

ORIGINAL RESEARCH ARTICLE

Maternal Health Practices, Beliefs and Traditions in Southeast Madagascar

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Abstract

Contextualising maternal health in countries with high maternal mortality is vital for designing and implementing effective health interventions. A research project was therefore conducted to explore practices, beliefs and traditions around pregnancy, delivery and postpartum in southeast Madagascar. Interviews and focus groups were conducted with 256 pregnant women, mothers of young children, community members and stakeholders; transcripts were analysed to identify and explore predetermined and emerging themes. A questionnaire was also conducted with 373 women of reproductive age from randomly selected households. Data was analysed using STATA. Results confirmed high local rates of maternal mortality and morbidity and revealed a range of traditional health care practices and beliefs impacting on women's health seeking behaviours. The following socio-cultural barriers to health were identified: 1) lack of knowledge, 2) risky practices, 3) delays seeking biomedical care, and 4) family and community expectations. Recommendations include educational outreach and behaviour change communications targeted for women, their partners and family, increased engagement with traditional midwives and healers, and capacity building of formal health service providers. (*Afr J Reprod Health* 2014; 18[3]: 101-117)

Keywords: maternal health, pregnancy, birth, postpartum, Madagascar, socio-cultural

Résumé

La mise en contexte de la santé maternelle dans les pays à forte mortalité maternelle est essentielle pour la conception et la mise en œuvre des interventions de santé efficaces. Un projet de recherche a donc été mené afin de déterminer les pratiques, les croyances et les traditions autour de la grossesse, l'accouchement et le post-partum dans le sud-est de Madagascar. Des entrevues et des discussions en groupes cibles ont été organisés auprès de 256 femmes enceintes, mères de jeunes enfants, membres de la communauté et parties prenantes; les transcriptions ont été analysées afin d'identifier et d'explorer des thèmes prédéterminés et émergents. Un questionnaire a également été mené auprès de 373 femmes en âge de procréer dans des ménages choisis au hasard. Les données ont été analysées à l'aide de STATA. Les résultats ont confirmé des taux locaux élevés de mortalité et de morbidité maternelle et ont révélé une série de pratiques et de croyances traditionnelles de soins de santé ayant une influence aux comportements axés sur la santé des femmes. Nous avons identifié plusieurs barrières socioculturelles à la bonne santé: 1) le manque de connaissances, 2) les pratiques à risque, 3) le retard dans la prise de décision de rechercher des soins biomédicaux, et 4) les attitudes de la famille et de la communauté. Nos recommandations comprennent la sensibilisation pour le changement de comportement qui vise les femmes, leurs partenaires et leurs familles, une plus grande engagement avec les sages-femmes et les guérisseurs traditionnels, et le renforcement des capacités des prestataires de services de santé formels. (*Afr J Reprod Health* 2014; 18[3]: 101-117)

Mots-clés: grossesse, naissance, accouchement, Madagascar, socioculturel, santé maternelle

Introduction

Madagascar is one of the poorest countries in the world, 77% of households live below the international poverty line of \$1.25 per day and 92% live on less than \$2 per day, with the majority located in isolated rural areas^{1,2}. Impacts of the nation's political crisis 2009-2013 included the

withdrawal or substantial reduction of almost all non-emergency international aid and major cuts to public service budgets - state spending on health dropped by 75% between 2008 and 2011 and a further 50% in 2012³⁻⁵. The national maternal mortality ratio, which was falling prior to the political crisis, rose back to an estimated 440 per 100,000 live births in 2010⁶. Malagasy women

have a 1 in 45 lifetime risk of death from pregnancy and childbirth⁷ and 21% of deaths in women aged 15-49 are linked to pregnancy or childbirth⁸. Despite progress made in increasing access to contraceptives and uptake of antenatal care, only 44% of births are attended by a skilled health provider⁹. With an adolescent birth rate of 148 per 1,000 live births, Madagascar's teenage pregnancy rate is one of the highest in Africa^{10,11} and sexually transmitted infections are found in 38% of the population and often remain undiagnosed and untreated^{8,12}.

Maternal health studies in Madagascar have typically focused on biomedical factors, demographics or structural issues including weak health infrastructure, lack of access to quality health services (antenatal care, assisted delivery, emergency obstetrics, postnatal care), poor referral from the clinic and community to the hospital level, inadequate staffing and insufficient equipment or medical supplies and financial barriers to health^{9,13-15}. Few studies have investigated the socio-cultural factors including beliefs and traditions that influence the healthcare practices of this population.

The World Health Organization (WHO) defines 'maternal health' as the health of women during pregnancy, child birth and the postpartum period. Specifically, it encompasses the various health care dimensions of family planning, preconception, prenatal, intrapartum and postnatal care in order to reduce maternal morbidity and mortality¹⁶. 'Maternal health practices' can therefore be understood to refer to the activities and habits of women throughout these periods, which impact their health. Literature often refers to 'evidence-based practices' or 'best practices' as actions that have been evaluated extensively through scientific study and been found effective, in this case, in resulting in the best possible maternal health outcomes¹⁷. It is with reference to these evidence-based practices (often expressed as recommendations) that we can compare different maternal health practices. In the same way, 'maternal health beliefs and traditions' can refer to the specific socio-cultural knowledge and customs - in general, the local understandings and corresponding actions that they provoke -

regarding maternal health, that exist within a particular society.

Globally, the importance of understanding these maternal health practices, beliefs and traditions, and thus contextualising maternal health, particularly in countries with high maternal mortality, has been recognised as playing a vital role in designing culturally appropriate interventions that are effective in reducing maternal mortality and improving public health¹⁷⁻²¹. As such, research contributing to this growing body of knowledge is an increasingly valuable resource. In order to implement community-based health interventions, contextual research is required to understand local practices and belief systems so that health promotion is appropriately tailored to the local context. In Madagascar, where economic stagnation and lack of improvements in health infrastructure persists, community-level health education and behaviour change interventions are a necessary and strategic approach to improving maternal health, reducing morbidity and mortality²² and increasing the impact of any state service-level interventions.

