AN ALTERNATIVE TO UNATTENDED DELIVERY—A TRAINING PROGRAMME FOR VILLAGE MIDWIVES IN PAPUA NEW GUINEA

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Abstract—Certain linguistic groups in the Southern Highlands of Papua New Guinea are unique in that there is no cultural role for a traditional birth attendant and, therefore, women deliver alone unattended. A programme to train village women as midwives was begun at Nipa Health Centre in 1981 and later expanded to a province-wide scope in 1986. Thirty-two Angal Heneng village midwives were trained during the period 1981–1989. Women of this language group have traditionally given birth alone. By 1989 the Angal Heneng village midwives had supervised 623 deliveries while 24 of them were still practicing. Well accepted in the community, they attended 11% of all births in 1989. Their efforts contributed to infant and perinatal mortality rates that were lower among the Angal Heneng than those of the neighbouring language group.

Key words—village midwife training, traditional birth attendant, Papua New Guinea

INTRODUCTION

Childbirth is a life crisis that is rarely approached alone. Most societies have included the role of a traditional birth attendant as an assistant to support and care for the labouring mother and newborn infant. However, several language groups in Papua New Guinea are without indigenous birth attendants. The Angal Heneng are one of these groups who still maintain the custom of unattended delivery. Local Angal Heneng women have recently been trained as village midwives and their role has been integrated into their culture, contributing to an improved maternal and perinatal survival.

The Southern Highlands Province is located in the centre of the island of New Guinea. Within the Nipa District of the Southern Highlands reside the 30,000 people of the Angal Heneng language group. They live in scattered hamlets in the intermountain valleys of 1500–1800 m elevation. Their houses are constructed of local wood, bark and grasses with an earthen floor and a central firepit. The staple diet consists of sweet potato and greens with occasional pig meat and, for those with a cash income, tinned fish or meat and rice. First contact with Westerners was in 1935, although modern health services did not become available in Nipa until the 1960s.

LOCAL CUSTOMS

Due to cultural prohibitions the Angal Heneng-speaking woman is expected to deliver alone [1]. Women's blood is considered dangerous and contact with blood is believed to result in illness or death. Other village women are not willing to assist one another in labour or delivery for fear of becoming contaminated. Conception and pregnancy are forbidden topics of discussion between men and women and a source of embarrassment even between women themselves. Congenital defects are believed due to a cultural infraction by the mother, and twins are often attributed to maternal adultery. Infanticide has been practiced rather than returning in shame to the village with such infants.

When confinement draws near, the husband builds a small delivery hut in a nearby garden. As labour commences, the parturient retires alone to this hut to await delivery. Custom allows another woman to call out to her but not to actually enter the delivery hut. Only after one or two days of unsuccessful labour might a decision be reached by the village women to seek assistance at a health centre. The husband may assist in arranging transportation but rarely accompanies his wife to the health facility.

MATERNAL HEALTH SERVICES

Through the efforts of the local churches and the Division of Health, the percentage of Angal Heneng women who attended antenatal clinic at least once during their pregnancy has increased from 73% in 1979 [2] to 98% in 1987 [3], although many women visit only a single time in the second trimester to have the pregnancy medically confirmed. The percentage of deliveries that are supervised in the health centre has increased from 35 to 45% over this same time period [2, 3]. A number of measures have been instituted to increase the rate of supervised deliveries. A traditional bush material house and garden have been provided at Nipa Health Centre for high risk women to live in while they await delivery. Around-the-clock transport to the health centre is offered to any woman in labour. Women who deliver their infants at the health centre or who are supervised by a village midwife receive a free 'road to health' book and birth certificate. Those who deliver their infants in the village in the traditional manner are required to purchase the book and certificate.

This improvement in antenatal coverage has approached the maximum contact the health service can
establish with the pregnant population because of the remoteness of the region and the scarcity of roads. Prior to 1985, 25% of all Angal Heneng women lived within a one hour walk from the health centre [3] at Nipa; this figure improved to 31% in that year with the opening of a new health facility at Karinja. A one hour walk is believed the longest a labouring woman might undertake, although it is unlikely that even this distance would be attempted after dark. Expectant women are reluctant to be admitted to the health centre prior to the onset of labour because of their responsibilities at their homes and gardens. The 17 aidposts in the area serve out-patients exclusively and are staffed by male orderlies which renders them culturally inaccessible for obstetrical care even in an emergency. Thus for many, culture and distance combine to limit access to a supervised delivery. It is because of these constraints to supervised delivery and the subsequently high maternal and perinatal morbidity and mortality that a village midwife programme was started in 1981 at Nipa Health Centre.

