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Barriers to preventing unintended pregnancies and sexually transmitted infections as experienced by women in Fort Dauphin, southeast Madagascar

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ABSTRACT

Objectives As part of a broader investigation into maternal and child health, this study aimed to explore barriers to preventing unintended pregnancies and sexually transmitted infections (STIs) for women in southeast Madagascar, in order to inform the development of interventions by a local non-governmental organisation.

Methods A year-long mixed methods study was conducted. Qualitative information was obtained from 246 participants through focus groups, single-event and serial qualitative interviews. Quantitative data was collected through a closed-ended questionnaire with a sample of 373 women of reproductive age. Data was analysed using pre-determined and emerging themes.

Results Family planning and sexual health services are not well integrated into other health services, nor routinely offered. Barriers to contraceptive use include actual or perceived side effects of hormonal methods, inaccurate information from health providers, and lack of support from partners or family members. STI prevalence is high, concurrent sexual relationships are common, and condom use is limited.

Conclusions Women's ability to prevent unintended pregnancies and STIs could be improved through measures aiming to dispel misconceptions about eligibility for and perceived risks of hormonal contraceptives, increase support for family planning among partners and families, and reframe the socio-cultural meaning of condom use in sexual relationships.

KEYWORDS Maternal health; Sexual health; Family planning; Sexually transmitted infections; Condom use

INTRODUCTION

As the Millennium Development Goal deadline approaches, improving maternal health remains a major challenge worldwide. Madagascar is regressing on progress initially made towards achieving Millennium Development Goal 5: to reduce maternal mortality by three quarters and achieve universal access to reproductive health[1]. The nation's maternal mortality

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ratio is 440 per 100,000 live births, far from the target of 178 to be met by 2015[2]. Government spending on health was cut by more than half during the country's political impasse in 2009–2013, resulting in the closure of numerous public health centres and prolonged health worker strikes throughout the country[3]. Major contributors to poor maternal health outcomes in this context include significant unmet family planning needs which lead to high parity and inadequate birth spacing, and high prevalence of sexually transmitted infections (STIs) which, if left untreated, can lead to pelvic inflammatory disease and pregnancy or birthing complications[4,5]. In addition to increasing access to antenatal and postnatal care and safe birthing facilities, maternal health outcomes can be improved by enabling women to protect themselves from unintended pregnancies and STIs.

Malagasy women face a 1 in 45 lifetime risk of maternal death[2]. Risk factors for maternal death include young age and lack of birth spacing. The situation is particularly severe in rural areas such as the Anosy region in the southeast of the country, where 44% of girls already have a child or are pregnant by the age of 19, compared to the national average of 32%[6], which is itself one of the highest adolescent pregnancy rates in the world[7]. Birth intervals of at least 24 months are recommended by the World Health Organization to reduce risk of maternal, prenatal and infant mortality[8], however, 23% of births in Madagascar occur within less than 24 months of each other, rising to 28% for births by women in this remote Anosy region, and rising higher still to 44% for births by girls aged 15 to 19 nationwide[6].

Madagascar's contraceptive prevalence rate (defined by the national Demographic and Health Survey as the proportion of all women of reproductive age (15 to 49 years) reporting to be using a modern contraceptive method at the time of the survey) is 23%[6]. If unmet family planning needs were addressed, this would be projected to rise to 59% (or 72% in urban areas), reflecting the significant total potential demand by women for spacing and limiting their births[6]. Unmet family planning needs are particularly acute among young women; 27% of girls aged 15 to 19 nationwide report to want to space or limit their births, but are not currently using contraceptives[6]. Research suggests that addressing unmet family planning needs in such contexts can reduce maternal mortality by at least 25%[9–11].

