

The need for traditional birth attendants (*dayas*) in Saudi Arabia

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مدى الحاجة إلى الدايات في المملكة العربية السعودية

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خلاصة: تمت دراسة أفضليات النساء من سكان المناطق النائية من حيث مكان الولادة والشخص المشرف على الولادة، وكذلك آراء أطباء الرعاية الصحية الأولية حول الرعاية التوليدية التي تقدمها الدايات، واحتياجاتهن التدريبية. واستعملت لهذا الغرض استبيانات مع مناقشة لمجموعة صغيرة. وتبين أن الولادات المنزلية والدايات كانت مفضلة لدى 24% و 38% تقريبا من النساء على التوالي. وكان السببان الرئيسيان لتفضيل الدايات يتمثلان في أنهن نساء وفي الارتياح النفسي لهن. ولقد كشفت ممارسات الدايات عن كثير من العادات الضارة. فلم تكن 75% من الدايات يلتمسن مساعدة مراكز الرعاية الصحية الأولية. إن انعدام التعاون بين مراكز الرعاية الصحية الأولية وبين الدايات كان مصدر قلق لدى معظم الأطباء. ويتطلب الأمر تدريب الدايات وإقامة اتصالات بينهن وبين خدمات الرعاية الصحية الأولية.

ABSTRACT Preferences of women living in remote areas regarding delivery place and attendant were surveyed, opinions of primary health care (PHC) doctors about traditional birth attendants' (TBA) maternal care were assessed and training needs for TBAs were identified using questionnaires and a focus group discussion. Home deliveries and TBAs were preferred by approximately 24% and 38% of the women respectively. The fact that they were women and psychological comfort were the main reasons for preferring TBAs. TBAs disclosed many harmful practices. No PHC centre help was sought by 75% of TBAs. Lack of cooperation between PHC centres and TBAs was a concern of most of the doctors. Training and links to PHC services for TBAs are needed.

Le besoin d'accoucheuses traditionnelles (*dayas*) en Arabie saoudite

RESUME Les préférences des femmes vivant dans des zones reculées en ce qui concerne le lieu de l'accouchement et la personne pratiquant l'accouchement ont été examinées, les opinions des médecins exerçant dans les structures de soins de santé primaires (SSP) en ce qui concerne les soins maternels dispensés par les accoucheuses traditionnelles ont été évalués et les besoins en matière de formation des accoucheuses traditionnelles ont été identifiés au moyen de questionnaires et d'un entretien avec un groupe indicateur. L'accouchement à domicile et les accoucheuses traditionnelles étaient préférés par environ 24% et 38% des femmes respectivement. Les principales raisons évoquées par celles-ci pour préférer les accoucheuses traditionnelles étaient le fait que ce soit des femmes et le confort psychologique. Les accoucheuses traditionnelles ont mis à jour de nombreuses pratiques néfastes. Soixante-quinze pour cent (75%) des accoucheuses traditionnelles ne sollicitaient aucune aide des centres SSP. Le manque de coopération entre les centres SSP et les accoucheuses traditionnelles constituait une préoccupation pour la plupart des médecins. La formation et la liaison avec les services SSP sont nécessaires pour les accoucheuses traditionnelles.

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Received: 04/06/98; accepted: 18/10/98

Introduction

Traditional birth attendants (TBAs) or *dayas* in rural areas of developing countries perform a significant role in the provision of maternal and child care services [1-5]. They are easily accessible and highly acceptable to the community [2-5]. Since they reside within the community they serve, they understand the culture, local customs, beliefs and traditions. They provide low-cost health service to the community and they are very well trusted by the people. For these reasons many countries, such as Bangladesh, India, Nicaragua, Ethiopia and Nigeria, have acknowledged their importance and have begun training programmes for TBAs to incorporate them into national health care systems at the grass-roots levels under primary health care [1-5]. This is occurring particularly in areas with widely scattered populations, poor roads and which are far removed from health services.

In Saudi Arabia, the need for a training programme for *dayas* has been questioned since good health care facilities exist, advancements in technology have taken place and there has been an increase in health manpower. During the past 2 decades, several nursing and midwifery institutes have been opened in Saudi Arabia. There has also been growth in the primary health care (PHC) network, which now serves more than 90% of the population. Road links and accessibility to secondary care maternity hospitals have also increased, although the population in some areas is so scattered that it cannot be covered by PHC facilities. Home deliveries account for 31% of deliveries in the southern region of Saudi Arabia [6]. Maternal mortality rates vary widely from 25/100 000 live births to 99/100 000 live births [7].

