



LUND UNIVERSITY

Sexual and reproductive health and HIV in border districts affected by migration and poverty in Tanzania

Obel, Josephine; Larsson, Markus; Sodemann, Morten

Published in:

European Journal of Contraception & Reproductive Health Care

DOI:

[10.3109/13625187.2014.944639](https://doi.org/10.3109/13625187.2014.944639)

2014

[Link to publication](#)

Citation for published version (APA):

Obel, J., Larsson, M., & Sodemann, M. (2014). Sexual and reproductive health and HIV in border districts affected by migration and poverty in Tanzania. *European Journal of Contraception & Reproductive Health Care*, 19(6), 420-431. <https://doi.org/10.3109/13625187.2014.944639>

Total number of authors:

3

General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

Sexual and reproductive health and HIV in border districts affected by migration and poverty in
Tanzania

Josephine Obel¹, Markus Larsson², Morten Sodemann³,

¹Department of Obstetrics and Gynaecology, Næstved Sygehus, Denmark

²Division of Social Medicine and Global Health, Department of Clinical Sciences, Malmö, Lund
University, Sweden

³Centre for Global Health, Clinical Institute, University of Southern Denmark, Denmark.

Running title: Reproductive health in Tanzania

Key words: Reproductive health; HIV; Migration; Tanzania.

Correspondence: Dr Josephine Obel, Vangehusvej 19, 2100 Copenhagen Ø, Denmark. Tel:
+4540250148, Fax: +4540250148. E-mail: jobel@dadlnet.dk.

ABSTRACT

Objectives To assess HIV knowledge, attitudes, sexual practices and sexual and reproductive health (SRH) service delivery in border areas of Tanzania, with a view to support the prioritisation of SRH interventions in border areas.

Methods The target sample comprised randomly selected people living near the border, aged 15-49. To gather information, we utilised: (i) a standardised questionnaire (n=86; 42 men and 44 women) previously used in national household surveys conducted by the Tanzanian government; (ii) focus group discussions (ten male groups, n=47; ten female groups, n=51); and (iii) semi-structured interviews with service providers (n=37).

Results The mean number of sexual partners, frequency of multiple concurrent partnerships and engagement in transactional sex were significantly higher in the border community than in the national population. Knowledge about HIV was comparable with that in the general population. Access to SRH services was limited in the border areas.

Conclusion Efforts to reduce HIV transmission and to improve SRH in the border areas should focus on gaps in service delivery rather than education and information activities alone. In addition, multi-sectorial efforts spanning the health, social, legal and private sectors addressing gender imbalances and poverty alleviation are imperative for reducing poverty-driven unsafe transactional sex.

INTRODUCTION

Studies from eastern and southern Africa suggest that mobility is a key factor in the spread of HIV and related sexually transmitted infections (STIs) ¹⁻⁴. High HIV and STI prevalence rates have been associated with migratory patterns, in particular with high-risk sexual behaviours occurring during phases of the migration process. Communities in border regions of Tanzania and elsewhere in East Africa comprise mobile groups such as fisher folk, seafarers, truck drivers, cross-border traders and a resident community. Even resident communities are relatively fluid; the border area attracts people, for longer or shorter periods of time, in search of business opportunities such as petty trade, sex-work or employment in small scale restaurants and bars around the border sites ⁵⁻⁸.

National HIV prevalence rates are reported as the prevalence of HIV among 15-49-year-olds. A national prevalence above 1% in this population group is called a *generalised epidemic*, with the implication that the presence of HIV among the general population is sufficient for sexual networking to drive the epidemic ⁹. Sexual networks, in the context of epidemiological studies of STIs, comprise the previous sexual relations of an individual, which together form a web of sexual contacts. These may or may not involve a communicable STI ¹⁰. Prevalence rates exceeding 5% indicate that no sexually active person is at low-risk ⁹. HIV prevalence among Tanzanians aged 15-49 years is currently 5%, with a clear epidemiological pattern of gender, age and geographical disparities¹¹.

Tanzania's latest national HIV and Malaria Indicator Survey (THIMS) from 2011-2012 brought to light that women who travelled away from their households more than five times in 12 months had a prevalence rate of 11%, whereas those who did not had a 5% rate ¹¹.

A study conducted in 2008 by the World Bank and UNAIDS revealed HIV prevalence rates of 15-20% in border areas and 12-15% in roadside areas, compared with the national rate of 5% ¹². Recognising the relationship between migration and HIV, the Tanzanian national HIV prevention policy and strategic action framework cites mobility as an underlying factor influencing the country's HIV epidemic, and highlights the need for specifically targeting mobile populations with prevention and treatment services ¹³⁻¹⁵. However, migration and high-risk sexual behaviours leading to HIV infection are far from being directly causally linked. A recent review of the literature on HIV and migration, showed that mobility and migration are broad and ill-defined terms. Thus, the design of location-specific interventions to mitigate risk enhancement owing to population movement will need to be informed by more studies that differentiate between different forms of mobility, the characteristics of the location-specific HIV epidemic in the sending and receiving areas as well as sexual networks ¹⁶.