The maternal mortality rate for the Angal Heneng is unknown, but the Huli language group with whom they share a common border had a maternal mortality of 4.6/1000 during the period from 1977 to 1983 [4]. The Huli culture encourages delivery in a health facility and a majority of their births are supervised so that it is unlikely that the maternal mortality of the Angal Heneng is considerably lower. There were no Huli village midwives in the study area over this time period. In the Southern Highlands Province, maternal mortality was reported as 9.0/1000 in 1984 [5] and 15.6/1000 in 1986 [6]. However, communication of maternal deaths to health officials is sporadic and incomplete, and the actual figures are probably much higher. About 50% of all maternal deaths in Papua New Guinea have been reported to be due to haemorrhage or sepsis [7].

Infant mortality was reported as 116/1000 in the Southern Highlands Province in 1980 [8] which was the highest in all of Papua New Guinea, and it was estimated to be 68/1000 in 1986 [9]. The infant mortality rate among the Angal Heneng language group's area is unavailable for 1980 and was estimated as 62.3/1000 in 1986 [9] using the method of determining the survival of previous infant at the time of birth registration and life tables [10]. No accurate data are available concerning perinatal or maternal morbidity of the Angal Heneng.

Because of the inability of the government and church health services to further extend maternal child health services to this remote population, a village midwife training programme was restarted in 1986 after a lapse of 3 years. The programme was based on a pilot project conducted in 1981 that trained the initial four Angal Heneng village midwives. Funding was provided in part by the Asian Development Bank Rural Health Improvement Loan II which purchased a vehicle and paid the salaries of the midwife tutor. The total grant for the 5 year programme was 70,000 U.S. dollars.

METHODS

Beginning in 1981 and continuing through 1989, 32 Angal Heneng women have received instruction as village midwives (VMW) at Nipa Health Centre (Table 1). The 1981 class were midwives number 1–4 while the others were trained during the years 1986–1989. As is the traditional custom, they were chosen as VMW candidates by the men of their community after discussion with the midwife trainer. The would-be students were enrolled into the course only after the local men had built a delivery house with a pit latrine and rubbish hole. None of the women had more than a grade 6 education and most were illiterate. Only older women with several children were accepted for training. For the most part, the VMWs were the wives of indigenous pastors, headmen or health workers. They undertook their studies and conducted their work as a Christian duty to serve the women of their village and relied on their faith to overcome the traditional taboo against becoming soiled by women's blood. All of the VMWs were unpaid by the Health Department.

The curriculum of the course has been described previously [11] and is briefly presented here. During a 4-week course, VMW students were instructed in basic anatomy, the normal progression of pregnancy and how to determine foetal lie. Each student conducted five normal deliveries and had the opportunity to observe several complicated deliveries. They were taught what is an appropriate obstetrical referral. All women that are nulliparous, grand multiparous, non-cephalic lies, in premature labour, have multiple pregnancies and those with previous obstetrical complications were to be sent to the health centre for delivery. Umbilical cord care and general hygiene and sanitation were also included in the course syllabus. The teaching was non-formal in style and much of the curriculum was taught through plays and skits rather than classroom lectures. The utilization of these teaching techniques avoided the student embarrassment that would have resulted from a more direct discussion of reproductive function. The students lived in a traditional house on the health centre grounds and were on call and available for all deliveries.

A delivery kit consisting of a sharp knife, cotton cord ties, gentian violet for umbilical cord care and ergometrine tablets were supplied. New banana leaves provided a clean delivery area and moss was used as surgical sponges. A fire or a kerosene lamp furnished light.

Supervision of the VMWs is carried out at monthly MCH clinic sites by the neighbouring health centre clinic sisters. They reviewed the past obstetrical history of potential VMW clients and together they examine the antenatal women. The nurses also conduct a verbal history of the VMW's recent deliveries and record them in a permanent record book that is kept by the VMW as well as on the routine Department of Health reporting forms. The VMW tutor visits the VMW at her delivery house at 1, 2, 6 and 12 months after completion of the training course and then again at 6–12 month intervals thereafter or whenever the need arises. In addition a yearly one week in-service training course is held for all the VMWs. The tutor also maintains contact with the male leaders of the village, encourages their continued support and intervenes on behalf of the VMW if necessary.
Remuneration to the VMW is primarily through an increase in status within the community, although food or firewood are often offered by the patient. The VMWs also receive a tin of fish and a bar of soap, or similar pay, for their assistance at the MCH clinics.

