someone with good relationships with communities and a fairly high social status.

Recommendations:

- **Messages and Materials should not focus on risk.** This finding provokes the important question of whether the risk approach is valid and effective for community education.
- **Polindes will work best under the management of one strong community member and should ideally be located in or near that person's home.**
- **Efforts should be made to de-mystify and de-bureaucratize the Polindes.** Communities may be able to provide important insight into how the Polindes could be made to feel more like home than it is at present.
- **There is a need to clarify with communities the role and capacity of the Polindes (i.e. cannot provide same services as Polindes but can refer women if needed at low cost) and to try to explore how Paraji's could increase referrals for women at risk without endangering their own reputations and client-base.**

APPENDIX 7

**DOES THE PROVISION OF MATERNITY SERVICES CLOSER TO THE PEOPLE
IMPROVE USE OF THOSE SERVICES**

Dr. J. Thouw



FAKULTAS KEDOKTERAN
UNIVERSITAS PADJADJARAN

RESEARCH REPORTS

003-1993

**Does the provision of maternity services
closer to the people improve use of
those services**

Health Research Unit

School of Medicine Padjadjaran University
& The General Hospital Dr. Hasan Sadikin
Jl. Pasirkaliki 190
Bandung - Indonesia
Phone / Fax : (62) - 022 - 87218



Synopsis

Establishment of 10 BH's in villages has had a positive effect on women to seek ANC and deliver at facilities provided (Health centers, private facilities).

Does the Provision of Maternity Services Closer to the People Improve Use of Those Services

Dr. James Thouw, Dr. Sutedja, Drs Hadyana Sukandar MSc.
Health Research Unit Faculty of Medicine, University of
Padjadjaran and Hasan Sadikin General Hospital, Bandung,
Indonesia.

Keywords: Birthing Homes, utilization of village level facilities, TBA referrals.

Abstract

10 Birthing Homes (BHS) were established in the Intervention area in 1991. Utilization of these BHS over a 15 month period are analyzed. A control area without Birthing Homes served as a comparison. Results show that use of the birthing homes for ANC increases over time. Fewer women receive ANC at home in the intervention area compared to the control area (54.4 versus 61.9%).

The number of deliveries at home is lower in the intervention area compared to the control area (84.9 versus 95.8%). A more detailed look at referrals in the intervention area shows that an increasing number of TBA referrals during pregnancy are to BHs (from 19.6% to 53.9%), while referrals during delivery also shows a rising tendency (from 17% to 33.3%) over time. A comparison of villages with BHs as opposed to villages without BHs shows that more women are using ANC and birthing facilities in villages with BHs (for ANC at IHSP + BH = 19.5% for IHSP alone = 9.3%).

Deliveries at home in villages with BHs is lower than villages without BHs (mean % 80.9 versus 87.8%). Establishment of Birthing Homes has a positive influence on women, motivation them to have ANC at the village level and encourages women to deliver more often outside their homes

Introduction

In Indonesia maternal and neonatal deaths account for a large proportion of total deaths. An overview of available data resulted in an Infant Mortality Rate of 75/1000 while the Maternal Mortality Ratio ranged from 150-720/100,000 (1,2,3,4,5). Based on the national census in 1990, the Department of Health of Indonesia has decided to use

the figure of 450/100,000 as a working Maternal Mortality ratio. Assuming that this figure is correct, it is still above rates of other Asean countries. The main causes of maternal deaths were haemorrhage, infection and anaemia accounting for 75-80% of deaths.

As in other developing countries (6) accessibility to health facilities plays a great role as well as the scarcity of trained personnel. Less than 50% of women in Indonesia receive antenatal care from a trained professional leading to higher maternal and infant mortality. Moreover \pm 80% of women in rural areas deliver at home attended by a Traditional Birth Attendant (TBA). Even though other MCH facilities are available (such as the Integrated Health Service Post = IHSP or Health Center = HC) women are reluctant to make use of these facilities and reasons cited are lack of transportation and long distances.

A study conducted in 1988 and 1989 in a subdistrict revealed that most maternal deaths occurred due to delays in reaching an adequately equipped hospital to deal with emergencies. In an effort to deal with the 3 delays most often cited by women (1. delay in making a decision for referral; 2. delay in reaching a referral facility; and 3. delay in obtaining appropriate care), an intervention study was initiated called the Regionalization of Perinatal Care. One of the main components of this study was the establishment of Birthing Homes which are located in the villages and accessible to a 4-wheeled vehicle for easy transportation. The birthing homes were meant to function as an extended

Integrated Health Service Post and provide MCH services including birthing facilities.

Method and Materials

Ten Birthing Homes were established in the intervention area in 1991, while no such facility exists in the control area. Tanjungsari served as the intervention area, a subdistrict of Sumedang (population 90,000), while Cisalak (population 43,237), a subdistrict of Subang served as a control area.

The study population consists of women using the services provided at the Birthing Homes over a 15 month period (March 1, 1992 till May 31, 1993).

Data on Antenatal Care, deliveries and referrals were collected through questionnaires conducted by trained interviewers and supervised by 5 supervisors.

A periodic sweep (every 6 months) was done to verify data on the routine questionnaires.

Data on use of the Birthing Homes were collected from the BH log books. Additional data were obtained from HC log books.

Variables measured in this study are:

The increase (in %) of use from the start of the study until the end, while trends are shown over 3 monthly periods.

The variables measured are Antenatal Care and deliveries as well as referrals.

For statistical purposes the Chi Square test is used whenever necessary, while no

multivariate analysis is attempted.

Results

The number of women having Antenatal Care in the intervention area over all 5 periods shows a slightly higher percentage (97.7%) as compared to the control area (96%).

From a point of view of the 5 different periods an increase is seen only for the last period in Tanjungsari while the percentage of women in Cisalak having antenatal care shows no increase (Table 1).

Table 1. Number of women with ANC and no ANC in Tanjungsari and Cisalak over a 15 month period (in 3 monthly periods)

Time period	Tanjungsari (Intervention)				Cisalak (Control)			
	ANC +		ANC-		ANC +		ANC -	
	No.	%	No.	%	No.	%	No.	%
March 1 - May 31	518	97.2	15	2.8	236	95.5	11	4.5
June 1 - August 31	505	96.7	17	3.3	262	97.8	6	2.2
Sept. 1 - Nov. 30	569	97.9	12	2.1	245	95.7	11	4.3
Dec. 1 - Febr. 28	564	97.7	13	2.3	237	94.0	15	6.0
March 1 - May 31	529	98.9	6	1.1	212	96.8	7	3.2
Total	2685	97.7	63	2.3	1192	96.0	50	4.0

Mean % women with ANC Interv. area : 97.7%

Mean % women with ANC control area : 96 %

X² = 8.72

p = 0.003

The difference in receiving ANC for the Intervention versus control area is statistically significant (p = 0.003).

Table 2 shows that the percentage of women receiving ANC at TBA's homes remains fairly constant for both areas with a slight drop over the last 2 periods in Tanjungsari. But the average percentage of women going to TBAs is lower for the intervention area (Tanjungsari) with an average of 68.3% as compared with the control area (Cisalak) which shows an average of 75.4%. This difference is statistically significant ($p < 0.001$)

Table 2. Distribution of Antenatal Care contacts at Tanjungsari and Cisalak according to place of ANC over 3 monthly periods

Place of ANC*)	Period									
	1		2		3		4		5	
	No.	%								
I. Tanjungsari:	(n=518)		(n=505)		(n=569)		(n=564)		(n=529)	
- TBA's place	363	70.1	336	66.5	393	69.1	381	67.6	361	68.2
- IHSP	47	9.1	39	7.7	57	10.0	65	11.5	35	6.6
- Birthing Home	9	1.7	24	4.8	27	4.7	39	6.9	30	5.7
- Health Center	346	66.8	341	67.5	385	67.7	371	65.8	383	72.4
- Hospital	1	0.2	2	0.4	5	0.9	6	1.1	2	0.4
- Private Fac.	217	41.9	203	40.2	236	41.5	203	36.0	235	44.4
II. Cisalak:	(n=236)		(n=262)		(n=245)		(n=237)		(n=212)	
- TBA's place	178	75.4	185	70.6	192	78.4	186	78.5	158	74.5
- IHSP	23	9.7	37	14.1	29	11.8	36	15.2	19	9.0
- Birthing Home	-	-	-	-	-	-	-	-	-	-
- Health Center	169	71.6	206	78.6	184	75.1	171	72.2	167	78.8
- Hospital	1	0.4	-	-	1	0.4	1	0.4	1	0.5
- Private Fac.	23	9.7	35	13.4	25	10.2	30	12.7	30	14.2

*) % adds up to > 100 % as women often go to 2 or more places for ANC

Mean % of women with ANC at TBA's home (Interv.) = 68.3 %

X² = 19.75

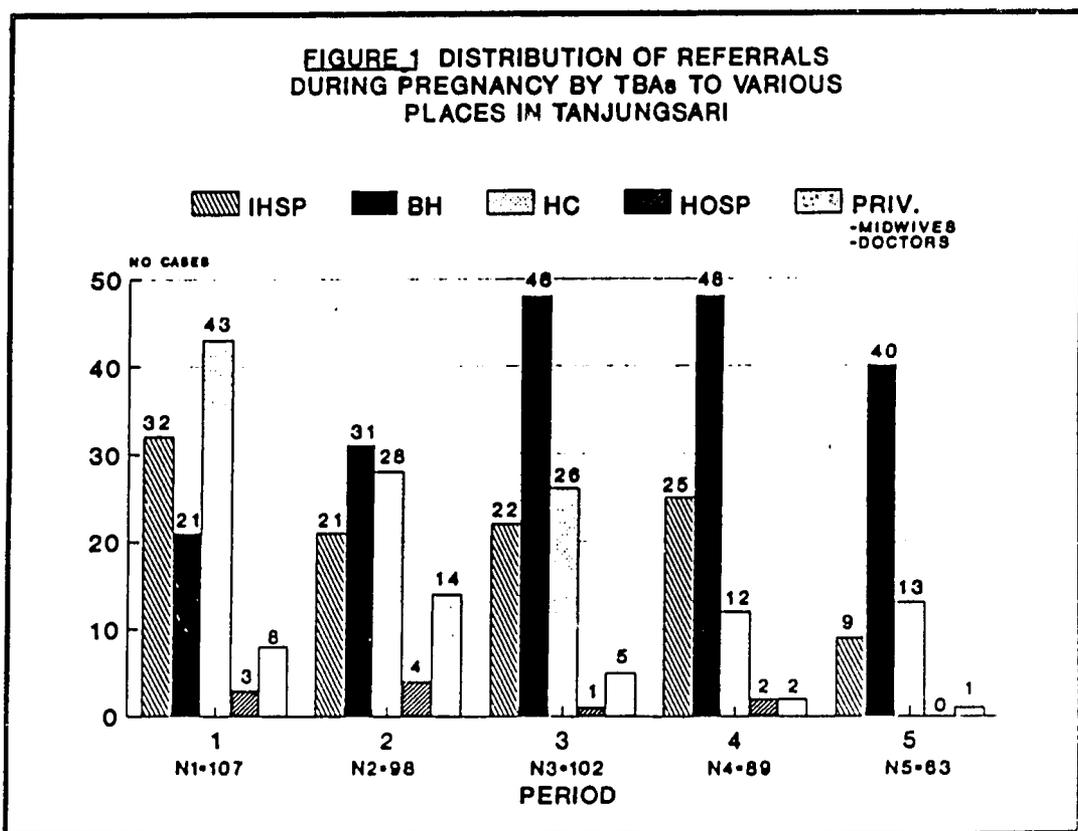
Mean % of women with ANC at TBA's home (control) = 75.4 %

p = 0.001

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Figure 1 shows that although the total number of referrals did not increase, an increasingly larger number of women are being referred to the Birthing Homes ranging from (21/107) 19.6% in the first period to (40/63) 63.5% in the fifth period of the total referrals by TBAs. On the other hand, the percentage of women being referred during pregnancy to the IHSP shows a decrease from 29.9% to 14.3%. So did the percentage of women being referred to the HC decline from 40.2% in the first period to 20.6% in the fifth period.

