

## Perceptions and use of maternal health services by women in rural coastal Madang Province

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### SUMMARY

Maternal mortality remains exceptionally high in Papua New Guinea (PNG) at 733 per 100,000 live births. There has been little, if any, improvement in maternal mortality or maternity services since the 1980s. In 1992-1993 a survey of 550 women in rural coastal areas of Madang Province was undertaken to investigate the prevalence of maternal risk factors and parous women's utilization of and attitudes towards the existing health services. Women were classified as at risk on the basis of previous obstetric complications, parity, stillbirths and neonatal deaths. On this basis 67% of women were classified as being at risk in a future pregnancy. High rates of obstetric complications were reported, with only 42% of women delivering their most recent child in a health facility. There was no statistical difference between those not at risk and those at risk in terms of their use of antenatal care or having been referred for a health centre delivery. The most common reason given for not utilizing the existing health services was lack of access. Most commonly expressed positive perceptions of a health centre delivery were the availability of medical help (59%) and the physical comfort of the health centre (48%). Most common negative views expressed were lack of physical comfort (29%) and the attitudes of staff (11%). Women's opinion on village births was divided. Many (47%) thought that there was nothing good about a village birth and the same percentage cited lack of medical care if problems arose. On the other hand 36% of women thought there was nothing wrong with a village delivery, and 30% cited the care and respect received from relatives as a positive aspect. When asked for suggestions on how services could be improved only a minority of respondents expressed an opinion. Those who did wanted better access, more information on family planning and improved care and respect from staff.

### Background

The health of women in Papua New Guinea (PNG) has been of significant concern for many years, with multiple reports of the dire state of women's health, particularly in regard to high birth rates, high maternal mortality rates and high neonatal death rates (1-8). Maternal care for rural women is delivered through maternal and child health (MCH) clinics, but the focus of these clinics has historically been on child health with neglect of maternal health (7,8). Utilization of these

clinics by women is also less than ideal. In 1987 it was estimated that nationally 68% of pregnant women attended an antenatal clinic and 43% of births were supervised (4). For Madang Province, 49% of women received antenatal care and 31% delivered in a health facility in 1989 (9). Unfortunately there has been little improvement in the intervening years (10).

In the late 1980s the Papua New Guinea Institute of Medical Research (PNGIMR), in conjunction with United Nations Children's

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Fund (UNICEF), commissioned a review of the literature in relation to the health of women in PNG. This was published as a PNGIMR monograph (4) and provided a comprehensive overview of the issues relating to the state of women's health and the delivery of health services. Over 10,000 copies of the monograph were distributed to health centres and aid posts throughout the country.

Following the publication of the monograph, a modified Delphi technique was used to gain insight from government and non-government sectors involved in the delivery of health care for women in the country (11). The culmination of the process was a one-day strategic planning meeting involving almost 100 delegates to identify factors that enhanced the health of women and strategies to improve their access to health care. The results of the day included specific project ideas to move these strategies forward. It is interesting to compare the report of this strategy meeting to the recent (2009) PNG Ministerial Taskforce on Maternal Health in Papua New Guinea (10). The issues raised have not changed. Nor has the maternal mortality rate improved. For the period 1984-1986, the maternal mortality ratio was estimated to be 700 per 100,000 live births (2). For the period 1994-2006 it is estimated to be 733 per 100,000 live births (10).

Here we report on a study undertaken in 1992 and 1993 to gather information on the prevalence of maternal risk factors and women's perception and utilization of maternal health services. Although the information is now dated, we are reporting it due to our concern at the lack of progress in reducing maternal morbidity and mortality in PNG. The article is based on a previous report to the World Health Organization (WHO) and the PNG Department of Health. We present this information in the hope that it may still be of benefit in improving maternal health services.

## Methods

This cross-sectional, community-based survey was undertaken in rural coastal areas of Madang Province, between September 1992 and September 1993. Women aged 15 to 45 years living more than 10 km from the centre of Madang town, within 25 km of the coast and below 800 metres above sea level, who had given birth in the past 5 years, or who were currently pregnant, were eligible to

participate in the survey. Ethical approval for the study was provided by the PNG Medical Research Advisory Committee.

## Selection and recruitment

A stratified cluster sampling method was used. Village population estimates, based on the 1990 census, were used to estimate the eligible female population aged 15 to 45 years. This data set was used to stratify villages by census division, from which villages were then randomly selected. Within villages women were selected on the basis of their availability on the day of the village interviews with a maximum of 25 interviews per cluster. In cases where there were fewer than 25 eligible women available in the selected village an attempt was made to interview women in the closest neighbouring village. A total of 26 clusters were chosen giving a maximum of 650 women to be interviewed.