**RESULTS**

**Deliveries and referrals**

During the period 1981 through 1987 there were 254 deliveries supervised by 3 VMWs with no maternal deaths (Table 1). At least 10 of these deliveries were of primigravida, and an unknown number were grand multiparous women who went to the village midwife rather than risk a long walk to a health centre and a possible delivery enroute. Thus, although an effort was made by the MCH–VMW team to deliver all ‘high risk’ parturients at the health centre, this proved impossible due to distance and the woman’s preference.

In 1987, the first year complete data was collected, 23 VMWs supervised the deliveries of 121 infants. Eighteen antenatal referrals (12.9%) of high risk women were sent to the health centre from a total of 139 VMW clients. Details of the reasons for referral are shown in Table 2. There were no deaths among these antenatal women or of an additional 4 postpartum women who were also referred. VMWs attended...
121/429 (28%) of all supervised deliveries in 1987, or 121/838 (14%) of all deliveries.

In 1988 there were 27 VMWs in independent practice, another was employed at Karinja health subcentre, and one was inactive. Detail of the numbers of supervised deliveries in that year are presented in Table 1. Midwife number 4 never practiced in her village. She had been chosen by her village headmen while her husband was away and when he later returned he forbid her working. Midwives 25 and 26 lived in an area that was engulfed by tribal fighting late in 1987, and their houses and gardens were destroyed as was the local school and health aidpost. The people affected moved off to the bush, and all government services have ceased since then. In 1988 the reporting of referrals and delivery complications was available only for the Nipa Health Centre administered VMWs (numbers 5–19). These 16 VMWs referred 41 antenatal or postpartum women. Thirty-two of these were antenatal complications or high risk patients; 7 were complications of labour or delivery; and 2 were threatened abortions. The reasons for referral to the health centre are listed in Table 2. There was one maternal death of a woman from the Nipa area as a result of a postpartum haemorrhage. The VMW who was helping the haemorrhaging woman was unable to find transport to carry her to the health centre. This was the only maternal death of a VMW-supervised delivery since the programme’s inception. Seven other women, out of a total of 155 (4.5%) women in labour, required referral to a health centre for peripartum complications. Village midwives attended 26% of all supervised deliveries and 18% of an estimated 856 total deliveries in 1988.

In 1989 the number of supervised deliveries declined to 94 or an estimated 10.7% of all Angal Heneng deliveries. There were 37 maternal referrals and 18% of an estimated 856 total deliveries in 1988. In 1989 there was 1 premature infant that died shortly after birth and 1 stillbirth. A second premature infant died at 2 weeks of age of an unknown cause. Two neonates received respiratory resuscitation by a VMW and survived. Karinja Health Subcentre and the other VMWs reported perinatal and neonatal mortalities of zero in 1988.

In 1989 there were 1 neonatal death of a premature infant and 1 stillbirth of all VMW-supervised deliveries. Table 3 presents the comparison between the mortality rates from the 1981–1989 VMW-supervised deliveries and that reported in 1984 for all health centre and unsupervised village deliveries occurring in the neighbouring Tari Basin [4]. The two groups are not identical, as the majority of the VMW-supervised deliveries were from a low risk maternal group. Therefore the results cannot be compared statistically. The difference between the neonatal mortality rate in the Tari Basin and the lower rate of the VMW infants is considerable. The perinatal mortality rate is also lower for the VMW-supervised deliveries in comparison with the Huli. Table 4 shows the comparison between infant mortality rates between the Tari Valley (Huli language) with that of the Angal Heneng group. The Angal Heneng have a lower infant mortality rate.

**DISCUSSION**

Despite customary prohibitions, it has been possible to train village midwives to provide obstetrical services in a remote part of Papua New Guinea where there was previously no cultural role of traditional birth attendant. Extensive preliminary health education of village headmen and careful selection of VMW trainees has allowed the development of an accepted and accessible maternity service to women who would otherwise have delivered their infants unattended. Of greater significance has been the relative safety of VMW-supervised deliveries both to the mother and her newborn. The single maternal death that occurred in 1988 might have been prevented had the delivery occurred at a health centre.
that had transport available. Nipa Health Centre is one and one-half hours by road from the Provincial Hospital at Mendi where transfusion services are regularly available. However, as the woman who died was at low risk for perinatal complications and she lived a considerable distance from a health centre, it is likely that she would have delivered in the traditional manner and died alone.

