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Reports and Policy Papers

Health service delivery and other HIV/AIDS related interventions in the fisheries sector in Sub-Saharan Africa.

A literature review

Andrea McPherson

This review was produced under the regional programme "*Fisheries and HIV/AIDS in Africa: Investing in Sustainable Solutions*" with financial assistance from the Swedish International Development Cooperation Agency (Sida) and the Norwegian Ministry of Foreign Affairs.



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Overseas Development Group & School of Development Studies,
University of East Anglia, Norwich, NR4 7TJ, United Kingdom

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Andrea McPherson

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Health service delivery and other HIV/AIDS related interventions in the fisheries sector in Sub-Saharan Africa.

Andrea McPherson

A literature review undertaken for the WorldFish Centre/FAO regional project 'Fisheries and HIV/AIDS: Investing in sustainable solutions'

2008

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Preface

The WorldFish Centre and FAO are implementing a regional project entitled “Fisheries and HIV/AIDS; investing in sustainable solutions”, funded by the Swedish International Development Cooperation Agency (SIDA) and the Norwegian Ministry of Foreign Affairs. As part of this project, the Overseas Development Group/School of Development Studies was asked to produce a literature review on ‘Fisheries and HIV/AIDS in Africa: evidence from social science, medical and policy research’. The task was to collate available data from socio-economic and medical research to identify trends in fishing communities in Sub-Saharan Africa.

This paper is the first of three parts of the literature review which covers:

- Review of research on health service delivery and other HIV/AIDS related interventions in the fisheries sector in Sub-Saharan Africa;
- Review of social science research on risk and vulnerability to HIV/AIDS in the fisheries sector in Sub-Saharan Africa;
- Review of research on the relationship between food and nutrition security and HIV/AIDS, and how this applies to the fisheries sector in Sub-Saharan Africa.

In each area, the Review describes the main research directions and summarizes key findings, identifying knowledge gaps as well as areas of potential linkages with promising research in related sectors.

Introduction

Although there is unanimous agreement that poor access and availability to health services exacerbates the vulnerability of fishing communities to HIV/AIDS and to other health risks, a systematic review of literature reveals a near total absence of empirical data on this topic. The nature of health service availability and utilization has not been a specific focus for research in the fisheries sector. Only three studies have made the nature and availability of health services available to fishing communities an explicit objective of the study. All of them were HIV/AIDS focused in the context of small scale capture fisheries¹. Where there is evidence of service-related data, the majority is littered sporadically through academic discussions of the dynamics of susceptibility and vulnerability to HIV/AIDS in fishing communities in the Great Lakes region. As a result, policy and intervention recommendations from this work in that region have formed the basis of much of this review, especially in discussing accessibility (particularly to fishermen).

By way of scene setting, this literature review briefly introduces the global debate of health service strengthening and HIV/AIDS initiatives, and details the implications for high level advocacy of the health priorities of fisherfolk to ensure the presence of the fisheries sector on the international health policy agenda. The review is then split into two major sections: one considers the availability of health services and HIV/AIDS interventions and the other considers issues associated with accessibility. Due to the lack of data on these issues related to fishing communities, methods draw from research on other mobile working sub-populations to suggest how these research gaps could be filled. The section on accessibility aims to filter through research related to the fisheries sector in Africa (i.e. for similarly hard-to-reach populations) in order to highlight the gaps that exist in fisheries focused literature. It draws on research from other characteristically similar sub-groups to flag observations that could substantiate the fisheries evidence base. Finally the review summarises the findings and provides an overview of the main research gaps.

Methodology

¹ Capture fisheries are distinguished by the use of gear to catch fish in contrast to farmed or reared fisheries referred to as aquaculture. Small scale fisheries are a diverse group of artisanal fishers that have not been concretely defined. They can include employers, freelance, subsistence and/or occasional fishers. They are characteristically informal and autonomous inasmuch as they are not institutionalised.

The literature review sought empirical research on health service delivery and other HIV/AIDS related interventions in the fisheries sector in Sub-Saharan Africa, as set out in the title. It was conducted through a systematic search of academic databases giving titles and abstracts of articles using the keywords below:

1. Applied methodology and empirical data in existence which has been carried out to investigate health service delivery in the fisheries sector (**health or health services and fishing or fisheries or fishery or fishermen or fisherfolk or fishworkers or fish processors**)
2. HIV/AIDS related interventions in the fisheries sector (**HIV/AIDS or immunodeficiency virus or acquired immunodeficiency virus or VCT or RCT or ART or ARV or condoms or IEC or awareness raising and interventions or support or services and fisheries** variations as above)
3. Regional specification was not usually necessary due to the thin evidence base and so when I have cited evidence from outside of the region (sub-Saharan Africa SSA) I have explicitly indicated this.
4. To gauge the appropriateness of services further understanding of determinants of engagement was explored (**treatment-seeking behaviour (TSB) or health-seeking behaviour and fishing communities or fishermen or mobile workers or migrant workers**) This was deconstructed further due to lack of literature to include characteristics of vulnerability that may affect treatment seeking behaviour (**TSB and masculinity, invisibility, fatalism, mobile, migrant, high risk, injury**) and also treatment seeking behaviour amongst sub-populations with similar livelihood characteristics (**mobile workers, migrant populations, nomads, pastoralists, truckers, mineworkers, sex workers, farmers**)

Sources reviewed:

1. Google Scholar;
2. Ingentaconnect, PubMed, Blackwell, Science direct, EBSCO, Wiley Interscience, Scopus;
3. Online publications/ libraries including UNAIDS, FAO, WHO, DFID, IOM, ILO, World Fish Centre;
4. Personal communication with contacts working in relation to the issues in the Terms of Reference for this work;
5. Searches for documents found in the reference list of relevant papers.

Only one cross-sectional study comprehensively covered the terms of reference for this literature review and warrants highlighting here as it could be repeated in other areas. The 'exploratory study of fishing communities in Uganda' (IAVI/CRC 2008) assessed the suitability of fishing communities as a candidate population for cohort

development in future HIV vaccine trials and was conducted in two Lake Victoria fishing communities. The objectives of the study included;

- Analysing the availability and utilization of health services, HIV testing and HIV treatment and care services.
- Exploring the Knowledge Attitudes and Practice (KAP) of fishing communities towards Voluntary Counselling and Testing (VCT) activities, HIV prevention, HIV care and treatment and HIV research activities.
- Investigating institutional factors that promote or hinder uptake of these services.