Asir Region is a large administrative province in south-west Saudi Arabia. It has a total area of approximately 80 000 square kilometres and is essentially a highland area, although it includes a large area of desert tableland. Unlike the rest of Saudi Arabia, it has a high annual rainfall, particularly in the mountains. Some of the inhabitants of the rural, desert, hilly and mountainous areas of the region live in widely scattered communities, predominantly connected by rough roads and far from the nearest health services. The total population of the region is approximately 750 000. The number of deliveries in Asir Region in local Ministry of Health (MOH) hospitals during 1996 was 17 814, which was 7% of the total deliveries conducted in MOH hospitals in Saudi Arabia that year [8].

The present study was carried out to:

- survey the preferences of women in remote areas about the place of delivery and the person attending the delivery;
- assess the opinions of PHC physicians about the maternal care delivered by TBAs;
- identify the trends in the practices of TBAs and their need for maternal and child care training.

Subjects and methods

The study was conducted during July-August 1997 in Asir Region. Asir Region is divided into 14 sectors; each sector commonly has one general hospital, some PHC centres and usually one governmental municipality unit. The administrative sector may include towns, villages and desert areas inhabited by Bedouins. PHC centres in the towns of Asir Region serve approximately 5000-15 000 residents each and

cover areas of approximately 5–15 square kilometres with good roads and transportation networks. Some PHC centres in remote villages or desert areas serve smaller populations of approximately 500–1000 inhabitants. In the remote desert areas, Bedouin people usually live in small scattered localities and sometimes move from one place to another in search of water and grass for their animals. In the mountainous and hilly areas and valleys of Asir Region, farmers live in widely scattered communities connected by poor roads. During heavy rains these roads may be impassable thus isolating these scattered communities. The catchment areas of some PHC centres lying in the remote desert areas and mountainous and hilly areas may be as great as 500 square kilometres. PHC services are occasionally provided to inhabitants of remote areas by once- or twice-monthly visits by a PHC team that reaches these places by helicopter. PHC centres in remote and village areas in four sectors were selected from the 14 sectors of Asir Region for the present study.

Three questionnaires were designed: one for TBAs, one for physicians and one for women of the area. The first questionnaire was administered to TBAs with the help of personnel from the PHC centres. The questionnaire requested information about sociodemographic characteristics of each TBA, the person who trained her, the number of deliveries she had conducted and whether any complications had occurred during or after any deliveries. The questionnaire also contained closed- and open-ended questions about cooperation or coordination between TBAs and the PHC centres in their area; whether they had contacted or asked for any help from the local PHC; why women preferred TBAs; their needs and possible areas for further train-

ing; and their views about cooperation between TBAs and PHC centres.

The questionnaire for the physicians included closed- and open-ended questions on the number of registered TBAs in their catchment areas; the cooperation or coordination between the PHC centres and the TBAs; their opinion of the performance of TBAs when delivering maternal care; whether they supported or rejected the participation of TBAs in maternal care services; and their suggestions to improve the quality of care provided by TBAs.

The third questionnaire was administered to a randomly selected sample of women of childbearing age attending PHC centres in the selected sectors. The questionnaire also contained closed- and open-ended questions of their sociodemographic characteristics; their preference of place and person attending delivery; and the place of their last delivery and the person who attended it. The three questionnaires were distributed to the study sites and retrieved during the first month of the study.

During the second month, *dayas* from one of the study sectors were invited to attend a focus group discussion (FGD) to talk about their experiences of conducting deliveries, social customs and beliefs and practices prevalent in the area regarding maternal and child health care services. They were selected because they were nearby and had easy access to the Abha Maternity Hospital where the FGD was held. The group discussion was led by a nurse/midwife who was trained to conduct FGD sessions. The nurse/midwife led the session by posing questions to the TBAs on specific topics including, for example, at-risk signs and symptoms during pregnancy, methods of cutting the umbilical cord, immediate care of the neonate, postpartum haemorrhage and prolonged labour. Another nurse took notes during the session.

