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**FINAL REPORT**

**Evaluation of the Traditional Birth Attendant Training**

**MotherCare/Guatemala Project**

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For the MotherCare/Guatemala Project**

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**TECHNICAL AND LOGISTICAL SUPPORT IN THE ORIENTATION OF THE TBA  
FACILITATORS**

**Ministry of Public Health and Social Assistance of Guatemala**

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*This study would not have been possible without the trained TBAs' enthusiastic cooperation*

## Executive Summary

This report presents the results of an evaluation of the knowledge and practices reported by the traditional TBAs trained in maternal-perinatal complications with the support of the MotherCare/Guatemala project. The TBAs were trained in September and November 1996 and the evaluation survey was carried out six months later in June 1997. 28 TBAs were chosen randomly from each list using systematic sampling, resulting in 24 to 30 TBAs being interviewed in each location for a total of 106 TBAs. The results of the survey were compared with those from a qualitative study carried out in 1995 with TBAs who were not trained in obstetric and perinatal complications.

The results of the evaluation suggest that, generally, the training of TBAs in maternal and perinatal complications had a positive effect on the knowledge and referral practices reported by the TBAs who were interviewed. More than half the trained TBAs know some pregnancy danger sign and a third or more know of the danger signs during delivery, post-partum, and in the newborn. When asked direct questions regarding each complication, almost all the TBAs recognize them as danger signs. In addition, three fourths of the trained TBAs say they would refer women with those complications to the health care services.

The majority of the TBAs who were interviewed had training materials and reported having used them for their intended purpose. The TBAs who were interviewed gave very good suggestions that should be taken into account in future training sessions.

## Introduction

The Traditional Birth Attendant continues to be the main human resource for care during pregnancy and delivery in the rural areas and for the native population of Guatemala. According to the National Survey on Maternal and Infant Health (INE 1996), in 1995 a physician or nurse cared for 45% of the pregnancies and a TBA cared for 32%. Notwithstanding, in that survey, if the interviewee mentioned more than one source of care during pregnancy, the most qualified one was recorded. The existence of a plurality of systems regarding care during pregnancy in Guatemala has been recognized and documented (Cosminsky 1977, Cosminsky 1982, Hurtado 1984, Acevedo and Hurtado 1996).

According to the same survey, 88% of the deliveries to native women in 1995 occurred at home and 65% at the national level. In addition, 72% of the deliveries to native women were seen by TBAs and 55% at the national level. There is no doubt that these percentages are higher in the native rural communities, where possibly more than 90% of the deliveries are seen at home and by a Traditional Birth Attendant (Schieber *et al.* 1994).

In 1970, the World Health Organization (WHO) began promoting the formal recognition of traditional providers in the area of health care relating to pregnancy, as well as the establishment of training programs in order that the TBAs could serve as "extensions" to the ministries of health (Leedam 1985). In 1978, at the Alma-Ata conference, explicit support was given to the idea that, with additional training, the traditional TBAs could become a valuable resource for the ministries of health. Later on, at the Conference on Safe Maternity that was held in Nairobi in 1987, it was stated that no maternal health program could function effectively at only one level (Royston and Armstrong 1989, Fleming 1984). Therefore, the idea that skilled TBAs are a key element in reproductive health care was incorporated, because they provide the supervision and counseling needed during pregnancy, delivery, and post-partum, they care for deliveries, and they act as the link with the health care system to which they can refer the women when necessary.

Since 1935, Guatemala has tried to regulate Traditional Birth Attendants and link this to training through a licensing program (the TBAs call the license "papers" or "*carne*"). Articles 98 and 99 of the Government Decree, dated April 16, 1935, delegate the responsibility of granting permission to the TBAs through an examination procedure to the General Office of Health Services. This decree also states that any TBA who is called to attend a training course and does not do so is forbidden to care for deliveries (Putney and Smith, no date). In 1953, regulations to grant licenses to traditional TBAs were introduced. Section F, article 15, decree no. 74, dated May 9, 1955, authorizes the Ministry of Public Health and Social Assistance (MSPAS) to issue certificates of authorization to traditional TBAs following an aptitude exam. The training programs date from the beginning of 1955<sup>1</sup>.

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<sup>1</sup> Several international organizations such as UNICEF, CARE, UNFPA, USAID have supported the training of TBAs in Guatemala during some period.

At the beginning of the eighties, along with other nations in the region, the Guatemala MSPAS followed the model recommended by the WHO. That is, it formally recognized the TBAs, maintained a recording system for these traditional providers, issued them licenses, administered a training program for them, and indicated that part of their work was to encourage the use of family planning methods (Leedam 1985). To date, from the formal point of view, these continue to be the general features of the relationship between the MSPAS and the TBAs. The current training program lasts fifteen consecutive days, for eight hours a day, and covers nine areas of study. This program is regulated by the MSPAS National Maternal Infant Health Program, is planned by the personnel in each health care area (generally equivalent to a department) in the country, and is carried out by the district nurse with the support of the nurses aides (Putney and Smith, no date).