Although the study was constrained by a very short data collection period it stands as the only empirical example to investigate a broad range of issues. Much like other studies for other sub-populations, a household survey formed the basis of the quantitative data collection. Although it was a small sample frame of 100 households, it gathered in depth data on the composition, characteristics of mobility, livelihoods and health related beliefs and behaviours (including specific knowledge and attitudes on VCT and HIV/AIDS). The study presented the range of services available and their utilisation disaggregated by gender. Triangulation with qualitative techniques strengthened the report by collecting information on perceptions of risk and health service delivery. It also made it possible to identify under reporting of the use of traditional healers and skewed results on population mobility, which suggested a less mobile population than in reality. Focus Group Discussions (FGD) made it possible to contextualise results and enabled the identification of socio-cultural and institutional factors that promoted or hindered uptake of services. Overall this study comprehensively targeted fishing communities and achieved a holistic interpretation of both the KAP of different members as well as provided disaggregated information on the actual service use and availability. Consequently this study is returned to throughout the literature review.

Health service strengthening and the fisheries sector

This review concentrates on the literature available on the existence, or lack thereof, of health services and HIV interventions for fishing communities. It looks at the evidence base available on the approaches that have been adopted, their effectiveness and identifies opportunities to strengthen this base of knowledge and practice.

The marginalisation of many fishing communities from health services available to neighbouring settlements disadvantages them amidst Sub-Saharan health systems, which are reportedly fragmented and ill equipped to deal with competing health

demands. Subsequently, we cannot investigate health service delivery to the fisheries sector without considering the broader political landscape within which to advocate for the inclusion of the needs of fishing communities. In addition, the debate on systems strengthening has re-emerged through concerns over up-scaling of HIV treatment services, and resonate with the concerns raised by analyses of fishworkers' position to benefit from treatment (Seeley and Allison 2005). Furthermore, evidence from this review suggests that the health systems agenda is moving away from the existing pattern of services that fisherfolk² 'benefit' from. Therefore, in the interest of risk reduction, the various needs within fishing communities must be in the consciousness of policy planners if they are to be included. Although it is not possible to unpack all the national and international-level debates on health services in this review, it is important to present how the health system strengthening in the context of HIV/AIDS may affect the health policy and research response which acts in the interest of the wellbeing of fishing community members. The shift in attention from HIV/AIDS targeted interventions to health systems equipped to challenge the epidemic is reflected by macro policy strategies to meet universal access targets. For example, £6 billion has recently been pledged by the UK government to develop health systems and services as part of their strategy for halting and reversing the spread of HIV in the developing world (DFID 2008). Given the implications of such macro-level changes in approaches to policy and programming, it is in the interest of fishing communities to be conscious of new directions in order to anticipate entry points where their issues can be raised.

In the past, policy has suggested that hard-to-reach groups must wait for services to be made available (Zinsstag et al. 2006) and that population size correlates with a hierarchical pattern of services in favour of settled urban populations (Ngwenya and Mosepele 2007; Seeley and Allison 2005). Epidemics have exposed the limits of this approach and led to disease-focussed and targeted strategies, categorised by vertical interventions that concentrate on a particular disease or service³. For example, countries where schistosomiasis is endemic have been identified as having health systems that face difficulties in providing primary health care, and where the lack of infrastructure has been identified as an important factor in the absence of sustainable control programmes (Chitsulo et al. 2000). Crudely speaking, the fragility of health services has been attributed to the financing of vertical health programmes, and health worker attrition whereby skilled health workers leave governmental services

² The term 'Fisherfolk' refers to a heterogeneous group of people whose livelihoods, to various extents, dependent on the capture, processing or trade of fish, or are people whose livelihoods are dependant on these fishing activities such as bar or hostel owners.

³ Vertical health programmes are characterised by programmes specific to a service or a disease in contrast to horizontal health systems which can be attributed to governmental health services which attempt to be pluralistic and wide spread.

for better paid work with an NGO (Pfeiffer 2003). It has been well documented that this has led to the fragmentation of the health systems in African countries and the evolution of HIV/AIDS interventions is now challenged with up-scaling within this setting (McCoy et al. 2005; Travis et al. 2004). The same has been found to entrench the vulnerability of fishing communities in SSA as "... the policy response to their vulnerability has, to date, been limited and fragmented" (Kissling et al. 2005: 1940).

Data from possible vertical programmes was not easy to find in this review and I, therefore, relied mainly on personal communication. Nonetheless, there is evidence from the Lake Victoria Livelihood Program co-ordinated by Diakonia, for example, that collaboration with the Ministry of Health was a component of the management of that project and a core aspect of the Anti-Retroviral Therapy (ART) component (Oloo and Mwangi 2008). If better collaboration at the macro level can be achieved in the future, including between different vertical initiative and between different countries, it may be that an evaluation and review of current approaches in the fisheries sector can contribute to best practices and serve as an entry point into the debate over service provision. To date, however, such comparative findings are not readily available. There is a pressure to achieve quick results on specific disease epidemics which has led to the fragmentation and verticalisation of health services and has allowed for uncoordinated bad practices to flourish in an unregulated market (Pfeiffer 2003; McCoy et al. 2005; Travis et al. 2004; Kemp et al. 2003). As fishermen are potentially the direct beneficiaries of disease specific international assistance, there is a danger that this could be occurring in the fisheries sector given the recent identification of the high risk to infection status of people in fishing populations.

There are examples where these are characterised by billion dollar funds such as the schistosomiasis Control Initiative, funded by the *Bill and Melinda Gates Foundation* (SCI 2008). The long term effectiveness of such funds have been questioned as the health systems they engage with are too fragile to deliver the volume and quality of services needed (Travis et al. 2004). More generally it has been warned that ambitious targets may lead to a preferential targeting of easy to-reach-groups (McCoy et al. 2005). Given the diversity of many fishing communities, this suggests that the same pattern can exist whereby fishermen who are considered the most challenging to reach with initiatives will remain excluded. Without investment specifically to help fisherfolk overcome socioeconomic barriers and access treatment, ART programs could widen the inequitable health outcomes that already exist in these communities. From a research perspective, vertical approaches inhibit the development of best practice in addressing the impact of the pandemic. For fishing communities, learning derived from these evaluations, which are not widely circulated, undermines an opportunity to engage with policy makers on how to strategise for this community. Future research should balance the focus on

disproportionate vulnerability to high prevalence diseases within a wider context of weakened health systems. Debate over horizontal and vertical approaches highlights the need to recognise and scale up best practices, as well as ensure effective integration with existing (horizontally-organised) health services.