This study was designed by a local/international NGO partnership working in the isolated town of Fort Dauphin in southeast Madagascar, with the aims of:

1. Gaining a comprehensive insight into the health problems affecting women of reproductive age and children under five, including their usage of and experience with local formal and informal health services
2. Identifying economic, social and cultural factors affecting women's access to health services for themselves and their children
3. Working with local stakeholders to develop a range of targeted, community-level interventions to improve maternal and child health, including identifying areas for national and international advocacy where appropriate

In order to do this, a range of qualitative and quantitative data collection tools were developed to enable the exploration of maternal health practices during pregnancy, delivery and postpartum, the underlying rationale for these practices, and their impacts on women's health-

seeking behaviour.

Methods

A mixed methods approach was adopted, predominantly focusing on the collection of qualitative data. Qualitative data has been shown to elicit detailed maternal health information that can be successfully used to inform policy, target health education messages and design and increase the impact of interventions^{20-21,23-26}. Mixed methods approaches provide a holistic picture of a particular context, with qualitative and quantitative data serving to complement and validate each other²⁷. The decision was therefore made to compliment and triangulate qualitative data with the collection of quantitative data across each of the project's research areas.

Study setting

The study was conducted in Fort Dauphin, the urban centre of the Anosy region in southeast Madagascar. Fort Dauphin has a population of approximately 60,000 people and is divided into 11 sectors or *fokontany* (the smallest administrative sub-division of the Malagasy political system), each of which is administered by a local community leader. Formal health facilities consist of one public hospital, two public community clinics, five private clinics and eleven independent doctors.

Study timeline

The research project ran from November 2011 until October 2012. The first two months of the project involved meeting with the Ministry of Health (regional, district and national levels) to finalise the project details and gain ethical approval; approval was also sought and gained from the urban commune leaders and *chefs de fokontany* (community leaders). A formal project launch was held with local stakeholders including partner agency representatives and senior staff from the town's public health facilities. This served to disseminate project information and secure buy-in and commitment from stakeholders from the outset, especially important given their anticipated future role in discussing learning from

the project and identifying and committing to responses. This period was also used to train the local Research Assistants (RAs). Data was collected between January and September 2012, with the final month spent disseminating findings and supporting the development of subsequent interventions.

Qualitative phase - design and sample

The qualitative research included focus groups (FGs), in-depth interviews (IDIs) and serial qualitative interviews (SQIs) (See Table 1). FGs were predominantly held with pregnant women and mothers of children under five, but were also conducted with male partners, family elders, formal and informal health care workers and community leaders. FGs were conducted at the NGO office with transportation costs and lunch provided as compensation. Prospective participants were purposefully selected to ensure that a broad spectrum of the target population was represented; candidates were recommended by community leaders and the NGO's community agents, and those meeting eligibility criteria were informed about the study and invited to participate. Eligibility criteria for study participants depended on the group being asked to participate (e.g. pregnant women, male partners, etc.) as well as the following: 1) having lived in Fort Dauphin for over a year, 2) being 15 years old or over, 3) willingness to participate, and 4) able to give informed consent. For women aged 15-17, verbal permission to participate was gained from their parents as well as themselves. IDIs were conducted with service providers, traditional healers, Ministry of Health and partner agency representatives at their places of work.

IDIs and FGs were conducted using semi-structured interview and FG guides developed by the primary researcher and reviewed with the study team before each meeting took place. These tools provided the RAs with general, open-ended questions to ask the participants, though they were encouraged to probe and explore topics as they arose. Tools were revised in an iterative fashion so as to continuously evolve and respond to changing data needs. RAs were Malagasy staff of the NGO, experienced in health projects, familiar with the locale and fluent in the local language. RAs

facilitated the majority of the FGs and SQIs, with senior, medically trained Malagasy staff conducting the FGs and IDIs with partner agency representatives and formal providers. The RAs were trained on interview techniques including identifying key areas of interest and probing to

elicit detail-rich information. RAs tested the questions with each other, practicing to ensure their familiarity with the questions, as well as finding the best way to phrase questions clearly and sensitively.

Table 1: Types of data collected and participants involved

Type	Participant type	Number of events	Number of participants
Focus Groups	Pregnant women	6 FGs	7-10 participants in each group
	Mothers	6 FGs	10 participants in each group
	Men	3 FGs	8-10 participants in each group
	Formal health staff	3 FGs	4-10 participants in each group
	Traditional midwives	1 FG	7 participants
	Village leaders	1 FG	10 participants
	Religious leaders	1 FG	5 participants
	Family Elders	2 FGs	10-11 participants
Serial Qualitative Interviews	Pregnant women	10 visits each	10 women
	Mothers (child <1)	9 visits each	10 women
	Mothers (child <5)	7 visits each	5 women
Interviews	Partner agencies	6	6
	Service providers	9	9
	Traditional healers	2	2
Questionnaire	Women age 15-49		373
Total number of participants			629

FG guides covered diverse topic areas including: maternal and child health knowledge, common illnesses and complications, interpretations of illnesses and courses of action taken, perception and use of formal and informal health services, specific health care practices relating to pregnancy, delivery and postpartum, traditional beliefs, barriers to care, and social roles and responsibilities. Some examples from the FG guide for pregnant women are:

1. When a woman realises that she is pregnant, what things does she do to take care of herself? What traditional / cultural practices are there relating to pregnancy?
2. Tell me about your experiences of clinic antenatal visits. Tell me about your experiences with traditional midwives or healers when pregnant.
3. What are some serious problems that can happen to pregnant women and why do they happen?
4. Where do you want to give birth? Why? Are you able to do this?
5. What traditional practices are there related to childbirth? How should a woman behave when giving birth and why?