Figure 1. Distribution of referrals during pregnancy by TBAs to various places in Tanjungsari



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Figure 2. Referrals of women delivering by TBAs to various places

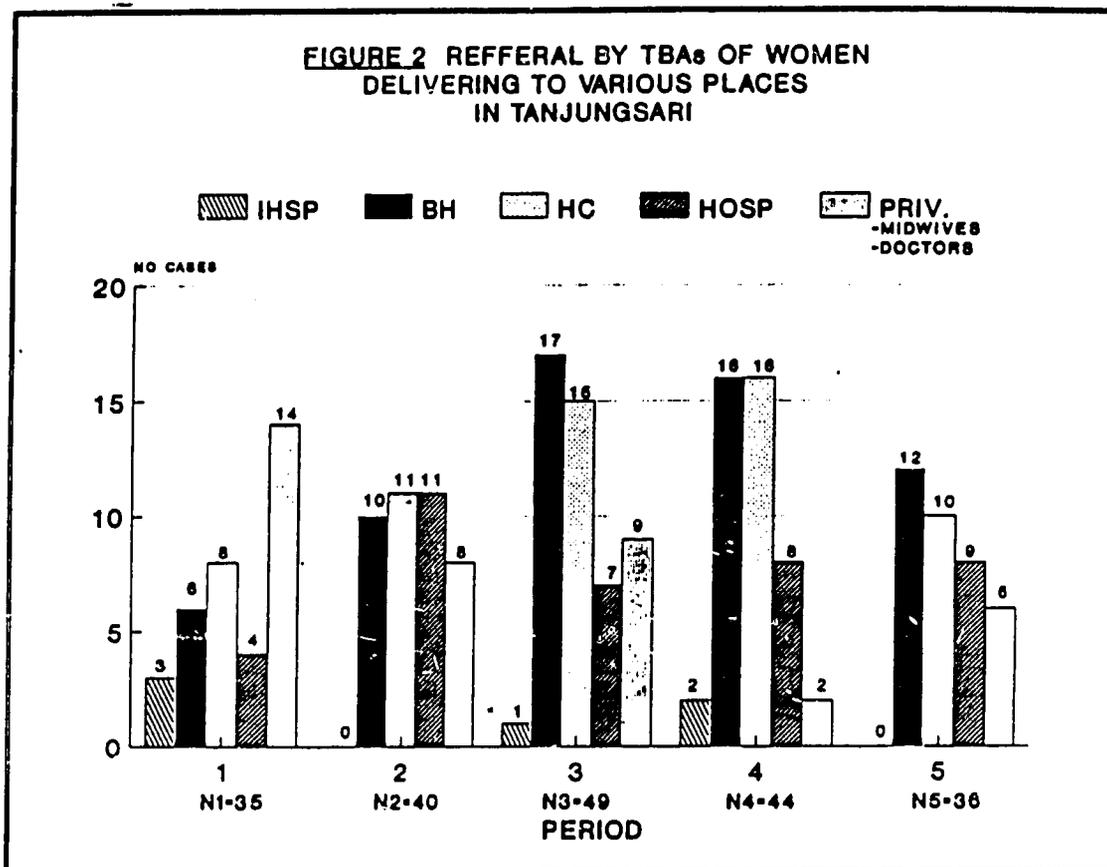


Figure 2 shows that the percentage of women delivering at home being referred to the Birthing Homes increased from (6/35) 17% in the first period to (16/44) 36.4% in the fourth period and (12/36) 33.3% in the fifth period while very few were being referred to the IHSPs.

The number of referrals to private facilities also shows a decline from a high of 14/35 women to 6/36 in the fifth period.

Table 3. Distribution of Deliveries in Tanjungsari and Cisalak according to place of birth over 3 monthly periods.

Place of Birth	Period										Total No.
	1		2		3		4		5		
	No.	%	No.	%	No.	%	No.	%	No.	%	
I. Tanjungsari:											
- At home	447	83.9	442	84.7	491	84.6	493	85.9	455	85.7	2328
- Birthing Home	28	5.2	27	5.2	25	4.3	14	2.5	4	0.8	98
- Health Center	6	1.1	4	0.8	12	2.1	11	1.9	14	2.6	47
- Hospital	11	2.1	25	4.8	26	4.5	34	5.9	24	4.5	120
- Priv. Fac.	41	7.7	24	4.6	26	4.5	22	3.8	34	6.4	147
Total	533	100	522	100.1	580	100	574	100	531	100	2740
II. Cisalak:											
- At home	240	97.2	259	96.6	247	96.5	239	94.8	206	94.1	1191
- Birthing Home	-	-	-	-	-	-	-	-	-	-	-
- Health Center	-	-	-	-	3	1.2	1	0.4	-	-	4
- Hospital	4	1.6	4	1.5	4	1.6	6	2.4	2	0.9	20
- Priv. Fac.	3	1.2	5	1.9	2	0.8	6	2.4	11	5.0	27
Total	247	100	268	100	256	100.1	252	100	219	100	1242

*) 1 baby born before arrival at facility
 Mean % deliveries at home in Tanjungsari = 85.0%
 Mean % deliveries at home in Cisalak = 95.9%

$X^2 = 98.30$
 $p < 0.001$

Percentage of women delivering at home in Tanjungsari (intervention area) is lower than for the control area (Cisalak) Mean = 85% versus Mean = 95.9% (Table 3). This difference is statistically significant ($p < 0.001$). The percentage delivering at the Birthing Homes does not show an increase over time, as a matter of fact it shows a definite drop over the last 2 periods. However, the percentage of women delivering at other facilities in Tanjungsari does not show a drop after initiation of the Birthing homes over the same period, but shows an increase over the last 2 periods. In Cisalak (Control) the use of private facilities is lower compared to Tanjungsari (Intervention), averaging 3.9% versus 11.4%.

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Table 4. Distribution of Antenatal Care in Tanjungsari according to provider in Villages with BHs and village without BHs

Villages with BHs (10)											
Place of ANC (person)	Period										Total No.
	1		2		3		4		5		
	No.	%									
	n = 212		n = 215		n = 254		n = 217		n = 234		
TBA's	154	72.6	149	69.3	201	79.1	153	70.5	171	73.1	828
IHSP	19	9.0	20	9.3	26	10.2	27	12.4	7	3.0	99
BH	9	4.2	23	10.7	27	10.6	38	17.5	30	12.8	127
HC	133	62.7	135	62.8	153	60.2	125	57.6	172	73.5	718
Hospital	-	-	2	0.9	-	-	5	2.3	1	0.4	8
Private Fac.	88	41.5	81	37.7	121	47.6	89	41.0	120	51.3	499
Villages without BHs (17)											
	n = 306		n = 290		n = 315		n = 347		n = 295		
TBA's	209	68.3	187	64.5	192	60.9	228	65.7	190	64.4	1006
IHSP	28	9.2	19	6.6	31	9.8	38	10.9	28	9.5	144
BH	-	-	1	0.3	-	-	1	0.3	-	-	2
HC	213	69.6	206	71.0	232	73.6	246	70.9	211	71.5	1108
Hospital	1	0.3	-	-	5	1.6	1	0.3	1	0.3	8
Private Fac.	129	42.1	122	42.0	115	36.5	114	32.9	115	39.0	595

Mean % of women receiving ANC at TBA's place for villages with BHs = 73.1%
 Mean % of women receiving ANC at TBA's place for villages without BHs = 64.8%
 $\chi^2 = 20.79$ $p < 0.001$

Percentage of women receiving Antenatal Care at a TBA's place remains fairly constant in both the villages with BHs (average 73.1%) over the 5 periods (Table 4). The same is seen for the villages without BHs (average 64.8%). However, Table 4 also shows that a very small percentage of women from villages without a BH make use of BHs in a nearby village (ranging from 0% to 0.3%).

Utilization of HC for Antenatal Care in villages with BHs shows a rise especially in the fifth period (73.8% of women going to HCs for Antenatal Care). This rise in

utilization of HC for villages without a BH is not seen.

Table 5. Place of delivery of women in villages with and without Birthing Homes (Tanjungsari)

Villages with BHs (10)										
Place of birth	Period									
	1		2		3		4		5	
	No.	%	No.	%	No.	%	No.	%	No.	%
At home	178	81.3	171	77.0	216	82.4	176	80.7	196	83.4
Birthing Home	26	11.9	26	11.7	25	9.5	14	6.4	4	1.7
Health Center	-	-	3	1.4	7	2.7	7	3.2	4	1.7
Hospital	3	1.4	13	5.8	5	1.9	14	6.4	15	6.4
Private Fac.	12	5.5	9	4.0	9	3.4	7	3.2	16	6.8
Total	219	100.1	222	99.9	262	99.9	218	99.9	235	100.0
Villages without BHs (17)										
At home	269	85.7	271	90.3	275	86.5	317	89.0	259	87.5
Birthing Home	2	0.6	1	0.3	-	-	-	-	-	-
Health Center	6	1.9	1	0.3	5	1.6	4	1.1	10	3.4
Hospital	8	2.5	12	4.0	21	6.6	20	5.6	9	3.0
Private Fac.	29	9.2	15	5.0	17	5.3	15	4.2	18	6.1
Total	314	99.9	300	99.9	318	100.0	356	99.9	296	100.0

Mean % of women delivering at home for villages with BHs = 81.0%

Mean % of women delivering at home for villages without BHs = 87.8%

$\chi^2 = 23.28$

$p < 0.001$

Table 5 shows that the mean percentage of women delivering at home is lower in the villages with BH as to compared with the mean percentage of women delivering at home in villages without BHs (81.0 % versus 87.8%). The difference is statistically significant ($p < 0.001$). Only 3 women from villages without BHs delivered at a BH. Births at the BHs does not show an increase (ranging from 11.9 to 9.5) over periods 1 to 3 and shows a definite drop over periods 4 and 5.

Table 6. Cross tabulation of women having ANC by place of utilization and place of birth for villages with BHs and no BH

Place of ANC	Villages with BHs (10)										
	Place of birth										Total No.
	At home		BH		HC		Hosp.		Priv. fac		
	No.	%	No.	%	No.	%	No.	%	No.	%	
TBA's	663	80.8	75	9.1	14.0	1.7	35	4.3	34	4.1	821
IHSP	82	83.7	10	10.2	1	1.0	3	3.1	2	2.0	98
BH	83	65.4	31	24.4	4	3.1	7	5.5	2	1.6	127
HC	588	82.1	52	7.3	16	2.2	32	4.5	28	3.9	716
Hospital	4	50.0	1	12.5	-	-	3	37.5	-	-	8
Priv. Fac.	364	73.4	37	7.5	11	2.2	33	6.7	51	10.3	496
No ANC	28	93.3	1	3.3	-	-	1	3.3	-	-	30
Villages without BHs (17)											
TBA's	881	87.7	3	0.3	21	2.1	42	4.2	57	5.7	1004
IHSP	140	97.2	-	-	1	0.7	3	2.1	-	-	144
BH	1	50.0	1	50.0	-	-	-	-	-	-	2
HC	1007	91.0	3	0.3	19	1.7	42	3.8	36	3.3	1107
Hospital	4	50.0	-	-	-	-	2	25.0	2	25.0	8
Priv. Fac.	432	72.7	-	-	13	2.2	51	8.6	98	16.5	594
No ANC	31	93.9	-	-	-	-	1	3.0	1	3.0	33

This table (6) shows that fewer women having had ANC with TBAs deliver at home in Tanjungsari with BHs (80.8%) as compared to villages without BHs (87.7%). This difference is statistically significant ($\chi^2 = 16.43, p < 0.001$)

Table 6 also shows that in villages with BHs women having had ANC at IHSPs most frequently deliver at home (83.7%). For villages without BHs the number of women having had ANC at IHSP shows that 97.2% deliver at home. This difference is statistically significant ($\chi^2 = 12.39, p < 0.001$).

From this table it is also apparent that out of 127 women having had ANC at BHs only 31 or 24.4% actually deliver there, while the majority (83 women = 65.3%) deliver at home. For women having had no ANC a larger percentage delivered at home in both the villages with BHs (93.3% versus 80.8%) and villages without BHs (93.9% versus

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87.7%) and in both areas the percentage was similar (93.3% versus 93.9%).

Discussion

Although several countries have tried different ways of providing better services, most authors agree that one of the most successful methods is to bring services nearer to the people and ensuring the community's participation. However, not much has been published on the use of BHs as this is a rather new concept. Provision of waiting homes is known to reduce maternal mortality as was reported by Poovan, Kifle and Kwast (7) and placement of midwives in villages had a drastic effect on reduction of maternal mortality in a rural area of Bangladesh (6).

Bringing services nearer to the people will only be successful when these services are accepted and used by the community. The establishment of BHs in 10 villages as part of an intervention project was tried on a community participatory basis. Analysis of utilization of the 10 BHs in this report will be based upon Antenatal Care, Deliveries and referrals from home deliveries (by TBAs).

The number of women receiving ANC does not differ much between the Intervention and Control area (97.7 versus 96%), however whereas the percentage of women receiving ANC shows no increase over time, in the Intervention area the fifth (3 monthly) period shows a slight increase over the mean percentage (98.9 versus 97.7%) (see Table 1). A breakdown of the place ANC is received shows that an average of 68.3% have ANC at a TBA's place, while the figure for the control area is 75.4%. A closer look at the number of women having ANC at a TBA's home shows a slight drop over the last 2 periods (67.6 and 68.2% respectively), while this drop is not seen in the control area. Utilization of BHs for ANC shows an increase over time from 1.7% in period 1 to 6.9% in period 4 and then declines slightly (Table 2). The reason for this drop in number of women receiving ANC at BHs was that 2 BHs were not functioning well. At one BH the midwife in charge resigned due to marital problems and at the other BH a clash occurred

between the village head and BH cadres (voluntary workers). As the role of the midwife in a BH is a pivotal one, the loss of the midwife resulted in a dramatic drop in ANC at the BH. At the other BH it was a different story as nobody was willing to take responsibility for the everyday running of the place. Our experience with these 2 BHs shows that the fate of a BH depends very much on the midwife and voluntary health workers at the village level (cadres). This result prompted us to conclude that a BH needs a midwife on a permanent basis and strong management to succeed.