Availability, in terms of the local existence of health services, is not enough (even if this *was* calculated to account for inconsistent mobility patterns) since a relationship of complex factors constrains access, as will be discussed in later sections. There is a need to describe the landscape of vertical and horizontal approaches available in the fisheries sector, and engage with research from other sectors that attempts to resolve the inadequacies of both. Further substance could be added by detailing how the main health-systems barriers particularly affect members of various fishing communities (such as found by Travis et al. 2004), identifying the major barriers and challenges to improving service delivery for priority health problems, including HIV/AIDS and malaria. These include: at the community level, individual and community barriers affecting demand (e.g. gender relations, socioeconomic factors and stigma); barriers to service delivery such as inequitable availability, physical infrastructure, human resources and quality of care; and health sector policy such as coordination between government bodies, donors and NGOs and the regulation of both public and private actors. It would be helpful to detail these in the context of the various environments in the fisheries sector. This might be useful in developing a model that illustrates how fragmented health systems undermine efforts to provide access to HIV/AIDS initiatives as an entry point to the debate. The final section of this review looks at the literature on accessibility which, if strengthened, would put these barriers in context for the fisheries sector.

Evidence on availability

Policy interventions

Many researchers have noted the lack of HIV/AIDS programmes which target fishing communities (Gordon 2005; Kissling et al. 2005; FAO 2006; Allison and Seeley 2004; Tanzarn and Bishop-Sambrook 2003). Although it has been said that fishing communities endure “...near neglect by government and the service sector” (Tanzarn and Bishop-Sambrook 2003: v), it is also noted that this situation is changing with the involvement of higher level policy responses (FAO 2006; Gordon 2005). Whilst fishing communities remain absent from the list of vulnerable populations identified by UNAIDS, at the national and international level in SSA, momentum is gathering to place the fisheries sector on the HIV/AIDS agenda as a vulnerable group.

The Great Lakes Initiative on HIV/AIDS (GLIA) convention was signed by 6 states in the Great Lakes region in 2005, to bind their commitment to reducing and mitigating the socio-economic impact of HIV/AIDS (GLIA 2005). GLIA has recognised fishermen and fisherwomen as a specific focus for subsequent interventions. A rapid review of HIV response data, the provision of a range of services including the training of fisheries officers in behavioural change communication for HIV, as well as the development of information education and communication (IEC) that 'speaks the language of the ports' all form part of the GLIA strategic plan. Given the lack of empirical data on which to base these initiatives, it is reassuring to find that the plan includes sharing best practices and commissioning epidemiological and ethnographic research in different occupational sub-groups within the fisheries sector (Frazer et al. 2008). This will be an important initiative to monitor for lessons that are relevant to the fishing sector across SSA.

An international workshop on responding to HIV/AIDS in the fisheries sector was held in Zambia⁴. A key message which emerged was the need for initiatives to engage with the whole community rather than targeting 'high risk populations', as well as to take multi-sectoral approaches in recognition of the fact that risk factors extend outside the fisheries and health sectors (WorldFishCentre 2006). The Lake Victoria Fisheries Organisation (LVFO) which is fundamentally concerned with resource management, held a regional workshop on developing a HIV/AIDS strategy for improving the health status of fishing communities in 2006 (LVFO 2006) highlighting the importance of a cross-sectoral approach. The diversity of the fisheries sector was also recognised as well as the need for responses to vary accordingly. This review verified the absence of information about vulnerability and resilience in different types of fisheries along such gradients as industrial and small-scale, coastal and in-land fisheries which was identified at the meeting in Lusaka. Future research, such as that proposed by GLIA, needs to explore how multi-sectoral approaches successfully reach sub-groups within the fisheries sector in the different settings in which they occur.

Despite the fact that the WHO has global statistics on the disease burden which confirms that 'schistosomiasis constitutes an important public health problem in SSA', they admit that the impact of the disease has been poorly evaluated (WHO n.d.). "Studies on the costs of schistomiasis control have invariably concluded that the cost of control is inordinately high compared to the per capita health expenditure

⁴ The Lusaka workshop was organised by the WorldFish Centre with the International Organisation for Migration (IOM), and the Food and Agriculture Organisation of the United Nations (FAO), and supported by the Swedish International Development Agency (SIDA) and was co-hosted by the Government of Zambia through the Ministry of Agriculture and Co-operatives (MACO) and the National AIDS Council (NAC). It included ninety participants from thirteen countries in Africa and from international organisations.

in sub-Saharan Africa” (Chitsulo et al. 2000: 47), which explains the absence of national policy responses. National and sectoral policies throughout SSA show that governments have mixed commitments to the broader health needs of fishing communities, while the health services which target them which are biased to HIV/AIDS interventions and focus on prevention messaging. There is a need to investigate how health policy provides for reaching populations in difficult settings with treatment services for all types of disease control.

There is little policy or national-level strategy for health specifically in fisheries. However, in terms of HIV/AIDS, Uganda stands out in the literature as having multiple levels of response (Baro 2004; FAO n.d.; Gordon 2005; Grellier et al. 2004; Tanzarn and Bishop-Sambrook 2003) in comparison to a relative lack of other SSA governmental strategies and commitments. Although it is beyond the remit of this review to investigate and compile them here, the spectrum can be gauged by looking at two examples, Uganda and Senegal. Uganda is well cited as having a fisheries-specific HIV/AIDS strategy to ensure the sector receives an appropriate allocation of government and donor resources (Gordon 2005; FAO). In addition, a Fisheries Sector Strategic Plan has been developed in line with the national Poverty Eradication Action Plan (PEAP), the instrument from which national governmental policies are derived and within which it refers to HIV/AIDS explicitly in relation to the fisheries sector (Bahigwa and Keizire 2003). Other strategies have been implemented such as that of Beach Management Units (BMUs) which, although not in the area of health, have been identified as entry points for prevention initiatives (Aciro Olyel 2006) and have featured as instrumental in health service research (IAVI/CRC, 2008). There is some scepticism amongst fishing communities on the appropriateness of BMUs, because of the lack of community involvement in the initiative, and because they are seen as ineffective at including those at highest risk (Westaway et al. 2007). With this consideration, it would be constructive to analyse the BMU initiative as a model for the implementation of national strategies, particularly for other countries in the Great Lakes region. The Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) has been criticised for not managing to secure sufficient financial resources to implement its proposed HIV/AIDS related programmes (Tanzarn and Bishop-Sambrook 2003) which raises concern about the effectiveness of this apparent policy recognition. In stark contrast to Uganda, Senegal has never focused on fisheries in national policies or activities related to HIV/AIDS (Mireille and Kandè 2006). Researchers in other sub-Saharan African countries have called for similar recognition to that of Uganda (Ngwenya and Mosepele 2007). An opportunity for GLIA would be to investigate the Ugandan strategy with a view to developing a framework for joined-up approaches that take into account necessary multi-level and multi-sectoral approaches, which could be adapted to other countries. A key research gap is apparent in the need for an audit of governmental and multilateral technical

papers.