This study, which was conducted in collaboration with the International Organization for Migration (IOM) and the Tanzanian Ministry of Home Affairs, aimed at informing policymakers, the government and donors about service delivery gaps and specific HIV and sexual and reproductive health (SRH) vulnerabilities in the border areas. We examined HIV knowledge, attitudes and practices (KAP) ¹⁷, mobility patterns, sexual networks and SRH service delivery in three border areas of Tanzania.

Our target population comprised residents in the border community, mobile populations (truck drivers, cross-border traders, fishermen and seafarers), service providers, and local government authorities in the border areas. The information gathered was passed on to a national consultation bringing together government officials, donors and civil society representatives who would discuss and plan initiatives regarding HIV and migration.

METHOD

This cross-sectional survey collected data from three geographical areas:

- the Port of Dar es Salaam (Temeke District),
- the Kigoma /Kagera Region (Kigoma, Kasulo, Kibondo, and Ngara District), and
- the Mbeya Region (Kyela District).

At each site, data were collected by (i) close-ended structured interviews relating to HIV knowledge, attitudes and practices (KAP-survey) (n=86; 42 men and 44 women); (ii) gender-segregated focus group discussions, including social mapping to obtain information about mobility patterns, sexual networks and access to HIV and SRH services (ten groups made out of men [total n=47]; ten groups consisting of women [total n=51]); and (iii) semi-structured open-ended key informant interviews of local government authorities, non-governmental organisations (NGOs) and health service providers (n=37; 22 private providers and NGO representatives, and 15 regional and district council members). The key informant interviews explored challenges and unmet needs of HIV and SRH service delivery, as perceived by the organisations that provide reproductive health services and health providers themselves. One to three days were spent at

each site for data collection, depending on the volume of people crossing the border. Table 1 displays the number and types of informants.

Informants contributing to the KAP survey and the focus groups were selected by approaching at random people who were present at the border site on the day of the survey and who were between 15 and 49 years of age and were working or resident at the border site or were crossing the border. Generally, people asked for interviews and focus group discussions agreed to participate; however, the survey team did not keep track of the number of those who refused participation. As the data collection was conducted at the request of the national authorities who wanted information quickly in order to make policy decisions, the number of participants depended on the time available at the study site; no power calculation was done. Respondents were asked neither about their legal status as documented or undocumented migrants, nor about any socio-demographic characteristics beyond gender and age, which had to be within the range 15-49 years.

Significant people were selected among the health- and migration district authorities responsible for the three survey sites. For each district included in the study, the following government authorities were included as key informants: (i) the Regional and District Medical Officers (RMOs and DMOs), (ii) Regional Immigration Officers and District Immigration Officers, and (iii) Council HIV/AIDS Control Coordinators (CHACCs). In addition, at all three study sites, a list of private service providers and NGOs providing SRH services in the border community was obtained from the district authority. All persons heading an organisation on these lists were included as key informants.

The three geographical locations were chosen in collaboration with the Tanzanian Ministry of Home Affairs - Immigration Department to enable assessment of a border community as diverse as possible, representing land, lake and ocean borders with high levels of cross-border movement.

A team consisting of two research leaders from IOM Tanzania, two research assistants and one observer from the Ministry of Home Affairs - Immigration Department gathered the data. All interviews, except those with informants fully conversant in English, were conducted in Kiswahili, with direct translation to English. Only those who gave an informed consent were interviewed.

In line with the ethical principles of the Helsinki World Medical Association Declaration, a research protocol containing information about institutional affiliations, funding, potential conflicts of interest and incentives for study participation was developed to protect the contributors from harm ¹⁸. Ethical clearance to conduct the study was obtained from the National AIDS Committee (Tanzanian Committee for AIDS, TACAIDS) and the Tanzanian Ministry of Home Affairs.

Knowledge, attitudes and practices (KAP) survey

To enable comparison with national data on HIV knowledge, attitudes and practices, we used a standardised questionnaire that was previously employed in the National HIV and Malaria Indicator Survey 2007/08, a nationally representative household survey conducted by the Tanzanian government and Macros DHS ¹⁹. Questions were added relating to transactional sex,

willingness to test for HIV, and gender-related issues to match the policy context in which this study was embedded. Transactional sex was defined as the exchange of sex, once-off or repeatedly, motivated by material or financial gains²⁰.