Data analysis was performed using SPSS. Appropriate tests of significance were performed. The Student *t*-test was used to compare unpaired sample means and the Pearson χ^2 -test was used to compare categorical data.

Results

Of 84 questionnaires sent to physicians in PHC centres in remote rural and Bedouin-inhabited areas of the four sectors, 66 male doctors (78.6%) responded. There were 90 women registered as TBAs in the four sectors. The average daily visits to PHC centres in the remote areas were approximately 10–15 visits per day, and about half of these were women of childbearing age attending for immunization of their children, for their own immunization against tetanus or for other reasons. The personnel of the PHC centres completed the TBA questionnaire for 69 registered *dayus* (76.7%) and for 121 women attending the PHC centres during the period of data collection.

Sociodemographic characteristics of the TBAs and the women who participated in

the study are given in Table 1. There was no significant difference in the literacy status between the groups ($P > 0.05$). There were, however, significant differences in both the ages ($P < 0.01$) and the marital status ($P < 0.05$) of the two groups. TBAs were older than the women and were single (5.8%), widowed (5.8%) or divorced (1.4%), whereas the women were divorced (4%) or married (96%) at the time of the study.

The mean average number of deliveries per *dayu* during the previous year was 3.6 ± 2.8 . The majority of TBAs (33 or 47.8%) had been taught the practice of delivery by their mothers or they were self-taught (32 or 46.3%). Only 3 TBAs (4.2%) were trained by PHC centre staff and 1 (1.4%) by another woman of the area.

No help had been sought from PHC centres by 53 TBAs (75%) of the study sample, whereas 16 TBAs (25%) had consulted PHC centre staff for primigravida (18.8%), prolonged labour (25%) or for no reason (56.2%) when PHC staff was available in the area. Those who did not seek the help of PHC centre staff attributed it to the absence of complications during delivery (17 or 32%) or had no reason (36 or 68%).

Table 1 Sociodemographic characteristics of traditional birth attendants (TBAs) and women

Characteristic	TBAs (n = 69)	Women (n = 121)	Test of significance
Mean age $\pm s$ (years)	43 \pm 11.5	30.1 \pm 7.5	$t = 18.69, P < 0.01$
Marital status			$\chi^2 = 15.41, P < 0.01$
Married	60 (87.0%)	116 (95.9%)	
Single	4 (5.8%)	–	
Divorced	1 (1.4%)	5 (4.1%)	
Widowed	4 (5.8%)	–	
Literacy status			$\chi^2 = 2.14, P > 0.05$
Literate	15 (21.7%)	40 (33.1%)	
Illiterate	54 (78.3%)	81 (66.9%)	

s = standard deviation

Table 2 Delivery preferences and last delivery experience of the women (n = 121)

Characteristic	No.	%
<i>Preferred place of delivery</i>		
Hospital	51	42.1
PHC centre	41	33.9
Home	29	24.0
<i>Preferred person attending delivery</i>		
TBA	46	38.0
Nurse	39	32.2
Doctor	36	29.8
<i>Place of last delivery</i>		
Hospital	61	50.4
Home	39	32.2
PHC centre	21	17.4
<i>Person attending last delivery</i>		
Doctor	63	52.1
TBA	39	32.2
Nurse	19	15.7

PHC = primary health care

TBA = traditional birth attendant

Many women preferred home deliveries (24.1%) or deliveries by *dayas* (38.0%) and 39 (32.2%) women had had their last delivery conducted at home by a *daya* (32%). However, 36 women (29.8%) preferred to have doctors attending their deliveries, while 63 (52.1%) had had their last deliveries attended by a doctor (Table 2). This might be due to conditions at the time which necessitated that doctors attend the deliveries; it may not reflect the actual preference or wish of the woman.

In all, 41 PHC doctors (62.1%), 46 women (38.0%) and 69 TBAs (100%) responded that *dayas* were the preferred persons to attend deliveries in their areas. Reasons given by the three groups for the preference of *dayas* are given in Table 3. It was agreed that the *dayas* were easily accessible, experienced and trusted by the community. It was believed that they under-

stood the local culture and that rural women preferred home delivery. There was no statistically significant difference between the three groups for these four reasons ($P > 0.05$). The three groups disagreed about other reasons for the preference of *dayas*. Women gave higher priority to the *daya* being female and also to the psychological comfort they felt with the *daya*. There was a significant difference between the three groups for these reasons ($P < 0.01$).