Services

As mentioned previously, the failings of the health services has been highlighted by many commentators in reference to the affect of the HIV/AIDS pandemic in the fisheries sector:

"In general, rural Africa is not well served by health services. It is difficult to recruit trained health professionals to work in rural locations with extremely limited resources and support. Poor roads, telecommunications and electricity, as well as lack of access to clean water and low levels of education in the target population exacerbate the difficulties in providing preventive medicine, diagnoses and treatment." (Gordon 2006:5)

While it would have been very useful to analyse quantitative data on the availability of health services at different levels, even for one country, unfortunately no systematic data were found on this. At present, only scattered findings were available from studies investigating the dynamics of susceptibility and vulnerability in the fishing sector. These clearly show that the availability of health services is generally poor in fishing communities. For example, a comprehensive study of small scale fisheries in Uganda revealed the selectivity and inconsistency in health service provision to them. In four purposefully selected sites (based on the scale of activities, economy, diversity of activities and community composition as well as HIV prevalence), neither of the two largest fishing based initiatives in Uganda (one governmental and one NGO) was active. Health facilities that were identified included two drug shops one sub-dispensary, five medical staff, one health centre and two drug shops serving a combined population of nearly 7000, of which one site (Walumbe, population 2000) had no health services at all (Tanzarn and Bishop-Sambrook 2003). Elsewhere in the literature are sporadic illustrations of the absence of health services, with distances of communities to their nearest health facility ranging from 7km (Westaway et al. 2007) to 20km (Appleton, 2000) to 67km, in one situation analysis, for higher-order services such as hospitals (Grellier et al. 2004). A household survey conducted on the islands of Lake Victoria also describes a setting devoid of health services or HIV interventions (Anon. n.d.). This provides some evidence to substantiate the widely-made claim that poorly available services entrenches the vulnerability of these communities (Pickering et al. 1997).

Empirical research in order to identify where and how improvements can be made needs to be established. Comprehensive surveillance of health equity in the fisheries sector would be constructive as a basis for the meaningful reform in the interests of fishing communities. Detailed quantitative evidence on this was thin. However, one

study of artisanal fishers and HIV/AIDS services in Botswana, where services are distributed according to settlement status (urban, urban village, rural and remote), found that in the Okavango Delta limited access to services disadvantaged AIDS-affected households engaged in occasional fishing. The household survey conducted gathered district level data on the service delivery infrastructure. The availability of these services could then be quantified in terms of the percentage of the population that has opportunity to access a clinic, health post and mobile clinic. It was then possible to observe the coverage of high, middle or low level service providers and reveal disparities between communities. Unfortunately, more detailed quantitative results were not presented in this article. However, general findings revealed that fisherfolk in the Okavango Delta live in unclassified settlements as they have populations of less than 500 people, leaving them unable to receive health services directly except through primary centres (Ngwenya and Mosepele 2007). At a national level Service Availability Mapping (SAM) of Kenya and Tanzania reveal similarly tiered systems which are biased towards settlement size and therefore away from both occasional and continual fishers (Kenya SAM 2007). This raises concerns that fishing communities (both stable and transitory) are not recognised by national settlement policies, and are overlooked by health system planners who remain sedentary- focused.

There is a need for studies such as that of the Okavango Delta to be conducted more widely and also to include coastal and transitory inland fishing settlements. These would be constructive in highlighting how fishers are deprived by current health systems in relation to their HIV/AIDS affectedness and give policy makers evidence to work from in considering their needs. To develop this model further, the nature of health service availability should go beyond the identification of public services. Assessments of health infrastructure should include private services disaggregated by provider (community based organisation (CBO), international or national nongovernmental organisations (NGOs), Faith-Based Organisations (FBOs) etc), as well as treatment services, human resources, outreach capacity and drug stocks. SAMs for various countries in SSA that have been published in the last few years provide a potential resource for advocates on behalf of fisherfolk to overlay the geography of settlements in contrast to these differentiated health services and present to Ministers of health the reality of health service availability for the fisheries sector. An audit of this sort may help to engage with macro health policy and support the growing recognition of high vulnerability and susceptibility to infectious diseases such as HIV/AIDS, schistosomiasis (bilharzia) and malaria.

Mapping is one way of representing the disadvantage of fishing communities in health service provision. Whilst no studies were found to have used mapping approaches for fishing communities, the following section presents various methodologies that have been adopted for other mobile groups, and introduces

various considerations for their application to fishing communities. Geographic Information Systems (GIS) and Global Positioning Satellite (GPS) were used to create simple maps of stop-over points used by truckers along the Northern Corridor highway in Kenya (Ferguson and Morris 2007). Given the similarities in risk behaviours and issues in accessing health services (Voeten et al. 2002), this could be replicated for mapping the landing sites and fishing camps in the Great Lakes region as well as the amenities therein in relation to the settlement with which they were associated.

In order to counter policy biases against small populations, researchers have calculated how distance affects uptake of services. GIS has been used to develop a Distance Usage Index (DUI) in a large mapping exercise in South Africa. The sample included migrant groups across a sparsely populated rural area and calculated according to the Euclidean distance patients would travel and found there was a high degree of congruence between actual clinic use and the predicted distance to these clinics. Calculations of health facility avoidance helped detail the spatial analysis of those who do not use primary health care (Tanser et al. 2001). GIS has also been used to model distances travelled to government health services in Kenya as part of a study to develop access and use models for health services (Noor et al. 2006). Even though this study is useful as it included a community on the shores of Lake Victoria, and because of the sampling techniques and transport network model employed, it was not conducive to accessing information on fishermen in particular. The algorithms were developed on the premise that “>80% of the patients reported no transport costs in travelling to health facilities and were therefore assumed to have walked...” (Noor et al. 2006). Also water courses were deemed to be barriers to health facilities. Nevertheless, the noted achievement of the study was that it developed a more effective model for identifying the access of communities to health services than the Euclidean model and so could be consulted for transferable methodologies in testing availability of services to fishing communities. However, modelling strategies must take into account the actual mobility of members of these communities.

Mapping exercises of fishing sites should be accompanied by identifying various characteristics such as those identified by Tanzarn and Bishop-Sambrook (2002) in order to capture their dynamics. A site selection matrix was developed for the four landing site study in Uganda. A comprehensive snapshot of each site was accomplished by identifying several factors which included: scale of fishing, rural/urban, HIV prevalence, proximity to services, variety of fishing related activities, ethnic composition (Tanzarn and Bishop-Sambrook 2003). Triangulation of the matrix with the availability of health services was another way of contextualising the marginalisation of these communities, and should be used in research to inform health service planning such as those mentioned earlier that model distance usage.