6. What role does your partner, your family or friends play in your pregnancy and birthing?
7. SQIs were conducted with ten pregnant women and 15 mothers of young children. Interviews were conducted every four weeks for nine months. Meetings took place in the participants' homes, with the same eligibility criteria and methods of tool creation and use as detailed above. Although the same general topic areas were discussed as with the FG participants, more encounters resulted in greater opportunities to ask a wider range of questions and to delve deeper into some topics. Thus the guide for SQIs contained three sections: 1) a set of standard questions that were asked at each visit about progression of pregnancy, any ill health experienced, antenatal visits etc., 2) a set of questions exploring a topic area not discussed previously in great depth (for example, contraception and sexually transmitted infections), and 3) specific questions developed from a reading of the previous interview transcript to explore more about areas discussed, including topics requiring more probing. Examples of

standard questions asked to pregnant woman at each visit are:

8. How has your health been in the last 2 weeks?
 - i. Describe any concerns or problems. Why you think it happened? What did you do?
9. Did you see a doctor / nurse / midwife / traditional midwife / healer? Describe your experiences.
 - i. How long did you wait before you sought care? For what reasons did you chose to go to them? Who helped you to make that decision?
10. Describe any antenatal visits in the last 2 weeks. What happened?
 - i. What did they do or give to you (including advice)? How was your experience? What were the costs involved?
11. Who have you talked to about your pregnancy/health in the last 2 weeks? What did you talk about?

A small financial compensation was given to participants for their involvement in SQIs. A verbal informed consent process was used with all participants, with RAs giving a copy of the consent form to the participants and signing and keeping a copy to authorize the process and consent given. No personally identifying data was collected from the participants. Security measures were used to protect the safety of written and electronic data, which included electronic files being saved on password-protected computers kept in a locked office. Paper documents never contained personally identifying information and were also locked away. Staff received training on confidentiality as part of their ethics training.

Data collection and analysis

All IDIs, SQIs and FGs were audio-recorded. A translator transcribed the audio files into English and field notes were added (comments and observations made by the facilitator and note-taker or interviewer). The transcribed data was periodically audited by a senior staff member. The primary researcher (a female British post-graduate with experience in maternal and child health in

Africa) read all of the transcripts numerous times, asking for clarifications and discussing her understanding with the team regularly. As she identified patterns, these were presented in monthly team meetings. Emerging patterns and themes were discussed in team meetings, and shared in larger project management meetings. As the research followed an iterative process, areas which lacked full information or understanding could then be prioritised during the next round of FGs and interviews. Data was collected and analysed until saturation was reached (in that information was occurring so repeatedly that one could predict responses from further data collection on the same theme).

Quantitative phase - design and sample

A questionnaire was developed by the primary researcher which included sections on: demographics, obstetrical history, antenatal care, delivery, maternal mortality, family planning, child health, and general health. Closed-ended questions were asked to participants by the RAs and recorded by the RAs on the paper questionnaires. In order to collect valid study data, the questions were discussed at length prior to beginning so that all of the RAs had the same general understanding of the questions and answers. The questionnaire was pre-tested with NGO staff, and shortened and adjusted according to feedback. The RAs each conducted a pilot with 10 women (total of 40 participants). Feedback led to a final elicitation of the questionnaire. Four RAs conducted the qualitative data collection over a period of six weeks, coming to the office at the beginning of the day to strategize and review protocol and returning at the end of the day to hand in paperwork and discuss any issues. At this time the primary researcher also reviewed the forms to ensure data was collected correctly and in full. Any discrepancies or missing information was discussed and resolved the same day.

The following calculation was used to produce a population-based sample size for the questionnaire:

$$\frac{Z^2 * (p) * (1-p)}{C^2}$$

Where Z=Z value (e.g. 1.96 for 95% confidence level), p=percentage picking a choice,

expressed as decimal (.5 used for sample size needed) and c =confidence interval, expressed as decimal (e.g., .05 = ± 5). The population size of Fort Dauphin is approximately 56,322. The national percentage of women who are of reproductive age (the target population for this study) is 23%, giving a target population in Fort Dauphin of 14,260. Using this number as p , and a 5% margin of error and 95% Confidence Interval, a sample size of 374 was given. The sample size was divided proportionately by *fokontany* as according to the population size of each area. Participants were randomly selected using a strategy whereby the RA started at a central point in the *fokontany* and was directed by spinning a pencil to locate a dwelling. If no one was present (unlikely given that in a family compound, there are usually many huts and people around at any time during the day), they would go to the next closest dwelling that had someone present. At each dwelling they enquired as to the number of women aged 15-49 that lived there. If there was more than one, the women were listed on pieces of paper and one randomly selected. If that woman was available, the RA confirmed eligibility, sought informed consent and conducted the questionnaire. If the selected woman was unavailable, the RA scheduled a time to return. All participants were located on the second or third visit. If no one at that household matched the eligibility criteria, the RA started the selection process again. At the beginning of each day, RAs would start in the same central location if continuing work in that *fokontany* or move to the next *fokontany* on the list.

Data collection and analysis

Questionnaire data was collected on paper forms and entered into Epi Info version 7 (CDC, Atlanta, Georgia). An audit process confirmed the accuracy of data entered, before being imported into STATA v11.0 (StataCorp LP, College Station, Texas) for coding and statistical analysis. Percentages were calculated and chi-square tests were carried out to examine associations between variables, in particular for associations between practices and population groups (including age, ethnic group and level of education). A p value ≤ 0.05 was considered statistically significant.

Thematic analysis of qualitative data was completed alongside analysis of questionnaire data with comparisons being drawn between the two. A broad picture concerning health practices and beliefs throughout pregnancy, child birth and postpartum were identified, which illuminate the barriers to maternal health in this population.

Trustworthiness

Extensive data collection using a large number of informants and multiple approaches contributed to the trustworthiness of the research. The primary researcher was responsible for the complete thematic analysis of the data, and the synthesis of the qualitative and quantitative data. Interpretation and verification was carried out continuously, checking back with participants and stakeholders as well as the research team throughout. Efforts were made to ensure that findings from qualitative data adhered to the quality standards of confirmability, dependability, credibility, and transferability²⁸. This was done using these methods: using thorough processes and audit trails exemplified through tools, guides, operations manuals and other electronic notes which documented the project meticulously; triangulation of qualitative and quantitative data sources; constantly checking in, examining and debriefing with research staff, senior management and stakeholders to ensure that data was being interpreted correctly; and prolonged engagement in the field throughout the one year project cycle²⁹⁻³⁰.