Madagascar's HIV prevalence rate was reported in 2012 to be less than 1%[12] although testing rates are low; more than 90% of adults of reproductive age in the Anosy region have never been tested for HIV[6]. STIs such as syphilis, gonorrhoea and chlamydia are extremely common; syphilis rates in the town of Fort Dauphin, the urban centre of the Anosy region, have been reported to be as high as 30% among sexually active adults[13], while 5% of sexually active adults in Anosy report a variety of symptoms associated with gonorrhoea[6]. Knowledge of STIs and use of condoms are low, with almost 50% of men and women in Anosy demonstrating a lack of knowledge about STIs, and less than 3% of young people in Anosy using a condom the first time they had sex[6].

Using a 'social determinants of health' framework incorporating socioeconomic, cultural and psychosocial factors[14], the aim of this study was to explore the various barriers to achieving optimal maternal and child health outcomes in Fort Dauphin, southeast Madagascar, with the purpose of informing the development of a series of community-based interventions by a local non-governmental organisation (NGO). This paper focuses on family planning and sexual health (preventing unintended pregnancies and STIs) as key contributors to the improvement of maternal health outcomes.

METHODS

Setting

The study was conducted in the town of Fort Dauphin (Tolagnaro), the urban centre of the Anosy region, southeast Madagascar. Fort Dauphin is divided into 11 administrative sectors or *fokontany*, each of which is governed by a local community leader. The town has a population of approximately 56,000 people, with formal health facilities consisting of one public hospital, two public health centres, five private clinics and a number of independent private doctors.

Design

A mixed methods study was conducted by a research team (one expatriate lead researcher, four local research assistants (RAs) and one local transcriber/translator, all supervised by the local head of the NGO's community health department) from November 2011

until October 2012. Local RAs were trained in ethics, confidentiality and data collection, with additional training sessions focused on developing facilitation and questioning skills, and ensuring understanding of the study objectives.

Qualitative data collection events included focus groups (FGs), in-depth interviews (IDIs) and serial qualitative interviews (SQIs). FGs were conducted with pregnant women, mothers of children under five, male partners, family elders, formal and informal health workers, and community leaders. IDIs were held with formal and informal health service providers, and local Ministry of Health and partner health agency representatives. SQIs were conducted with 25 pregnant women and mothers of children under five over a period of 10 months. A closed-ended questionnaire was also developed to collect quantitative data from a sample of 373 women of reproductive age (15 to 49 years).

In the absence of any formal in-country institutional review board, ethical permission was obtained in writing from the Ministry of Health from the district medical inspector, and the study was endorsed by the regional health directorate. Permission was also gained from the mayor of the Fort Dauphin urban commune, and the leaders of the administrative sectors covered by the study. Approval was given for protocol including the use of verbal informed consent, justified given the high illiteracy rate in this region.

Research activities were conducted in the local Antanosy dialect of Malagasy. Prior to each data collection event, the RAs explained the study to prospective participants, including how findings would be used and disseminated, before asking for their verbal consent to participate. No personally identifying details were collected. FGs and interviews were audio-recorded with the permission of the participants. All electronic data was stored securely on password-protected computers, and all paper data was filed and stored in a locked office.

FGs were held at the NGO's office, and lasted approximately 60 minutes, with transportation costs and lunch provided for participants as compensation. Participants were purposefully selected for inclusion to represent local demographics; *fokontany* leaders and the NGO's community agents recommended suitable candidates, and those meeting the eligibility criteria were informed about the study and invited to participate. Two RAs facilitated each FG with one leading, and the other assisting and taking notes.

IDIs were held in the participants' places of work, and lasted approximately 60 minutes. They were conducted either by RAs or the head of the community health department as appropriate, and were held in private. Across these FGs and IDIs, a range of open-ended questions were asked about sexual, maternal and child health services, knowledge, practices, beliefs, roles and responsibilities as providers. Question guides were developed iteratively by the lead researcher, and reviewed with the local RAs before each data collection event.

SQIs were conducted every four weeks over ten months with 25 pregnant women and mothers of children under five, taking place in private in the participant's own homes, with one RA facilitating. A small financial compensation was given for their time; each session lasted approximately 30 minutes. In addition to open-ended questions about sexual, maternal and child health services, knowledge, practices and beliefs, these SQIs also elicited detailed and contextualised information about women's experiences in relation to sexual health-seeking behaviour.