With a HIV/AIDS specific agenda, Ferguson and Morris achieved this with truck-drivers through the triangulation of computer-based methodologies and qualitative approaches, in order to map the distribution of 'hot spots' of transactional sex between truckers and women at rest points (2007). This study aimed to strengthen HIV/AIDS control in Kenya by highlighting the needs of vulnerable groups, their risk avoidance and health seeking behaviours in combination with data on service availability. One potential barrier to successful geographic mapping is that fishing communities, unlike other studies such as those mentioned here, are often transient in nature and may experience seasonal changes in their characteristics. This could be problematic for computer-based spatial assessment tools and requires longitudinal data collection of site characteristics. Mapping the nature of service availability to fishing communities would form a solid baseline for quantifying how landing sites are marginalised from health care. This would be an opportunity for demonstrating the weaknesses in the available health system and could be used to engage in the discussion on health system strengthening.

With nomadic groups, Participatory Rural Appraisal (PRA) techniques have been used in an effort to develop health systems to reach them. Somali participants in Kenya mapped their own seasonal migration patterns. The investigation also documented their perceptions of health care across the migration cycle, and has led to evidence based recommendations for health personnel, as well as documenting the failings of the current system (Maalim 2006). As will be detailed in later sections, the evidence base stresses the importance of acknowledging the perceptions of health held within fishing communities and of fishermen in particular, when attempting to improve access for this group. Hence, this methodology could provide comprehensive data that explores the dynamics of fishers' mobility, and subsequently that of landing sites and the availability of health services, as well as understanding their attitudes to different forms of health care and how this might vary throughout the migration process (i.e. from home areas, to and between landing sites, and return). Social mapping was used in a recent exploratory study of fishing communities in Uganda where gender disaggregated qualitative information gave a sense of the importance of access to available services. Social maps created by men in a fishing community revealed that although there is a well resourced health centre and ambulance service nearby, but the presence of the army means that people fear to go there (IAVI/CRC 2008). Research instruments that could be replicated from this study for fishermen and other mobile fishworkers were innovative and included mapping, Venn diagrams, seasonal calendars and daily work schedules. Cumulatively, through these techniques participants articulated which services were available and how they were utilized as well their engagement with different institutions and the communication gaps between healthcare providers and community members (IAVI/CRC 2008). PRA methods endeavoured to understand fishermen's engagement with health services would provide new insights. This is

particularly important since the research body that exists often draws from the perceptions of other fishing community members as studies, such the IAVI/CRC study, struggle to gain the responses of fishermen.

There are clear benefits to trying to achieve an understanding of the seasonality of fishermen's movements. Having said that, the cultural and linguistic diversity of fishermen at landing sites (Maddox 2007; Seeley and Allison 2005; Westaway et al. 2007) might indicate more variability in their movements. This is in contrast to nomadic populations who maintain seasonal patterns of mobility in kinship groups, or to truckers who may have more structured or formalised travel patterns. Pilot testing could determine the necessary sample size and strategy in order to draw conclusive results. In addition, mapping exercises should take into account the mobility of other community members, including women.

In terms of HIV/AIDS-specific interventions there is also a lack of evidence relating to what services are available to fishing communities, not least due to range of vertical and horizontal providers. Patchy research on HIV/AIDS in fisheries has revealed significant inconsistency in the availability of testing services at a time when scaling-up of ART is being attempted, resulting in concerns that the absence of counselling and testing services will undermine these efforts (Matuvo and Makumbi 2007). In several case studies, including those on islands or isolated landing areas, the absence of VCT has been reported (Anon. n.d.; Pickering et al. 1997), whilst there is sporadic and buried evidence that VCT is available to some fishing populations in the great lake region (IAVI/CRC 2008; Oloo and Mwangi 2008; Kenya SAM 2007). A situation analysis of Lakes Victoria, Kyoga, George and Edward and Albert found that Lake Victoria had much greater access to and coverage of HIV/AIDS interventions. Lake Kyoga by contrast was found to have the lowest awareness of local HIV/AIDS services (Grellier et al. 2004). Despite a few spots of focus (probably due to vertical campaigns) we cannot assume that many fishing communities have good service provision, or good awareness. More location-specific studies are needed to highlight major gaps in provision, building from fisherfolk's own perceptions, and using their own movement patterns as a basis for determining where services need to be available

There is evidence that NGO efforts continue to try to fill in service gaps. For example, the Uganda Fisheries and Fish Conservation Association (a national NGO) had submitted a proposal to implement HIV/AIDS programmes within fishing communities through raising awareness, condom distribution, VCT and reaching fishing communities with ART (Baro 2004). However, without conclusive research to the contrary, it can be assumed that fishing communities endure the same availability issues as other rural and mobile populations in SSA. Data suggests that in reality, HIV treatment services are unevenly distributed and places fishing

communities in what Seeley and Allison observe as an 'ART lottery' (2005: 693), which is exacerbated by access issues presented in the coming sections. Mobility is a fundamental factor in a large proportion of fishing livelihoods, which intensifies this problem.

Evidence on accessibility of services

Mobility and access

Given that mobility is key to accessing and being accessed by biomedical health services in developing countries, the issue has received scant policy attention. Furthermore, Haour-Knipe and Grondin (2003) observe that this has required migrant populations in particular to take responsibility for their own health. Wider health policy has emphasised this through a focus on the importance of social networks in health care, something which mobile groups cannot always benefit from. The WHO guidelines suggest that the "continuous support of relatives, friends and treatment supporters" (2004: 44) are key, which disadvantages those who cannot rely on those social networks. The mobile nature of the vast proportion of fisherfolk in SSA serves as a double handicap as it increases risk taking behaviour and situates them in environments where physical access to health services is unavailable or inappropriate. For example it was found that in communities where NGOs visited infrequently, popular opinion was that they were ineffective due to the constantly changing population (Grellier et al. 2004). The movements of fishworkers, and the often unsociable hours that they work, undermine the possibility of their seeking treatment (Seeley and Allison 2005).

This literature review found no studies that empirically investigate the mobility of fishermen, beyond a conceptual recognition that it exacerbates risk and susceptibility. Nevertheless, the health of migrants and mobile workers is a growing area of interest for many medical and health providers, researchers and policy makers. Although there are diverse health outcomes that occur as a result of mobility, there are common health factors related to the nature and process of mobility (Gushulak and MacPherson 2004), which should be considered when filling this research gap. Theorists highlight how the process of mobility, including the pre-movement, journey itself, arrival and return phases, have a dynamic affect on the vulnerability of migrants to health risks, as well as on the availability of various forms of health care and accessibility to them for migrants (IOM 2003). The effectiveness of different information strategies has also been found to vary according to mobility. An investigation into sources of information on AIDS in rural

communities in Senegal found that men who had migrated to urban areas were much more likely to cite radio as a source of AIDS-related information. Conversely sedentary men and women from the community were more likely to cite the local health centre (Lagarde et al. 1998). There has been little research into these dynamics beyond sporadic, small scale and 'single phase' focused studies, often on the transient stage such as on those at landing sites or fishing camps. As Lurie (2004) points out, very few studies have considered both ends of the migration process. Recognition of changing perceptions, behaviours and ability to engage with health services throughout the mobility cycle helps to think of risk environments and not attribute risk to people (Desmond et al. 2005).