Results

Two hundred participants were invited to FGs, with 186 (93%) acceptances. For the SQIs, only two meetings were missed due to the participants being out of town. From 383 women approached to participate in the questionnaire, ten declined to participate. Reasons given included being busy or having plans ($n=5$), not wanting to participate ($n=3$) and not willing to participate without an incentive ($n=2$).

Survey participants ranged in age from 15-49 and were mostly ethnically Antanosy. The majority had between 'some primary' and 'complete secondary' level of education. One

quarter (26%) classified their literacy level as 'poor' or 'not literate.' Their number of pregnancies experienced ranged from 0-11. Selected socio-demographic characteristics are presented in Table 2.

Table 2: Selected socio-demographics of questionnaire participants (N=373)

Characteristic	N=373 (%)
Age	
15-19	95 (25.5)
20-29	121 (32.4)
30-39	94 (25.2)
40-49	63 (16.9)
Ethnic group	
Antanosy	217 (58.2)
Antandroy	106 (28.4)
Other	50 (13.4)
Level of education	
None	36 (9.7)
Primary in/complete	97 (26.1)
Secondary in/complete	169 (45.3)
Higher	71 (19.0)
Partner status	
Married/stable partner	206 (55.2)
Divorced/widowed/single	117 (31.4)
Casual partner	50 (13.4)
Employment	
Full time	67 (18.0)
Part time/casual	154 (41.3)
Not employed	98 (26.3)
Student	54 (14.5)
Number of pregnancies	
0	71 (19.0)
1-4 pregnancies	228 (61.1)
More than 4 pregnancies	74 (19.8)

Participants in the qualitative data collection events ranged in age from 15 to 80. Convenience sampling enabled a wide range of participants to be included in each of the demographic groups. The ages of pregnant women and mothers involved in the FGs and SQIs ranged from 15-48 and parity from 1-10. These women were selected from all over Fort Dauphin, and were chosen to represent a wide range of society in terms of level of education, income, marital status and birthing experiences.

Health, beliefs and practices during pregnancy

The first period analysed from the data collected was pregnancy, revealing the following trends, health beliefs and practices.

Of 291 the questionnaire participants who had even been pregnant, 186 (64%) were aged 19 or under when they had their first pregnancy. Of those aged 19 or under at the time of the questionnaire (n=95), 40 (42%) were already mothers or currently pregnant. From the whole sample, three of the currently pregnant women (5%) were aged 40 or above, and it was not uncommon for FGs participants to report having children the same age as their grandchildren. In terms of preferred number of children, participants in both the FGs, SQIs and questionnaires expressed an ideal number of children that was often lower than their actual number of children, for example, interview participants considered two to four children to be 'ideal,' while 60 of the 291 women ever pregnant (21%) already had five or more births. Of these women, 117 (40%) had already had at least one miscarriage. Interviews with local clinicians showed a lack of accurate data on sexually transmitted infections, but existing data from antenatal syphilis tests showed rates ranging from 30% to 80%.

FG participants explained how they would usually realise that they were pregnant in the second or third month. Home-based pregnancy testing was rare but most attended antenatal visits (ANV) at the public health clinics. Similarly, of the questionnaire participants, 195 (93%) who were pregnant in the last five years attended at least one ANV, and the average number of visits was four. ANV service delivery in Fort Dauphin is inconsistent and little counselling is provided at the visits. While some women are able to stop engaging in hard physical work such as collecting water when pregnant, for others this is not possible. Of the women who have some knowledge about healthy eating in pregnancy, many are not financially able to increase their meal intake or improve its nutritional content. There are many foods and activities that are considered taboo during pregnancy such as eating peanuts or bananas, drinking milk, drinking standing up, and wearing things around the neck. The potential harmful effect on the unborn child was explained by two pregnant women participating in FGs:

"When pregnant, you can't wear anything around your neck ... because the doctor doesn't like it, it makes the baby's umbilical cord wrap around its

neck. When you give birth, the baby has it wrapped round his neck.” “When you get pregnant you are forbidden from having something bitter. It makes your child miscarry.”

Coitus is generally avoided from 3-8 months into the pregnancy to at least 3 months postpartum. It is taboo for the partner of a pregnant woman to have sex with casual partners during the pregnancy due to the belief that it could have a harmful effect on the unborn baby, however, it is socially acceptable during the months after the birth during the mother’s postpartum confinement period when she is considered too fragile to have sex.

Many women visit traditional midwives and/or *ombiasa* (traditional healers or shamans) during their pregnancy. From 210 questionnaire participants who had delivered in the last five years, 93 (44%) had visited a traditional midwife and 63 (33%) had visited an *ombiasa* during their most recent pregnancy. Herbs are the most common form of treatment given by *ombiasa* and traditional midwives, and 71 (34%) questionnaire participants reported taking herbs during their last pregnancy.

Traditional midwives may give herbal liquids to pregnant women for protection of health and treatment of illnesses, and often give massages to change the baby’s position. Traditional midwives are seen as friendly and helpful, and are usually sought in addition to formal ANVs. Traditional midwives encourage formal ANVs and child vaccinations, and some encourage facility delivery, especially for breech presentations which they have not been able to correct, or if the child seems very large.

Fears of poisoning or witchcraft are common in Malagasy culture. This is particularly the case during pregnancy, which is thought to arouse jealousy in other people. Curses and poisoning are believed to be transmitted through food, particular objects, touch, or simply through bad thoughts, all of which are considered to have the power to harm or kill. For this reason, pregnancy and due dates are rarely discussed with anyone except female family members. Also, whereas clothes-washing is a job that ordinarily is delegated to any female member of the community, during pregnancy it is common for women to restrict this activity solely

to their mothers, again for fear of the witchcraft that could be placed on their clothes by other jealous women. To prevent or treat poisoning, *ombiasa* give pregnant women herbs to drink called *besaro*. The seriousness of the risk of poisonings was expressed by two women, both mothers of children under five: “One pregnant woman in our *fokontany* (neighbourhood) got poisoned because she told her friend about the day of her giving birth, and then she died, and the baby.” “You can’t tell about (your pregnancy) to anyone in case you get poisoned so you only speak about it to your family, no one else because maybe if you speak about it to the bad people then they will do bad things to you. (Interviewer: Who are the people that do it, and why?) The people who are jealous of you do it and maybe they don’t like you having a baby or they don’t like your family.”