A closed-ended questionnaire was used to collect quantitative data on knowledge and practices relating to sexual health, family planning, and maternal and child health. A pilot of the survey was conducted with 40 women, following which the questions were revised and finalised. The survey consisted of 75 questions, which took between 20 and 40 minutes to conduct. Survey data were collected over a period of six weeks by four RAs, using a simple random household sampling technique, with the sample divided by *fokontany* according to the population size of each sector. Eligibility criteria included being a resident of Fort Dauphin, being a woman of reproductive age (15 to 49 years), and being able to give verbal informed consent; for those aged 15 to 17 years, consent was also obtained from a parent. The number of visits to find participants and reasons for refusal to participate were recorded.

Data analysis

A local translator transcribed the audio files from FGs and interviews into English, adding field notes made by the RAs. The lead researcher read all of the transcripts numerous times, continually asking for clarifications from the RAs and regularly verifying her interpretations with the team. Pre-determined and emerging

themes were discussed in monthly team meetings, and data were collected and analysed until information was occurring so repeatedly that responses from further data collection on the same themes could be predicted. The research followed an iterative process, with areas lacking information or full understanding prioritised during subsequent rounds of FGs and interviews. Quantitative survey data was collected on paper forms, entered into Epi Info v7 and audited, before being imported into STATA v11 for coding and statistical analysis. Descriptive statistics were calculated.

Limitations

Collecting clinical data on STI prevalence rates was not within the remit of this study, and figures quoted by different health service providers in Fort Dauphin varied significantly, making it difficult to establish likely STI prevalence rates with a satisfactory degree of precision. Self-report of sexual behaviours and condom use has also been shown to be unreliable[15], however, we sought to elicit honest responses by using local RAs who were trained to reassure participants that their answers would be treated as strictly confidential.

Audio recordings of qualitative data collection events were transcribed directly from Malagasy to English and did not follow a process of back-translation for quality assurance, as the emphasis was on capturing the meanings of the participants rather than obtaining a perfect translation. Transcriptions were therefore audited at regular intervals, and interpretations were confirmed with local RAs and stakeholders.

Finally, Madagascar is culturally diverse so findings presented here may not reflect the situation throughout the country. However, given the study's aim to engender a deep and thorough understanding of a specific local context in the Anosy region, this is not considered a major limitation to the research.

RESULTS

A total of 246 people participated in qualitative data collection events, as detailed in Table 1. These participants were selected to reflect the full range of socio-demographic characteristics seen in the population in terms of age, educational, economic and marital status. Participants were included from all 11 *fokontany*.

A total of 373 women participated in the quantitative survey. Overall, 383 women were approached, with 10 declining 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 ($n = 2$). Of those who did participate, the majority identified themselves as being ethnically Antanosy, and most had at least some primary or secondary level education. More than half were married or had a stable partner, and over 60% had had 1 to 4 pregnancies. The socio-demographic

Table 1 Qualitative data collection events.

Data collection event	*Participant type*	*Number of events*	*Total number of participants*
Focus groups	Pregnant women	6 FGs	53
	Mothers	6 FGs	60
	Male partners	3 FGs	27
	Family elders	2 FGs	21
	Formal health staff	3 FGs	21
	Informal health staff	1 FG	7
	Community leaders	1 FG	10
	Religious leaders	1 FG	5
In-depth interviews	Service providers	1 IDI	9
	Traditional healers	1 IDI	2
	Partner agencies	1 IDI	6
	Pregnant women	10 visits each	10
Serial qualitative interviews	Mothers (child < 1 year)	9 visits each	10
	Mothers (child < 5 years)	7 visits each	5
Total		52	246

FG, focus group; IDI, in-depth interviews.

characteristics of our survey responders are presented in Table 2. Women responding to our survey displayed high parity and a high adolescent pregnancy rate; of all women ever pregnant who recalled their age at first pregnancy ($n = 293$), 64% reported their first pregnancy before the age of 19. These findings were mirrored in our qualitative data.