In MSPAS terminology, a distinction is made between the "empirical TBA," who exercises her profession based on observation and experience and not on training by a health care official, and the "traditional skilled TBA," who has received training from the MSPAS. The fact that only skilled TBAs are recognized represents the prevalence of the biomedical belief system over the traditional belief system. Moreover, it is forbidden in Guatemala for a TBA who is not trained by the MSPAS to care for a delivery (Putney and Smith, no date). Notwithstanding, among the Mayan population of Guatemala, there exists the belief that TBAs are born to be TBAs, and the TBA has traditionally had a prominent place in the community as a ritual specialist (Paul 1975, Paul and Paul 1975). Cosminsky (1982) has noted that in Guatemala, during the seventies, the training of TBAs involved the adoption of biomedical methods and the specific condemnation of traditional methods. For example, the TBAs were instructed to avoid the use of herbs, of the *temascal* bath, and the kneeling or squatting position for women during delivery, despite the fact that there is no empirical evidence in every case that these practices are dangerous. On the other hand, the desire to "modernize" the TBAs can cause them to become alienated from their clients, which could in turn weaken their link with the formal health care services. The important thing is to find a balance between the TBAs' traditional knowledge and practices and the need to inculcate formal practices based on "scientific criteria."

Since 1990, the MotherCare project has been supporting the Guatemala MSPAS in improving the quality of maternal and perinatal care. This support includes training the TBAs in the minimum knowledge and practices to contribute to the reduction of maternal and neonatal mortality, which in Guatemala is 280 maternal deaths per 100,000 live births and 29 neonatal deaths per 1,000 live births, respectively. As part of an intervention process that also includes strengthening the health care services' technical training and improving the quality of care of the same, these training sessions recognize that the majority of the deliveries are seen by traditional TBAs and, in the short and long term, will continue to be seen by them. Therefore, the intention is not that all normal deliveries be seen in a hospital, but rather that the cases of obstetric and perinatal complications be detected and referred in a timely manner by the TBA to a health care center or hospital for treatment.

The training promoted by the MotherCare project focuses on the detection and immediate referral of the main obstetric and perinatal complications that lead to the death of a mother or child during pregnancy, delivery or post-partum. The technical content included in the TBAs' training in obstetric and perinatal complications is as follows: 1. Prenatal care, 2. Anemia during pregnancy, 3. Spacing pregnancies, 4. Labor, 5. Prenatal hemorrhaging, 6. Pre-eclampsia and eclampsia, 7. Premature rupture of membranes, 8. Malpresentations, 9. Post-partum hemorrhaging, 10. Post-partum sepsis, 11. Asphyxia of the child, 12. Neonatal sepsis, and 13. Premature and low birth weight baby. The content of the training session is summarized as "danger signs" of death of the mother and/or baby easily detected by the TBA and that should induce her to refer the woman and/or child to the closest appropriate health care service.

The TBAs' training in these "danger signs" has been carried out by MSPAS personnel, typically by professional nurses and nurses aides in each location. The MotherCare project has supported the training of these health care personnel, who act as facilitators for the TBAs' training. In addition to the technical content of the TBAs' training, the facilitators' training focuses on the hands-on adult education methodology that should be used. In the training, the facilitators create appropriate and low-cost visual materials and carry out practical activities in which the TBAs become actively involved. The health care personnel also receive training in interpersonal and interethnic relationships, with a view toward facilitating the receipt of referrals by the TBAs and improving the treatment of the TBAs when they visit the health care services, including the hospital.

The purpose of this report is to present the results of an evaluation of the knowledge and practices reported by traditional TBAs trained in maternal-perinatal complications with the support of the MotherCare/Guatemala project. The TBAs were trained in September and November 1996 and the evaluation survey was carried out six months later, in June 1997.

## Method

### Selection of the sample

The selection of the TBAs for interview purposes was carried out based on the lists of trained TBAs provided by the health care personnel. The lists of the municipalities emphasized by the MotherCare project were used: Nahualá, Sololá; Momostenango, Totonicapán; and Comitancillo, San Marcos. Since no TBAs had been trained in San Carlos Sija (the project's fourth municipality), TBAs were selected from the Quetzaltenango list, where TBAs from that municipality, from Cantel, and from Olinstepeque appeared. 28 TBAs were chosen randomly from each list using systematic sampling, resulting in 24 to 30 TBAs being interviewed in each location, for a total of 106 TBAs. Table 1 shows the number of TBAs who were interviewed in each location.