Our figures also show that the number of women receiving ANC at other places (such as IHSP, HC, hospital and private facility) in the intervention area shows no decline over time, which means that the increased use of BHs for ANC does not simply reflect a shift from other formal facilities, but is a result of a drop in ANC at TBA's places. This poses a distinct advantage as naturally the quality of ANC at TBA places is not good, while at the BHs the TBAs are supervised and assisted by the midwife and trained cadres. Furthermore the BHs are provided with risk scoring charts for use by cadres and midwives and during ANC cadres assist TBAs in scoring risk during pregnancy.

Another use of the BHs is for deliveries as they provide the TBA with a relatively clean place for delivery and as these BHs are located alongside a village road accessible to a 4-wheeled vehicle rapid transportation to a HC or Hospital is possible (a radio at each BH is also available to call for an ambulance or for professional help).

As with ANC, the number of home deliveries is relatively higher in the control area as compared to the Intervention area (mean percentage 95.9 versus 85.0). This difference is statistically significant and shows that more women are willing to deliver at birthing facilities. The number of deliveries at BHs does not show any increase over time and the percentage of pregnant women delivering at BH is quite small (from 5.4% to 0.8% in the fifth period). From this point of view, the BHs are under-utilized as we would like to see at least 30% of women delivering at BHs. A KAP study performed as part of the project revealed that women mentioned the cost of delivering at a BH as a

prohibitive factor. At some BHs a certain fee is charged whenever a midwife or doctor is called in to deliver the baby. Furthermore, women also stated that they perceived the BHs only to be a way station for referrals as a BH in their opinion is not a place able to cope with emergencies. And in fact they are quite right as our figures show that 73 out of 98 deliveries at BHs are conducted by TBAs alone and only a small percentage are managed by the midwives. But this was in line with the project's aim, that is to have only normal deliveries at BHs. But the fact that women do not understand the advantages of delivering at a BH reflects our failure to get the message across that a BH is not meant to deal with complications, but to ensure proper care or rapid transportation to a HC or Hospital.

In contrast with deliveries, ANC is provided free of charge at the BHs, so cost is not a factor for ANC. Different to the control area (Cisalak) a greater number of women are delivering at HCs in the Intervention area (47 versus 4 deliveries). The same applies for deliveries at the District Hospital and Private facilities. This greater use of birthing places other than the home in the Intervention area reflects a greater willingness on the part of the community to deliver outside of their homes. We believe that this is due to more frequent contact between pregnant women and Health care providers (outside TBAs) with consequently greater knowledge concerning risk factors on the part of the population.

A look at referrals by TBAs during pregnancy to various Health Care facilities in the Intervention area shows an increasing number of women being referred to the BHs, from a low of 19.6% to a high of 63.5% in the fifth period (Figure 1). This shift in referrals from IHSPs, HCs, Hospital and Private Facilities to the BHs shows that TBAs are gaining confidence in the BH as a place to refer pregnant women whenever a complication occurs. A KAP study of TBAs also revealed this fact, because although some TBAs voiced concern about losing their standing in the community by referring patients, the majority were of the opinion that referrals are necessary to ensure the mothers and

fetuses well being.

A look at referrals during delivery by TBAs also shows that an increasing number of delivery referrals are to the BHs (from 17.1% in the first period to 33.3% on the fifth period). As the total number of referrals stays pretty constant over the 5 periods a definite shift is seen over time concerning the place women are being referred to during delivery. Naturally not all cases referred to BHs can be handled there as no facilities are available for vacuum or forceps deliveries etc., so it is appropriate that often these BHs function only as transit points.

As TBAs were retrained in the use of the action based guidance cards they know that certain complications arising during delivery should be handled at the HC or Hospital. The advantage of transferring such patients to a BH is that a call for the ambulance can be placed while preparations are being made to transport the patient from her home to the BH.

To further analyse the function of BHs we differentiated ANC and deliveries between villages with BHs (10) and villages without BHs in the Intervention area (27 villages). Table 4 reveals us that the percentage of women receiving ANC at a TBAs place shows no difference over time (average 73.1%) and the same applies to villages without BHs (average 64.8%). A surprising finding was that for villages with BHs the number of women receiving ANC at Integrated Health Service Posts (IHSP) stayed fairly constant. An explanation for this might be the fact that even though a village has a BH, its location may not be convenient for women, so the nearest place for ANC would be visited by women living quite a distance from BHs. If we combine the percentage of women receiving ANC at both IHSP and BH together, we see that a higher percentage are receiving care in villages with BHs as compared to villages without BHs (average percentage 19.5 versus 9.3%). This fact taken together with the figures showing no drop in percentage of women receiving ANC at IHSP in villages with BHs, shows that there is an increase in utilization of services at the village level and it also means that it is not just

a shift from IHSPs to BHs. A disturbing finding is that every few (only 2) women from villages with no BHs go to a BH for ANC. This means that BHs are perceived to be the property of the village they are established at. Initially it was hoped that the BHs would be open to women from neighbouring villages and not be used exclusively by women from the same village as the BH.

Although the total number of births at the BH is not too high, a breakdown of place of delivery shows that the % of women delivering at home is lower for villages with BHs as compared to women delivering at home for villages without BHs (mean percentage of 81.0 versus 87.8%). This difference is statistically significant. As with ANC, few women from villages without BHs deliver at a neighbouring BH (only 3 deliveries). As with ANC, women delivering at other birthing facilities such as HC, Hospital and Private facilities does not show a drop over time, so the reduction in home deliveries can be accounted for by the number of births at BHs. So again the number of women delivering at BHs does not signify merely a shift from other birthing facilities.

From the cross tabulation (Table 6) we can see that fewer women receiving ANC from TBAs deliver at home in villages with BHs (80.8%) as compared to villages without BHs (87.7%) and although women having had ANC at BHs still often deliver at home (65.3%), this figure is much lower than women delivering at home for women with ANC at IHSPs (83.7%). So it seems that even though the percentage of women receiving ANC at BHs actually deliver there is not too large, these women use other facilities more often for deliveries outside their homes. This lower tendency to deliver at home is even seen with women having had ANC at Health Centers for both areas (82.1% for women from villages with BHs and 90.6% for women without BHs). So it seems that the BHs have a positive influence on women decision to deliver outside their homes.

This positive influence is also reflected in the fact that 93.3% of women without ANC deliver at home in the control area.

For the intervention area this means that 12.5% of women deliver more often at home

in the villages with BHs. A look at the percentage of women delivering at home after ANC at BHs shows that only 65.4% of these women deliver at home. This again shows a significant reduction (28.5%) (see Table 6).

Of course we cannot prove that the willingness to deliver more often outside their homes in villages with BHs was due exclusively to the establishment of BHs. But a good point can be made of the fact that our KAP study shows an increased awareness of the population towards BHs and their function. It was also apparent from the KAP study that more women would like to deliver at BHs, but were deterred by the cost.

As much as we would like to compare our results with other people's, the authors have not been successful in finding reports specifically dealing with functioning of BHs.

A report by Hermann and Duale on Improving maternity care services in rural Zaire does mention the fact of maternity huts, and its establishment in 50 villages, but no specific data was forwarded on the role of maternity huts in lowering maternal mortality. Other reports such as Poovan et.al. (7) mentions only maternity waiting homes as a means of preventing obstetric catastrophes.

As we all know that health facilities are often located too far and difficult to reach any effort to bring services (including ANC and births) nearer to the people should have a positive effect on reducing maternal mortality. As a matter of fact we had a Maternal Mortality Ratio of 225/100,000 LB over the 15 month period which was slightly lower than in the control area. A previous study in the Intervention area revealed a MMR of 508/100,000 LB over a 2 year period. Although the numbers are too small to draw any definite conclusion we like to think that our efforts has resulted in a reduction of over 50% in deaths, and that this was due in part to the establishment of BH's.

One other advantage of the BHs is their fixed location. Whereas IHSPs often change venues and are only functioning once a month, BHs can function more often and at the same location (a previous study revealed that women's complaints about the IHSPs were primarily on their change of venues and schedule). However, we have also

found out that for a BH to function successfully, it needs strong management and have the services of a Midwife Stationed at the villages (preferable living close to a BH). Furthermore, we also learned that a BH will be only successful when the community feels a need for its services and actively participates in its establishment. So the first step should be to prepare the community by introducing the concept of BHs and their functions.

Acknowledgements

This project was made possible by a grant from Mother Care (USAID and John Snow Inc.). The authors would like to thank Drs M. Koblinsky and B. Kwast for their assistance in preparing this manuscript.

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APPENDIX 8
REGIONALIZATION, WEST JAVA
FINAL REPORT



FAKULTAS KEDOKTERAN
UNIVERSITAS PADJADJARAN

RESEARCH REPORTS

NO. 002-1993

**REGIONALIZATION OF PERINATAL HEALTH CARE
A PILOT STUDY IN TANJUNGSARI,
WEST JAVA, INDONESIA**

Health Research Unit

School of Medicine Padjadjaran University
& The General Hospital Dr. Hasan Sadikin
Jl. Pasirkaliki 190
Bandung - Indonesia
Phone / Fax : (022) - 87218



FINAL REPORT ON THE MOTHERCARE PROJECT:

**REGIONALIZATION OF PERINATAL HEALTH CARE,
A PILOT STUDY IN TANJUNGSARI, WEST JAVA,
INDONESIA**

Duration of Project: January 2, 1991 to July 31, 1993

Total in country budget: US \$ 375.838
Rupiah 704.697.150

1. Principal Investigator: Anna Alisjahbana, MD

2. Co-Principal Investigator: James Thouw, MD

Sub-Contractor Address: The Health Research Unit
School of Medicine University of
Padjadjaran/G.H. Hasan Sadikin
Jl. Pasirkaliki, No. 190 Bandung
West Java, Indonesia
Telephone/Fax: 62-22-87218

Report prepared by : Anna Alisjahbana and James Thouw

PROJECT OBJECTIVES

General objectives

1. Increase awareness among the villagers and providers of the importance of care, recognition of risk cases and the need for referral during pregnancy, delivery and in the postnatal and neonatal period.
2. Upgrading of quality of care at all levels for pregnant women and children including recording and reporting.
3. Strengthen the communication and information network to provide expert consultation and continuing education for both the informal and formal sector of the health care delivery system.

PROJECT OUTPUTS

1. Training material
 - o The mother and child card and manual, a recording and action card kept by the mother and filled in by all health care providers of the informal as well as formal sector.
 - o Risk scoring for risk identification and classification to be used by village midwives to take appropriate action.
 - o The problem action guideline, a handbook and referral booklet for traditional birth attendants. The questions and actions are presented in pictorial form.
 - o Case management guidelines for Mds, and midwives at the birthing homes, health center and hospital.
2. Social marketing materials: posters, stickers, action cards and leaflets.
3. Verbal autopsy guidelines/forms
 - o For stillbirths, neonatal deaths and maternal deaths.
4. Services output
 - o Establishment of 10 Polindeses (birthing homes)
 - o Organization of communication (11 radios) and transport (ambulance) system
 - o Establishment of linkage between DH and Health Center Staff.

5. Scientific papers/seminars

Manuscripts prepared for submission to professional journals and presented at international and national meetings.

- o One national seminar held at the Health Research and Development Board of Indonesia to disseminate project methods and findings and the social marketing component in particular.
- o Presentation of the regionalization concept to the West Java Governor's staff.

ACKNOWLEDGEMENTS

The work upon which this report is based was performed under the MotherCare Project by the Research Unit, School of Medicine, Padjadjaran University, Indonesia, under Contract No. DPE-5966-Z-00-8083-00 with the U.S. Agency for International Development.

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I. BACKGROUND

A. Location and type of setting

While Indonesia has been successful in lowering fertility through family planning, the maternal mortality rate remains high, the estimated maternal death rate being 450 per 100 000 live births with an interprovincial variation of 130-750 maternal deaths per 100 000 live births. (Indonesian Ministry of Health, Household Health Survey, 1986), while for West-Java it ranges from 350-500 per 100 000 live births.

The Regionalization of Perinatal Care Project was implemented in Tanjungsari in West Java, Indonesia which has a population of about 89 000. Cisalak served as the control area (total population \pm 42 000 people). Although not an exact match of any of the three settings described in the draft of Programming for Safe Motherhood, rural West Java is closest to Setting B. (Koblinsky, et al., 1992).

A district hospital provides maternity services in both the experimental and control areas. In Tanjungsari, there were 3 health centers with a physician and 3 sub health centers and more than 100 integrated health services posts (IHSP = posyandu). In the control area there is 1 health center with a physician and two sub-health centers without a physician. Theoretically all IHSP provide weighing programmes for underfive, immunizations, family planning, prenatal examinations, nutritional supplements and some level of counseling to pregnant women. In reality only the weighing program is available and the other programmes are working only occasionally. An obstetrician and two pediatricians staff the district hospital. A physician lives besides and staffs each of the health centers. Before the project began, there were 5 midwives practicing in Tanjungsari.

Women may deliver at the hospital or health centers. Outside of the public health system, doctors and midwives in private practice, traditional birth attendants provide health services to childbearing women. Services at the formal health sector are not free, people have to pay a small amount for consultation and medicine. Almost all women in Tanjungsari seek some of their prenatal care from a midwife or doctor. However, about eighty percent deliver in their homes with the assistance of a traditional birth attendant (TBA). The hospital provide emergency services to women. Blood is available via the red cross, but is relatively expensive. An operation room for caesarean section and care for the new born infant are available.