The villages were contacted in advance, informed about the purpose of the study and what was involved, and their cooperation requested. No village refused to participate. The study team, consisting of a supervisor (SK) and four experienced interviewers, visited the villages and conducted the interviews on pre-arranged days. Individual women were informed about the purpose of the study and all gave their oral informed consent.

## Data collection

The interviewers, some of whom had done similar work previously with the Institute of Medical Research, were trained in the use of the questionnaire. The questionnaire was pilot tested in several non-selected villages and modified accordingly. The questionnaire took 20 to 30 minutes to administer and collected information on the woman's obstetric history, use of maternal health services, perceptions of the services, barriers to their use and suggestions for improvements, as well as basic demographic data.

For each pregnancy they were asked whether the child was still alive or not. If the child was dead, they were then asked when it died in relation to the birth. The outcome was recorded as alive, stillbirth, early neonatal death (within one week of birth), a subsequent death (after one week of birth), a miscarriage or currently pregnant. For each pregnancy and delivery, mothers were questioned about

the occurrence of the following complications: premature rupture of membranes (defined here as rupture of the membranes more than 24 hours before the onset of labour), prolonged labour (labour lasting more than 24 hours), assisted delivery (forceps, vacuum extraction or caesarean section), breech presentation, eclampsia, postpartum haemorrhage, ruptured uterus, retained placenta or postpartum infection. In addition, for the most recent pregnancy, women were asked about bleeding during the pregnancy and abnormal swelling of hands and feet. In addition, women were asked about their use of antenatal and delivery services for each pregnancy.

### Validation from health centre records

All health centres and hospitals in PNG are required to maintain a birth register in the labour ward, which records the details for all women admitted. An attempt was made to validate the data from the interviews by reviewing the birth books at the health centres for those births which the mother had reported as occurring in a health facility. After entering the interview data on the study database, a report was obtained for all births reported to occur in a health facility, as well as the details of that birth as reported by the mother. This was then used to try to identify mothers in the birth books and determine the correlation between the records.

### Data analysis

All data were double-entered and checked using the FoxPro data management system. Analysis was performed using FoxPro and Epi Info 5.01. The perinatal mortality rate was calculated as the number of stillbirths plus neonatal deaths within the first 7 days of life, divided by the total number of stillbirths and live births, multiplied by 1000.

Women were considered to be at risk in their most recent pregnancy if they were parity 0 or  $\geq 4$  at the time; developed bleeding or abnormal swelling during the pregnancy; had a breech presentation or twins during the last pregnancy; or had a history of one of: long labour, surgical delivery, postpartum haemorrhage, ruptured uterus, retained placenta, stillbirth or early neonatal death. Women were considered to be at risk in future pregnancies if they are now para 4 or more or had a history of one of these risk factors.

## Results

A total of 550 women were interviewed, giving details of 2356 pregnancies. Many of the villages had fewer than 25 eligible women, and for some clusters there were difficulties obtaining 25 interviews, despite going to one or more extra villages. In total the survey team visited 47 villages, with a minimum of 16 and a maximum of 25 completed interviews per cluster.

The women ranged in age from 17 to 49 years, with a mean age of 29 (standard deviation [s.d.] 6.6). Their parity ranged from 0 to 13 with a mean of 4.1 (s.d. 2.5). 40% of women (n = 218) had not attended school at all, and only 40 (7.3%) had any post-primary schooling.

### Pregnancies, risk factors and outcomes

Of the 2356 pregnancies experienced by the women (mean = 4.3), 61 were current and 2295 completed pregnancies; 2236 were reported as being full term. There were high levels of mortality, with 59 miscarriages (2.5% of all pregnancies), 67 stillbirths (3%), 55 early neonatal deaths (2%) and 162 deaths after day 7 (7%). The perinatal mortality rate was calculated as 55 deaths per 1000 births.

A total of 261 of the women had experienced at least one obstetric complication (48% of those who had had a full-term pregnancy) (Table 1). Of the 2236 full-term pregnancies, 517 (23%) had been complicated by at least one of these problems. Additionally, 14 women reported bleeding during their last pregnancy (3%), and 33 women reported abnormal swelling of hands or feet during their last pregnancy (6%).

The information on complications, parity, stillbirths and neonatal deaths was used to determine the number of women at risk in their last pregnancy and the number who would be at risk should they become pregnant again. The results are shown in Table 2.