Table 1  
Composition of the sample of TBAs who were interviewed

<i>Location</i>	<i>No. of TBAs on the list</i>	<i>No. of interviews</i>	<i>Percentage</i>
1= Nahualá, Sololá	104	24	23
2= Momostenango, Totonicapan	188	30	16
3= Quetzaltenango	139	28	20
4= Comitancillo, San Marcos	70	24	34
TOTAL	501	106	21

### Instrument and procedures

A closed questionnaire consisting of six sections was used: A. Characteristics of the TBA, B. Knowledge and practices regarding pregnancy, C. Knowledge and practices regarding delivery, D. Knowledge and practices regarding the post-partum stage, E. Relationships with the health care services, F. Training, ideas and suggestions. The form consisted of a total of 174 questions. In the sections on knowledge and practices regarding complications, initially the TBA was allowed to respond spontaneously regarding the "danger signs" she was aware of during each stage, but later she was asked about each danger sign in which she was trained and had not mentioned spontaneously. The danger signs the TBA was asked about were as follows: during pregnancy: edema of the hands and face, hemorrhage, child in wrong position, premature rupture of the membranes, premature labor, and previous cesarean sections; during delivery: hemorrhage, prolonged labor, malpresentation, retained placenta, and twins; post-partum: hemorrhage, fever, abdominal pain, and foul-smelling discharge; in the newborn: does not breastfeed, umbilical infection, is very small, difficulty breathing, fever, violet color, does not move, and hypothermia.

The interview lasted 2 hours. In almost every case, an appointment had been made with the TBA unless she had time to see the interviewer at the time of the first visit. In addition, in a few cases the interview was completed in two visits. The interviews were carried out by eight bilingual surveyors in Spanish and the Mayan dialect of the area (Kiche or Mam). The interviewers were duly trained and standardized.

### Limitations

The evaluation survey had several limitations. In the first place, the design of the evaluation was the poorest, with only a post-test. There was no evaluation of the TBAs' knowledge and practices before participating in the training session or a control group. Notwithstanding, in 1995 a qualitative study was carried out in the same municipalities (different villages) with 20 traditional TBAs who were not trained in maternal-perinatal complications (Hurtado 1997). For some questions on knowledge it is possible to compare the results of that study with those of the current one, although the number of TBAs who were interviewed is considerably lower in the first study than in the second.

The other limitation is that an interview provides information regarding reported knowledge and practices. The most appropriate methodology to study the practices is that of direct observation, which was not feasible for use in this study. Notwithstanding, the observation technique was used for the training materials and questions regarding their use.

Finally, it should be noted that closed interviews are not the ones that work best with traditional TBAs who are not accustomed to making rigid divisions between pregnancy, delivery, and the post-partum stage and, instead, are very prone to recounting anecdotes from their lives and the cases they have seen.

### Data analysis

The forms were carefully reviewed and some questions that were left open were coded. The information was recorded in the EpiInfo6 program, which cleaned up and analyzed the information.

## Results

### Description of the TBAs

The average age of the TBAs who were interviewed was 52 (24-85). The majority were illiterate (68%), and only 30% had gone to school. Of the 32 TBAs who had attended school, 22 were from Quetzaltenango, 6 from Comitancillo, 4 from Nahualá, and none from Momostenango. 62% of the TBAs said they were monolingual, the majority being from Nahualá and Momostenango where Kiche is spoken. Only 20% communicate with their patients in Spanish, the majority in Quetzaltenango. Except for 8 TBAs in Quetzaltenango and 3 in Comitancillo, the vast majority of the TBAs (95) identified themselves as natives.

On average, the TBAs had 17 years of experience in caring for deliveries (1-64). Around 20% of these TBAs said that the main way they learned to care for deliveries was at the health care services, while the rest learned from experience based on an unexpected case they resolved successfully (20%), "with nothing" (17%), with their mother who was a TBA (11%), by a "gift of God" (11%), by "destiny" since they were born on the right day or had some characteristic that indicated they would be TBAs (6%), and in some other way (9%). In other words, the majority started their practice before having contact with the public health services.

### Reported knowledge and practices regarding care during pregnancy

Two thirds of the TBAs said that the pregnant women request their services between the fourth and sixth month of pregnancy (the average was 5 months). Half of the TBAs visited provide prenatal care at their patients' homes (home visits), 39%, mainly in Momostenango and Comitancillo, see them at the TBA's house, and the rest combine both practices. The majority of the TBAs said they saw the pregnant women 6 to 10 times during the pregnancy (an average of 8 times), once a month at first, and more frequently during the last months.