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B. How/why project selected

Since the national meeting held in Indonesia on June 1988 to promote safe-motherhood, Indonesia has committed itself to participate in the safe-motherhood initiative. It was noted that Indonesia had the highest maternal mortality among the Asean countries.

A study conducted over a 2 year period (1988-1989) in the subdistrict Tanjungsari (called the RAS study) revealed an overall perinatal mortality rate of singletons of 52 in 1988 and 40‰ births in 1989 and a maternal mortality ratio of (508/100 000 live births), factors identified as contributing to these high rates were:

1. adverse behaviour and traditions on the part of the population,
2. weakness in services provided, and the referral system in particular
3. problems in communication and transportation

Based on the results of the RAS study the Research Unit of Padjadjaran Medical Faculty proposed a pilot project to John Snow Inc. with approval of the Director General of Health Services and the Head of Research and Development Board of the DoH.

In an effort to improve services and overcome the problems identified a pilot study was planned addressing the above mentioned factors.

By serving as a pilot project it was hoped that the results would show that by strengthening the existing health care delivery system, without introducing fundamental changes (except for the development of birthing homes) and without entailing huge costs, a lowering of perinatal and maternal mortality is possible. After completion of this project the results will be presented to the Department of Health Officials as a model for other provinces in Indonesia. Based on the experience of the PI this project was accepted to be sponsored by MotherCare.

C. Relationship of project to other activities in country

By Presidential Decree, the training and placement of midwives in all of the 87.000 villages in the country was decided in 1989. These village midwives (bidan di desa) will require a place to work and the testing of the birthing home (Polindes) idea in Tanjungsari is timely for the GOI.

Given these new plans of the government and the continuing pervasiveness of the TBA in delivering births throughout much of Indonesia, the pilot project of a Perinatal Regionalization network aims at providing the government with a model of Perinatal care by the establishment of birthing homes together with a communication and transport system.

D. Organizations participating in project

Most of the key project personnel have academic positions in either the School of Medicine at UNPAD or the teaching Hospital Hasan Sadikin in Bandung. Members of the faculties of Anthropology and Sociology of the University of Padjadjaran have participated in some parts of the study e.g. the social marketing component of the intervention. In addition, district level health officials have participated in the Regionalization Project so they can easily incorporate the research results and experiences into the district health services program. The central goal of the Regionalization Project is not to alter, but to improve the existing government system in order that activities begun now will continue after the external funding has stopped. To this end, the MCH activities official of the District was also the Project's Field Coordinator.

II. OBJECTIVES

The general goal of the pilot project is to show that improved care including screening, referral and development of norms for preventive (ANC) and emergency care at all three levels (village, health center + district hospital) will lead to early identification and appropriate management of risk conditions and complications.

A. Effecting behaviors

The project's aim was to: 1) increase awareness among the villagers and health care providers of the importance of maternal and perinatal care, 2) create recognition of risk cases and the need for referral during pregnancy, delivery and in the postnatal and neonatal period, and 3) promote the Birthing Home as a place for MCH care.

The implementation of Social Marketing activities to promote birthing homes is hoped to serve as a model for the government by changing peoples attitude and behavior.

B. Improving services

The project is expected to provide appropriate antenatal, delivery and postpartum care to all pregnant women and newborns, at the primary as well as the secondary level (home, birthing homes, health center and hospital).

- o The implementation of regionalization of maternal and child health care in Tangjungsari will serve as a pilot study of the bottom-up approach for delivering maternal and child health care using the risk approach concept.

- o The birthing homes will serve as a model of the village midwife's permanent village level facility or an advanced Integrated Health Service Post (Posyandu) for the community. Because it is relatively more sophisticated than the IHSP in the management and kind of services provided it is possible that only selected IHSP can be further developed to become a birthing home.
- o A Birthing homes is a place where traditional health services and joint services work together in a comprehensive maternal service. The birthing home staffed by TBAs and CHW's may become a model for the transition period between now when most births are conducted by TBAs and the future when it is envisioned that village midwives will carry out this task.
- o Improvement in communication and transportation is expected to reduce mortality rates especially maternal mortality.
- o Retraining of TBAs in the requirements of pregnancy complication and referral, training of HC doctors and midwives at the District Hospital should improve quality of care.
- o Development of risk scoring manuals and management protocols should make it easier to identify and treat at risk cases.

C. **Enhancing policy dialogue**

Through meetings with DoH Officials, Provincial Health officers, District Head, District Health Officials, Subdistrict Head and Village heads it was hoped to promote an improved Health Care delivery system and cause awareness on the official's part on the magnitude of the problem.

III. **METHODS AND MATERIALS**

A. **Type of study**

The study is a community based longitudinal study using an intervention and control area. Intervention consisted of 1) training TBA's, cadres, midwives and HC doctors, 2) establishment of birthing homes and 3) equipping BH, HC and to a certain extent the District Hospital.

The duration of the project was from January 2, 1991 to July 1993. Establishment of (building and equipping) birthing homes took place from January 1991 to July 1992. Installation of radios, a radio tower and acquisition of the ambulance was also completed by July 1992. Training and social marketing of Birthing Homes was completed by the end of November 1992.

For detailed plan see Appendix.

Therefore the time periods for analysis of results of implementation was determined as from March 1, 1992 - November 30, 1992 and from December 1, 1992 - May 31, 1993 respectively.

B. Sample size

All pregnant women in the intervention area served as the study subjects while all pregnant women in a different subdistrict served as controls. Based on the total population in Tanjungsari (\pm 89000) and a birth rate of 26/1000 the expected number of pregnant women for 1 year was 2340, while in the control area with a population of 43000 and a birth rate of 26/1000 the expected number of pregnant women was 1118. The actual numbers are 2748 for Tanjungsari and 1231 for Cisalak.

C. Data collection

Data collection was done by interviewers using prestructured questionnaires through home visits. The first questionnaire was at first contact of the pregnant women up to 7 months, the second visit was directly after delivery, third visit was on day 7, fourth visit was on day 28 and the last visit was 42 days postpartum. Interviewers were village cadres (voluntary community health workers) previously trained in completing questionnaires. The interviewers were supervised by field supervisors (5 males). Supervisors are academics with degrees in social sciences. Data on activities at the birthing homes are entered in log-books which were collected by a member of the research team. "Sweeping" is used as a method of verifying data on pregnancies and births collected by the interviewers and is done every 6 months over a period of 18 months (January 1992 - June 1993).

Special data on maternal and perinatal deaths were collected by completion of death questionnaires (verbal autopsies) conducted by the health center doctors by means of questioning family members, TBAs and hospital and HC personnel. Other data collected such as case reviews of all Caesarean Sections was done by going through records at birthing homes, health centers and district hospital by a member of the research team.

At the same time, data from the birthing homes, health centers and hospitals were collected by the district health department.

Data collection for special activities such as social marketing and cost effectiveness was done by special teams. Pregnancy history, births, referrals, death reports etc were collected at the Research team headquarters, where cleaning of data was carried out.

For the cost study 2 interviews were fielded. The first to 1033 women at 7 months gestation and followed until 42 days postpartum, at which time 988 women were reinterviewed. The cost study took place between May , 1992 and Jan 30, 1993.

D. Data analysis

All incoming data were entered into the computer (after cleaning) using a DSurvey computer program. Quantitative analysis was done by SPSS-PC and include univariate, bivariate and multivariate techniques. Statistical significance is measured by using the student T test where applicable. The results are described in four manuscripts that have been attached in Appendix D.

IV. ACCOMPLISHMENT

A. Summary of activities (see table 1)

Effecting Behaviors

The following were done:

- o Formative research to develop IEC materials (posters, stickers, action cards and leaflets).
- o A IEC campaign for recognition of danger signs during pregnancy and the use of appropriate health services (oriented to both community and health service providers).
Midwives and TBA's counseled pregnant women on the need for appropriate health care during pregnancy.
- o Post campaign surveillance: training activities of midwives to TBAs and monitoring of referrals from BHs.

Handwritten notes:
1. Formative research to develop IEC materials (posters, stickers, action cards and leaflets).
2. A IEC campaign for recognition of danger signs during pregnancy and the use of appropriate health services (oriented to both community and health service providers).
3. Post campaign surveillance: training activities of midwives to TBAs and monitoring of referrals from BHs.

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Improving services

1. Facilities

- o 10 birthing homes were established in the intervention area with the consent of health officials and community leaders. The research team supplied the equipment while the homes were built by the village communities

2. Training

- o Training of health personnel (in intervention area)
3 Health Center doctors were trained on the management of obstetric and neonatal cases by an obstetrician and 2 pediatricians at the District Hospital, over a period of 1 year (weekly sessions).
Additional training to the 6 health center and village midwives in the management of obstetric and neonatal cases was done by senior midwives at the District Hospital.
Training of HC doctors + midwives in the use of risk scoring.
Training of HC doctors + midwives in the use of the WHO partograph.
- o Training of traditional birth attendants was done by midwives who were previously trained by an obstetrician + pediatrician from the Central (Hasan Sadikin) Hospital and a senior member of the research staff.
- o Training of birthing homes managers (village head and birthing homes cadres), by Mr Djumani, especially in the financial management of the polindes. Training period was 4 days; each polindes was represented by 2 persons.
- o Training of village drug store managers. The training period was one week, by a MD from the Department of Pharmacology.

3. Perinatal and Maternal deaths review

- o Perinatal audits of 23 cases (SB + END) in District Hospital
- o Perinatal audits of referral and perinatal and maternal death cases by TBAs and midwife.
- o 117 verbal autopsies of SB + END in village

- o Verbal autopsies review of 9 cases (6 in Tanjungsari + 3 in Cisalak)
- o Social economic cases review.

Referral system:

- o Installation of 2 way radios in all 10 Polindes, 3 Health Centers + District Hospital.
- o Ambulance on 24 hour duty at the central HC.
- o TBA referrals to birthing homes: increased from 19% - 53% for antenatal women and from 17 - 33% for women during labor/delivery. 62.2%. Of all referrals by TBAs were to BHs for the first period (June 1, 1992 - Nov 30, 1992), and 72.4% for the second period (Dec 1, 1992 - May 31, 1993). Out of 57 referral from BHs to Health Centers and Hospital, 46 women complied and 37 of these 46 women used the ambulance (the rest had used their own transportation)
- o During the 15 months period, the ambulance was used 552 times (average 1.23/day), most frequent cases: ARI, Prolonged Labor + Bleeding.
- o Almost all ambulance referrals used radios.
- o Almost all radios are operational.

Management and supervision.

All supplies for birthing homes were provided by the Research team. Additional drugs were supplied whenever needed.

Monitoring was done by members of the Research team, through periodic visits and meetings in the field.

Evaluation of progress was done at weekly meetings. Final evaluation and analysis was done in Bandung (Research Team Headquarters).

B. Summary of impact and process indicators of project

Effecting behaviors

Impact on women's behavior: 1) willingness to use birthing homes for antenatal care and delivery services and 2) acceptance of referral compliance to referral advise served as indicators of change in behavior and attitude of women.

1993

- o Use of Birthing Homes for antenatal care was satisfactory. Percentage of pregnant women receiving ANC increased from 9.1% during March 1 - May 31, 1992 to 12.6% during December 1, 1992 - February 28, 1993.
- o Utilization of BHs for births was lower than expected; only 5% of births in villages with BHs occurred at the BHs while for villages with no BHs very few delivered at neighboring BHs.
- o Knowledge of danger signs improved on the part of TBAs as well as the population.
The populations knowledge on danger signs improved from 12.0 to 13.36% during pregnancy, 65.2 to 80% during delivery and from 69.36 to 82.16%, post partum.
- o Compliance with referral increased dramatically. Out of the total referrals by TBAs, 100% women complied antenatally, during labor and post-partum.
Referrals from BHs; 80% of women complied (60% for ANC, 86.5% during labour and 100% post-partum)
- o Knowledge of the community on BHs increased from 23.2% to 44%.

Improving services

Indicator for result of training was pre and post test results

- o Training of all sectors of health care providers resulted in better care. The impact of training was on knowledge of doctors and midwives on Perinatal Care. Obstetrical knowledge improved by 27.9% for doctors and by 55.7% for midwives, but Pediatric knowledge did not improve for doctors and only improved by 14.2% for midwives.
- o Recognition of danger signs: (use of risk scoring charts) not measured yet.
- o Referral system: improvement in utilization of radio's and ambulance.
- o Lowering of maternal mortality. Although statistically impossible to prove due to the small numbers, the number of maternal deaths declined from the previous (RAS) study of 20 over 2 years MM Ratio 508/100 000 LB to 6 in 1992 - 1993 (15 months) for a maternal mortality ratio of 225/100 000 LB (see appendix)

1994

Management and supervision

Monitoring and evaluation had a positive impact on recording + reporting:

- o "Sweeping" revealed that only 1.5% of Antenatal cases were missed in Tanjungsari and 4.7% in Cisalak, while 1% of deliveries were missed in Tanjungsari and 5.3% in Cisalak.
- o Evaluation of official reporting in the control area revealed that only 40% of births were reported to the local government (kecamatan), while only 75% were reported to the HC.
Only births attended by TBA's, midwives and doctors were reported while births attended by other Health providers were not reported.