When questioned about desired family size, women in FGs and interviews commonly reported 2 to 4 children to be the ideal number, while 4.3 was the mean ideal number reported by women answering this question in our survey ($n = 366$). Actual family size was reported as higher than desired family size by women in FGs and interviews, and almost a fifth of women in our survey cohort reported already having more than 4 children.

Table 2 Socio-demographic characteristics of survey responders.

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

Family planning

Family planning services in Fort Dauphin are available from public facilities (the town's public hospital and two public health centres) and private clinics or providers. Modern contraceptive methods such as condoms, hormonal methods (pills, injections, implants), intrauterine devices (IUDs), emergency contraception and spermicides are somewhat available at these facilities, with hormonal methods being the most widely and reliably available.

Of all women responding to our survey, 96% (358) could name at least one of the public clinics in Fort Dauphin, while 71% (266) could name at least one of the private clinics. Despite the availability of these services and high levels of knowledge about clinics in the town, family planning services are not integrated with other relevant consultations such as antenatal, postnatal or child immunisation visits, so women often have to specifically request and seek out family planning information and services in order to obtain them.

The most commonly promoted contraceptive methods in Fort Dauphin's facilities are pills, injections and implants, all of which are available at subsidised prices at private facilities, or free of charge at public health facilities. Knowledge levels regarding modern contraceptive methods were high, with over 97% (363) of all women responding to our survey naming injections as a form of contraception and 89% (332) naming pills; however, the use of these methods was relatively low in comparison, as shown in Table 3.

Almost 10% (36) of all women responding to the survey reported to be using traditional methods of contraception; namely the calendar method, cycle beads and the lactational amenorrhea method (LAM). Qualitative data indicated that many women who reported using these methods lacked comprehensive understanding of them. For example, some women could not explain how the calendar method works.

Throughout the qualitative data collection events and the quantitative survey, the majority of women expressed a desire to space or limit births. Survey participants who were not using contraception despite wanting to space or limit births ($n = 135$) were asked about the reasons for this, with results detailed in Table 4.

Although 21% of these women reported not using family planning because they were breastfeeding or because their periods had not yet returned following

Table 3 Contraceptive knowledge and use.

Contraceptive methods		*Contraceptive knowledge* (N = 373)*		*Contraceptive use (N = 373)***	
		%	*n*	*%*	*n*
Modern contraceptive methods	Injection	97.3	363	24.4	91
	Pill	89.0	332	10.7	40
	Implant	79.9	298	11.3	42
	Intra-uterine device	51.5	192	2.1	8
	Male condom	27.1	101	5.1	19
	Female sterilisation	15.8	59	1.9	7
	Female condom	8.6	32	0.3	1
	Vasectomy	8.3	31	0	0
	Emergency contraception	2.7	10	0.5	2
	Spermicide	1.3	5	0.3	1
Traditional/natural contraceptive methods	Calendar method	13.9	52	7.8	29
	Cycle beads	9.9	37	0.3	1
	Lactational amenorrhea method (LAM)	8.3	31	1.6	6
	Abstinence	1.6	6	0	0
	Withdrawal	2.9	11	0	0
None	Don't know any/not using contraception	1.1	4	40.5	151

*Participants were encouraged to keep naming the contraceptive methods they knew until they could think of no more. **Some women reported using more than one contraceptive method.

delivery, 59% of the 79 mothers with babies born in the last year reported feeding their newborns water, tea or herbal liquids within 7 days of delivery, while 43% reported feeding their infants solid food within 3 months of delivery. LAM relies on breastfeeding exclusively and on demand with small intervals between feeds[16] yet only one woman in our survey reported breastfeeding exclusively for 6 months following delivery, so it is unlikely that all of the women who believed to be using LAM were in fact protected from unwanted pregnancy.