A total of 12 of 20 registered *dayas* in one of the sectors (60%) responded to the invitation to attend a FGD at the local maternity hospital in Abha city. Some of the harmful beliefs and practices expressed by the TBAs during the FGD about antenatal, natal and postnatal care, breastfeeding and childhood immunizations are given in Figure 1. The TBAs also admitted during the FGD that there were cases of stillbirths, neonatal and maternal deaths in their sectors which were not reported to the health authorities.

There were 19 254 deliveries in Asir Region in 1997, including 15 903 deliveries in hospitals (82.6%), 910 in PHC centres (4.7%), 173 home deliveries assisted by nurse/midwife (0.9%), 1648 home deliveries attended by TBAs (8.6%), 594 in private hospitals (3.1%) and 26 in other places (0.1%). The average number of deliveries per sector was 1375.3 (Technical Directorate, Asir Region, unpublished data, 1997).

Only 16 PHC doctors (24.2%) expressed no concern at all about the performance of TBAs in their regions, while 47 (71.1%) expressed some concern (Table 4). The lack of cooperation with PHC centres in advising pregnant women to attend the centres for antenatal check-ups and to assess the most suitable place for delivery was the most frequent concern (87.8%). This was followed by the lack of hygienic

Table 3 Reasons for the preference of TBAs as given by PHC doctors, TBAs and women

Reason	Doctors* (n = 41)		TBAs (n = 69)		Women* (n = 46)		χ^2 , P-value
	No.	%	No.	%	No.	%	
Easily accessible	16	39.0	20	29.0	23	50.0	5.21, > 0.05
Female sex	4	9.8	5	7.2	19	41.3	26.08, < 0.001
Understanding of local culture	5	12.2	8	11.6	7	15.2	0.34, > 0.05
Good experience and trusted	4	9.8	4	5.8	5	10.9	1.08, > 0.05
Psychological comfort	4	9.8	25	36.3	7	15.2	12.43, < 0.01
Home delivery	10	24.4	14	20.0	14	30.4	1.54, > 0.05
No reason	8	19.5	32	46.4	4	8.7	

*Number of doctors and women who said that TBAs were the preferred persons to conduct deliveries in their area.

TBA = traditional birth attendant PHC = primary health care

care of the umbilical cord (24.2%) and the lack of adequate delivery experience (22.7%). Lack of drugs and equipment and unhygienic conditions in the rural houses were also cited. The views of the doctors about the performance of TBAs were based on maternal problems they witnessed when called to homes to help in cases of home deliveries attended by TBAs or in cases referred to the PHC centres after prolonged labour attended by *dayas*.

Reasons for the lack of cooperation between the PHC centres and the TBAs are given in Table 5. The primary reason given by doctors was the difficulty in contacting the TBAs in their regions (62.1%), whereas the TBAs attributed the lack of cooperation to the absence of problems or complications in their work.

A total of 68 TBAs (98.5%) and 52 doctors (78.8%) expressed that some cooperation should exist between the PHC centres and the TBAs. The two parties differed significantly regarding most of the priority needs of such cooperation (Table 6). The highest priority of TBAs was the provision of drugs and equipment (36.8%), whereas

only 11.5% of PHC doctors gave that priority ($P < 0.01$). The highest priority of 51 PHC doctors (98.1%) was the need for programmes to train the TBAs in safe deliveries, whereas only 6 TBAs (8.8%) expressed such a need ($P < 0.01$). The TBAs also expressed their interest in learning and expanding their experience in areas other than deliveries, including first aid (13 or 19.1%), health education (8 or 11.1%) and child care (4 or 5.9%). PHC doctors did not favour these as priorities. However, the doctors (96%) recommended financial incentives to the TBAs for training and services.

Discussion

The present study found that there was still some dependency on and preference for TBAs in remote areas. These women from a remote area in Saudi Arabia, a country where there has been a high investment in health care services and where more than 90% of the population is covered by a network of PHC facilities, preferred *dayas* for some maternal and child health care servic-

Cutting the umbilical cord

"It is cut by an unsterilized razor for the boy and by scissors or a sharp-edged instrument for the girl."

"The umbilical cord can be left without tying after cutting."