Enhancing Policy Dialogue

Meetings, conferences, workshop were held to promote results of the project. These were well attended and results were favorably received.

Other indicators of succes in enhancing Policy Dialogue were:-

- o Recognition of research team members at National and Provincial level.
Appointment of PI and Co PI to Provincial and National level committees to promote Safe Motherhood. These included the following:
Provincial committee on lowering child mortality in West-Java. Meeting with DoH officials and Province Officials on research of HCs in West-Java.
Regular meetings at Dept. of Health (DoH) for manuals development.
Appointment of PI + CO PI a consultants for development of Proposal for ADB IV project with a SMI component.
- o A collaboration between the Dept. of Health and the GH Hasan Sadikin to train ± 180 nurses from type C and D hospital of West Java in nursing care for newborn.
- o The decision of the Dept. of Health to conduct training for MDs and nurses from several District hospital of province other the West Java.
The training course and perinatal case management will start in September 1993.
- o Request of Policy makers at National level for more information on results. (BAPPENAS) - a meeting on this subject as plan for July 30 - 31, 1993 in Jakarta
- o The Department of Health and the Unicef have started a meeting on SMI. The PI and CoPI will continue participate in this meetings that is plan for each month.
The meeting is organize by the Unicef (Dr. Samhari and Dr. Nardho (Department of Health).

V. LESSONS LEARNED

A. Effecting behavior

- As development of BH's is a new concept more preparations on the part of the community is necessary. The community should feel a need for birthing homes, and be responsible for its maintenance.
- Change of behavior is a difficult process and a long time is needed for efforts towards change of behavior to show results.
- BHs seem to work best under a strong manager (usually a TBA or cadre Community Health workers).
- Motivation of women to deliver at BH's is the most difficult as; firstly women prefer to deliver at home and secondly they perceive birthing homes to function only as a way station and unable to cope with emergency cases.
- The cost of delivering at a birthing home poses a real problem as most women stated this fact to the cost study team (see appendix on result of cost study)
- A discrepancy exists between knowledge of danger signs on the one hand and action or behavior of women on the other hand improve knowledge does not always result in appropriate action.
- Doctors and midwife's negative attitude towards TBAs effects their performance and behavior. This fact was discovered during perinatal audits at the village level.
- Formal village heads do not always have a positive influence on the community, and do not always reflect the village community's wishes.
- BHs are seen as valuable because they promote availability of ANC services.
- Referring patients to another facility is perceived by TBA's to be discrediting to their standing in the community (for details see SM + referral reports)

B. Improving Services

- The time available to HC doctors and midwives for Health services is less than 30% as they have to spend a lot of their time on other activities (not health oriented)
- A short training course for TBA's is not very effective. Better results were obtained when it was a continuous process and learning by doing, including the implementation of perinatal audit.
- Training of midwives and HC doctors resulted primarily in improvement of Obstetrical knowledge as compared to pediatric knowledge.

This difference in improvement was mainly caused by the scarcity of pediatric referral cases, due to cultural habits in the area. Newborn infants may not leave the house before one month of age.

- o **Each birthing home should have a midwife on a full time basis as this study shows that Antenatal care increases whenever a midwife is available (see appendix) and the presence of a midwife continuously makes it possible for a birthing home to function daily as a place for delivery.**
- o **Competition amongst village heads resulted in delays as some village heads insisted on well built homes their our birthing home.**
- o **Fee for services charged by different Health personnel at BHs is an important issue and needs more attention from the start in the form of a consensus between community and Health personnel.**
- o **Perinatal audits at the Hospital and BHs served as an excellent means of transfer and retention of knowledge between different of Health personnel as well as between the TBA and the midwife.**
- o **Installment of radios and the services of an ambulance on a 24 hour basis has had a positive effect on the quality of referral.**
- o **Operation of radios was not optimal due to difficulties in personnel operating radios.**
- o **The recordings system implemented during the project was to complicated (typically 6 different log books exists in one BH). A simplified recording system needs to be developed.**
- o **A high drop-out rate of cadres exists due to financial difficulties. Cadres are voluntary village workers, if they have other work in the village that is income generating, they will leave this job at the birthing homes.**

C. Enhancing Policy dialogue

- o **There were several positive as well as negative factors influencing the project. Positive and supportive attitude on the part of the policy makers: permission to try out new ideas and methods was granted by Government Health officials as well as other Government officials, and a willingness existed at all levels to listen to suggestions and to participate in seminars etc. A decision by the Governor of the Province of West Java to lower Infant mortality on a crash program basis has had a beneficial effect on Government official's attitude and willingness to learn of this project's result. Involvement of Government authorities was essential for the success of this project.**

D. Improving Project Management

Project management was effective in several aspects such as supervision and monitoring but a few shortcomings were noted.

- o A precise job description was not available and resulted in confusion of each team member's tasks and responsibilities.
- o Structure and organization of the Research staff was not known to all participants, so a detailed description is an important part of the success of a project.
- o Recruitment of research team members who are fully qualified and can devote most of their time to this project was impossible. University staff members as well as Hospital staff members cannot spend a 100% of their time on project activities as they have other responsibility.
- o Compensation for time devoted to project activities was not adequate; USAID scale of payments is based on a BAPPENAS regulation which is hopelessly inadequate.
- o Several changes of consultants occurred during this project with adverse effects on the project. This change of consultants (especially of the Social marketing consultants) has resulted in confusion and to some extent has been responsible for delays in research activities.
- o The attitude of some of the consultants was not friendly, condescending and sometimes patronizing, while reports to MotherCare were prejudiced which resulted in the feeling on the part of members of the Research team that they were being treated as inferiors, and this was reinforced by the actions of some of the appointed consultants.

VI. RECOMMENDATIONS

If the project were to be scaled up to a Provincial Level or National Level the Research team proposes the following: * (Note certain modifications will be necessary for its implementation on a National Level due to differences in cultural and geographic conditions).

Certain elements should be expanded such as:

- o Establishment of Birthing Homes with a full time midwife in charge which should function as an extended Integrated Health Service Post (IHSP) and preferably originating from a functioning IHSP.

- o A need's assessment should proceed the establishment of BHs, including peoples wishes, so as to ensure a bottom-up approach.
- o Establishment of linkage between the formal (health personnel) and informal (women and community) sectors.
- o Establishment of linkage between District Hospital and HCs plus BHs, so as to establish transfer of knowledge from specialists at the District Hospitals to HC doctors and midwives and to ensure participation of Hospital Staff in supervising and monitoring of first level activities.
- o Additional training for HC midwives and doctors which are problem based and problem solving oriented. This would involve 6 months of once a week training at the District Hospital as well as Perinatal audits.
- o Strengthening of an accurate and simple recording and reporting system. The project results show that the official R and R system does not function well and needs improvement. However, an extensive and continuous surveillance system as in this project will not be sustainable.
- o Aspects of the project which are sustainable are:
 - * Training of TBAs. and additional training of HC doctors and midwives using the problem based learn approach.
 - * Perinatal audits
 - * Establishment of BHs with a midwife in charge on a full time basis
 - * Use of the risk scoring system and the use of the WHO partograph
 - * Installation of radios at all levels of care and the services of an ambulances on a 24 hour basis for emergency transportation
 - * Implementation of Social marketing

The Research Team feels that certain modifications should be made to achieve these expansion and these are:

- o Changes in equipping BHs. No refrigerators are necessary, while beds should be suited to local customs and needs.
- o Changes in policy on midwife's prerogatives and responsibilities (these should include the right to administer antibiotics orally or by injections, administering of oxytosics post-partum as well as certain obstetrical emergency measures such as manual removal of placentas and massage of an atonic uterus).
- o Changes in the Social marketing implementation. Lots of women know danger signs but do not act upon it.
Many women also complained that Leaflets and pamphlets were not sufficiently self explanatory and that no additional information was supplied to explain their meaning.

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- o **Modifications in the training of Doctors and Midwives. Training or retraining should encompass a community approach and should incorporate counseling and communication skills**
- o **Changes in the reporting system. The existing reporting system does not include reports from other MCH providers (such as nurses, nurses-aids etc). All personnel involved in MCH services should be required to report on all aspects of MCH services provided.**
- o **Supervision and monitoring of all MCH service providers should be implemented. Reports on deliveries and deaths should be upgraded and attention on quality of these reports should be intensified.**

	Activities/Products	Danger sign/Complications			Referral System	Integrated Health Care	
		Prenatal care	Labor/Safe	Post-partum care			
I	Enhancing policy dialogue						
	Meeting with Dept. Health (monthly meeting org. by UNICEF)	X	X	X	X	X	
	Workshop with provincial level Govern. (Birth & Death surveillance)					X	
	1 workshop with Depkes		X	X	X	X	
	1 workshop provincial level		X	X	X	X	
	1 workshop District head		X		X	X	
	4 meetings with village head	X	X		X	X	
	Post study seminar						
	Decision makers	X	X	X	X	X	
	Provincial level	X	X	X	X	X	
	District level		X		X	X	
	1 work shop with Depkes (Soc. Mar.)				X		
	II	Improving services					
		A. Training					
1. MDs training (4)			X	X			
2. Midwifery training (7)		X	X	X	X	X	
3. TBA training (120)		X	X	X	X	X	
4. Training HC staff + MDs partograph			X		X	X	
B. Establishment of services and equipment							
- BH		X	X		X		
- HC		X	X	X	X		
- Hospital			X	X			
1. Village drug stores		X					
2. Birthing homes						X	
C. Materials Development							
1. Training material							
- TBA training module		X	X	X	X		
- Risk assessment		X	X	X			
Risk management		X	X	X	X		
- Polindes/Health Center	X	X	X	X	X		

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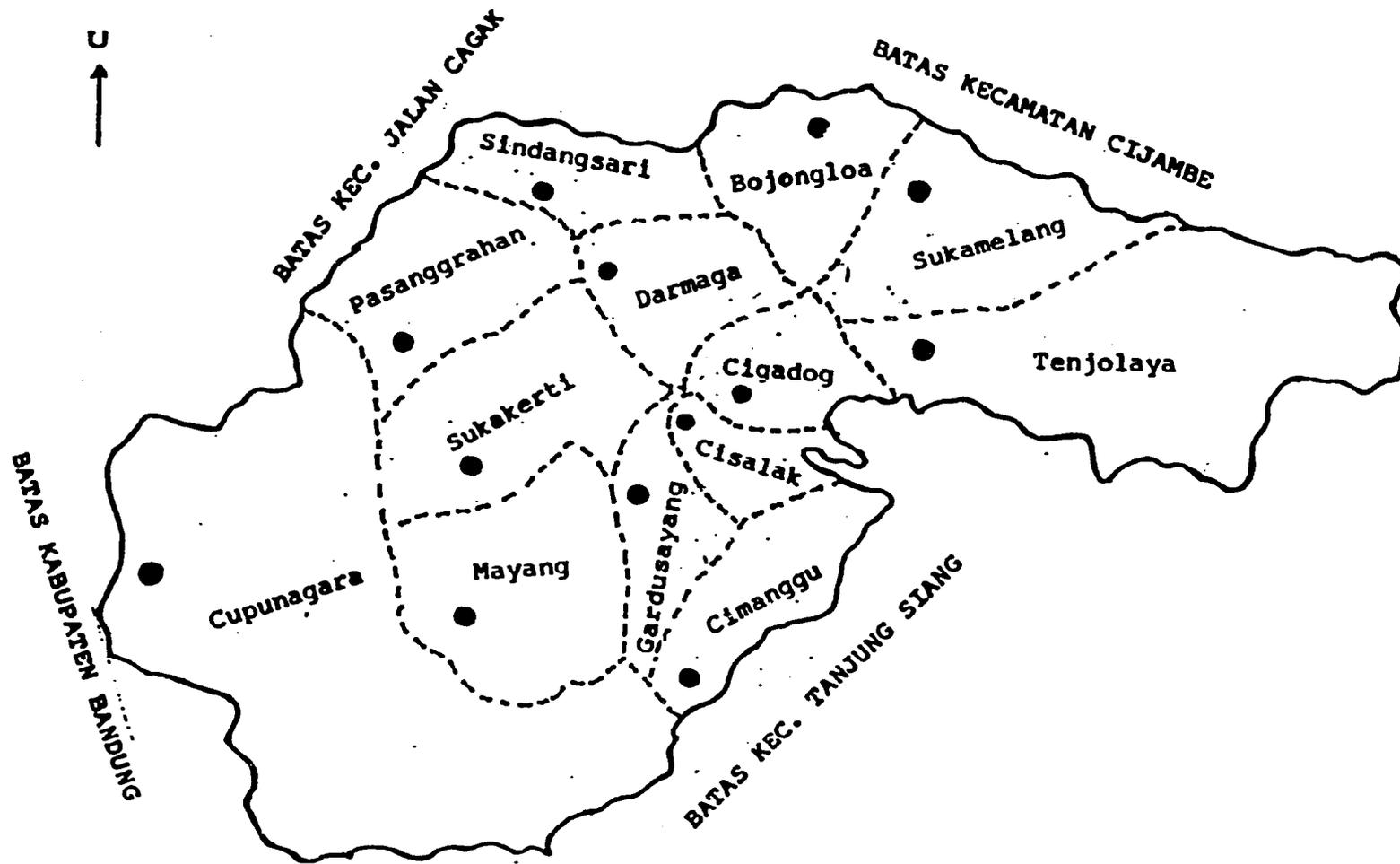
Final Report table: Activities by topic emphasize