It is also important to recognise diversity amongst fishermen as age, ethnicity and other forms of social difference many influence these dynamics. For example, a cross-sectional study in Thailand found that Burmese coastal fishermen were more likely to engage in self treatment than Thai fishermen, who were more likely to seek formal health care (Entz et al. 2001). Although there has been a concentration of literature around the Great Lakes region of SSA, this topic of the impact of cross border migration by fishermen in relation to health care has not been explored. The same study in Thailand presented evidence that the status of fishermen in crews had an impact on health service utilisation (*ibid.*). With this in mind, studies into health seeking behaviour of mobile fishers should take into account heterogeneity of this group as boat owners, labourers and those who use illegal gear may not access services at sites where there are regulatory institutions to enforce requirements (Westaway et al. 2007). Interventions which are implemented through statutory groups such as BMUs will not necessarily gain the trust of these fishermen. Health services may need to separate from official organisations and practice strict confidentiality procedures in order to encourage the uptake of services by these community members.

A review of the knowledge base on the relationship between mobility and access to health in low income countries revealed the need to pay more attention to non-communicable illness that disproportionately affect the poor, illness which may develop as a result of unhealthy working conditions such as repetitive strain injury or rheumatism (Molesworth 2005). In considering the potential of mapping, as mentioned earlier, research efforts should attempt to bridge spatial and temporal dimensions with perceptions of risk, particularly given that high risk environments can undermine treatment behaviours (see following section). The health and mobility discussion is dominated by one-way migration flows, and the literature on Africa is predominantly focused on rural-to-urban migrants. Comparatively little research has drawn attention to internal migration as a broader public health issue in the same way, and when it does, there is a communicable disease focus. In planning for improved public health infrastructure, there is a need to understand better the

dynamics that inhibit or promote health engagement at different stages of migration, including treatment-seeking and risk-avoidance behaviours. More research on the mobility of fishermen and their health seeking behaviour could fill gaps in the connection between health and mobility of internal labour migrants (those who migrate for work within a country). In doing so, the existence of normative biases within communities should be taken into account in research design. The IAVI/CRC study found that there was significant under-reporting of the use of traditional healers and contradiction between quantitative data which indicated a less mobile population than the reality presented by qualitative results (IAVI/CRC 2008) .

Most research evaluating service uptake does not take migration into account. However, a more uniform approach could allow us to build a broader understanding of best practices to be reviewed further for use in the fisheries sector. Studies on treatment or service uptake in a particular area should go beyond simply identifying respondents as migrant or resident. In order to understand how migration affects service uptake, more needs to be understood about the migration pattern including: period away from home, the number of stops, the duration of stay at rest points, the regularity of this pattern, and the nature of health service availability at home. Mobile members of fishing communities (fishermen in particular) experience both the health risks attributed to their mobile livelihood and those services which are unavailable or inappropriate at reaching this group. This is often compounded by issues of nationality and legality. The need to understand mobility patterns and dynamics suggest that research across sites of mobility should be coupled with efforts to gain fishermen's perspectives which, in order to have empirical meaning, should complement quantitative methods that identify service availability.

Health seeking behaviour and access

In order for health services to be accessible the socio-economic and cultural characteristics of their target population need to be considered. Literature on health- or treatment-seeking behaviour that focuses on the fisheries sector is thin and draws from the same few studies. There has been much more empirical study on the health seeking behaviours of other mobile workers, such as miners and truckers, in the context of HIV/AIDS. This final section also draws on some conceptual literature which helps illustrate the nuances which affects the actual uptake of services.

The IAVI/CRC study identified above achieved a great deal in contributing to the conceptual literature on health seeking behaviour. In addition, it provided evidence-based insights into uptake of services and then made recommendations for policy

and programming, as well as strategies for improving research. As the report identifies, the study failed to survey accurately the mobility of community members. Suggestions include participatory observation that investigates the experiences of fishermen and their issues, as well as the development of a sample strategy that focuses particularly on mobile persons. Also, the study findings had a gender imbalance, probably due to biased sampling towards longer-term residents, indicating the need for research to assess the ebb and flow occurring as a result of seasonal variations in fishing, trading and other activities. Given the apparent lack of data of this kind, and since no other examples were found in this review, it would be highly beneficial to reproduce this study (and its recommendations for improvement) at a larger scale for more landing sites. It could also be considered for coastal communities and occasional fishers etc. There is evidence from other KAP studies of fishing communities in relation to HIV/AIDS, such as the Sustainable Fisheries Livelihoods Program (SLFP) conducted in Base Agip and Makotipko in Congo-Brazzaville (M'Boussou 2006), however the detail of this study could not be recovered for review. There is a general need for NGOs and research partners to publish their works and contribute to building a contextualised picture of health service and of the issues related to HIV/AIDS service provision affecting the fisheries sector, which can contribute to the development of best practices. In the absence of this information, it is difficult to draw out general lessons for effective health service delivery to fishing communities.

Much of the research on behaviour concentrates on transactional sex or 'fish for sex', which is presented as a major practice in the transmission of HIV at landing sites or fishing camps. A recent review of the literature on this phenomenon has been conducted and finds it to be extensive (Bene and Heck 2008). While this research does not evaluate specific interventions, it does draw out recommendations for those aiming to challenge or mitigate risk in these behaviours by understanding the nuances of internal and external perspectives. A recent focus has been to investigate the nature of the gender relations from which transactional sex occurs, as well as how it is placed within wider livelihood strategies. Many ethnographic studies have dispelled simplistic interpretations that had labelled it as prostitution or sex work, and have advocated for a more nuanced and context-based understanding of these relationships (Swidler and Cotts Watkins 2006; Harcourt and Donovan 2005; van den Bourne 2003)⁵. Interventions which conceptualise transactional sex as exploitative, emotionless, financial arrangements between strangers will not be effective, as neither party identify their sexual behaviour in this way (van den Bourne 2003).

⁵ See the Review of social science literature on risk and vulnerability to HIV/AIDS among fishing communities in Sub-Saharan Africa for further discussion of typologies of 'sex workers' and associated risk behaviours.