During the prenatal visits, the TBA examines the pregnant woman's abdomen using her hands and massaging the abdomen, back, and legs, frequently in a traditional *temascal* or steam bath, which is used more in Momostenango and Nahualá than in the other two locations. 17% of the TBAs mentioned that they examine the conjunctiva for paleness as a sign of anemia.

The TBAs said they counsel the pregnant women regarding nutrition (82%), physical activity (58%), seeking prenatal care at a health care service (53%), controlling emotions such as anger and rage (15%), and others. The advice regarding prenatal nutrition is pretty general, such as "eat everything" and "eat well." Contrary to the suppositions regarding nutritional taboos, these TBAs did not report advising restrictions in the pregnant woman's nutrition. The advice regarding physical activity refers mainly to not lifting heavy objects or exerting too much physical effort.

When the TBAs were asked if they referred the pregnant women to any place for care, only one from Comitancillo responded negatively. The rest (95%) refer the women to a public health service, 4 to parochial clinics, and 1 to a private physician. The reasons for making the referrals were the exam (73%), to know whether the pregnancy is normal or not (73%), to get a vaccine (55%), to get vitamins (55%), and some other reason (15%).

A little over half of the TBAs said the majority of their patients comply with the referral. The reasons for non-compliance they mentioned were fear of the health care services or personnel (48%), their spouse does not let them go (46%), embarrassment about the exam (40%), distance from the service (20%), poor quality of the care (20%), language (10%), and other reasons (34%), such as lack of money to pay for transportation, lack of trust in the service, or greater trust in the TBA. The TBAs do not usually accompany their patients to the prenatal visits to a health care service, with only 30% saying they always do so.

The TBAs said they recognize when a woman is weak or has anemia because of lack of appetite (82%), paleness of the conjunctiva (54%), sleepiness (48%), listlessness (43%), fatigue (35%), and dizziness (28%). In order to treat the anemia, the majority of the TBAs (94%) mentioned nutrition, 62% mentioned vitamins, and only 14% mentioned iron pills. Notwithstanding, when asked specifically about the iron pills, 53% of the TBAs knew about them. Of these, the majority (51 out of 56) said they thought it was good for pregnant women to take iron pills and that they can be obtained at the health care services (39 out of 56).

The majority of the TBAs (84%) said they knew the danger signs during pregnancy. Table 2 presents the number of TBAs who spontaneously mentioned each danger sign and the number of TBAs who responded affirmatively when asked if they considered each one of these a danger sign (incited mention). The danger signs during pregnancy most familiar to these TBAs were: swelling of face and hands and prenatal hemorrhage. Very few TBAs spontaneously mentioned previous cesarean sections as a danger sign. Adding the spontaneous and incited mentions together for each danger sign, it was found that almost all the TBAs recognized all the complications.

Table 2  
Trained TBAs' knowledge of danger signs during pregnancy

<i>Danger sign</i>	<i>Spontaneous mention</i>	<i>Incited mention</i>	<i>Total</i>	<i>%</i>
Swelling of face and hands	56	47	103	97
Hemorrhage	54	48	102	96
Child in wrong position	46	57	103	97
Premature water break	25	78	103	97
Premature labor pains	25	69	103	97
Previous cesarean section	7	85	92	87
Other	33		33	31

Table 3 shows the number of danger signs spontaneously mentioned by the TBAs who were interviewed. A third of the TBAs could mention at least two danger signs, 54% mentioned two to three signs, but 18% did not know them (one who said she knew them did not mention any), and only one TBA mentioned all of them.

Table 3  
Number of danger signs during pregnancy spontaneously mentioned by the TBAs who were interviewed

<i>NO. OF SIGNS (SPONTANEOUS MENTION)</i>	<i>TOTAL</i>	<i>%</i>
0	19	18
1	17	16
2	34	32
3	23	22
4	7	7
5	5	5
6	1	1
TOTAL	106	100

Table 4 shows a comparison of the percentages of TBAs not trained in maternal-perinatal complications and interviewed in 1995, and the trained TBAs who mentioned each danger sign. Greater percentages of the trained TBAs than the untrained TBAs spontaneously mentioned the danger signs of edema of face and hands, hemorrhage, and wrong position. On the other hand, premature water break, premature labor pains, and previous cesarean sections were considered dangerous by an equally low number of TBAs trained and not trained in maternal-perinatal complications.