	Activities/Products	Danger sign/Complications			Referral System	Integrated Health Care
		Prenatal care	Labor/Safe	Post-partum care		
III	Effecting behaviour					
	A. Community					
	1. Formative Research	X	X	X	X	X
	Comparative study to other Polindes					X
	2. Social Marketing:					
	- Communication material (booklets/leaflets)	X	X	X	X	
	Posters)					
	- Training midwives, health cadres	X	X	X	X	X
	- Monthly monitoring				X	
	- Pre-/postintervention				X	
	KAP	X	X	X	X	
	- In depth interview on referrals & compliance		X	X	X	X
	Launch Activities					
	- Dialogue		X	X	X	X
	Community leaders	X	X		X	X
	- Cross country walks		X	X	X	X
	- Dances		X	X	X	X
	- Polindes song		X	X	X	X
	- Wayang performance		X	X	X	X
	- Polindes		X	X	X	X
	Quiz competition					
	3. Home based maternal recording and action card	X	X	X	X	X
	B. Health Providers					
	1. Perinatal audit					
	MDs/midwives	X	X	X	X	X
	TBAs/midwives	X	X	X	X	X

Final Report table: Activities by topic emphasize

	Activities/Products	Danger sign/Complications			Referral System	Integrated Health Care
		Prenatal care	Labor/Safe	Post-partum care		
IV	Management of Project					
	Management/supervision					
	- Routine weekly meeting					
	- monthly meeting				X	X
	Logistic/supplies	X	X	X	X	X
	(10 Polindes fully equipped)				X	X
	Ambulance				X	X
	Radios				X	X
	Monitoring					
	- Program monitoring (monthly)		X		X	X
	- Base line		X		X	X
	- Sweeping		X		X	X
	Evaluation					
	- Pre test	X	X	X	X	
	- Routine interviews	X	X	X	X	
	- Incidental visite of PI	X	X	X	X	X
V	Research					
	- Cost survey	X	X	X	X	
	Data collection instrument development					
	Training interviews	X	X	X	X	X
	- Polindes cost survey	X	X	X	X	X
	Data collection instrument development	X	X	X	X	
	Comparative study	X	X			X

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SKALA : 1 : 2000

TIME SCHEDULE OF REGIONALIZATION PROJECT ACTIVITIES

INTERVENTIONS

1. Training

- T.B.A
- M.D
- Midwives } -----
- Program
- Risk Skoring

-Perinatal Audit

2. Birthing Homes

3. Social Marketing

4. Transportation

- Radio Communication

EVAL. + MONITORING

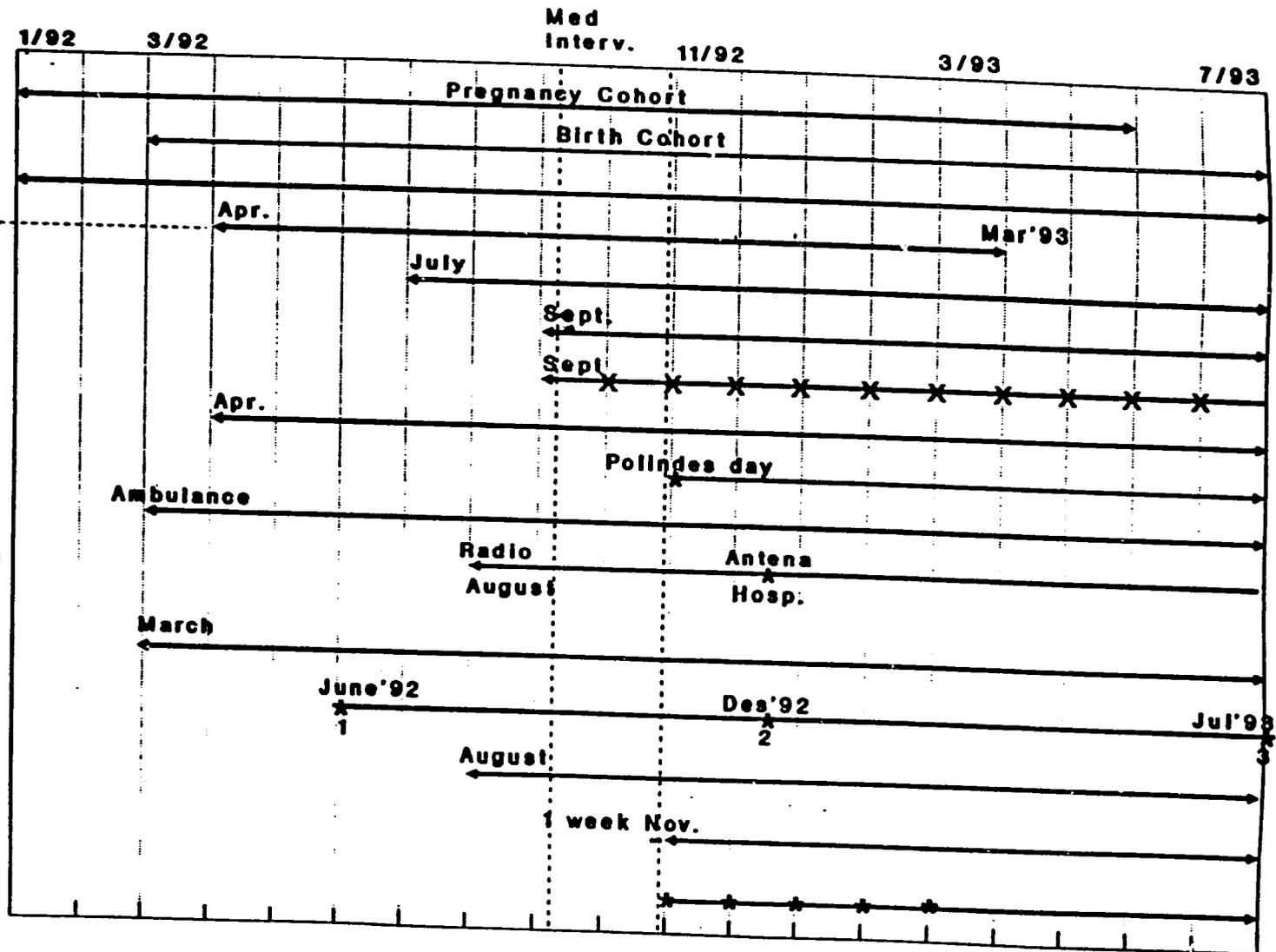
1. Interviews

2. Sweeping

3. Health Economic

4. Soc. Marketing Baseline

5. Monthly S.M monitoring



Appendix.**Glossary**

Age Specific Fertility (ASFR)	is the rate at which the number of live births in a year per 1 000 women by certain age.
Child ever born (CEB)	is average number of children born per ever married woman who had reached the end of their reproductive ages (45-49 years).
District hospital	serves as a referral hospital for the ditrict. Has obstetrician(s) and pediatrician(s):on its staff.
Early neonatal death rate	is the number of infants died between 0-7 days per thousand live born infants.
Family Planning clinic	is a clinic where women (acceptors) may obtain the family planning services such as contraceptives, this includes hospital, public health centers maternal and child health centers, medical mobile team and others.
Growth rate	is the rate at which a population is increasing (or decreasing) in a given year and expressed as a percentage of the base population.
Health center(Puskesmas)	headed by a medical doctor. May have 2 doctors and inpatient services. midwives are also on the staff supervises work at the Integrated health service post (Posyandu).
Maternal mortality ratio	is the number of pregnancy related maternal deaths per 100 000 live births.
Perinatal mortality rate	is the number of late fetal deaths plus early neonatal deaths per thousand total births.
Polindea	Pondok Bersalin desa : as defined by the Department of Health = birthing home. In this study by Polindea is meant a facility for MCH care headed by a village midwife (bidan didesa)

Late neonatal death rate	is the number of infants died between 8 - 28 days after birth per thousand liveborn infants.
Low birth weight	is the birthweight of a newborn infant less than 2500 grams.
Low birth weight incidence	is the total number of newborn infants less than 2500 grams per hundred births.
Low birth weight rate	is the total number of liveborn infants less than 2500 grams per hundred livebirths.
Subdistrict (Kecamatan)	Part of a district. Average population 30-90 000. Administered by a Camat (a government employe appointed by the Governor).
Integrated Health Post (Posyandu)	is a health post conducted and organized voluntary by village women. Five health programs are carried out, weighing of under fives, nutrition rehabilitation, immunization, Family planning, MCH and polyclinic (by health personnel).
Total Fertility Rate (TFR)	is the estimated number of children that would be born alive to a woman during her childbearing period, assuming that fertility behavior of each woman is the same.
Village (desa)	is part of a subdistrict (kecamatan) Average population 3000-5000 people. Administered by a village head (not a government employe, chosen by the people).
Village midwife (Bidan di desa)	a qualified nurse-midwife, is responsible for MCH services at village level.

APPENDIX 9
PERINATAL MORTALITY BY BIRTH ATTENDANT AND PLACE OF BIRTH

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Place of Birth by Birth attendant and Perinatal death
Arinalah , March 1992 - May 1993

	Place of Birth									
	Home			Birthing Home			HEALTH CENTER	HOSPITAL	Primitive Midwife	BSBA
	Midwife	Relative		TBA	Midwife	TBA/Midwife				
Total Births	107	96	8 +1	-	-	-	4	19	27	(1)
Still births	10	4	+1	-	-	-	1	2	1	(1)
Early Neonatal Deaths (0-7 days)	21	3	-	-	-	-	-	1	-	(1)
PHR	28.8	72.9	0	N	A	-	-	157.9	-	-

APPENDIX 10
FINAL REPORT
EAST JAVA SAFE MOTHERHOOD PROJECT

I. FINAL PROJECT REPORT

Title : East Java Safe Motherhood Study

Location : Probolinggo, East Java, Indonesia

Duration : August 1992 - July 1993

In-Country Budget: \$ 229,467.84

Central Office: Dr. Soetomo Hospital/School of Medicine
Airlangga University

Address: Jl. Mayjen Prof. DR. Moestopo 6-8
Surabaya
Tel. office 518635 (031)
home 42970 (031)
Fax 42970 (031)

Principal Invest.: DR. Dr. Poedji Rochjati Dr. Soetomo Hospital/
Co-Investigator: School of Medicine
Airlangga University

Dr. Listya Setjalilakusuma	" "
Dr. Agus Abadi	" "
Dr. Benny Soegianto, MPh	Provincial Health Office
Dr. Slamet Rihadi	Provincial Health Service
Dr. Achmad Djaeli	" " "
Drs. Wasis Budiarto, MS	Health Services Research and Development Centre Ministry of Health

Key Personnel:

Dr. Hurip Sudiro	Head DHS Probolinggo
Dr. Sanyoto Basuki	Head MHS Probolinggo
Dr. Masjon Surjono, DTMH	Head DHS Pasuruan

OBJECTIVES

Overall objective is to reduce Maternal and Perinatal mortality through :

1. Promote in community the concept of potential risk in pregnancy and awareness of the danger signs by implementation of Predictive Antenatal Risk Scoring System and subsidized transport.
2. Improve organizational network of maternity care as a continuum beginning from community, village health post (Posyandu), Village birthing hut, Health Centre and Hospital with appropriate use of maternity service.
3. Involve leaders, health and other related sectors in Safe Motherhood program.

OUTPUT/OUTCOME

1. Community based Predictive Antenatal Risk Scoring System use by PKK for 83.5% of pregnant women.
2. Used effectiveness of emergency transportation subsidy for timely referral, when needed.
3. A community based Maternal and Perinatal mortality follow up, which can be used for the improvement of future maternity care.
4. Cost analysis in the maternity care by women/family and Health Institution for future planning of cost delivery supported by community and government.
5. Human resource development in the intervention area.
6. Presentation on the Risk Approach Strategy with the community based predictive antenatal scoring system to National level : Indonesian ObGyn Association meeting.
Provincial level : - Annual meeting for Obstetricians, Pediatricians and the Heads of district MCH section
- Family Welfare Movement.

Acknowledgement

The work contain in this report was performed under the Mother Care Project, John Snow Inc., by Dr. Soetomo Hospital/School of Medicine Airlangga University under the contract number #DPE 5966-Z00-8083-00 with the U.S. Agency for International Development.
Subcontract number : 1659-030.

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III. BACKGROUND

A. Location :

Probolinggo district (24 subdistricts) and municipality (3 subdistrict) were the intervention areas with the total population of 897.044 and 180.517 respectively, Pasuruan district (24 subdistricts) was the control area (population 1.112.410). Geographically in these 2 districts there were 3 distinct areas namely coastland, midland and highland/mountainous. In this study for intervention we used 4 subdistricts and for control 2 subdistricts from each area.

In the other 15 subdistricts (non intervention areas) in Probolinggo district a Cost analysis was done as one of the study components.

Probolinggo District and Municipal is a type B setting (Appendix I.1).