There are many forms that 'sex work' can take, which vary by socio-economic context (Harcourt and Donovan 2005). Mobile workers may not identify sexual relations at rest points with prevention messages warning of the dangers of unprotected sex with a stranger. One of the few studies to use a sampling structure that specifically targeted mobile fishermen found that commercial sex frequently involved multiple steady relationships, which men identified with feelings of trust and safety (Voeten et al. 2002). ABC messaging (Abstinence, Being faithful, Condoms) has also been criticised as it does not allow for these complexities. Such ABC messages are often seen to reflect a particularly American concept of 'good' or 'bad' sex, one which does not necessarily resonate in other cultural settings. Subsequently, it has been found that condom promotion modifies sexual practices in only certain types of relationships, such as single occurrences (Bond and Dover 1997). An ethnographic study in a fishing community in Malawi found that women's economic constraints and their subordinate position continued to promote sex with fishermen, despite having internalised educational messages from prevention initiatives on HIV/AIDS risk and vulnerability. Without challenging the gender relations that constrain a woman's capacity to negotiate at points of sexual decision making, women are overburdened with a fatalistic outlook that has potential disempowering effects (Merten and Haller 2007). Consequently, in the absence of transformative initiatives to challenge this gender inequality, which would demand a comprehensive understanding of contextual gender relations, behavioural change messaging and condom promotion, should be focused on men. Additionally, efforts to increase women's bargaining power could explore offering them alternatives to condoms, such as the female condom and, in future, microbicides as well as innovative micro-credit initiatives to diversify livelihood options.

High awareness levels have been reported amongst some communities which do not have treatment services available to them; consequently this has undermined risk avoidance behaviours. One study found that in a fishing community exposed to vehement prevention messages where sexual mixing was high, nearly all participants believed they were infected, which undermined any modification of their behaviour in the absence of testing or treatment facilities (Pickering et al. 1997). This is reinforced by data that indicates low condom use by mobile workers (including fishermen), even when they are available (Gysels et al. 2001). It is found repeatedly that condoms are used with sex workers however, sexual partners at landing sites (or truck stops) are often perceived differently and associated with sentiments of trust which transcend the exchange of money or gifts as mentioned earlier (Ferguson et al. 2004; Jackson et al. 1997; Voeten et al. 2002; van den Bourne, 2003; Merten and Haller 2007). For example, in a cohort study of truckers who received information education and communication (IEC) on condoms (Jackson et al. 1997), no increase in condom use was found despite active promotion and unlimited free supplies use. This provides evidence that the issue of 'trusting' and 'safe' relationships is a

significant issue to be understood by programmers and policy makers (Merten and Haller 2007; Voeten et al. 2002) “Men were more likely to use condoms with sex partners they classified as commercial sex workers than partners they classified as girlfriends” (Jackson et al. 1997: 908-909). What we know already is that IEC materials should promote condom use in steady relationships as well as with commercial sex workers (Nyazi et al. 2004; Voeten et al. 2002). Equally, awareness-raising should go hand-in-hand with VCT and other treatment services. The literature demands that initiatives to mitigate risky sexual behaviour should know the context of these relations by answering such questions as: what is the nature of ‘good or safe sex’, and what is the purpose of sex for the men and women involved in terms of its meaning. This would demand more contextualised research, gathered with innovative techniques that could form a baseline assessment of risk practices.

Beyond ethnographic studies which have enlightened practitioners on these issues, there has been no reported research that has investigated incidence of behavioural change of fishermen. This research gap should be filled with longitudinal studies that can assess the impact of prevention messaging on the behaviour of different members of fishing communities. One example of this for truckers was a cohort study which assessed the degree of behavioural change of truck drivers who took part in risk counselling, which included pre- and post-test counselling, condom negotiation, and IEC strategies. 556 compliant participants were required to attend three-monthly follow-up visits with health teams who rotated between large depots. The median number of follow-up visits was 2.9 and the interval between visits ranged between 3 and 431 days. A significant decline in risky heterosexual sex behaviour was found, though no change in condom use (Jackson et al. 1997). There were several clear limitations of this study in terms of identifying compliant participants and collecting follow up data. In addition it is not clear which methods or what combination of them achieved the greatest impact. Without such evidence, it remains difficult to assess critically the effectiveness of different strategies. Nevertheless, it represents an attempt to measure behavioural change which can only be achieved through longitudinal data collection and follow-up visits.

More research needs to be identified which traces actual behavioural change of mobile workers at high risk of HIV following such multifaceted health initiatives. Opportunities to adapt and improve Jackson *et al*’s methodology for application to mobile fishworkers is essential for the evaluation of initiatives attempting behavioural change. One major challenge would be planning the strategic positioning of health teams, as the study of truckers benefited from the more structured migration pattern along the highway which is in contrast to that of fishers. This strengthens the argument for the need to establish data on the mobility patterns of fishermen and the temporal nature of landing sites as a first priority, as a basis for strategically developing evaluations of behavioural change over time. Additionally,

innovative strategies are needed to encourage follow up visits and should include confidentiality measures and free condoms and sexual health advice. Good evaluations would also determine how attitudes change in relation to behaviour from qualitative (such as focus groups, diaries etc) and quantitative data collection (such as surveys and testing for Sexually Transmitted Infections etc). For example, what attitude change correlates with the reduction of risky sexual practices and which behaviours do not change despite apparent positive attitude change? These results could inform indicators for further KAP studies.

There might be better opportunities for monitoring behavioural change monitoring in the formal fisheries sector in terms of sampling. There is some evidence that fishery companies have HIV/AIDS workplace policies, however no detailed information of the effectiveness of these could be found (Kenya SAM 2007). The African Medical Research Foundation (AMREF) recognised the importance of targeting male mobile workers and launched a campaign across different sectors to raise awareness and condom use including the training of peer educators in social settings (Robinson 1991). Once again, evaluation of its success was not available.

The need to understand perceptions of health, and particularly that of men as decision makers in sexual relations, has been presented. This systematic review of HIV interventions revealed that relatively few focus on men's own sexual health concerns. Those studies that have included them have focused on their perceptions of contraception and family planning. This literature has developed in response to an emerging reproductive health agenda that has recognised inherent dangers in omitting men's reproductive health from policy (Collumbien and Hawkes 2000; Odimegwu and Okemgbo 2008). Although masculinity, and in particular 'hypermasculinity', has been identified as a factor that exacerbates fishermen's vulnerability to HIV/AIDS (Allison and Seeley 2004), it is an issue that has been discussed more than it has been researched. There is a need to engage with men's attitudes to sexual health, as their decisions and practices have a major impact. There is a glaring need for this to be recognised as more research on HIV interventions in fishing communities calls for a greater focus on male fishworkers, and in particular fishermen, who are key to controlling the epidemic (Merten and Haller 2007).