### Use of services and referrals by the antenatal clinic

100 women (18%) reported having no antenatal care during their last full-term pregnancy and 13% reported never having had antenatal care. In total, women did not receive any antenatal care for 531 (23%) of

**TABLE 1**

PREGNANCY COMPLICATIONS REPORTED BY WOMEN

Complication	Cases		Women	
	N	% of full-term pregnancies	N	% of women*
Premature rupture of membranes	71	3.2	53	9.7
Prolonged labour	139	6.2	92	16.9
Forceps delivery	33	1.5	21	3.9
Vacuum extraction	24	1.1	18	3.3
Caesarean section	16	0.7	15	2.8
Breech presentation	34	1.5	29	5.3
Eclampsia	64	2.9	44	8.1
Postpartum haemorrhage	205	9.2	141	25.9
Ruptured uterus	3	0.1	3	0.6
Retained placenta	82	3.7	49	9.0
Postpartum infection	175	7.8	90	16.5

\*Percentage of women who had had a full-term pregnancy

**TABLE 2**

WOMEN AT RISK

Risk	N	% of women
Parity $\geq 4$	216	39.3
Previous stillbirth or neonatal death	97	17.6
At least one previous complication or one other risk factor	395	71.8
Women at risk in future pregnancies	369	67.1
Women at risk in last pregnancy	414	75.3

the reported pregnancies. The majority of births took place in the village including 1374 (61%) of all full-term births, with 843 (38%) in a health facility and 19 (1%) in other locations. 42% of the women delivered their last child in a health facility.

Use of antenatal services and referral for

a health facility delivery were similar among women at risk and those not classified as at risk. While 335 of 414 women (81%) classified as high risk in their last pregnancy received antenatal care, 115 (88%) of those not classified as high risk received antenatal care. Of those who received antenatal care, 68% at high risk and 57% of those not at risk

were referred for a health facility delivery. There were no significant differences between the proportions of women receiving antenatal care in the two risk categories, nor between the proportions referred in each category.

If they had been advised to have a health facility delivery, the women were asked what reason they had been given. The vast majority of the women did not recall being told of any specific risk they may have been facing in that pregnancy, but just that it was generally better to deliver in a health facility in case they developed a complication.

While only 38% of all deliveries took place in a health facility (42% for the most recent delivery), 64% of women had had at least one health facility delivery. Only 24% of women had delivered all their children in a health facility, 21% had delivered at least half but not all of their children in a health facility, and 19% had delivered less than half their children in a health facility but had used a health facility for at least one delivery. 60% of women either always use the delivery services or never use them. There was a strong association between education level and use of delivery services, with women with higher levels of education using the services more ( $X^2 = 57.14, p < 10^{-8}$ ).

### **Women's attitudes toward the health services**

Women who had been to the antenatal clinic in their last pregnancy were asked to give their opinion on the positive and negative aspects of attending the antenatal clinic. Those women who had not attended an antenatal clinic in their last pregnancy were asked why they had not done so. Those who had ever delivered in the village were asked to give their opinion on the positive and negative aspects of delivering their baby in the village and those who had ever delivered in a health facility were asked similar questions regarding delivering in a health facility. All women were asked what they would like to change about the health services for women. For each of these questions, an open-ended format was used, and the responses subsequently categorized. More than one response was allowed. The data are presented in Table 3.

#### *Antenatal clinics*

A total of 477 women responded to this

aspect of the interview. 70% of the women indicated that there was nothing negative about the clinics. The most common positive responses related to obtaining medical care, specifically medicines for the mother or the infant (82%). The second most common positive aspect was receiving information or advice (39%). On the negative aspects a small minority of women (9%) commented on a lack of care or respect accorded to them by the clinic staff, who they reported as being 'cross or hard'.

Among the 101 women who did not go to the clinic, the most common reason given was a problem with access (81%). There were also a number of women who reported that they could not be bothered or did not think they needed to go (19%).

#### *Village births*

A total of 409 responded to questions related to aspects of having their babies in the village. 47% of women said there was nothing good about having their baby in the village, while 36% indicated there was nothing bad about it. In a similar comparison 18% indicated that physically it was better to deliver in the village where their family can help and they have a bed and food, while 17% thought this was lacking and a problem if they delivered in the village. One positive aspect identified by 30% of the women was the care and respect that they received in the village during the delivery of their babies. A negative aspect identified by 47% of women was that there was no medical support if something went wrong.