B. This Project was selected based on :

1. The current maternity care in Indonesia is with limitation of effective maternal and child health care network. Those are lack of a system for identifying and monitoring high risk pregnancies, transportation problems for maternal emergencies, limited convenient village-based places where women can come for a complete range of perinatal care services, lack of medical supervision of TBA's and a system to integrate TBA's with the present maternity care. Beside these problems there are still problems of getting pregnant women to use the maternity facilities and referral care once a mother at risk needs referral.
2. There is an effective women's network in Indonesia, especially in rural areas. Women in Indonesia have been organized into a women's movement called the PKK (Family Welfare Movement). The main program of the PKK include Health promotion, Education, Household welfare, and Home industry development. Past activities of this organization have been very effective in bringing MCH services to the community, especially for child care under five years, through the community based health post called Posyandu. The PKK has been active in health care delivery mainly through social mobilization efforts. They don't provide direct health service.

In 1988 in Sidoarjo district East Java by P.I a study was done to investigate the possibility of using this Predictive risk based screening by the PKK in the community. The results showed a successful achievement in training the PKK to interact and develop a long-term trusting relationship with the pregnant women, and health seeking behaviours were changed in positive fashion; good partnership developed between PKK, TBA and formal health personnel, with the result perinatal mortality 23.6 per 1000 birth and maternal mortality 0.5 per 1000 LB with the total pregnancy N 4017 from one million population.

C. The relationship of this project is built in in the already existing MCH Program of the Health deliveries system of the Government.

D. Organization participating in this project :

1. Provincial Health Office (Kanwil Kesehatan)
 2. Provincial Health Services (Dinas Kesehatan)
 3. Health Economic Division Health Services Research and Development Centre Ministry of Health.
 4. ObGyn. Department School of Medicine Airlangga University.
 5. Dr. Soetomo Hospital.
- with their senior staff as representative together with P.I form a Project Team.

IV. OBJECTIVE BY TOPIC

A. Affecting behaviour - the community

1. PKK as women health volunteers in the community.

Promote screening, detection of risk factors by PKK in the community by door to door home visit to pregnant women, followed by IEC for antenatal care, referral one needed and plan for appropriate site and birth attendant.

2. TBA

2.1. Improve TBA's participation in Risk Approach Strategy for pregnant women by recognition of risk factors and positive respons to color code as communication tool for safe delivery.

2.2. Build a good integrated teamwork between PKK, TBA and health personnels, midwife and health centre doctor, also hospital.

3. Women and family

3.1. Improve recognition of danger signs during pregnancy, delivery, and post partum/ neonates with increasing health care seeking behaviour.

3.2. Improve compliance with referral to higher level of care, when necessary.

B. Improving services - Health Institution and Health System

1. Improve timely referral of high risk antenatal, intranatal, and postnatal/neonatal conditions by planned and emergency transportation subsidy.

2. Improve working relationship between different levels of maternity care responsible for safe delivery.

3. Increase referral by Subsidized transportation for pregnant women with high risk and very high risk.

4. Reduction of maternal and perinatal mortality.

C. Enhancing Policy Dialogue

1. Enhance the risk based maternity and neonatal care in the already existing Governmental MCH Program,

2. Enhance awareness and participation of the other related sectors, Governmental and non Governmental.

V. METHOD AND MATERIALS

An applied ongoing community based study was conducted using an experimental method with an intervention and control design, and a Pre and Post-survey (appendix I.2).

1. Pre and Post-Survey.

In August 1992 before the study a Pre-survey was done for health and economic parameters.

The Pre-Survey was performed in Probolinggo District & Municipality (12 Subdistrict) and in Pasuruan District (6 Subdistrict).

The Post-Survey was conducted in May 1993 in the same areas with the same method, materials and interviewers. While the supervisors were senior academic staff from Health Centre. In both surveys the Health Centre doctors functioned as field coordinators.

Sample size : the population for the Pre and Post-Survey was 491 483 for Probolinggo and 278.102 for Pasuruan. Based on National birth rate of 25 per 1000, number of pregnant women are expected 12.500 for Probolinggo and 6952 for Pasuruan. The total number of respondents in Probolinggo were 9447 delivered mothers between August 1991 - July 1992 for the Pre-Survey and 7195 mothers for the Post-Survey covering a 9 months period for August 1992 - April 1993. The number of delivered mothers in the control area was 6487 and 4766 for the same time period. From the above figures it appears that the birth rate is lower than the national rate : 18,8 per 1000 for Probolinggo and 23,3 per 1000 for Pasuruan.

Data collection : the interviewers were the local midwives (122 and 46 respectively). It was a door to door survey interviewing for health as well as economic parameters. This included : pregnancy, delivery, utilization of services, outcome of pregnancy, risk factors/complication, referral, health information about previous deliveries and children as well as selected socio economic variables.

The supervisors of the Pre-survey (26 and 11 respectively) in Probolinggo District and Pasuruan District were graduated students from Public Health School Airlangga University. The supervisors of the Post-Survey were local academic health personnels (14 and 8), (appendix II.1-II.5).

2. Implementation of home based Predictive Antepartum Risk Scoring System.

It was conducted from August 1992- July 1993 by door to door home visit. All pregnant women were to be identified, and screened by PKK. The number of PKK involved in this screening activity was 2 to 4 in each village depending on the geographic conditions and density of the population. The conditions of pregnant women, the risk factor and pregnancy outcome were monitored and recorded in the score card hold by PKK. A color code with the color based on the total score at each visit/contact was made by PKK and attached at the front door of the women's house (appendix III.1&2).

3. Transport system and subsidy

This study components was implemented since October 1992 - July 1993 in 6 subdistricts (10 H.C), while the other 6 subdistricts (8 H.C) functions as control areas. Transport subsidy was given to planned and emergency obstetric risk cases, using Health Centre ambulance, public/private car.

Procedure for reimbursement : Health centres both from subsidy and non subsidy Subdistricts keep a yellow card of all referral received from the community and for subsequently referred to the Hospital. The Hospital hold a light red card for registration of all referrals received both from subsidy and non subsidy area. These cards were returned to the research team. Then patients who is referred from a subsidized Health Centres received a red safe delivery card for a Hospital delivery and reimbursement. Registration of referral made from the subsidized Health Centre to the Hospital and of referral received by the Hospital was made on special forms, which were returned to the research team (appendix IV.1-IV.5).

4. Cost Analysis

This was conducted in March 1993 in 15 subdistricts. 19 Health Centres in the non intervention area of Probolinggo district and municipality. The methodology was a recall study with 9 segments. Segment I - VI was for women at 4, 5, 6, 7, 8, and 9 months pregnancy. Segment VII as for post partum women up to 7 days. Segment VIII for post partum women between 8-42 days.

The 9th segment consisted of for 14 cases with operative deliveries in the 2 Hospitals during one month previous to the recall study in February 1993 (appendix V.1-V.3).

5. Death Follow Up

Based on the national maternal mortality of 4.5 per 1000 LB, about 40 maternal deaths are expected. The expected perinatal mortality is 35 per 1000, thus they will be about 350 perinatal deaths. Flow of information for all Maternal and Perinatal death cases begun from the cadres as a first recorder and reporter of all deaths in their own community (appendix VI.1).

They reported to Health Centre within 48 hours and within the same time the midwife took the verbal autopsy and reported these death cases to the study team for further medical audit of the terminal events. The senior residents from ObGyn department in Dr. Soetomo Hospital/school of Medicine Airlangga University as interverviewers visited the family using a special Maternal and Perinatal mortality form (appendix VI.2 and VI.3).

Data Analysis

A Hewlett Packard computer was installed in the ObGyn Department. Initial screening of survey questionnaires and score cards was done in the field. Computer data entry was subsequently performed in Dr. Soetomo Hospital followed by further data cleaning. SPSS 4 software was used for quantitative analysis using bivariate and multivariate techniques.

VI. ACCOMPLISHMENTS

A. Narrative summary of activities (Table I).

Table I. Final Report Table : Activities by Topics Emphasized

Activities/Products	Topic							
	Prenatal Care	Danger Signs	Complications	Labor/Safe Delivery	Referral System	Post-Partum Care	Perinatal Care	Family Planning
<u>Enhancing Policy Dialogue</u> Meetings, Seminar with influential leaders, Government and non Government in Provincial and District level				X	X			
<u>Improving Services</u> Training Risk Scoring System Supervision Transport subsidy Two-way Radio Medic		X	X	X	X		X	
<u>Affecting Behaviors</u> A refined Score Card Total score Risk group/Color code Leaflets, posters, etc. Simulation game Radio Spots		X	X	X	X		X	X
<u>Management of Project</u> <u>Management/Supervision</u> Pre and Post Survey Pregnancy follow up/record Maternal & Perinatal Mortality	X	X	X	X	X	X	X	
<u>Research</u> Cost-Effectiveness Study	X			X	X	X	X	

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1. Effecting Behaviours - Risk Scoring System

- A refined version of score card was used by PKK as an antenatal assessment for reproductive risk.
- Using the total score of each contact the pregnant woman 6010 (83.7%) out of 7185 is categorized into three risk groups : Low Risk Pregnancy (LRP) 71.7%, High Risk Pregnancy (HRP) 26.3%, Very High Risk Pregnancy (VHRP) 2.0%.
- Women with high risk and very high risk antenatal risk score were supposed to be referred to further assessment by trained medical and paramedical personnels.
- Each pregnant woman with score card received color code for place of delivery : green, TBA at home; yellow, midwife at home; and red hospital. The color code is placed at the door of the woman's house.
- Posters, leaflets about risk factors and manuals describing the terms used in obstetric/perinatal care, criteria for risk factors, guidelines for filling out and using the antepartum scoring form and the color code form used. PKK used them on every contact with the pregnant mother (see leaflets, posters, calendar).
- Leaflets and posters giving guidelines for ANC and ladder to safe delivery were given to pregnant women, so at home they have the opportunity to discuss with their husband and family.
- Simulation game about Risk factors on pregnant women is conducted by mother awareness group (pregnant, lactating women and women with contraception), supervised by the trained local PKK and midwife.
- Radio spots about Risk factors on pregnant women is developed in this ongoing study and broadcasted daily by local Radio broadcasting in Probolinggo.

2. Improving Services

Training for Risk Scoring System.

- One day training was given by senior staff from Provincial Health service, Provincial Motivating Team Family Welfare Movement and Research Team to the Heads and staff of the District and Municipal Health Services in Probolinggo, ObGyn specialist, H.C Doctors (18), H.C midwives (21), bidan didesa (16), Head of Subdistrict (27), related health officials (14).

- Initial one day training by staff of 18 Health Centres was given to Cadre (502) and TBA (375).
- 426 out of 502 cadres (85%) are still working after 9 months of the project.
- Training for PKK and TBA's was reinforced by monthly meetings in Health Centres. Supervision of PKK and TBA in the field was also provided by the H.C staff.
- Partograph was done in the community by the midwives on Low Risk pregnancy deliveries, in district area 340 and city 152 deliveries. While in the hospital partograph was not yet implemented caused by limited of personnel.

Referral System

- Subsidized transport for 6 out of 12 intervention subdistrict was offered. 47 pregnant women received subsidized transport : 3 LRP, 34 HRP, and 10 VHRP.
- Transportation subsidy was announced to PKK by Health Centre doctor and midwife, then the PKK gaf the information to the pregnant women under her care.

Communication

- A two-way Radio Medic was installed in 5 Health Centres and 1 Hospital in February 1993.

In summary :

Pregnant women in this project were divided into three groups : 1) women in the 6 Subdistricts in Probolinggo District who received the intervention of Risk Scoring System, pregnancy identification, risk assessment, health education and referral by risk status; 2) those in the other 6 Subdistricts received the same intervention as the first group and were provided with transport subsidy to the Hospital or/and health centre; 3) women in 6 Subdistricts in Pasuruan District as a control with the usual care provided for them with outcomes studied in detail.

Management and supervision :

Logistic and supplies

- supplies for field research activities and IEC campaign materials were organized by Research Team, then distributed through District Health Service, Health Centre, and finally to cadres, TBA and pregnant women in the community.

Monitoring and Evaluation

- A Pre and Post-Survey was conducted in the implementation and control area.
- All pregnancies occurring in the selected intervention Subdistricts were prospectively followed and outcomes were recorded.
- Result of maternal and perinatal mortality. Maternal mortality (18) and perinatal mortality (254) were recorded, of these 13 and 216 respectively were investigated (appendix VI.4).

3. Enhancing Policy Dialogue.

Provincial level

- In front of the Health Communication Forum consisted of Heads of Provincial Health Office and Provincial Health Services, the Dean of School of Medicine and the Director Dr. Soetomo Hospital, this Safe Motherhood project was presented by the P.I. They had given support in the implementation of this project as a health system research. This research team consists of Senior staff members as representatives from all these Institutions.
- Several specialist from the Department ObGyn including staff members from the Perinatology and Social Obstetric Section participate in the outreach activity through this Safe Motherhood project.
- The Provincial Family Welfare Movement participate fully in this program based on the instructions by the East Java Governor's wife (1991), (appendix VII.3).

District level

- Information about this study was presented to the Bupati as Head of Probolinggo District official.
- Meeting between Bupati, District Motivating team Family Welfare Movement (Ibu Bupati), USAID and Mother Care representatives and research team in March 1993 was very strategic for their political back up and guidance.
- Seminar for Camats with other related health officials was conducted in the beginning of the study and during the midterm review, Bupati and Ibu Bupati also attended.