Focus groups

In the focus group discussions information was gathered on mobility, sexual networks and access to SRH services in the border community. Before taking part in the focus group discussion, informants were given a consent form in Kiswahili explaining the interview's purpose and process. Each discussion took approximately one hour and was moderated by one of the research leaders and interpreted by a research assistant. The moderator and assistant were always of the same gender as the informants. To enhance the validity and unequivocal character of the data, privacy and confidentiality records were implemented²¹. All focus groups were conducted in a secluded area, away from other people and vehicles. However, the impact of the power relationship between the researcher and the participant should not be underestimated²². To minimise this influence, openness and tolerance towards the informants' opinions and attitudes were emphasised. Each interview and focus group commenced with a discussion of the importance of being open and non-judgemental towards each other's opinions, experiences and behaviours. The sample size was sufficient to reach data saturation, i.e. sampling to a point at which no new information is obtained and redundancy is achieved²³.

The focus groups used the participatory rural appraisal technique of social mapping, whereby participants draw their mobility patterns and points of delivery of preventive, diagnostic and curative SRH services along their travel routes²⁴. During the focus groups, sexual networks

and practices within the border communities were explored using an interview guide developed prior to the study. Only data on gender, age and profession were gathered to get a brief overview of background, but it was made clear to all that this information was strictly confidential and would not be published in a way that it could be traced back to the persons concerned.

Semi-structured key informant interviews

Providers and district authorities were probed about current SRH service provision and unmet needs for services in the border areas. All key informants were interviewed using the same semi-structured interview guide developed prior to data collection. Their number was sufficient to achieve saturation (responses from key informants became repetitive and did not reveal new information). To preserve privacy and confidentiality, all interviews took place at the informant's office with only that person, the research leader and the interpreter present.

Data analysis

Data collected through the KAP survey questionnaires were entered and analysed using the public health software EPI info. Discrete variables are presented as proportions and 95% confidence intervals (CIs). Continuous variables are shown as means, standard deviations and variance. Spot checks were used to ensure the quality of the data entry.

The key informant and focus group data were recorded as field notes and later transcribed into a matrix by the same researcher to ensure consistency and validity. Analysis of the data was conducted through a latent contents analysis approach. Themes were developed and grouped based on the transcribed field notes in order to identify recurrent themes and patterns.

RESULTS

HIV knowledge, attitudes and practices

In Tables 2, 3 and 4 the findings from the KAP survey are presented. The results from the THMIS household survey, which provides nationally representative estimates based on a cluster-sampling survey conducted every fourth year, are presented for information. However, it must be noted that our sample size is small and that we collected no socio-demographic information other than gender and age range, which compromises direct comparison with the THMIS survey results.

Note to the Publisher: Insert Tables 2, 3 and 4 about here.

In Table 2 HIV knowledge in the general Tanzanian population, according to the national household survey THMIS 2007/8, is compared with that among border community members interviewed for this study. Both populations had similar levels of HIV knowledge. In our study sample, only 48% (95% CI: 32-64) of men and 36% (95% CI: 22-52) of women had comprehensive HIV knowledge, defined as knowing that HIV can be prevented by consistent condom use and faithfulness as well as rejecting three common misconceptions about HIV transmission. These figures do not significantly differ from the proportions found by THMIS in the general Tanzanian population ¹⁹.

Reported practices related to avoidance of HIV among populations living in border areas are mentioned in Table 3. Whereas HIV knowledge was similar to that in the general population, risk behaviours appeared to be much more frequent in the border community, with as many as

67% (95% CI: 51-80) having paid money for sex in the past 12 months compared to only 8% in the general population.

We calculated that the mean number of sexual partners for men on the move and those residing/working in border areas was more than three times higher than that of the average Tanzanian man, whereas the mean number for women was almost twice that related to women from the general population.

In Tanzania, the primary mode of HIV transmission is heterosexual intercourse, with multiple concurrent partnerships (MCPs) being a common risk behaviour^{15,19,25}. We found MCP to be a frequent practice in the border community, with 52% of men and 14% of women reporting to have had more than one sexual partner during the past 12 months. In comparison to the general population, these figures are nearly three times higher for men and more than five times higher for women¹⁹. Half of the 28 respondents practising MCP stated they had used a condom during their last sexual encounter and nearly half reported never to have used a condom in the past month.

Voluntary counselling and testing (VCT) for HIV in the border community was high, with 48% (95% CI: 31-64) of men and 81% (95% CI: 70-93) of women stating they ever had submitted to a HIV test, which is approximately double the proportion of men and women in the general population of Tanzania who had the test done. In addition, 81% of men and 91% of women reported to be willing to take a HIV test if offered. The high uptake of HIV counselling and testing services was confirmed by several NGOs, that had found the number willing to test by far exceeded the capacity to do so of their mobile teams.

Traditional gender norms are prevalent in the border areas; 34% of respondents thought that a woman is promiscuous if she carries a condom and as many as 12% found violence against women acceptable if there is a marital disagreement. With only one exception, we found gender norms in the border areas to be comparable to those prevailing in the general population. However, only 64% (95% CI: 48-78) of the female respondents in our study group thought it was justified for a woman to refuse sex if the husband has a STI, as compared to 83% of women in the general population ¹⁹.