Table 4

Percentages of TBAs trained and not trained in complications who spontaneously mentioned each "danger sign" during pregnancy

<i>"Danger sign" mentioned spontaneously</i>	<i>TBAs not trained in complications (N=20)</i>	<i>TBAs trained in complications (N=106)</i>
Swelling of face and hands	20	53
Hemorrhage	15	51
Child in wrong position	20	43
Premature water break	20	24
Premature labor pains	20	24
Previous cesarean section	0	7

Table 5 shows the same comparison between TBAs not trained in maternal-perinatal complications and TBAs trained in making referrals to the health care services for each danger sign. In this case, the difference between the percentages of untrained and trained TBAs who said they do make referrals is important, especially regarding the child in the wrong position.

Table 5

Percentages of TBAs trained and not trained in complications who said they make referrals for each "danger sign" during pregnancy

<i>"Danger sign"</i>	<i>TBAs not trained in complications (N=20)</i>	<i>TBAs trained in complications (N=106)</i>
Swelling of face and hands	55	79
Hemorrhage	50	86
Child in wrong position	5	82
Premature water break	30	86
Premature labor pains	30	71
Previous cesarean section	60	81

### Reported knowledge and practices regarding care during delivery

Care during delivery is at the home of the pregnant woman (96%). The TBAs who participated in the training received a traditional napkin or *tzute* with materials such as a pan, soap, and towel to encourage hand washing and greater hygiene during delivery. Also included were scissors, castille ribbon, merthiolate, gauze, and cotton for cutting and protecting the umbilical cord, and an aspirator for suctioning the newborn's phlegm.

During the evaluation, the TBAs were asked about the *tzute*, and were also asked to show it in order to observe the contents. The majority (94 of the TBAs) said they had the *tzute*, and of these, 86 were able to show it. 76% (65) of the *tzutes* contained soap, and all, except one, showed signs of having been used. The TBAs confirmed this, saying they used it to wash their hands before caring for a delivery. Some TBAs said that they had used up the soap and that they used another, which could not be confirmed. The majority of the TBAs who showed the *tzute* had scissors (84 out of 86) and an aspirator (85). Almost all (82) said they used the scissors to cut the umbilical cord and that they boiled them before doing this; this was also stated by the TBAs who could not show the *tzute* or the scissors. Of the 85 TBAs who had an aspirator, 74 (84%) said they had used it to aspirate the child's phlegm.

63% of the TBAs said they used *temascal* for the delivery, which probably means immediately post-partum, since it has been observed that the delivery no longer occurs in the *temascal* bath. Half the TBAs said that the position for the delivery is lying down and the rest said kneeling or squatting. The TBAs from Quetzaltenango reported less traditional practices than the rest since the majority said they do not use *temascal* and that the position for the delivery is lying down.

At the training sessions, the TBAs were instructed to not use oxytocin injections during delivery since it has been associated with a higher risk of perinatal death or early neonatal death (Bartlett et al. 1993). 11% of the TBAs who were interviewed said they use oxytocin injections, and 4% more said that although they do not recommend it, someone from the family requests it and someone else administers it. The TBAs who use the injection say that it is to "give strength" or "feed" the woman during labor or to "hasten" delivery.

Regarding the TBAs' knowledge of danger signs during delivery, Table 6 shows the number of TBAs who spontaneously mentioned each danger sign and the number of TBAs who responded affirmatively when asked if they considered each one to be dangerous (incited mention). A third or more of the TBAs spontaneously mentioned signs of hemorrhaging, delayed delivery, malpresentation, and retained placenta. Only two TBAs spontaneously stated that a twin delivery is a danger sign and still fewer, when asked directly, affirmed this regarding the other complications. Adding the spontaneous mentions to the incited mentions for each danger sign, it was found that the majority of the TBAs recognize all the complications during delivery over those who were trained.

Table 6  
 Interviewed TBAs' knowledge of the danger signs during delivery, by location

<i>Danger sign</i>	<i>Spontaneous mention</i>	<i>Incited mention</i>	<i>TOTAL</i>	<i>%</i>
Hemorrhage	55	43	98	92
Delayed delivery	34	63	97	92
Malpresentation	33	70	103	97
Retained placenta	32	70	102	96
Twins	2	63	65	61
Other	39		39	37

Table 7 shows the number of danger signs during delivery spontaneously mentioned by the TBAs who were interviewed. Almost 50% of the TBAs could mention at least two danger signs or more, but 29% did not know them and only two TBAs mentioned all of them.

Table 7  
 Number of danger signs during delivery spontaneously mentioned by the TBAs who were interviewed

<i>NO. OF SIGNS (SPONTANEOUS MENTION)</i>	<i>TOTAL</i>	<i>%</i>
0	31	29
1	23	22
2	32	30
3	13	12
4	5	5
5	2	2
TOTAL	106	100

Table 8 presents a comparison of the percentages of midwives not trained in maternal-perinatal complications who were interviewed in 1995 and the trained midwives who spontaneously mentioned the danger signs during delivery. Greater percentages of trained midwives than untrained midwives spontaneously mentioned hemorrhage during delivery. Regarding the rest of the danger signs during delivery, there do not appear to be important differences in the percentages, those of the midwives trained and not trained in maternal-perinatal complications being equally low. Of special noteworthiness is the low percentage of midwives trained and not trained in complications that consider a twin pregnancy to be dangerous.