"The umbilical cord can be tied towards the baby by any piece of cloth or rope found in the house."

"The umbilical cord can be tied towards the mother by turning it around her thigh or her big toe and wait till the placenta separates and descends by itself."

Postpartum haemorrhage

"It is incorrect to try to stop any bleeding which might occur after delivery because this is unclean blood and the woman should get rid of it."

Immediate care of the neonate

"Put water and margarine of the sheep in the mouth of the baby immediately after delivery or give sweetened water."

Breastfeeding

"We advise the mother to squeeze her breast and get rid of the breast milk which comes out during the first 3 days because it is harmful to the baby and advocate the use of some oil drops or butter to be given to the child for cleansing the stomach and intestine."

"The duration of breastfeeding for the boy is 2 years while for the girl it is 1 year only as per family norms."

Childhood immunizations

"We advise the mothers not to immunize their children during the first year because it is harmful to the child."

At-risk signs and symptoms during pregnancy and their referrals

"If we notice during pregnancy any pallor, yellowish discolouration, puffiness of the body and legs or if the pregnant woman complains of headache or vomiting, all these symptoms and signs are quite normal during pregnancy, and there is no need for the pregnant woman to go to hospital. We do tattooing by fire on her head, neck, arms and legs as preventive measures."

"Rural males sometimes refuse to refer their wives to a health care facility even if she falls sick because they insist that their wives should not be seen by male doctors. They also do not want to disclose the pregnancy and they are afraid of complications or even death which may occur to their wives during transportation by difficult roads or even at the hospital."

Prolonged labour

"If the labour becomes prolonged, obstructed or with abnormal presentation, the patient is wrapped in a woolen blanket in prone position and then shaken by holding the edges of the blanket to right and left. This procedure facilitates delivery, corrects the position of the fetus and also helps in the expulsion of the placenta."

Stillbirths, neonatal death and maternal death

During the discussion, TBAs admitted that dead babies (stillborn) are sometimes delivered. Some babies die during 1–2 weeks of life following convulsions and refusal to suck the breast (neonatal tetanus). Mothers may also lose their lives during labour. All such deaths are not reported by families to the health authorities.

Figure 1 Harmful practices expressed and agreed upon by 12 traditional birth attendants during the focus group discussion

Table 4 Concerns of PHC doctors (n = 66) regarding the performance of traditional birth attendants

Doctors' views	No.	%
No concern at all	16	24.2
No comment	3	4.5
Very much concerned because of:		
lack of cooperation with the PHC centre	58	87.8
lack of hygienic care of the umbilical cord	16	24.2
lack of adequate experience in delivery	15	22.7
lack of the essential drugs and equipment for delivery	4	6.1
rural houses are unhygienic for deliveries	4	6.1

PHC = primary health care

Table 5 Reasons for the lack of cooperation between PHC centres and traditional birth attendants (TBAs)

Views	No.	%
<i>Doctors (n = 58)^a</i>		
TBAs do not ask for help from the PHC centre	8	13.8
TBAs are not safe to conduct deliveries	7	12.1
Difficulty in contacting TBAs in the region	36	62.1
Do not know	8	13.8
<i>TBAs (n = 53)^a</i>		
Lack of any problems or complications	17	32.0
Do not know	36	68.0

^aNumber of PHC doctors and TBAs who expressed lack of cooperation
PHC = primary health care

Table 6 Views of traditional birth attendants (TBAs) and doctors regarding cooperation between TBAs and PHC centres

Areas of cooperation	TBAs (n = 66 ^a)		Doctors (n = 52 ^a)		P-value
	No.	%	No.	%	
Provision of drugs and equipment	25	36.8	6	11.5	< 0.01
Supervision and link with the PHC centre	23	33.8	2	3.8	< 0.01
First aid training	13	19.1	0	0.0	< 0.01
Referring at-risk cases	22	32.4	0	0.0	< 0.01
Health education	8	11.1	0	0.0	< 0.05
Training to conduct delivery	6	8.8	51	98.1	< 0.01
Training to perform child care	4	5.9	0	0.0	> 0.05
Notification	2	2.9	0	0.0	> 0.05
Immunization	2	2.9	0	0.0	> 0.06
Maternal follow-up after delivery	2	2.9	0	0.0	> 0.05
Financial incentives for TBAs	0	0.0	5	9.6	< 0.01

^aNumber of TBAs and PHC doctors who expressed the need for cooperation
PHC = primary health care

es. *Dayas* had attended the deliveries of approximately one-third of the women of the study sample. More than one-third of the total study sample preferred *dayas* to attend them during their deliveries.