Mobility patterns, sexual networks and access to HIV and health services

Four themes were identified through the focus group discussions and key informant interviews: (i) transactional sex, (ii) multiple concurrent partnerships, (iii) condom availability and (iv) service delivery. The sections below describe the findings in regard to each of these themes.

Transactional sex

Focus group discussions conducted in the fishing communities revealed that transactional sex for food and goods was more common than sexual services in return for monetary payment.

Participants expressed concerns about the widespread practice of transactional sex.

“When there are no fish for several days, what are these girls supposed to do to fill their stomach? They often also have a child or more to feed at home.” (Woman 20 years old, Kiberisi, Kigoma Region)

While the price for sexual services ranged from 100 Tsh to 1,000 Tsh (0.1 to 0.4 EUR) most women were paid in fish from the daily catch. The use of condoms during these encounters was said to be entirely up to the man.

“When girls are hungry, they do not think about HIV.” (Woman 41 years old, Matema Beach, Mbeya Region)

“It is the man deciding and if he doesn’t want a condom, no condom will be used.” (Man 29 years old, Kiberisi, Kigoma Region)

Transactional sex was also reported as a means for a woman in the community to regain her business if she had lost her goods due to bad weather or lack of customers. Several women reported that they had spent all their savings in such circumstances and that sometimes transactional sex was the only way to regain a stock of fish that would allow them to earn an income.

Focus group discussions conducted with truck drivers confirmed that they often stayed at the border sites for several days and occasionally much longer until they had cleared their goods and could continue their journey. Scattered along the border are communities of petty traders, guesthouses and bars servicing transport workers and other travellers. According to the respondents, sex work is extremely common at these sites and takes place in guesthouses, bars, trucks and at parking lots. Unlike in the fishing community, sex is sold for money rather than for goods or food. The price for sex ranges from 5,000 to 10,000 Tsh (2.2 to 4.40 EUR) with a

condom and approximately double the price without. The truck drivers and men in the border communities stated that the use of condoms with sex workers is always negotiable – it depends on what you want and how much you are willing to pay.

“Rusumo is known to be a good place to make business. You get more money to sell sex here.” (Businessman, Rusumo border site, Kagera Region)

Both truck drivers and people living near the border claimed that sex work by minors is quite common.

“I see girls down to the age of 11 coming with STIs. In the past three months I have seen ten girls who are only 11 years old who are pregnant and another 15 with STIs, but still there is no health education in the primary school.” (Health professional at a clinic close to Rusumo border site, Kagera Region)

According to the key informants working in the Port of Dar es Salaam and the seafarers themselves, the majority of these latter spend their time onshore in bars and brothels. Men of certain nationalities tend to go to the more expensive hotels in town, but the majority frequents a handful of bars known as pick-up places for sex workers. Key informants revealed that there is an organised business with middlemen bribing the guards in the port to get in contact with the seafarers. In exchange for a service fee, these middlemen take the seafarers on a city tour that includes visits to a number of smaller brothels in the Kinondoni area of Dar es Salaam.

Tanzanian health programmes do not target foreign seafarers entering the country, rendering them vulnerable to STI/HIV infection.

“I use a condom when I am sober, but when I am out of the ship I often get drunk and forget the condom.” (Seafarer from Tonga Island, Port of Dar es Salaam)

The Mission to Seafarers provides some HIV information to foreign sailors and is also mandated to assist any of these who falls sick during his/her time in Dar es Salaam. At the same time, both the seamen and the Mission to Seafarers confirm that efforts to address HIV vulnerabilities among the former are very limited in scope.

Multiple concurrent partnerships

The qualitative component of this study confirms the KAP-survey finding that multiple concurrent partnerships are abundant among people on the move and those working and residing in border areas. As one informant said:

“Every fisherman has a wife and one or several concubines who get a regular supply of fish.” (Health worker, Kyela District, Mbeya Region)

The men reported that it was common practice to have a wife in one place and girlfriends in the other fishing camps. Relationships with these girlfriends were perceived as ‘exclusive’, in contrast to the occasional sexual relationships the men have with sex workers they meet at bars and guesthouses. Condoms were generally not used in relationships with girlfriends, as they were

regarded as more long term. In casual transactional sexual encounters, the interviewed men said that condoms were more frequently employed, though several of them claimed that it depends how drunk the man is and how available the condoms are during these encounters.

“This woman looks nice and I know her. We trust each other and don’t need a condom.”

(Fisherman, Matema beach, Mbeya Region)

In addition, barmaids, guesthouse workers and female food vendors often have regular, long-term relationships with truck drivers or businessmen who frequently travel the same route. These men often have a wife at home and one or several girlfriends in the places they visit regularly.