#### *Health facility births*

A total of 350 women responded to these questions. The majority (59%) of women indicated that the medical support available at the health facilities was very important, while 55% of women indicated that there was nothing negative about delivering at the health facility. Interestingly 48% of women indicated that the positive aspect of delivering at the health facility was the physical comfort (good water, toilets and beds), while 29% indicated that this was a problem in the health facility, where there were not enough beds, the facility was dirty and it was difficult to get food. 9% of women identified problems with medical issues, including lack of medicines, and 11% of women indicated that there was at times a lack of care and respect from staff in the

**TABLE 3****WOMEN'S VIEWS OF ANTENATAL CARE AND PLACE OF BIRTH**

	<b>Number (%)</b>
<b>Antenatal clinic (N = 477)</b>	
Satisfied with clinic – no need to change	336 (70%)
Medical issues	389 (82%)
Receive medicine for mother or baby	
Receive treatment	
Receive information and advice	187 (39%)
Reasons for not attending antenatal clinic (N = 101)	
Access issues (too far, does not come to the village)	82 (81%)
Don't know, don't think I need to	19 (19%)
<b>Village births (N = 409)</b>	
Lack of medical care if there is a problem	192 (47%)
Nothing is good about village births	193 (47%)
Nothing is bad about village births	146 (36%)
Physically more comfortable	72 (18%)
Physically less comfortable	70 (17%)
You receive care and respect from family and relatives	123 (30%)
<b>Health facility births (N = 350)</b>	
Medical support if you need it	205 (59%)
Physically more comfortable	167 (48%)
Physically less comfortable	102 (29%)
<b>Changes to health services (N = 550)</b>	
No comment	295 (54%)
Improved access	146 (27%)

health facility.

When asked about suggestions for changing the health services for women, 54% had no suggestions. However, 27% of the women mentioned issues related to improving the access of the services. 10% requested more help with family planning, 9% mentioned improving physical comfort of the health centres and 6% thought the staff should treat

the women with more respect and do their jobs more conscientiously.

#### **Validation from health facility records**

The women interviewed were served by seven health centres and the Madang Provincial Hospital. The birth books from these health facilities were searched for records of all the births which the women reported

having occurred in a health facility. Of the 843 reported, only 144 were identified in the birth records. The reasons for this very low return rate are likely to include: the mother using a different name (people in PNG usually have several names and also frequently change names, so it is common to find someone using one name at a health facility and another in the village); poorly kept records (some of the birth books were missing or had large gaps in the dates); occasionally a woman may have claimed to have had a health centre delivery when in fact she delivered in the village. The relative contribution of these factors is not possible to assess.

Of the 144 births identified, 85 (59%) were in complete agreement, and a further 14 differed only on sex, date of birth or parity, and these differences were small. Thus a total of 99 (69%) were either in complete agreement or differed on a point not related to the level of complications and/or in which we consider our data more likely to be correct.

The remaining differences were related primarily to details of delivery (use of forceps) or complications reported by the women and not by the health facility or vice versa. Complications that had been noted by the women that did not appear in the health facility record included: postpartum haemorrhage (10 cases), prolonged labour (16 cases), eclampsia (4 cases), retained placenta (1 case) and 1 case where the mother reported twins (currently still alive) of whom the birth book made no mention. Details in the health facility record that were not noted by the mother included breech presentation in 7 cases.

In general we found the birth books to be poorly kept, with little information, which was inconsistently recorded. It is unfortunate that we were not able to use the actual labour notes for the validation as historically these have provided a more complete and reliable record of the details of a given birth.

## Discussion

This study identified a number of issues in relation to obstetric history and the provision of antenatal and birthing services for women in rural Madang Province. The women reported high rates of parity and complications in pregnancy meaning that the majority of women would be classified as high risk in

their last and future pregnancies. While the majority of women received antenatal care, a sizeable proportion did not. Of even greater concern is that the majority of deliveries had taken place in the village, and there was no difference in the rate of health facility delivery by risk status.

The women's responses to the questions about their perceptions of antenatal services are generally fairly positive, with women identifying the clinic as a place to get medicines and advice. However, none of the women mentioned the role of screening and identification of high-risk women, which suggests that they were not aware that this should be a part of that service. The major single dissatisfaction expressed by women who attended for antenatal care (9%) was with the attitude of the nurses (cross or hard). A similar problem was identified in a more recent study in Goroka, where ill-mannered treatment by staff was one of the most significant concerns raised by the women (12). The most common reason given for not receiving antenatal care was related to access (too far away, no transport, clinic does not come any more), with 81% of non-users identifying access as a problem. A smaller but more worrying group were those that could not be bothered or did not see a need to attend (19%). Overall, this suggests that where antenatal services are available to them, all but a few women would use them.

The picture was not so good regarding the place of delivery. 42% of the women in the study had delivered their last baby in a health facility. Despite the official strategy of referral of high-risk women for a supervised delivery, those women defined as high-risk in their previous full-term pregnancy were no more likely to report being referred for a health centre delivery than those not at risk. This research was not able to identify the influence of antenatal clinic advice on a woman's decision as to where to deliver. When the women were asked why they did not deliver in the health centre, almost all replied that it was too hard to get there.