Health, beliefs and practices during delivery

Moving on from pregnancy, data for delivery trends and specific beliefs and practices during delivery were examined, with the following findings.

Most FG and interview women considered birth preparation in terms of buying clothes and supplies for the birth rather than planning where they will deliver and how they will get there. Many women save and sometimes borrow money in preparation for their delivery and for supplies, but often only know which delivery options they can afford once labour has started. The male partner’s responsibility is generally seen by both women and the partner in terms of financial support only. Due to the lack of information and counselling given at ANVs, most pregnant women do not know how to ensure a healthy pregnancy or how to recognise warning signs or complications during labour and delivery.

Local birthing etiquette entails remaining composed throughout labour and delivery; not complaining, ‘pulling faces’ or making noises. This is because it is believed that having a child should be a positive experience, as well as this behaviour representing a sign of strength. If a woman fails to follow this etiquette, both she and her family will be embarrassed and it is thought that physical damage may be inflicted on the child,

as expressed by three mothers of young children in FGs: “You can’t cry and make the angry face; you have to make the normal face during your delivery.” “It’s taboo if you cry because it’s good news to await the baby’s cry so if you cry it means you don’t want the baby.” “You need to push the baby, that’s why you have to stop it, because if you cry you don’t have enough energy to push the baby and maybe it will cut the baby’s head.”

Due to this practice of remaining composed throughout labour, family members may not actually be aware of how far a woman’s labour has progressed. Many SQI and FG participants reported that while they had planned to deliver at the hospital, they didn’t due to the ‘suddenness’ of the birth. 124 (12%) mothers in the questionnaire sample also stated that the main reason they didn’t deliver their last child at the public hospital was due to the suddenness of the birth. Men, who are generally uninvolved in pregnancy practices, must remain absent during delivery and are forbidden from being in physical proximity as it is thought that their presence will prolong delivery or prevent the baby from coming out. Prolonged labour and other delivery complications are sometimes viewed as resulting from an unsettled feud with someone, especially one’s parents or partner. Resolving feuds or getting benediction is often sought before or during delivery in order to prevent or resolve complications.

Of the 282 births delivered in the last five years to 210 questionnaire participants, 109 (39%) were delivered at hospital, 98 (35%) were delivered at home with a skilled attendant, and 75 (27%) were delivered at home with a traditional midwife. The main reasons given for not delivering at hospital were ‘expense’ and ‘negative views of the hospital or staff’. Main reasons for choosing home delivery with both skilled and traditional midwife were ‘cost’, ‘convenience of being at home’, ‘familiarity/habit’ and ‘friendliness of attendants’. Women with primary or less than primary education were more likely to have visited a traditional midwife or *ombiasa* during pregnancy than women with more than primary education ($p=0.005$ and $p<0.001$, respectively), and they are more likely to have delivered at home, especially with a traditional midwife ($p<0.001$).

Traditional midwives may attempt to speed delivery by encouraging women to have a hot shower, drink tea and walk around, whereas skilled attendants (at home or in a facility) may give an injection of oxytocin to augment labour or after delivery to prevent haemorrhage, which is viewed by many women as desirable. Some women, regardless of where and with whom they are delivering, take herbs to speed what they regard as a prolonged labour; of the 210 questionnaire participants who had given birth in the past five years, 21 (10%) reported having carried out this practice. Local clinicians interviewed reported the possibility of complications arising from this practice including still birth.

Since traditional midwives do not give injections, they are sometimes seen as “not doing anything”, and in some circumstances are only called post-delivery to cut the umbilical cord. Some traditional midwives do not have safe or clean delivery practices, with common hazards including: lack of hand and perineum washing, not wearing gloves, delivering on a non-clean surface, and use of non-sterilised equipment such as scissors or razor blades to cut the umbilical cord. They may also direct labouring women to feel with their fingers how close the baby is, posing a particularly significant risk in a context where hand washing is not a regular practice. During some deliveries, traditional or skilled attendants may push the labouring woman’s abdomen to ‘aid’ delivery. Birth attendants at home generally leave shortly after the birth, but women in hospital are required to remain for three days. Skilled midwives working in and outside of a facility usually give a three-day course of antibiotics to prevent postpartum infection.

The qualitative data collected suggests high rates of haemorrhage and fistula resulting from child birth. Of the 25 SQI participants, 13 personally knew at least one woman (relative or friend) who had died from postpartum haemorrhage. Of the 23 SQI participants who were asked about fistula, eight knew someone who suffered from this morbidity. It is unlikely that they were discussing the same women as SQI participants were located from different *fokontany*, although this cannot be ruled out completely. FG and SQI participants rarely had a reliable idea of

what constituted a prolonged labour or ‘too much’ bleeding, and there were clear delays identified in terms of recognition of complications and actions taken during their own deliveries.

Haemorrhage (antepartum and postpartum) may also be understood by some as a curse or poisoning for which the treatment is ingestion of herbs. The incidence of haemorrhage and lack of knowledge about warning signs is illustrated by the following comments from SQI mothers: *“I saw two women who had that problem before - who died after delivery. One had too much blood come out, it means haemorrhage, and the other one the placenta was stuck inside because they had the delivery at the traditional midwife’s.”* *“My bleeding stopped two weeks after my delivery. In the first week a lot of blood came out, then in the second week not much blood came out. In the first week I changed the towel 4 times a day, then the last week I only changed it 2 times a day. (Interviewer: Do you know the difference between haemorrhage and the blood after delivery?) I don’t know the different between those two.”*

Health, beliefs and practices during the postpartum period

Continuing to explore the data chronologically through the maternal period, the postpartum period was then analysed; in particular, any trends, practices or beliefs relating to this time.