“I was in a relationship with the man from the custom, now he left and I have a new boy friend. He is a driver. He is married but he passes through once a month.” (Barmaid,

Burundian side of Kabanga border site, Kagera Region)

“You know being out on the road is so lonely. You can’t imagine. You miss your wife, so then it is nice to have a woman.” (Truck driver, Rusumo border site, Kagera Region)

“It is comfortable to have a girl there [Rwanda] because my wife here will not know about it.” (Cross border trader, Rusumo, Rusumo border site, Kagera Region)

In the fishing and trucking communities, condoms are generally not used in long-term relationships, even when the partners are aware that the partnership is not exclusive. Condoms appear to be more commonly – but far from consistently – used during one-time sex between a client and a sex worker. The men mentioned reduced sexual pleasure, “the heat of the moment”, alcohol and unavailability of condoms as the main reasons for not consistently using condoms during such encounters.

“Love issues are very difficult to control, even if people know they might do otherwise.”

(Burundian businessman, Kabanga border site, Kagera Region)

Condom availability

By and large, condoms are available in the communities at small shops or are sometimes distributed for free in guesthouses. However, there is no systematic distribution of condoms at the border sites. Relying on shops implies access limited to opening hours, while guesthouses often only provide condoms at the reception upon request. Most guesthouses visited did not provide free condoms. It was also reported that the condoms provided at guesthouses sometimes had passed their expiration date.

“You meet this man and you don’t have condoms – what will you do if shops are closed?”

(Woman, Port of Dar es Salaam)

Both women around the border sites and transport workers perceive poor availability of condoms as a barrier to their use. Some women who were self-identified sex workers said that

sometimes after 9 or 10 pm, when the “dukas” (‘shops’, in Kiswahili) are closed, one is forced to pay up to 10-20 times the normal price for a condom. Albeit NGOs distribute condoms at the border sites, the focus group discussions revealed problems of keeping condoms in stock for potential sex encounters. “In the heat of the moment”, informants reported that they had searched for condoms unsuccessfully and ultimately engaged in unprotected sex.

Service delivery

In terms of service delivery, focus group discussions with fishing communities and interviews with representatives of organisations and district authorities revealed that fishing communities are severely underserved areas, mainly due to the difficult terrain. The fishing camps are often only accessible by boat. Some efforts have been made to provide the fishing communities with mobile HIV counselling and testing, peer educators and primary health care services. However, the delivery is irregular and does not match the high-risk environment. The community is generally aware of where services can be obtained but due to the direct costs of transport and indirect costs of sometimes spending a full day’s journey to access services such as VCT, STI treatment or contraceptives, service availability remains limited.

Lake Tanganyika borders Congo (DRC) and Burundi; migrants from these two countries were often found in the fishing communities on the Tanzanian side of the lake shore. According to the District Medical Officers (DMOs), this represented an additional challenge for HIV prevention efforts, as both these countries are war torn and have a weak public service infrastructure. Hence, fishermen from these countries were said to have limited knowledge and awareness about HIV, other STIs and contraceptives.

At the truck stops on the border between Tanzania, Burundi and Rwanda, women from the border community were concerned about the lack of family planning (FP) products and access to HIV counselling and testing. Some women considered unwanted pregnancies as a more serious concern than HIV due to the immediate threat to livelihood caused by an unwanted pregnancy.

Interviews with DMOs, service providers and representatives of service provider organisations pointed to the availability of anti-retroviral (ARV) drugs and renewal of drugs for transport workers as great challenges. Several women on the Burundian side of the border independently mentioned that HIV-related stigma led some women to access ARV-medicines through private businessmen rather than through a clinic.

“You know what to do, but they [the clinic] will talk about you.” (Woman, Burundian side of Kabanga border site, Kagera Region)

Although health service provision for seafarers falls under their companies' responsibility, interviews revealed that these services often are inadequate. Newly arrived seafarers must often identify healthcare providers on their own, which is difficult for newcomers. Language differences also represent a major barrier to the access of services.

“I don’t know how to communicate with them [service providers] and it’s sometimes easier just not to go.” (Seafarer, Philippines, Port of Dar es Salaam)

DISCUSSION

Findings and interpretation

Sexual risk-taking behaviour was more common in the study population residing in- or travelling through the border areas than among the general population. However, HIV knowledge was similar to that in the population at large. Cautiously interpreted, due to the small number of informants, this may suggest that preventive efforts aimed at information, education and communication (IEC) reach the border population. Access to services such as VCT, care and treatment, as well as the availability of condoms and other FP services and products, were found to be limited.

Strengths and weaknesses of the study

The small sample size and the fact that we collected little or no demographic information on the participants compromise the ability to compare findings directly with the national survey. As well, an unknown level of information bias is associated with retrieving information regarding sexual behaviour²⁶. In order to minimise this bias, all interviews took place in secure locations and in the language preferred by the informant. To decrease the power-relationship between the researcher and the informant during the interviews and focus group sessions, each of these commenced with a discussion of the importance of respecting each other’s views and attitudes. The findings pertaining to sexual risk-taking, high levels of transactional sex, multiple concurrent partnerships, limited condom use and limited access to reproductive services were consistent

across the study sites. Furthermore, the three data collection techniques used in the survey (close-ended questionnaire, focus group discussions and semi-structured key informant interviews) yielded similar findings, which supports the validity of the results.