Table 8  
Percentages of midwives trained and not trained in complications who spontaneously mentioned each "danger sign" during delivery

<i>"Danger sign" mentioned spontaneously</i>	<i>Midwives not trained in complications (N=20)</i>	<i>Midwives trained in complications (N=106)</i>
Hemorrhage	30	52
Delayed delivery	20	32
Malpresentation	15	31
Retained placenta	20	30
Twins	0	2

The responses regarding the referrals to health care services the midwives would supposedly make upon encountering each danger sign during delivery are presented in Table 9. Considerable differences between the percentages of untrained and trained midwives who spontaneously said they would refer the complication to a health care service can be observed. Delivery of twins is not only not considered a complication by the majority of midwives, but is also the least likely to be referred.

Table 9  
Percentages of midwives trained and not trained in complications who said they make referrals for each "danger sign" during delivery

<i>"Danger sign"</i>	<i>Midwives not trained in complications (N=20)</i>	<i>Midwives trained in complications (N=106)</i>
Hemorrhage	10	78
Delayed delivery	70	91
Malpresentation	40	91
Retained placenta	N. A	78
Twins	15	48

Reported knowledge and practices regarding care during delivery

The majority of the midwives said they visit puerperal women one week after delivery (the average was 8 days). Table 10 shows the number of midwives who mentioned each post-partum danger sign. The most spontaneously recognized complication was post-partum hemorrhage followed by fever, abdominal pain, and foul-smelling discharge. Adding together the spontaneous mentions and the incited mentions for each post-partum complication, it was found that almost all the midwives recognized them.

Table 10  
Interviewed midwives' knowledge regarding post-partum danger signs

<i>Danger sign</i>	<i>Spontaneous mention</i>	<i>Incited mention</i>	<i>TOTAL</i>	<i>%</i>
Hemorrhage	49	45	94	89
Fever	41	57	98	92
Abdominal pain	37	57	94	89
Foul-smelling discharge	22	72	94	89
Other	25		25	24

Table 11 shows the number of post-partum complications spontaneously mentioned by the midwives. A third of the midwives could not mention any and only three midwives mentioned all of them.

Table 11  
Number of post-partum danger signs spontaneously mentioned by the midwives who were interviewed

<i>NO. OF SIGNS (SPONTANEOUS MENTION)</i>	<i>TOTAL</i>	<i>%</i>
0	36	34
1	19	18
2	26	24
3	22	21
4	3	3
TOTAL	106	100

The comparison between the trained midwives' knowledge of post-partum complications and that of the untrained midwives is presented in Table 12. Slightly higher percentages of the trained midwives than the untrained midwives mentioned the danger signs. The most marked difference was for the sign "foul-smelling discharge," which in the 1995 study was not mentioned by any of the midwives and in this study was mentioned by 22 midwives.

Table 12  
Percentages of midwives trained and not trained in complications who mentioned each post-partum "danger sign"

<i>"Danger sign"</i>	<i>Midwives not trained in complications (N=20)</i>	<i>Midwives trained in complications (N=106)</i>
Hemorrhage	30	46
Fever	20	39
Abdominal pain	25	35
Foul-smelling discharge	0	21

The same comparison between the percentages of midwives trained and not trained in complications who said they make a referral for each post-partum danger sign is presented in Table 13. It can be observed that higher percentages of trained midwives than untrained midwives said they referred cases of complications. Notwithstanding, it was found that there is a lower tendency to make referrals for post-partum complications than for those complications that occur during pregnancy and delivery.

Table 13  
Percentages of midwives trained and not trained in complications who said they make referrals for each post-partum "danger sign"

<i>"Danger sign"</i>	<i>Midwives not trained in complications (N=20)</i>	<i>Midwives trained in complications (N=106)</i>
Hemorrhage	25	77
Fever	20	57
Abdominal pain	15	46
Foul-smelling discharge	45	78

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Reported knowledge and practices regarding care for the newborn

As can be observed in Table 14, less than a third of the midwives spontaneously mentioned each danger sign in a newborn. More (39%) midwives mentioned other complications not included among the danger signs, but recognized by them, such as coughing, bronchitis, depressed fontanel, pimples, paleness, etc. Notwithstanding, as in the case of the danger signs during pregnancy, delivery, and post-partum, the majority of the midwives recognized those of the newborn when asked specifically about each one (incited mention).