The neonatal mortality rate of infants delivered of mothers under the care of VMWs is less than that in Tari, a well studied and adjacent area; and there was a lower perinatal mortality rate among the infants of VMW-supervised deliveries. Although the VMWs cannot be solely credited with the lower infant mortality rate among the Angal Heneng people compared with that of their neighbours, these better MCH health indicators are of considerable interest. Perhaps the community support of the VMWs is a reflection of greater health consciousness of the Angal Heneng as compared to the Huli. In other health and social-economic indicators the two groups are similar.

Access to health services is better among the Huli than in the Nipa area. Nutritional status of Huli children is superior to those in the Nipa District [3], which has one of the most serious malnutrition problems in the nation. Maternal education levels, birth spacing and per capita income are approximately equal in both areas where subsistence agriculture is universal and small coffee gardens provide a small cash income. A majority (86.7% in 1987) of Huli women deliver in a health centre or hospital compared with the Angal Heneng (64.0% in 1987). The percentage of women of childbearing age that use contraception in each area and less than 7% [3]. Antenatal clinic registration is nearly 100% in both groups but attendance after the first visit is equally poor averaging 2.3 additional attendances per woman in Tari and 1.2 in the Nipa area in 1987 [3].

The maternal and infant health of the Angal Heneng appears to be superior to that of its neighbours, the Huli, although there are differences between the two populations studied. The reasons for this difference are uncertain, but the village midwives have probably contributed to the reduced mortality by encouraging antenatal care, referring high risk pregnancies to deliver in health facilities, and providing delivery services for women who are too distant from health centres. The VMWs are believed to have contributed to the improved neonatal survival and have enhanced attendance of infants and children at MCH clinics.

Although the number of VMW-attended deliveries is small and the women they serve are in a relatively low risk group, there would have been at least 2 maternal and 19 neonatal deaths expected (using Tari Research Unit’s maternal and neonatal mortality rates) rather than the 1 or 3 observed. Weekly supervisory visits and in-service training along with VMW-MCH clinic staff cooperation have allowed identification of women with potentially high risk deliveries and facilitated timely referral to a health centre. This teamwork has contributed to the relative safety of a VMW-supervised birth.

The programme has been enthusiastically supported by most of the communities and a waiting list of villages and their trainees has developed. Only two women have stopped providing midwifery services because of the loss of village support although this continues to be a hindrance to another VMW (No. 15). Two other VMWs have curtailed their services because of a prolonged tribal war in their area. The Kaji VMW (No. 2) was offered employment at Karinja Health Subcentre after it opened near her village in 1985. The deliveries she conducted at the health centre were not counted as VMW-supervised although she also continued to attend a few deliveries outside the health centre. Three VMWs have retired after 9 years of service having supervised 304 deliveries in all.

Four community councils have offered cash financial support to their midwives. Other VMWs are rewarded directly by their clients. It is surprising that the VMWs who have been paid have supervised 4.7 deliveries per year as compared with the 7.3 deliveries per year conducted by the midwives who did not receive any form of payment. The increase in social status and doing one’s Christian duty appear to be the motivating force behind these women. No midwife has been approached to pay compensation for a delivery-related complication. The attrition rate of the VMWs for all causes has been 8 of 32 (25%).

Over 80 VMWs are now working among 8 different language groups in the Southern Highlands [11]. They have been trained in Nipa and Tari by two VMW tutors and two assistants and at a third ad hoc programme in the Koroba District. Several other VMW training courses are currently in operation in Papua New Guinea including one in Morobe Province [12] while other programmes are in the planning stages.

CONCLUSION

In rural areas of the less developed countries of the world, health services are often inadequate because of financial constraints and inaccessibility of the people to health facilities. In many societies, the traditional birth attendant fills this gap in the provision of maternal-child health care. There was no cultural role for the TBA in the Angal Heneng community, and the village midwife has now filled this void. The VMWs’ geographic accessibility in the village and their sharing of the same cultural orientation as their clients have permitted their easy integration into the birth practices of the women. Their presence has contributed to the increased number of supervised births and is believed to have contributed to the decreased neonatal and infant mortality of the Angal Heneng.

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