Table 4 Reasons for not using family planning.

Reason for not using family planning (N = 135)	*%*	*n*
Currently breastfeeding/periods not returned following delivery	20.7	28
Don't need to (e.g. not having sex)	18.5	25
Negative side effects	12.6	17
Partner or family doesn't want me to	11.1	15
Fearful of using contraception	8.1	11
Don't have a child yet	8.1	11
Want to have more children	8.1	11
My body isn't strong enough for contraception	3.0	4
Contraception doesn't work	3.0	4
No information about how to use family planning	2.2	3
Don't like contraceptive methods	1.5	2
Against my religion	1.5	2
Long wait at the clinic	1.5	2

From the quantitative and qualitative data on barriers to using family planning, three themes were identified: (i) actual or perceived negative side effects; (ii) partner and/or family doesn't agree with contraception; and (iii) misinformation about eligibility for contraception.

Actual or perceived negative side effects

As shown in Table 4, 13% of women reported 'negative side effects' as their reason for not using family planning, with a further 14% saying that they were 'fearful' of using contraception, or believed that their body was 'not strong enough' for contraception or that contraception 'doesn't work' ($n = 135$). Qualitative data from FGs and interviews similarly indicated that

misunderstandings or objections about contraception, in particular hormonal methods, are common. Many women dislike, don't understand or don't expect their periods to be affected by the use of hormonal contraceptives, often because they are not informed of this possibility by health workers, and therefore perceive these methods to be ineffective or producing negative side effects when their periods are affected. Women mention not being able to 'bear' taking contraceptives, or not being strong enough to cope with the numerous side effects that they perceive to be associated with hormonal methods.

> The bad effect of the injection is continual menstruation. In my case, it happened during 3 months, so I had a medicine from a doctor which stopped it after 2 weeks of swallowing it twice a day. (Focus group participant)

Some women are also concerned that use of hormonal contraceptives may result in infertility. This is particularly significant due to the high esteem assigned to motherhood within Malagasy culture as highlighted in FGs and interviews; childless women may be subject to social stigma, partnership break-up and family abandonment.

Partner and/or family doesn't agree with contraception

The role of partners and families was another prominent reason for not using contraception despite wanting to space or limit births, reported by 11% of women answering this question in the survey. Qualitative data suggests that husbands and other family members frequently discourage women from using contraception due to a desire for large families as a means of social security in old age or infirmity. However, some women in FGs said that if their partners or families were resistant to the use of contraception, this would not prevent them from using hormonal methods, even if it required them doing so in secret. This may be due to the fact that most women reported seeing family planning as solely their responsibility.

> 'What blocks people's use of contraception?'
> The women's husbands don't like it. If their husbands want to have a child, they dislike it.
> And some of them [women] don't want to have children, but their husbands still want to have one. (Focus group participants)

Misinformation about eligibility for contraception

Eight percent of women in the survey who weren't using contraception despite wanting to plan their pregnancies ($n = 135$) said that it was because they 'don't have a child yet', probably due to a common misconception that nulligravidas cannot use hormonal methods of birth control. Inaccurate information about women's eligibility for hormonal methods is being given by formal health workers, with women reporting to have been told they cannot use hormonal methods because they had not yet had a child or 'enough' children:

> I did the injection but I had bad headaches… then I went to the nurse and she told me to stop the injection and take the pills. But before that, the nurse told me as well that women who haven't had a baby can't do the injection. (Case study participant).

> The doctor told me about it [that women who don't have a baby yet can't use hormonal methods]. He said only use a condom if you don't have many babies, then you won't have a problem at all [with conceiving], and when you have many babies then you can use family planning for family size. (Case study participant).

Sexually transmitted infections

STI testing and treatment services in Fort Dauphin are available in public and private clinics; HIV and syphilis testing are supposed to be a standard part of antenatal consultations, although these were found to be inconsistent at best, and treatment not necessarily free. When testing does occur, women reported that there is little counselling or explanation so they are often not informed about how to prevent re-infection, and partners are seldom notified. STI testing and treatment among the general population is uncommon.