As in many parts of the world, difficult topography in the region has caused the people to be self-reliant in emergency conditions, such as deliveries when urgent action is needed and there are sometimes difficulties in obtaining access to the nearest PHC facilities. These difficulties include the remoteness of the region, difficult approach roads, heavy rains which often block roads and the usual closure of PHC centres at night. Furthermore, Bedouin people sometimes live in small nomadic communities scattered over large desert areas which accentuates the problem of accessibility to health services and increases the need for TBAs.

Nevertheless, the need for TBAs as shown in this study was low compared to other regions in Saudi Arabia such as Bisha where the incidence of home deliveries by TBAs is 63.8% [9] and compared to other countries where the preference or occurrence of home deliveries and assistance by TBAs or by untrained relatives ranges from 50% to 95% [1,2,4,5,10,11].

The accessibility of the *dayas* to women in remote areas was not the only reason for the preference for *dayas* expressed by the women, the doctors and the *dayas* themselves in the present study. *Dayas* were also preferred for their experience, their sex, their understanding of the local culture and the psychological comfort they gave to women while conducting deliveries in their homes. Women in the study assigned two priority reasons to their preference for *dayas* which were statistically significant ($P < 0.01$): *dayas* are female and the women felt psychologically comfortable with their presence at delivery. In other parts of the

world, the TBA has been given with even more respect. She has been described as a loved and respected member of the community who cares for women during their childbearing years and advises them about contraceptives, gynaecological problems and the care of infants [3].

The TBAs and the women attending the antenatal clinic were not significantly different in their literacy level. Both belonged to the remote areas of the study region where educational facilities are not easily accessible. The 78% illiteracy rate of TBAs was similar to the findings of other studies in which TBAs either had low literacy levels or were illiterate [3,10,13,15].

The TBAs and the women had significant differences both in age ($P < 0.01$) and marital status ($P < 0.05$). TBAs, as professionals, were older as a group than the women attending the antenatal clinic at PHC centres who were of childbearing age. Similar observations have been also made by Pratinidhi et al. and Dehne et al. in which the ages of TBAs ranged between 35 years and 80 years and 34 years and 72 years in their study populations [2,10]. The age of females attending an antenatal clinic in a suburban area of Benin city was found to be between 18 years and 35 years [5], considerably younger than TBAs. The marital status of TBAs did not affect their work or their efficiency and it is believed that they commanded the same respect in the community whether married, single, widowed or divorced.

The present study documented beliefs and practices revealed by TBAs during the FGD. Practices regarding the cutting of the umbilical cord were similar to studies conducted in Kenya [14], Nigeria [14] and India [11] where the cord was cut with dirty razor blades, knives, the outer sheaths of sugarcane, sharp edges of broken bottles or sickles. Such unhygienic practices along

with unclean ties, might predispose the infant to umbilical sepsis or might lead to neonatal tetanus. Leaving the cord without tying it might lead to loss of blood for the infant.

When postpartum haemorrhage occurred, the TBAs commonly allowed the mother to bleed until the unclean blood cleared. This again is a disastrous practice for the health of the mother. The *dayas* probably did not know that such bleeding might lead to the loss of life of the mother, particularly that of an anaemic mother.

Immediate care of the neonate included giving plain or sweetened water and sheep's margarine but not breast milk to the baby just after delivery. Colostrum was considered harmful to the baby and mothers were asked to discard milk secretions for the first 3 days after birth by manually expressing them. Instead of breast milk, mothers were advised to give oil drops or butter to the child to cleanse the stomach or intestine. Similar observations have been noted in Saudi Arabia, Oman and the Republic of Yemen [15].

The duration of breastfeeding was longer for boys than girls because this was commonly believed to provide more strength to the boy. This finding agrees with studies from Lebanon and the Republic of Yemen [15]. Such a practice would eventually lead to variations in the health status of boys and girls.

Childhood immunizations were not approved of nor advocated by TBAs because they were thought to be harmful to the child. In a study conducted in Ethiopia [4], TBAs also did not favour immunizations as they had no idea of the preventive value of the immunization.