Difficulty of access is a given for village women, but there may be other factors at play. For example, in 2002, 89% of Huli women, some of whom may face similar access difficulties, were reported to deliver in a health centre (13). However, a traditional delivery for a Huli woman is a solitary one; this is not true

for the Madang women who were interviewed.

While 47% of women who had delivered in the village identified nothing good about it, a further 36% indicated that there was nothing bad about it. The care and respect provided by the community and family members was important to 30% of women. Opinions related to physical comfort were varied, with almost as many saying the village was best as those saying it was a negative aspect. These issues were also important as criticisms of the health services, with 29% of women complaining about difficulties with cooking, washing, dirty toilets and bad beds in the health facilities. In contrast to this 48% of women delivering in a health facility praised the physical surroundings. It may be that some health centres are more pleasant than others and this may explain the apparent discrepancy. Such differences were identified in the study by Beracochea et al. (14).

Availability of medical help was identified as an important issue by the majority of women who had delivered in a health facility. It is therefore important that this positive perception be maintained by meeting medical needs adequately. This involves maintaining supplies and equipment as well as ensuring staff are adequately trained. It also involves ensuring rapid and appropriate referral when needed. In this respect it is salient that 9% of women identified problems with medical issues, including lack of medicines, staff absences and frightening procedures, and felt that the experience was just as bad as in the village.

The low response rate when asked about improvements to the services is disappointing, but probably to be expected in a population which is rarely consulted about services. The most important issues identified by the women were improving access, providing family planning, improving the physical comfort of health facilities and changing negative staff attitudes to the mothers and to their jobs.

### Limitations

This study involved the retrospective collection of data by interviewing women about their reproductive lives and attitudes. It is inevitable that there will be problems related to this methodology, particularly related to the women's recall. Where the birth occurred some considerable time in the past, it is likely

that the recollection of the event will be less accurate than if it occurred more recently. There is also the possibility of error due to differing perceptions of what is normal and what is abnormal. While an attempt was made to minimize this by providing case definitions for some of the complications (eg, a long labour was one which lasted more than 24 hours), there will inevitably be different interpretations of when labour started, and there may be an altered perception of the events with the lapse of time. Doubt exists about the authenticity of the reports of eclampsia. The Tok Pisin expression 'ai raun, bun gurua', which is the nearest equivalent which can be found to describe a convulsion, can also mean merely 'dizzy, fainting, shaking'. It was decided to include the 'yes' responses, because this condition appears to be widely recognized and is considered to indicate a difficult and dangerous labour. Some other complications could not be assessed at all. These include problems such as anaemia and preeclampsia which require assessment at the time of occurrence. Additionally, the study did not capture any information on maternal mortality, or data related to women who had died during or as a result of pregnancy or childbirth.

### Conclusions

This study provides an overview of pregnancy and childbirth histories, and use and perceptions of maternity services, as reported by a large group of women from Madang Province in the early 1990s. It supports previous reports of high fertility rates as well as high rates of complications from pregnancy (4,10). A mixed picture emerges of women's views regarding the benefits and disadvantages of antenatal care and delivery services. There is no correlation between the use of delivery services and women's risk status. Given the high proportion of women classified as high risk this should perhaps not be surprising. It may be that health care service providers simply tell all women to take advantage of the services and do not discriminate between women at different risk levels, or, if they did, they did not communicate these thoughts to the women.

An important finding is that the women provided very few recommendations for health care delivery improvements. It is not possible to tell if this lack of opinion is related to a sense that it does not really matter what they think or that they really do not have a

perception of what these services should/could be providing. However, it is reasonable to assume that women have fairly limited expectations and are not aware of the type of services they should be able to expect.

Although the data reported could be considered dated, the sad truth is that it is likely that little has changed in relation to the provision and acceptance of health care for women, especially in relation to pregnancy and childbirth, over the past 20 years. Recent data indicate that 44% of women still deliver at home and over 44% of women experience complications during or immediately following delivery (15). The PNG Ministerial Taskforce also reports an increase in maternal mortality rates between 1996 and 2006 and the recommendations in the Ministerial Taskforce Report (10) mirror many of those made during the 1993 consensus conference (11).

In this article we have provided the data from our previous report to make it more accessible in the public domain. As researchers who lived and worked in Papua New Guinea we developed a love for the country, its people and its women. We hope that the provision of these findings will assist other researchers, policy-makers and service providers to move forward in their endeavours to improve the delivery of health services for the women of Papua New Guinea.

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