> I never had training about sexual health before, that's why I don't know the name of the disease [I had]. Even the doctor didn't explain to me about the sexual diseases that happen to people… For example, I got an injection for family planning before and after a few weeks I had a problem, then we went to the hospital and the doctor gave me some medicine but with no explanation about

what was happening and why I have to take the pills. (Case study participant)

Although most people have heard of various STIs – including syphilis, gonorrhoea and HIV/AIDS – and understand how they are transmitted, knowledge about their symptoms and methods of prevention is more limited. A total of 88% of all women responding to our survey knew that STIs are transmitted through sexual intercourse, but only 57% knew that condoms can be used to prevent transmission.

Misconceptions about syphilis were common, with qualitative data showing many people to believe that syphilis is not sexually transmitted, but rather a general illness affecting pregnant women and their babies, probably because of the way that pregnant women are targeted for antenatal syphilis testing and treatment in Fort Dauphin. Some believe that it can be contracted from dirty toilets, sick people or ingesting salt. Babies born with congenital syphilis may not be given medical treatment but instead may be treated with herb baths, with parents believing the illness to be a skin infection and seeking traditional rather than allopathic treatment.

'What do you know about syphilis?'
The only thing I know about syphilis is that it's an infection and most babies have it.
'How do you get the disease?'
I don't know, people said it's from eating salty food during your pregnancy, that's why the baby has the disease after giving birth.
'Can anyone get the syphilis disease?'
I think only pregnant women and babies can get it. (Case study participant)

Gonorrhoea is commonly recognised as an STI, and pain during urination is a well-known symptom. However, other symptoms of gonorrhoea or other STIs are not as commonly known, and there is little awareness of the possibility of having asymptomatic STIs.

Sexual norms and condom use

FG and interview participants described the sexual norms in Fort Dauphin, which include having multiple partners; typically one or more casual partners in addition to a fixed partner, although this is more socially acceptable for men. The reasons why those in stable relationships have sex with others can be different for men and women; for women it is often a means of earning money or following difficulties associated with a stable relationship, whereas for men it is often tied to local conceptions of masculinity, as infidelity is viewed as socially acceptable and normal for men in this community. The dynamics and outcomes of casual sexual relationships also tend to be different for men and women; if a man finds out that his fixed female partner has been unfaithful then the relationship is likely to end, whereas if a woman finds out that her fixed male partner has been unfaithful then the relationship is likely continue, particularly if she is financially dependent on him. Paying women for sex is also a prevalent practice within this community, although while sex work and women self-identifying as sex workers are not uncommon, men may often casually ask and pay women who do not regard themselves as sex workers for sex.

Within stable relationships, couples usually refrain from sex during the woman's menses, late pregnancy and for a few months following the birth of a child. It is considered quite common for men to have sex with other partners during this period of postpartum abstinence. While some women in Fort Dauphin who are in stable relationships are able to acknowledge their partners' liaisons and request that they use condoms with other women, many are unable to demand or ensure this.

My husband is sometimes going out very late so I get angry with him because it's normal for men, but when he goes out I always ask him to use the condom if he's doing something with another girl. (Case study participant)

To examine condom use, survey participants were asked if they use condoms with their partner. Of those who answered this question (and excluding those who answered 'not applicable') ($n = 347$), 9% said they always used a condom, 39% said they sometimes used a condom, and 52% said they never used a condom.

To assess the difference in condom use by relationship status, we compared condom use between married women or those with a fixed partner ($n = 200$) and those with a casual partner ($n = 47$): 5.5% of women with a fixed partner reported always using a condom, 38% reported sometimes using a condom, and 56.5% reported never using a condom, whereas 15% of those with a casual partner reported always using a condom, 53% reported sometimes using a

condom, and 32% reported never using a condom. Differences between these two groups were significant at $p < 0.01$. The majority of women with a fixed partner reported never using a condom, while the majority of those with a casual partner reported sometimes using a condom, as shown in Figure 1.