Despite these limitations, the study illustrates that the border community represents hot-spot zones with high levels of sexual risk behaviours, including transactional sex, multiple concurrent partnerships and inconsistent condom use.

Differences in results and conclusions in relation to other studies

Our findings are supported by recent international studies and reviews assessing sexual risk behaviour among three groups of mobile populations: (i) labour migrants, (ii) fishermen, and (iii) female sex workers²⁷⁻³⁰. Whereas these studies focused exclusively on mobile groups, ours considered the border population as a whole. The latter is a fluid group, consisting of people on the move - such as fishermen, seafarers, truck drivers and cross-border traders - and the resident community. Locals may also themselves be highly mobile, as many travel from other parts of Tanzania to the border areas in search of business opportunities such as petty trade, sex work or work in small-scale restaurants and bars. Our results do not point towards a specific link between mobile populations and risk behaviours, but rather illustrate dynamics within the border areas that create high vulnerability to HIV and other adverse reproductive health effects. The fluid nature of the border community, with vast interaction between the residents and people on the move, calls for interventions that target these groups as a single entity rather than either of its components alone.

Relevance of the findings: Implications for healthcare providers and policymakers

A recent modelling study from Tanzania assessed the effect of non-participation among mobile groups (travellers and migrants) on the incidence of new HIV infections. There were two interventions, namely, (i) condom promotion, and (ii) health education aiming at partner reduction. It appeared that non-participation by this group reduced the effectiveness of these interventions by 40%³¹. Border communities with many people on the move have a high prevalence of HIV infections, which must be addressed to contain the epidemic¹². However, we found that current efforts to provide HIV and reproductive health services within the border communities are insufficient. Border communities are complex and different prevention programmes must be adapted and contextualised to the local situation. Reproductive health services in a smaller lakeside border community, with infrequent border crossings and a high dependency on payments in kind, need to be different from those in a larger road border post with high traffic and high cash flow.

Unanswered questions and future research

Individual risk estimation and sexual behaviour are determined by a multitude of factors. Providing information and improving knowledge regarding HIV is insufficient to address the complex web of factors that influence individual risk-taking behaviour. The qualitative component of this study revealed that poverty is an important driver of sexual risk taking; however, more in-depth research into this issue should examine the relationship between poverty, individual risk estimation and related sexual risk behaviour as a means to guide prevention programmes.

CONCLUSION

The border areas in Tanzania are characterised by high levels of risky sexual behaviour and vulnerability to HIV, other STIs and unwanted pregnancies. Due to the prevailing mobility patterns, these hot spots fuel new infections not only locally but also beyond. In this study, we found an unmet need for both preventive and curative SRH services and structural interventions to address the high levels of poverty that drive sexual risk behaviours. The limited financial resources available for HIV prevention and SRH care provision in the border areas should be directed to secure access to key services such as family planning, STI screening and treatment, VCT and antiretroviral treatment rather than the current strong focus on information and education activities, as knowledge levels are generally high. Prevention programmes should be preceded by studies assessing factors determining individual risk estimation and behaviour. Such studies should guide the process of tailoring interventions to local circumstances instead of employing a generalised approach. The findings of this study indicate that strengthening sexual and reproductive health requires a multi sectional approach beyond traditional health interventions as a means of addressing drivers of sexual risk behaviours, such as poverty and gender imbalances.

ACKNOWLEDGEMENTS

The authors thank the Tanzanian Ministry of Internal Affairs and the migration department, the Tanzania Commission for HIV and AIDS and the International Organization for Migration for their contributions to this study. We are also indebted to research assistants Helena Chikomo, Gladys John, Gonzaga Stephen Kananura, Marco Kitundo and Patrick Kossima for their assistance with translation and organisation during the data collection. Finally, we thank Annika Bergstöm and Michael Lee Burgess for editing the paper.

Funding: The study was funded by the IOM programme, Partnership on Migration and Mobility in Southern Africa (PHAMSA), supported by the Swedish International Development Cooperation (SIDA).

Declaration of interests: The authors report no conflicts of interest. The views they express in this article are theirs alone and do not necessarily reflect the views of, nor should they be attributed to, the International Organization for Migration, the Tanzanian Ministry of Internal Affairs or the Tanzania Commission for HIV and AIDS. The authors alone are responsible for the content and the writing of the paper.