Participants described how they consider pregnancy and child birth to be dangerous times for women, with the birth leaving women’s bodies very damaged, weak and soft. A number of practices are performed to clean out ‘dirty’ blood, with some skilled attendants giving hot water douches or using equipment to spray hot water into the mother’s vagina to clean it out immediately after delivery. Some women may practice crouching over burning charcoal to cleanse and tighten the womb. This, and herb drinking (which follows an intense postpartum regime, often involving a variety of preparations at different time intervals), are thought to clean out anything dirty from the vagina and womb, and promote healing and the return of the body to its pre-pregnancy state.

Most postpartum women follow a period of a confinement for one to four months. Of 201 questionnaire participants who had given birth in the past five years, 186 (92%) observed a period of confinement. During this time, women stay indoors wrapped in blankets, with doors and windows closed, and sometimes with animal lard on their skin. They drink hot fluids, take hot baths and ingest a regimen of herbs. Some women minimise their movement and restrict their bathing rather than taking hot baths. As the postpartum woman is seen as especially fragile and weak after delivery, it is thought that she can easily get sick and die from cold (*sovoky*) because the wind and cold air is harmful to her. Keeping warm is also seen to ensure the production of warm milk for the baby. Symptoms of *sovoky* include fever and chills and can result in death. Medical staff frequently reinforces this belief by explaining that the injections they give to postpartum women are to prevent cold when in fact they are a three-day course of antibiotics to prevent infection. Herbs are ingested both to prevent and treat *sovoky*. According to local clinicians, there are many negative health effects that result from these postpartum confinement practices such as fever, dehydration, heat rash, heat stroke, poor hygiene and the inability to leave for medical visits when sick. One clinician described these practices but thought that they were no longer common in urban areas: *“It’s often the villagers who still follow the traditional culture to make themselves warm with the fire and plug their ears with cotton when they stay inside. And they often have coats on without bathing. It’s because they are afraid of coldness (sovoky) but the sovoky can kill them. For the town people here, they get out of that step by step because of education – for example knowing that sovoky isn’t from coldness, it’s from dirt. The villagers however often practice that culture - as I see, they are there with temperatures of 42 degrees and have an enormous heat rash, like measles, and then they lose consciousness and then they die.”*

This study suggests that practices are the same in town as in rural areas, with the only difference being in duration of the confinement period, reported as being typically longer in rural areas.

Due to the confinement period, postpartum

visits to health facilities are rare, though private midwives and traditional midwives often visit during the first week to check on the baby for women who delivered at home. As an example, 113 (60%) questionnaire participants reported at least one complication during their last delivery or in the three following days which included: severe vaginal bleeding, high fever and weakness, prolonged labour, convulsions/cramps, swelling of legs, and general weakness. Of these women who reported experiencing a complication, 15 (10%) were already at a health facility at the time and 69 (47%) went to a facility for medical attention, but the remaining 62 (42%) did not seek any medical attention.

Within this region, many illnesses are understood in traditional rather than biomedical ways. When a symptom or a variety of symptoms are understood or interpreted in a traditional way, they are treated accordingly. FG and interview participants described various traditionally understood illnesses which pertain to the postpartum period. One already mentioned is *sovoky* which has many symptoms similar to that of infection; pain, swollen abdomen, and fever. It is understood as being caused by wind or cold air is treated with herbs and viewed as an often fatal affliction. Postpartum contractions are understood as *pia*, pain caused by blocked or dirty blood left in the womb which needs eliminating through ingestion of herbs. Symptoms thought to be related to poisoning are treated with *besaro* herbs or by the woman being taken to church if she is a Christian, as detailed by one pregnant woman during a SQI meeting: “*One of my neighbours died after the delivery and her baby as well died one week after she died. She died from getting poisoned - that’s what the family says but I don’t know much about it. (Interviewer: Did they take her to the doctor?) No, they only took her to the church.*”

In addition to traditional interpretations of illnesses mentioned above, there are also various spirits that Malagasy people believe can occupy a person and cause serious harm or even death. Many FG and interview participants talked about women being possessed by evil spirits during the postpartum confinement period. The symptoms of possession are craziness or madness, not

breastfeeding the baby, restlessness, wandering eyes, and crying. Other symptoms sometimes include fever and convulsions, which might be due to infections and/or the progression of other illnesses. In this population, mental illnesses are often understood as ‘madness’ from curses and spirits, as are physical illnesses that induce convulsions and epilepsy. These are treated by seeking out an *ombiasa*, ingesting herbs or being taken for exorcism at church; many cases are said to result in death. Possession by such evil spirits was discussed by a SQI mother: “*Some women had evil when they were staying inside and sometimes they don’t want to breastfeed their baby so they have to stop staying inside and go to the church because if you are still staying inside sometimes the mother will die or the baby.*”

Discussion

This paper has described local pregnancy, delivery and postpartum practices in an urban centre of southeast Madagascar, and the socio-cultural context of these practices in terms of common underlying beliefs, norms and traditions. Global factors which increase the risk of complications during pregnancy and childbirth can be seen to affect this population; namely young and old age, high parity and lack of birth spacing as well as poverty, stunted growth, poor nutrition, untreated STIs and confounding illnesses^{10,31-32}.

From this overview it can be seen that some biomedical practices are common (for example, preferences for ANV and facility delivery), but that many traditional beliefs and practices are also prevalent, including traditional interpretations of illnesses and a widespread use of traditional healers and non-allopathic treatments. From this data, four main overlapping themes were identified which help to illuminate the barriers to maternal health in this population: 1) lack of knowledge, 2) risky practices, 3) delays seeking biomedical care, and 4) family and community expectations.