Since the TBAs were illiterate and had had no previous training, they did not have any knowledge of at-risk signs and symptoms of pregnancy and hence were not in

favour of using PHC centres or hospital services. Our observations agree with an Indian study in which untrained birth attendants had no concept of antenatal care or awareness of recognizable risk factors during pregnancy, and their first contact with women was during labour [2]. TBAs also revealed during discussion that rural men were against disclosing pregnancies and did not like their wives to be seen or handled by male doctors, even in emergencies. This was also the reason given to explain why the rural men were against referral of their wives to health care facilities during pregnancy or delivery. The men preferred to rely upon TBAs and traditional methods, such as tattooing, as preventive or corrective measures.

The management of prolonged labour or expulsion of the placenta as carried out by TBAs in our study was also similar to the observations of an Ethiopian study in which mothers were lifted and shaken in order to expel the placenta [14].

The majority of the PHC doctors (71.1%) expressed concerns about the performance of TBAs in their region and held them responsible for the prevailing infant and maternal mortality. Lack of cooperation was the most frequent concern (87.8%), followed by lack of hygienic care of the umbilical cord and lack of adequate experience in conducting safe deliveries. The principal reason for such lack of cooperation between PHC centres and TBAs was the difficulty in contacting TBAs in remote areas of the region with scattered populations and poor roads or no access by road. However, 32% of TBAs attributed this lack of cooperation to the absence of any complications during delivery, while 68% of TBAs assigned no reason. The reluctance of rural men to disclose pregnancies and have their wives referred to health care facilities where they might be seen or handled by male doctors

and the fear of complications or death resulting from transportation over difficult and unsurfaced roads or while the patient was hospitalized might be reasons for the lack of cooperation but these were not mentioned. Absence of a high level of care, indifferent attitudes of doctors [13] and the reputation of hospitals [10] could be reasons for not seeking help or referring deliveries to a maternity hospital [10]. Distance and poor transportation infrastructure in rural areas might also be blamed [5,10].

Although 68 TBAs (98.5%) and 52 doctors (78.8%) wished to have some sort of cooperation between PHC centres and TBAs, their priorities differed. TBAs wanted drugs and equipment to be provided to them (36.8%), while only 11.5% of doctors approved of the proposal. This was statistically significant ($P < 0.01$). The first priority of doctors (98.1%) was to organize training programmes for TBAs in conducting safe deliveries, whereas only 8.8% of TBAs acknowledged such a need. This was also statistically significant ($P < 0.01$). The hesitancy of TBAs could be a reflection of illiteracy, a false sense of competence in maternal care, prevailing beliefs or customs of the region, indifferent attitudes toward health professionals or a fear of undermining their status in the community if trained and supervised by PHC centre staff. Those who supported training wanted to learn more about first aid, health education and child care. This agreed with the course content of programmes in Nicaragua [3] where TBAs were also trained in safe delivery and recognition of at-risk signs and symptoms. PHC doctors recommended financial incentives to the TBAs for training and services. Similar recommendations have also been made [4].

Conclusions

We clearly identified the existence of physical barriers to the provision of medical and health services. It is impossible for workers of PHC centres to reach and deliver health care services to the scattered and isolated populations of hilly areas linked only by dirt roads or with no roads at all. The only solution to this problem is the TBA who is a woman and a resident of the area, easily accessible to the population, highly acceptable to both men and women of the region, and who enjoys the full trust of the families and communities; she is the preferred person to conduct home deliveries and to advise women when needed.

The illiteracy rates of TBAs, social customs and beliefs and prevalent harmful practices in the region indicate a need to initiate training programmes as soon as possible to equip TBAs with basic knowledge in conducting safe deliveries. This would include the recognition of at-risk signs and symptoms of pregnancy, the value of breastfeeding and immunizations in child care as well as health education designed to eliminate harmful practices. The need for training is acknowledged by the physicians of the PHC centres and by the TBAs themselves.

After basic training, TBAs could be recruited to safely deliver maternal and child health care to the rural population and could be integrated within the PHC network. They could be of great help in reducing infant and maternal mortality in the region by recognizing at-risk cases, conducting safe deliveries and referring complicated cases in a timely fashion. Future research is needed to identify practical problems in learning before initiating the training programme.

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