Qualitative data suggest that the most significant barrier to condom use is related to mistrust or infidelity associated with this method; there is a tendency to associate condom use with casual partners and not with fixed partners, resulting in fears of jeopardising a serious relationship if condom use is suggested or requested. Furthermore, condoms are not generally considered as a form of family planning; only 27% of women mentioned them when asked about the contraceptive methods that they knew (Table 3), which may make them less used by 'fixed' couples. Condom use among casual partners is generally perceived as an advisable practice (to protect against STIs), however, levels of condom use in casual relationships demonstrate that even this is far from the norm, as detailed above.

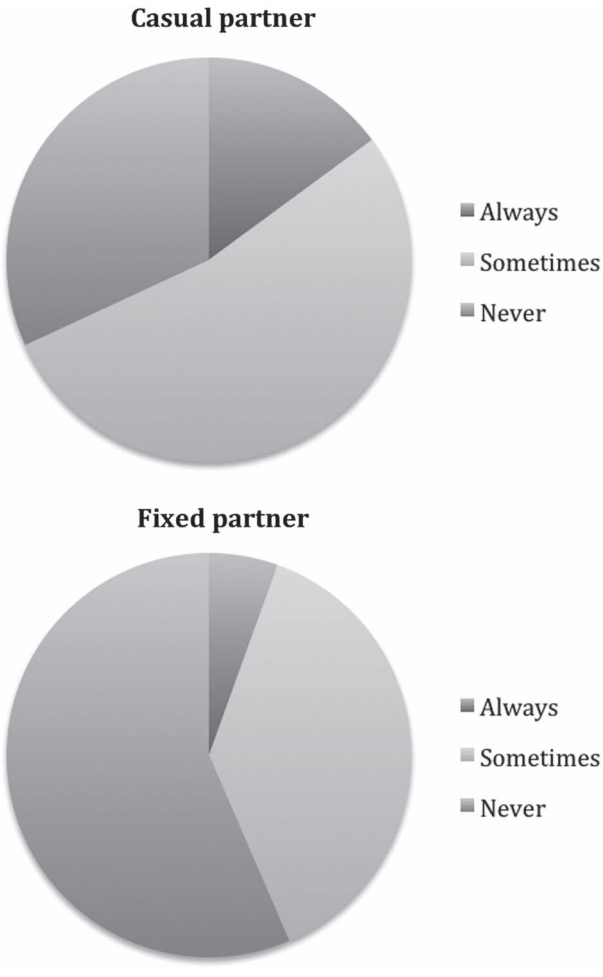

Figure 1 Self-reported condom use, by partner type.

DISCUSSION

The importance of actual or perceived side effects of hormonal contraceptives, such as menstrual disruption or fears of infertility, as barriers to the use of family planning highlighted by this study corresponds with findings from research carried out in Madagascar and sub-Saharan Africa[17–19]. One study found high levels of actual or perceived side effects of hormonal contraceptives among women in Madagascar; 65% of women in a 2011 national survey believed that oral contraceptives have a multitude of secondary effects that may require ceasing use of this method, while 59% of women reported the same for injectable contraceptives[19]. A segmentation analysis in the same study indicated that women who perceive their family members to support use of modern contraceptives are significantly more likely to use them[19]; findings similar to ours in relation to family planning use.

This study suggested that a significant proportion of women in Fort Dauphin who report to be using LAM may in fact be vulnerable to unintended pregnancy, as most are not breastfeeding exclusively. Such unmet family planning needs during the postpartum period have been highlighted by other research carried out in Madagascar; a review of national Demographic and Health Survey data indicated that postpartum women may be at significant risk of unintended pregnancy during the three- to six-month period following delivery, when there is a sharp decline in exclusive breastfeeding in parallel with a resumption of sexual activity[20].