Lack of knowledge

Women of reproductive age in this population have low levels of knowledge and skills for birth preparedness and complication readiness³³, and there is little public knowledge about pregnancy or

postpartum health. Despite the significant uptake of ANVs, little is actually being communicated to the women attending them in terms of the WHO recommendations for antenatal counselling, which include: the health needs of pregnant women, safe delivery, birth and emergency preparedness, nutrition, recognition of danger signs, and when to self-refer to hospital and postnatal care³⁴. Antenatal education programmes are considered a standard component of antenatal care worldwide and are theoretically included in public ANVs in Madagascar³⁴, however the results of this study suggest these are often lacking. Lack of counselling at ANVs in this population supports data from other countries which identify this missed opportunity for health-related information, education and communication (IEC)³⁵. Another study examining information given at ANVs found that in 15 of the 19 developing countries studied, less than 50% of women reported receiving information on warning signs of complications³⁵. Since receiving advice about pregnancy complications increases the likelihood of delivery at a facility and reduces delays in seeking care in the event of a complication³⁵⁻³⁶, this lack of information-giving constitutes a serious missed opportunity to improve maternal health in Madagascar.

The qualitative data revealed difficulties among women of reproductive age in retaining information after one-off health promotion events or training sessions. Low literacy and levels of formal schooling require IEC tools to be appropriately targeted and messages repeated frequently. Pregnant women should not be the sole focus of such education interventions as behaviour change cannot be achieved and sustained without also involving family members who currently encourage, enforce and perpetuate the continuance of many traditional practices. Studies have shown that training provided to families and spouses is effective in promoting health-enabling social environments and improved practices³⁷. For example, male attendance and involvement in their partner's ANVs have been associated with positive outcomes for the mother and baby including more ANVs attended, women learning and retaining more information, increased birth preparedness in

case of pregnancy complications, and possible reductions in delays to receiving care from obstetric complication³⁸⁻⁴¹.

While many women in this study expressed a desire for greater involvement of their spouse in their pregnancy, it might prove difficult to incorporate men into antenatal care due to social perceptions around appropriate or inappropriate spheres of involvement for men. Despite these possible challenges, it is strongly recommended that more attention is focused on involving men in reproductive health education interventions, as creative strategies could significantly impact positive birth outcomes. Educational interventions including female elders - mothers, aunts and sisters - who are traditionally more involved in pregnancy, delivery and postpartum care, should also be strongly encouraged.

Risky practices

A wide variety of traditional practices have been identified within the pregnancy, delivery and postpartum periods in this population. While in many countries traditional care practices have the advantage of being affordable, culturally acceptable and easily available, data from this study suggests that a number of these practices may have a harmful impact on women and/or their unborn or newborn's health. These include: pushing on the abdomen to speed labour, unsafe/unclean delivery (also previously recorded in Madagascar⁴²), and postpartum confinement practices such as overheating and not bathing. Other practices which may potentially be harmful include turning the baby in-utero, herb ingestion during pregnancy, delivery and postpartum, and squatting over hot coals post-delivery. This lends support to other studies which claim that despite being an often neglected area, perhaps due to concerns regarding cultural imperialism, various socio-cultural practices do contribute to maternal deaths; global examples include female genital cutting, food restrictions and taboos, early marriage/childbearing and some elements of postpartum confinement practices, which can all have serious impacts on maternal well-being⁴³⁻⁴⁵. Potentially risky practices must be identified and

recommendations for improving maternal health made in a culturally respectful manner that acknowledges and addresses the underlying reasons for the influence they hold.

Measures to reduce risk and improve the safety of some of the practices include use of clean delivery kits which have been demonstrated to reduce maternal and neonatal infection rates and death for women delivering at home⁴⁶⁻⁴⁷. Providing training and support to traditional midwives as well as formal facility-based and outreach staff can improve their knowledge and skills, ensure consistency and quality of information and advice provided and help to bring practices in-line with international biomedical recommendations^{44,48-49}.

Herb taking during pregnancy, childbirth and postpartum is common in many countries in Africa and Asia though the herbs involved are often specific to the local regions. For this reason, the safety and efficacy of herbs used must be assessed on a case by case basis. While herb ingestion can potentially have beneficial effects⁵⁰⁻⁵¹, two clinicians interviewed in this research claimed they negatively affect women's health, specifically by causing damage to the kidneys as well as harming the baby. Further research is therefore required into the use and safety of herbs in this context.

With regard to making childbearing safer, there is clearly overlap with the first theme of needing to improve maternal health knowledge to reduce risky practices, however a growing realisation that information by itself does not necessarily translate into action has exposed what has been called the knowledge-attitudes-practices gap, or rather the gap between knowledge and attitudes on one hand and practices on the other⁵². In particular, this research highlighted common conflicts between well-known biomedical recommendations and traditional practices (such as for skilled delivery). While there is no simple solution, any health education outreach work which endeavours to change behaviour must work through an understanding of existing behaviours and their underlying socio-cultural context.

Delays seeking biomedical care

Many illnesses or complications during pregnancy, delivery and postpartum are seen as being caused

by the behaviour of the woman or her partner during pregnancy, curses, spirits, the weather and occurrences inherent in the postpartum condition (such as ejection of 'dirty blood' and 'being weak'). While traditional beliefs and practices co-exist with biomedical ones for many people, the treatment sought for traditionally interpreted illnesses tend to be traditional themselves: herb taking, visiting *ombiasa* and traditional midwives for remedies, or priests for exorcisms. Some people may try different courses of action (traditional, biomedical, religious) - moving from one to the next if it is not seen to work - but for many illnesses, biomedical action might not be considered an option at all. In the case of some obstetric complications such as haemorrhage or infection, women may not be taken to see a medical professional or not taken until the condition is very serious. It is also likely that postpartum depression is being experienced by many women while undergoing their confinement period (as understood by their symptoms), and due to a traditional interpretation of spirit possession, their treatment often consists of visiting *ombiasa* or being taken to church.