Subdistrict level

- Based on questionnaire filled in by Heads of Subdistrict, other related officials and PKK showed the acceptability and commitment in field application of score card by cadres (89%), and the belief in Safe Motherhood program advantages (81%).
- They expressed the desire for sustainability of this project (appendix VII.1).
- Data from questionnaire filled in by Health Centre doctors and midwives showed that the participation in this community based on Risk Scoring System by cadre is (85.4%), by TBA is (83.1%), by Head of subdistrict is (83.3%), and by Head of Family Welfare Motivating Team in Subdistrict is (83.3%). But then the involvement of the head of the villages is still relatively low (54.3%), (appendix VII.2)

B. Impact and process indicators of the project

An evaluation framework (appendix III.4) was developed to answer the following question :

Does the implementation of a predictive antenatal risk scoring system and subsidized transport reduce maternal and perinatal mortality through appropriate use of maternity services.

The components of this question address policy dialogue, improvement of services and change in behavior. Indicators are also related to activities in Table I.

Component	Selected indicators
- Implementation of predictive antenatal Risk Scoring System	- Policy seminars - % cadres trained who continue to work after one year
Policy dialogue	
Improving services (training)	- % health personnels trained - % pregnant women who have risk score card - % women identified as LR, HR, and VHR.

- Appropriate use of maternity services
Affecting behavior - % of HR or VHF women referred to appropriate place and complying with referral for delivery.
- % of LR, HR or VHR women delivery at appropriate place.
- Transport system and subsidy
Improving services - % of LR, HR or VHR women using subsidized transport
- Maternal and Perinatal mortality - Reduction in maternal and perinatal mortality.

VII. LESSONS LEARNED

Major issue : the Risk Approach Strategy for pregnant women with the related activities started in the community by PKK cadres as women voluntary non health worker created an integrated continuous and comprehensive service for women at risk in all health levels.

A. AFFECTING BEHAVIOUR

Positive

1. Develop awareness of potential Risk and the related risk factors among the pregnant women and family in the community.
2. The early detection of mother at risk give more time to educate, to refer and to plan for safe delivery and also preparing or saving the later needed expense.
3. The PKK used as ANC outreach workers increased access and equity for the pregnant women in their area, by door to door home visit.
4. PKK were effective in communicating with and altering the behaviour of pregnant women, in a long term and develop a trusting relationship.

Negative

1. Majority population in Probolinggo are Madurese ethnic group, historically have lower utilization rates, strong belief in TBAs and rigid behaviour.
2. Information of risk factors to the mother and family can make them afraid. More time for repeated information giving is needed.
3. The cadres and health personnels have to do home visit in the afternoon because some of the pregnant mothers are working in the field to help their husbands.
4. Mutual trust and relationship between cadres, pregnant women and family needs more time.

5. The color code attached at the front door of the mother's houses is a practical communication tool for the TBA's about appropriate site and birth attendant.

5. Delivery by TBA remains high even for those identified as high risk (73.8%) and very high risk (55.9%) because of the lower cost, their strong belief in TBA, longer post partum services with the assistance for the cultural ceremonies given by TBA.

B. IMPROVING SERVICES

Positive

1. One day training plus one day monthly continuous training/supervision of Safe Motherhood concept and Risk Approach Strategy is given :
 - a. To all level of care, from district included hospital, health centre and community level.
 - b. To all health personnels and to cadres PKK, as women voluntary non health workers in the community.
2. The use of a refined version of a simplified risk scoring system to grade pregnancy helped the cadres to be more confident in the community.
3. Timely referral for pregnant women at risk and Obstetric emergencies is likely to have an impact on decreasing maternal and perinatal mortality.
4. Transport subsidy with the reimbursement ensure the women can reach the appropriate level of care in good time.
5. Communication and information, through two-way Radio Medic already installed in the Health Centres and Hospitals, before referring give time for the hospital to prepare.
6. Logistic and supply for field research activities and IEC campaign materials is organized by Research Team, then distributed through District Health Service, Health Centre, finally to cadres, TBA and pregnant women in the community.

Negative

1. Most of PKK cadres (60%) are educated from elementary school.
This low level of education need regular supervision by local health personnels and Research Team.
Time is needed to make cadres more confident in filling and using score card for detection of risk factor in the community.
2. Geographically mountainous area with very scattered houses, long distances and heavy roads make the contact to outreach pregnant women more difficult by cadres.
3. Willingness to be referred is still low. The existing socio cultural, economic and other barriers impede effective utilization of health care services.
4. Expenditure for hospital treatment is still a major problem for low social economic family. They still refused to be referred.
5. -
6. The first Bank account sent by MotherCare was on June 22, 1992. There was very limited of time to prepare, to print and to distribute. Seminar for Camats and others was on July 11; the first training was on July 21. The field Safe Motherhood Study was started in August 1, 1992.

7. Health care system included net work of referral for women at risk through an integration of Primary Health Care and Risk Approach Strategy for pregnant women in the community has been developed by good coordination in all levels, health centres, district health service/hospital and provincial health service.
8. Complete report of Maternal and Perinatal Mortality could be expected by the research team through the early detection by the cadres. There should be no missing mortality in the community.
9. An evaluation system on the effect of intervention is established in terms of health measures and economic cost.
7. Dual system of responsibility for referral gives problems in supervision. Hospitals are under the Directorate General of Medical Care, while Health Centres are under D.G. of Community Health.
8. The death follow up is quite difficult to perform because of the mountainous area and long distances. Translator is needed for interviewing the mother and family in Madurese language.
9. The time of the study is too short (August 1992 - July 1993) to know the impact of the study in reducing maternal and perinatal mortality.

C. ENHANCING POLICY DIALOGUE

Positive

1. The involvement of all Provincial Health institutions with their senior staff as representative form a 'Regional Coordinating Team', and working together with PI as Research Team to develop a maternal health care system.
2. The involvement of District and Municipal Health Service in planning and organizing the field study with the Health Centre Doctor and Midwives as field coordinator and supervisors.
3. The involvement of all other related sectors like officials from social welfare, religion in preventing young primi gravida. By IEC to the parents the girls younger than 16 years old are not to be married.
4. The involvement of Provincial, District and Subdistrict Motivating team Family Welfare Movement can give more motivation to PKK cadres used as ANC outreach workers.

Negative

The senior staff members have very busy duty and task with their limited time. PI and the other research members are not full time investigator with the limited time and capability.

5. The involvement of the local governmental leaders Bupati and Camat with their political back up and guidance can mobilize the local official on giving more support for field Research activities.

The sustainability of this system's implementation in district level still need further support by the provincial and national level in terms of political enforcement and operational budget.

D. IMPROVING PROJECT MANAGEMENT

Situation in this Safe Motherhood Study.

Suggestion

1. In this study there are six components : Pre Survey, Risk Approach Strategy with risk screening and appropriate use of maternity care. transportation subsidy, cost analysis, death follow up, and post survey.

The Safe Motherhood Study in Probolinggo is suggested to be continued in longer period to strenghten the already started developing maternity care system. So they will be time enough to evaluate the changes in the mode of delivery, site and birth attendant in the community with the impact on reducing maternal and perinatal mortality.

2. The limited time and the work load of the study cause :

Also longer time is needed for changing the health behaviour in the strong belief to TBA in the community, cost problems, transportation for risk emergencies can be solved together by the government and the non governmental organizations.

a. Implementation of the study components can not be conducted simultaneously in the beginning of the study.

b. It is difficult to evaluate the result of the study on reducing maternal and perinatal mortality.

3. The Safe Motherhood Project based on Primary Health Care and Risk Approach Strategy for pregnant women in the later years can improve the quality of women's care, and can be intergrated in the already existing program.

2. The limited time and the work load of the study cause :
 - a. Implementation of the study components can not be conducted simultaneously in the beginning of the study.
 - b. It is difficult to evaluate the result of the study on reducing maternal and perinatal mortality.
3. The Safe Motherhood Project based on Primary Health Care and Risk Approach Strategy for pregnant women in the later years can improve the quality of women's care, and can be intergrated in the already existing program.

Also longer time is needed for changing the health behaviour in the strong belief to TBA in the community, cost problems, transportation for risk emergencies can be solved together by the government and the non governmental organizations.

VIII. RECOMMENDATION

MATERNAL HEALTH SERVICE DELIVERY

Implement province-specific strategy and priorities. Individual plans of action developed for each province for strengthening of service delivery, in accordance with the following suggestions:

1. Posyandu level
 - Improve the quality of antenatal care at the posyandu by insisting that every woman attending for antenatal care, with screening and identifying of risk factor using risk scoring system by PKK cadres.
2. Village/community level
 - Assign well-trained Bidan diDesa for every village, giving priority to areas where maternal mortality is high and referral facilities are limited.
 - Encouraging High Risk Pregnancy women with yellow color code to be delivered by Bidan diDesa , while Very High Risk pregnancy women with red color to be referred and delivered in the hospital.
 - Establish linkages between TBA's and Bidan diDesa and Health Center so that they become mutual supportive and function in a team approach.

3. Subdistrict level

- Upgrade systematically all Health Centers to have at least 2 beds for maternity cases, with the labor room.
- Entrust the health center to organize and conduct outreach services for maternity health care.

4. District level

- Strengthen the district hospitals as first referral level facility, offering all the essential obstetric functions.

INFORMATION, EDUCATION, and COMMUNICATION

1. Systematically dissemination, and implementation of IEC aims to improve awareness in the community in early recognition of danger signs, problem, and emergency by women, family members, and community, and improve knowledge of the services available to response to these problems, whom to contact, how to contact them, and the means available to travel to the first level of care needed for timely compliance with emergency referral.
2. Motivate community, local official, and policy makers to develop organized transportation network, beside that to mobilize, allocate, and rationalized the available resources effectively to finance the Safe Motherhood program, like cost of essential obstetrics intervention in the hospital needed by the at risk emergency cases.
3. Educate families to start saving for money for the pregnancy and delivery, after the three month ceremony of pregnancy.

TRAINING & EDUCATION

Review courses syllabus and planned teaching - learning activities in currently used curriculum for medical doctor and midwife, to be included a continuum strategy in Safe Motherhood initiative beginning with community based risk approach strategy.

RESEARCH

1. A socio-cultural impact study of community midwife (bidan di desa) to assess their acceptance by the community.
2. Studies on the feasibility of "maternity huts" located near the hospital as maternity waiting home for use by high risk pregnancy women, among other things the Bad Obstetric History cases with the obstetric and paediatric needed by both mother and her baby.
3. Community cultural traditions, beliefs, values, and practices associated with pregnancy, childbirth, post-natal care, and community perception regarding TBA (dukun).
4. The nature of conflict between modern and traditional system related to maternal health care including Family Planning in various setting with a view to determining specific approaches to the provision of services.

POLITICAL/LEADERSHIP COMMITMENT

1. Initiate and activate efforts in Provincial, district, subdistrict and village level, that would give more visibility and priority to the commitment of multisectoral initiative, pay more attention and involvement of the all other health related sectors to improve Safe Motherhood program in reducing Maternal and Perinatal mortality.
2. Create mechanism by which provincial and district authorities at the highest level as well as provincial/ district health staff become familiar with these Safe Motherhood program and are actively involved in their monitoring and achievement.
3. Programme budget analyses to identify sources and needs for funding the at risk group mothers.
4. Involve the community - level planning body (LKMD) so as to activate, for example, the community health fund (dana sehat) for emergency health care.

IX. APPENDICES

A. Project Contacts

USAID/Country : Dr. Kenneth Farr, Dr. K. Ratna
Dr. Mike Linnan

Project Team : DR. Dr. Poedji Rochjati
Dr. Listya Setjalilakusuma
Dr. Agus Abadi
Dr. Benny Soegianto, MPh.
Dr. Slamet Rihadi
Dr. Achmad Djaeli
Drs. Wasis Budiarto, MS

Public/Private Sector Counterparts : Mrs. Soerjadi
(PKK Provincial Team)

Mother Care Long-term consultants : DR. Barbara Kwast
Dr. Mike Linnan

B. Financial statement : It would be sent on August 31,
1993

C. Products/Processes

Training Curriculum/Materials : Risk Scoring System
Score Card & Color Code

Research : East Java Safe Motherhood Project
An applied on going community based study,
using experimental method with
intervention and control design, and a Pre
and Post-Survey.

Evaluation Framework : (appendix III.4)

IEC product : Leaflets & Posters
Simulation games

Tools : Score Card & Color Code
Pre and Post-Survey questionnaires
Emergency Subsidized Referral forms
(Health Centre and Hospital)
Yellow and light red referral card
Red Safe Delivery card
Recall study/cost analysis form
Maternal & Perinatal Death Follow up Form

D. Bibliography of supportive documents :

1. Kwast, Barbara. Unsafe Motherhood, A study of maternal mortality in addis ababa, 1985.
2. Ministry of Health - Republic of Indonesia. Safe Motherhood, Recommended Plan of Action (1992-1996). Vol. 5, December 17, 1991.
3. Poedji Rochjati. Risk Approach Strategy on Pregnant Women by PKK cadres using Predictive Scoring System in Sidoarjo District, 1990.
4. Tinker A, Koblinsky, M.A. Making Motherhood Safe, World Bank Discussion Papers, 1993.

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