Recommendations to address these issues include better integration of family planning services with antenatal, postnatal and child immunisation visits in order to address the contraceptive needs of postpartum women in Fort Dauphin. Counselling about the side effects of hormonal methods is very important, both to inform women about the possibility of menstrual disruption and to dispel misconceptions about the risk of infertility or the ineligibility of nullgravidas for hormonal methods. Training should be conducted at facilities in order to ensure that health workers know that contraception can be given safely to women who have not yet had children, and that women are properly informed about natural options such as the calendar

method, including advice about its reliability and proper use. Recommendations to increase social support for contraceptive use among the local population include interpersonal and mass communication strategies – peer education activities, small group discussions, radio broadcasts and social marketing campaigns – involving men and women sharing testimonies about the benefits of family planning, birth spacing and modern contraceptive methods[18,19].

Local sexual norms including concurrent sexual relationships and infrequent condom use raises significant concerns about STI transmission. Studies from sub-Saharan Africa support this finding and identify how concurrent sexual relationships facilitate the transmission of STIs[21]. Modelling and empirical evidence suggests that concurrent sexual relationships (when compared to serial sexual relationships) can increase the size of an epidemic, the speed at which it infects a population, and its persistence within a population[21]. The prevalence of concurrent sexual relationships in Fort Dauphin is alarming, particularly in relation to the risk of an HIV epidemic developing in the future; there is a significant need for interventions to support community members to protect themselves against STIs by adopting safer sexual practices.

Our findings regarding the implication of mistrust or infidelity associated with condom use are similar to research conducted in Malawi highlighting the powerful semiotic axes that organise how people talk about condoms: condom use signifies a less serious and less intimate partner, to the extent that even when people believe that condom use is advisable, the statement that condom use makes about a relationship usually outweighs all other considerations[22]. Condom use may therefore be less common among stable partners due to the importance of trust and intimacy signified through unprotected skin-to-skin contact[22]. Promoting condom use within this context is therefore challenging, requiring an appreciation of the social meanings imbued in sexual health decision-making, and an approach that seeks to influence attitudes and practices by positively reframing what condoms signify (for example, care rather than mistrust), particularly within fixed relationships[22].

Improvements to STI testing services are recommended, both in terms of increasing their coverage (reaching the general population in addition to targeting pregnant women – for example, through integrating STI testing and treatment with standard health visits, and promoting them through social marketing) and improving the counselling given (informing clients about what STIs are and how to prevent re-infection, as well as notifying sexual partners as appropriate).

Future research directions

As the findings presented here are specific to Fort Dauphin, research in different parts of Madagascar including under-served rural zones could lead to a geographically broader understanding of these issues and enable tailored recommendations to be made for other regions.

Research focusing more attention on the factors affecting condom use decisions by men would contribute to a greater appreciation of their potential role in preventing unintended pregnancies and transmission of STIs, and allow specific recommendations to be made for ensuring their participation in improving women's sexual health.

CONCLUSION

This study found that a variety of factors impact on the ability of women in Fort Dauphin, Madagascar, to protect themselves from unintended pregnancies and STIs, contributing to high levels of maternal mortality and morbidity. Inaccurate information from formal health workers, and actual or perceived side effects of hormonal methods are significant barriers to the use of family planning, while partners or families may also discourage some women from using contraceptives. Levels of knowledge about STIs are low, concurrent sexual relationships are common, and self-reported condom use is limited.

Recommendations for supporting women and their partners to prevent unintended pregnancies and STIs include expanding sexual health education into the community, tailoring messages about the benefits of family planning to men, promoting condom use through social marketing campaigns designed sensitively around an understanding of its symbolic value within different types of relationships, and integrating services to better target postpartum women for family planning and the general population for STI testing. These findings have supported the development of a comprehensive maternal health strategy and associated community-based interventions for a local NGO working in Fort Dauphin, and the establishment of a

platform for coordinating health promotion efforts among regional stakeholders.

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