Table 14  
Interviewed midwives' knowledge regarding danger signs in the newborn, by location

<i>"Danger sign"</i>	<i>Spontaneous mention</i>	<i>Incited mention</i>	<i>Total</i>	<i>%</i>
Cannot breastfeed	32	61	94	89
Umbilical infection	28	64	92	87
Is very small	24	55	79	74
Has difficulty breathing	24	70	94	89
Has a fever	19	80	99	93
Is violet	17	77	94	89
Doesn't move	11	86	97	92
Is cold	10	81	91	86
Other	41		41	39

A third of the midwives did not spontaneously mention any danger sign in the newborn and 44% could mention two or more. Surprisingly, because there were so many of them, one midwife could mention the eight danger signs in the newborn.

Table 15  
Interviewed midwives' knowledge regarding danger signs in the newborn

<i>NO OF SIGNS (SPONTANEOUS MENTION)</i>	<i>TOTAL</i>	<i>%</i>
0	34	32
1	26	24
2	22	21
3	12	11
4	5	5
5	5	5
6	1	1
8	1	1
TOTAL	106	100

Except for the danger sign “newborn cannot breastfeed,” there is almost no difference between the percentages of trained and untrained midwives who spontaneously mentioned each sign (Table 16).

Table 16  
Percentages of midwives trained and not trained in complications who spontaneously mentioned each “danger sign” in the newborn

<i>“Danger sign” mentioned spontaneously</i>	<i>Midwives not trained in complications (N=20)</i>	<i>Midwives trained in complications (N=106)</i>
Cannot breastfeed	0	30
Umbilical infection	15	26
Is very small	20	23
Has difficulty breathing	15	23
Has a fever	40	18
Is violet	5	16
Doesn’t move	5	10
Is cold	0	9

Generally, higher percentages of midwives trained and not trained in complications said they would refer a newborn to a health care center for each danger sign they were asked about (Table 17).

Table 17  
Percentages of midwives trained and not trained in complications who said they make referrals for each “danger sign” in the newborn

<i>“Danger sign”</i>	<i>Midwives not trained in complications (N=20)</i>	<i>Midwives trained in complications (N=106)</i>
Cannot breastfeed	50	75
Umbilical infection	40	64
Is very small	15	57
Has difficulty breathing	N/A	71
Has a fever	N/A	70
Is violet	35	72
Doesn’t move	40	68
Is cold	30	44

### Effects of the training

The midwives were asked if they changed anything in their practices following the training, to which 68% responded affirmatively. When asked to specify the changes, some midwives mentioned knowledge more than practices. Notwithstanding, among the changes reported in the practices are the following:

- Care during delivery, such as better exam and referral to the hospital (mentioned by 19 midwives)
- Clean delivery practices such as hand washing, clean nails, and cutting the cord with sterilized scissors (11 midwives)
- Care during pregnancy such as questions, advice, examination of the conjunctiva, visits and referral to the health care service for prenatal care (15)
- Referral to a health care service upon detecting danger signs during pregnancy, delivery, and post-partum
- Care for the newborn, such as artificial respiration, kangaroo mother, use of aspirator (7)

Three midwives said that after the training they no longer use *temascal*, despite the fact that that practice was not advised against during the training. Another three midwives said that, because of the training, they do not use oxytocin injections. One midwife said that she now provides counseling in family planning.

### Relationship with the health care services

Of the midwives who were interviewed, 14% said they go to the health care service (health care post or center) more often than once a month, 36% said they go monthly, 43% said they go less frequently, and 7% said they never go. The majority (85%) reported that they are treated well at the health care service and answered positively to questions regarding the quality of the interaction between the official health care provider and the midwife. When asked about the treatment received by their referred patients, fewer midwives (70%) felt they received good treatment. The midwives from Nahualá and Momostenango said they preferred to be seen in the Kiche language, the ones from Quetzaltenango preferred Spanish, while the ones from Comitancillo preferred Mam. Notwithstanding, those from Nahualá and Comitancillo reported that they are not seen in their preferred language. When the midwives go to a health care service, it takes, on average, 4.5 hours from the time they leave home until they return. A third of the midwives, especially those from Nahualá, thought the time was too long.

It was found that the midwives' knowledge of the hospital, the place to where they needed to refer the delivery complications, was low. Only 38% of the midwives said they were familiar with the hospital and only one of the midwives who was interviewed in Momostenango said she was familiar with the Community Maternity of that location. A fifth of the midwives said that between January and June 1997, they had referred some patient to the hospital for the following reasons: delayed labor (5), malpresentation (4), retention of the placenta (3), hemorrhage (2), twins (1), and another complication (8).