One of the main ways of improving maternal outcomes involves reducing various delays in timely access to adequate obstetrical care. These delays have been identified as: 1) the delay in deciding to seek care, 2) delays in reaching care, and 3) delays in receiving appropriate care⁴¹. Traditional interpretations of illness can sometimes result in a significant delay in the first category; deciding to seek *biomedical* care. This concurs with other research which shows traditional understandings of illness causation to affect the decision or time taken to seek biomedical care^{20,23,53}. Building on the previous two themes of improving knowledge and reducing risky practices, education and sensitive behaviour change promotion can be effective in reducing delays to seeking care when needed, and in promoting biomedical understandings of some common, dangerous, obstetric complications which require medical attention.

In addition, the poor quality of public health services was found to be a barrier to accessing biomedical care. For example, many women favoured delivering with traditional midwives

rather than going to a facility, due to their friendliness and the perceived lack of quality of care at public facilities. Negative experiences and lack of trust in facilities have been found to be barriers to accessing biomedical care in many countries^{21,54}, so improving the quality of public health care services and rebuilding trust in them is paramount. However, given the importance and widespread use of traditional health care providers, interventions to improve maternal health should also engage these actors. Although this remains a highly contentious topic, traditional healers are often the first and sometimes the only point of primary out-patient care in Madagascar, just as in many other countries worldwide. The WHO estimates that in some Asian and African countries, 80% of the population depends on traditional medicine for primary health care⁵⁵. Madagascar has recently initiated a government campaign to increase facility deliveries with the help of traditional midwives⁵⁶, and research from other developing countries has shown success in community health care projects that engage with traditional healers⁵⁷. Since research in Madagascar has shown great institutional, structural and economic limits to the capacity of the public health system to implement maternal mortality reduction programmes²², engaging with providers who work outside as well as inside the formal health care system is certainly an approach that should be considered. Traditional healers and midwives in this locale involved in the study expressed a strong interest in receiving training from, and collaborating with formal health providers.

Role of family and community expectations

Within this population in Madagascar, decision-making is relatively egalitarian between male and female partners. Male partners do not often play a big role in pregnancy and birth besides the securing of funds needed for delivery. In these communities, family structures are very strong and it is often the wider family that has great influence. Family members who tend to hold the greatest influence over women's health care decisions are parents, siblings and family elders and because women are traditionally considered as primarily responsible for family health, it is often female

elders in particular who hold the greatest influence over other women in the family's health care decisions. This research revealed that while some women would prefer not to observe various traditional practices, they find it difficult to do so due to pressure from family members and elders. One example of this is postpartum confinement practices which some mothers would prefer not to follow or would like to considerably reduce in duration, due to the unpleasantness and health challenges experienced during this period. Their inability to do so however is expressed by one SQI mother: *"Everyone will tell you off (if you don't stay inside after delivery). My family would be angry with me and wouldn't accept it."*

Family elders report themselves to be "more traditional" than younger family members, and are thus particularly inclined to uphold the continuation of traditional practices such as postpartum confinement. Although male elders in our FGs perceived themselves as resistant to "new (biomedical) ways", female elders considered themselves more adaptable to "new ways" and are interested in receiving new information. However, it is unlikely that changes in practices will be adopted without proper training, follow up and support.

Other forms of influence were found to come in the form of social expectations and attitudes of non-familial community members such as religious leaders. Community attitudes and expectations were found to strongly influence maternal health in terms of adherence to postpartum confinement practices and traditional care practices. The involvement of men, other family members and the wider community in making improvements to maternal and child health has long been recognised as essential^{21,58-59}. The African Union's Health Strategy for 2007-2015 emphasises the important role to be played by community members, local non-governmental and community-based organisations⁶⁰. Community mobilisation or participatory community projects aimed at education and behaviour change communications may be a way to appeal to and reach the wider community for improvements in maternal health. Some successes have already been seen using low-cost, participatory, community-based approaches. For example, in

various countries, women's groups and community mobilisation have been effective at improving home delivery practices, birth outcomes and other positive impacts on maternal and child health^{58,61-62}. Participants within this study were eager to engage in community-based activities aimed at improving health, and pre-existing social structures such as women's groups can be utilised to further this goal.

Strengths and limitations

Strengths of this research include the large number of participants (629), the long period of data collection and analysis (10 months), the triangulation of qualitative and quantitative data, and the consistent checking of understandings and interpretations throughout the study cycle with participants, various stakeholders and the local research team. Limitations include having a local team relatively inexperienced in conducting formal research, although thorough training was delivered by the experienced primary researcher, strict ethical and research protocols were maintained, and staff were supervised and given feedback throughout. Due to the large amount of data collected and scarcity of local translators, data was not back translated from English to Malagasy to check for accuracy. The emphasis was on capturing the participants' meanings rather than obtaining a perfect translation, which is a limitation of the data. To mediate this, data was audited and all interpretations were confirmed with the research staff and key stakeholders. Finally, Madagascar is culturally extremely diverse and there may be differing traditions between ethnic groups in other regions which may affect maternal health practices, beliefs and traditions. Findings presented here may therefore only be relevant to this particular region. However, given the study's aim to engender a deep and thorough understanding of a very specific local context, this is not considered a major limitation to the research.

Conclusions

Findings from this study contribute to a growing body of knowledge that supports a context-specific

understanding of the practices, beliefs and traditions related to pregnancy, childbirth and postpartum in communities and countries with high maternal mortality. If interventions are not designed with an understanding of the specific socio-cultural elements involved, they may be ineffective in improving maternal health outcomes. Designing interventions to reduce maternal morbidity and mortality in Madagascar requires working within and outside the public health system, and across both traditional and biomedical paradigms. In particular, recommendations for this population include ensuring counselling and education for women at antenatal visits, community-based maternal health IEC projects involving female family elders, male spouse and other family members, community mobilisation on health issues, and engagement with traditional healers and midwives in order to create an integrated approach that delivers real and lasting improvements to maternal health.

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Contribution of Authors

JLM led the study design, data collection and analysis, and preparation of the manuscript; SS and LR were involved in the study conception and design, data analysis, and preparation of the manuscript; MSA was involved in the study conception and design, data collection and analysis, and final review of the manuscript.

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