REFERENCES

1. Voeten H, Vissers D, Gregson S, *et al.* Strong association between in-migration and HIV prevalence in urban sub-Saharan Africa. *Sex Transm Dis* 2010;37:240-3.
2. Camlin C, Hosegood V, Newell M, *et al.* Gender, migration and HIV in rural KwaZulu-Natal, South Africa. *PloS one* 2010;5:e11539.
3. Glynn J, Ponnighaus J, Crampin A, *et al.* The development of the HIV epidemic in Karonga District, Malawi. *AIDS* 2001;15:2025-9.
4. Coffee M, Lurie M, Garnett G. Modelling the impact of migration on the HIV epidemic in South Africa. *AIDS* 2007;21:343-50.
5. Kwena Z, Camlin C, Shisanya C, *et al.* Short-term mobility and the risk of HIV infection among married couples in the fishing communities along Lake Victoria, Kenya. *PloS one* 2013;8:e54523.
6. Heffron R, Chao A, Mwinga A, *et al.* High prevalent and incident HIV-1 and herpes simplex virus 2 infection among male migrant and non-migrant sugar farm workers in Zambia. *Sex Transm Infect* 2011;87:283-8.
7. Camlin C, Kwena Z, Dworkin S. Jaboya vs. Jakambi: status, negotiation, and HIV risks among female migrants in the “Sex for Fish” economy in Nyanza Province, Kenya. *AIDS Educ Prev* 2013;25:216-31.
8. Ng’ayo M, Bukusi E, Rowhani-Rahbar A, *et al.* Epidemiology of human papillomavirus infection among fishermen along Lake Victoria Shore in the Kisumu District, Kenya. *Sex Transm Infect* 2008;84:62-6.
9. UNAIDS. What are the different epidemiological scenarios? Accessed 13 December 2013 from: http://hivpreventiontoolkit.unaids.org/support_pages/faq_diff_epi_scenarios.aspx.
10. Doherty I, Padian N, Marlow C, *et al.* Determinants and consequences of sexual networks as they affect the spread of sexually transmitted infections. *J Infect Dis* 2005;191:42-54.
11. Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), *et al.* *Tanzania HIV/AIDS and malaria indicator survey 2011-12*. Dar es Salaam: TACAIDS, ZAC, NBS, OCGS, ICF International 2013.
12. UNAIDS, World Bank. *The HIV epidemic in Tanzania mainland, where we have come from, where it is going, and how are we responding?* Dar es Salaam: World Bank 2008.
13. Prime Minister’s Office. *National multisectoral HIV and AIDS stigma and discrimination strategy (2013-2017)*. Dar es Salaam: Prime Minister’s Office, TACAIDS 2012.
14. Prime Minister’s Office. *National multisectoral HIV prevention strategy 2009-2012*. Dar es Salaam: Prime Minister's Office, TACAIDS 2009.
15. Prime Minister’s Office. *Tanzania third national multi-sectoral strategic framework for HIV and AIDS (2013/14-2017/18)*. Dar es Salaam: Prime Minister's Office, TACAIDS 2013.
16. Deane K, Parkhurst J, Johnston D. Linking migration, mobility and HIV. *Trop Med Int Health* 2010;15:1458-63.
17. Schopper D, Doussantousse S, Orav J. Sexual behaviors relevant to HIV transmission in a rural African population: How much can a KAP survey tell us? *Soc Sci Med* 1993;37:401-12.
18. Saif M. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA* 2000;284:3043-5.
19. Tanzania Commission for AIDS (TACAIDS), Zanzibar AIDS Commission (ZAC), National Bureau of Statistics (NBS), *et al.* *Tanzania HIV/AIDS and malaria indicator survey 2007-08*. Dar es Salaam: TACAIDS, ZAC, NBS, OCGS, Macro International Inc. 2008.

20. Dunkle K, Jewkes R, Brown H, *et al.* Transactional sex among women in Soweto, South Africa: prevalence, risk factors and association with HIV infection. *Soc Sci Med* 2004;59:1581-92.
21. Lincoln Y, Guba E. *Naturalistic inquiry*. Beverly Hills: Sage 1985:255-88.
22. Marshall A, Batten S. Researching across cultures: Issues of ethics and power. *Qualitative Soc Res* 2004;5(3 Art 39). Accessed 15 April 2014 from: <http://www.qualitative-research.net/index.php/fqs/article/view/572/1241>
23. Polit D, Beck C. *Study guide to accompany nursing research: Principles and methods*, 7th edn. Philadelphia, PA: Lippincott Williams & Wilkins 2004:308.
24. Mikkelsen B. *Methods for development work and research: A new guide for practitioners*, 2nd edn. New Delhi, India: SAGE Publications Inc 2005:107-10.
25. National Bureau of Statistics (NBS), ICF Macro. *Tanzania Demographic Health Survey 2010*. Dar es Salaam, Tanzania: NBS and ICF Macro 2011.
26. Phillips A, Gomez G, Boily M, *et al.* A systematic review and meta-analysis of quantitative interviewing tools to investigate self-reported HIV and STI associated behaviours in low- and middle-income countries. *Int J Epidemiol* 2010;39:1541-55.
27. Kishamawe C, Vissers D, Urassa M, *et al.* Mobility and HIV in Tanzanian couples: both mobile persons and their partners show increased risk. *AIDS* 2006;20:601-8.
28. Weine S, Kashuba A. Labor migration and HIV risk: a systematic review of the literature. *AIDS Behav* 2012;16:1605-21.
29. Smolak A. A meta-analysis and systematic review of HIV risk behavior among fishermen. *AIDS Care* 2014; 26:282-91 [Epub ahead of print]
30. Scorgie F, Chersich M, Ntaganira I, *et al.* Socio-demographic characteristics and behavioral risk factors of female sex workers in sub-saharan Africa: a systematic review. *AIDS Behav* 2012;16:920-33.
31. Vissers D, De Vlas S, Bakker R, *et al.* The impact of mobility on HIV control: a modelling study. *Epidemiol Infect* 2011;139:1845-53.