The majority of the 23 midwives who had referred some patient to the hospital in the last six months said that the treatment they received was good (88%), as well as the treatment received by their patient (70%), although the latter was to a lesser degree. The majority of the midwives said they were allowed to enter the hospital but not to be present at their patient's delivery.

Regarding the use of the pictorial referral coupons the training sessions tried to promote, it was found that the majority of the midwives (81%) said they received them during the training. Of those, 61 (72%) could show some and 35 (41%) said they had used some: 19 (54%) to refer a patient and 16 (46%) for another purpose, such as to show the pictures to their patients.

#### Communication, ideas, and suggestions

89% of the midwives said they had received a pamphlet during the training containing pictures to color in regarding the main danger signs during pregnancy, delivery, post-partum, and in the newborn. Of these, 78 (84%) could show the pamphlet to the interviewer. 68 pamphlets were found to be in good condition and colored in and 10 were not colored in or were in poor condition. 70 (out of 93) of the midwives said they had used the pamphlet as a reminder for the course (73%), to show their patients (21%), and for both things (6%).

The vast majority of the midwives (97%) expressed their desire to attend more training courses. The course they are most interested in is one of "review," "reminder" or "extension" of the training on maternal-perinatal complications. They are also interested in learning to care for complicated cases on their own because sometimes it is very difficult to refer the patients to the hospital or for the families to comply with the referral, and also to improve the care they provide during normal deliveries.

As suggestions for future training sessions, the most frequently mentioned were the following: that the course always be in the midwives' Mayan language, that they be given some kind of help for their assistance (for example, money to pay for transportation, food, materials that they use, provisions from the food distribution program or other programs, medicine to treat illnesses, specialized medical service for them) and more demonstrations and practical activities in the handling of complications. Regarding the last recommendation, the midwives said that they would like to be able to perform exams on the pregnant women jointly with the health care service personnel. The midwives also requested specific materials, talks for the pregnant women and their spouses so that they may understand the midwives' work and their relationship with the health care services, iron pills for the pregnant women, invitations to meetings sent directly to them and not through third parties, and invitations to young midwives to participate since they are observing that fewer women wish to be midwives.

## Discussion

The results of the evaluation suggest that, generally, the training of midwives in maternal and perinatal complications has had a positive effect on the knowledge and referral practices for complications reported by the midwives who were interviewed. More than half the trained midwives know some danger signs during pregnancy, and a third or more know the danger signs during delivery, post-partum, and in the newborn. When asked directly about each complication, almost all the midwives recognize them as danger signs. This difference between spontaneous mention and incited mention is not unusual since it is easier to recognize a series of characteristics or conditions if someone names them than to recite these from memory. The list of danger signs in the newborn was especially long (8 items), so one positive point is the retention of knowledge by the midwives six months after participating in the training session. There was no post-test immediately following the training in order to be able to compare results.

Three fourths of the midwives said that they would refer women with these complications to the health care services. In terms of the evaluation on communication and strategies and changes in behavior, the intention of doing something is considered an important determining factor in practice. Notwithstanding, in order to verify that practice, additional research is required. One limitation is that few midwives have used the referral coupons for the health care services, designed for that purpose.

The midwives from Quetzaltenango who were interviewed have a higher level of formal education than the others and in other traditional practices (use of *temascal* and delivery position) seem to be more modern than the midwives from the other three locations. Additional analysis of the relationship between education (whether the midwife attended school or not) and knowledge of the danger signs during pregnancy, delivery, post-partum, and in the newborn, and the intention to make a referral show that both the knowledge as well as the reported intention to make a referral are positively and significantly associated with school attendance.

The qualitative research carried out before (Hurtado 1997), points to the reasons for which the midwives show less intention to refer patients for some complications than for others. For example, the cases of previous cesarean sections and twin delivery are not as common, and the midwives have some experiences of their own, or that have been referred, that women with those complications give birth normally at home under their care. During the post-partum stage, the intention to make a referral is lesser than during pregnancy or delivery because the woman is on a "diet," which includes rest and avoiding outings in the "air" that could enter the womb and cause harm or illness. In addition, the midwives may consider complications such as fever and abdominal pain normal during the post-partum stage since, according to them, these are also signs that the milk is coming down, or of lactation itself (afterpains), and they say they can obtain home remedies and pharmacy medications to treat them. Contrary to the foregoing, the intention to make a referral because of "foul-smelling discharge" was great because it is a danger sign that is unknown to the midwives and they say it would be better to refer such a case. Regarding complications in the newborn, the number of midwives who would refer a very small baby is fewer than the number who would refer a child with other complications, because they think the small baby can survive once it is breastfeeding and receiving proper care