Table 1. Gathering of the information (N=221; 125 men and 96 women).

<i>Questionnaires: individual HIV knowledge, attitudes and practices (86 informants)</i>	42 men and 44 women residing/working in- or passing through the border areas.
<i>Focus group discussions (98 participants)</i>	47 men split into ten male focus groups; 51 women split into ten female focus groups.
<i>Key informant interviews (37 respondents)</i>	22 private providers and NGO representatives (all men); 15 representative of the Regional Authorities and District councils involved in the study (14 men and one woman).

Table 2. Knowledge of HIV.

	Border community and mobile populations Age 15-49 years			Tanzanian population nationwide as per national household based survey*. Age 15-49 years	
	Men % (95% CI) (n=42)	Women % (95% CI) (n=44)	Total % (n=86)	Men %	Women %
Has heard of HIV and AIDS	100	100	100	99	98
Knows that using condoms reduces the risk of contracting HIV	88 (74-96)	75 (60-87)	81	89	85
Knows that limiting sex to one uninfected partner reduces the risk of HIV transmission	91 (77-97)	77 (62-89)	84	87	82
Knows that abstaining from sex reduces the risk of HIV transmission	91 (77-97)	90 (78-98)	91	89	85
Knows that a healthy looking person can be HIV positive	93 (81-99)	86 (73-95)	90	86	80
Knows that HIV cannot be transmitted by a mosquito bite	67 (51-80)	82 (67-92)	74	73	72
Knows that HIV cannot be transmitted through supernatural means	91 (77-97)	75 (60-87)	83	89	84
Knows that HIV cannot be transmitted through sharing food and utensils	81 (66-91)	75 (60-87)	78	83	81
Comprehensive HIV knowledge**	48 (32-64)	36 (22-52)	42	44	40

*Source: Tanzania HIV/AIDS and malaria indicator survey 2007/08 ¹⁹.

** Comprehensive HIV knowledge includes knowing that use of condoms and faithfulness can prevent HIV and negating three common misconceptions: (i) HIV can be transmitted by mosquitoes, (ii) HIV can be transmitted by sharing food or utensils and (iii) a healthy looking person cannot be HIV positive.

CI, confidence interval.

Table 3: Sexual risk behaviours.

	Border community and mobile populations Age 15-49 years (n = 86)		Tanzanian population nationwide as per national household base survey* Age 15-49 years	
	Men % (95% CI) (n=42)	Women % (95% CI) (n=44)	Men %	Women %
Has paid money for sex in the past 12 months	67 (51-80)	2 (0-12)	8	-
Has received money for sex	12 (4-26)	52 (37-68)	-	-
Has given goods for sex	21 (10-37)	11 (4-25)	-	-
Has received goods for sex	7 (2-20)	57 (41-72)	-	-
Has ever been forced to have sex	17 (7-31)	21 (10-36)	-	-
Mean number of sexual partners	22 SD 34 Var 1150	4 SD 8 Var 63	7	2
Had two or more sexual partners in the past 12 months	52 (36-68)	14 (5-27)	18	3
Has ever tested for HIV	48 (31-64)	84 (70-93)	29	41
Would submit to a HIV test if offered one	82 (68-93)	91 (78-98)	-	-

*Source: Tanzania HIV/AIDS and malaria indicator survey 2007/08¹⁹.
CI, confidence interval; SD, standard deviation; Var, variance.

Table 4. Attitudes concerning inter-gender relationships.

	Border community and mobile populations Age 15-49 years			Tanzanian nationwide household Age
	Men % (95% CI) (n=42)	Women % (95% CI) (n=44)	Total % (n=86)	Men %
Finds women are justified to refuse sex if the husband has a disease that can be transmitted through sex	91 (77-97)	64 (48-78)	77	86
Finds that women are justified to insist on condom use if the husband has a disease that can be transmitted through sex	83 (69-93)	77 (62-89)	80	81
Thinks men should have control over decisions made in relationships	33 (20-50)	18 (8-33)	26	-
Thinks that if a woman carries a condom it means she is sleeping around	48 (32-64)	21 (10-35)	34	-
Thinks it is acceptable for the husband to slap or push his wife around if there is a disagreement	7 (2-20)	16 (7-30)	12	-

*Source: Tanzania HIV/AIDS and malaria indicator survey 2007/08¹⁹. CI, confidence interval.