The gendered nature of fishermen's vulnerability inhibits the accessibility to health care. Long periods away from their families, living in bleak conditions with access to alcohol and sex, and loneliness in the absence of the rules and norms of a social network, are said by various commentators to undermine risk avoidance behaviours as well as treatment seeking behaviours. Men therefore present particular challenges for HIV interventions, due to the gendered differences in their cultural environment. In a study of gender differentiated behaviour towards HIV/AIDS it was found that more men than women had never talked about AIDS with friends, and men have

been reported as having less support than women (Simbayi et al. 2007). It has been well reported that strong masculine subcultures can encourage sexual conquest as a 'badge of honour' and having multiple partners is regarded as masculine (UNAIDS 2000). Fishermen have also identified that a reason for high levels of sex behaviour is directly related to peer pressure from colleagues and bar friends (Voeten et al. 2002). Most studies have either disaggregated health seeking behaviours by gender or investigated how gender identity influenced risk behaviour (particularly that of male mobile workers). A study of men's treatment seeking behaviour in Botswana found that the longer an infected man remained with symptoms before seeking help, the more likely he would choose traditional healers as a source of care (Langeni 2007). More needs to be understood about the ways men perceive their sexual health (Collumbien and Hawkes 2000). Suggestions for how this could be approached have been presented in the former section on availability and the use of PRA methods. A qualitative study of migrant miners in South Africa revealed that healthy aspects of masculinity such as responsibility and faithfulness to the family they support were strongly associated with what it means 'to be a man' for participants. Yet the concept of faithfulness was often confused, many considered themselves to be good men and admitted having had other female partners. This was attributed to a deterministic perspective of the 'nature of being a man', meaning the need to have sexual relations (Brummer 2002). There needs to be more evidence that bridges this research gap and links the gender identity of mobile workers and risk behaviours to treatment seeking practices.

Links have been made between masculinity and the invisibility of sickness, which could exacerbate the absence of health care seeking of fishermen. For example, boys that grow up influenced by the notion that real men do not get sick may see themselves as invulnerable to sickness and there is evidence that men often resort to self treatment (Schensul et al. 2006). There is sporadic reference throughout the literature to the absence of sickness at landing sites, as sick fishermen return home. This is also associated with the knowledge that healthier individuals are more likely to migrate away from home (Kothari 2003). This confirms the need for a holistic approach to research of treatment seeking and access throughout the full migratory cycle and how the onset of symptoms promote return, risk avoidance and self treatment behaviours. In a study of miners' attitudes to VCT and ART, it was established that mobility itself exacerbates the perceptions of 'healthy-work' spaces (Day et al. 2003). Comments referring to the absence of sickness in the workplace are made sporadically throughout the literature on fishermen such as 'sick fishermen go home' (Westaway et al. 2007; Oloo and Mwangi 2008; Seeley and Allison 2005). "if one is not personally aware of newly infected people and does not witness any consequences to their infections, knowledge of AIDS and how it is transmitted poses no immediate threat and there is no need to change one's own behaviour" (Bowser 2002:1). Only when people start dying does transformative behavioural change take

place, and given that fishers go home when they are ill due to the labour intensiveness of the work, transactional sex behaviour is not directly associated with death that they may see at home (Bowser 2002). Data from truckers supports this theory as one study found that receptivity to IEC materials is more likely to lead to behavioural change as personal knowledge of AIDS through the illness of family or friends increases (Jackson et al. 1997). The study suggested that it is possible that the effects of more widespread infection within the trucking sector has influenced a higher perception of personal risk of HIV, and has played a significant role in decreasing risk behaviour (Jackson et al. 1997). Research into health seeking behaviour of fisherfolk should consider the importance of being symptomatic before health care is sought, as this may affect engagement with VCT and treatment services. Research on the causes of delayed behaviour in seeking health care stresses the need to raise awareness around the recognition of symptoms (Meyer-Weitz et al. 2000). Since services are sought only when a person is symptomatic (Moses et al. 1994) and fishermen are less likely to work whilst visibly sick, this might lead them to disengage from the services that are available. An opportunity for action research might be the effectiveness of symptom recognition IEC materials (rather than those with behavioural change messages) in relation to the uptake of different services.

Coupled with the absence of visible sickness is the high risk environment within which fishermen work. A high level of occupational risk and accidents has been described as endemic in small scale fishing (ILO 1999). Quantitative data from the formal fish processing sector in South Africa gives some idea of the health issues that occur in other areas of the fisheries sector beyond artisanal or small scale fishing, such as accidents with equipment and processing machinery (Jeebhay et al. 2004). A denial of danger and an emphasis on independence has been noted by the occurrence of a fatalistic attitude to HIV/AIDS (Seeley and Allison 2005). Subsequently this affects the perceived importance of preventative health. No studies appear to exist which explicitly investigate the potential psychosocial connection between apparently 'healthy workspaces' and health seeking behaviour for either fishermen or other migrant workers in Africa. Much can be gained from the growing discussion of the interplay of masculinity and engagement with HIV/AIDS services and from the smaller body of literature on masculinity and health services more broadly.

In general, researchers should also be responsive to positive entry points for implementation. For example, decision making power over sexual relations determines that men are more likely to stop sexual encounters whilst symptomatic than women, and this risk avoidance behaviour should be reinforced (Moses et al. 1994). There is a need to instigate more research on risk avoidance behaviours rather than only focus on the factors that inhibit health care seeking. This latter approach reflects a 'deficit model' which concentrates on what fishermen lack, rather than the

behaviours that could be built upon (Maddox 2007). Additionally, it would be beneficial to build on the assumption that in the absence of health services individuals engage in self treatment. What is the nature of self treatment amongst members of fishing communities, and what decision making process does this emerge from? Research on self treatment that is currently available is often unreliable and thin on the ground. This might be a result of coding responses to treatment behaviour surveys. For example research by Langeni grouped self treatment and treatment amongst friends and neighbours under the same survey code as traditional healers (2007).

Overall research in the area of this review is patchy and there is no synthesis as yet available on what has been learned from these projects or what can be taken forward into recommendations or action. There is a need for action research that is based on strong methods of engagement that are monitored regularly. The Lake Victoria Livelihoods Project had a HIV/AIDS component which was identified as the most successful part of the project. Interestingly, the report admits not reaching fishermen with their messages, and saw them as an 'unwilling group' for engagement. This suggests that the effectiveness of some strategies should be explored contextually through action research. Interventions which strategise to engage hard-to-reach groups, such as the use of radio and peer educators, have been highlighted as promising ways to deliver health messages. Radio has been championed as an effective tool for the dissemination of IEC to mobile groups (Nyazi et al. 2004). It has the potential to reach fishermen across the mobility cycle and has been heralded with other benefits for promoting behavioural change as the activity of listening to radio is a group activity that stimulates discussion, whilst bypassing stigma and health costs, as well as creating demand for health services (Adam and Harford 1999). There has been empirical evidence collected on the effectiveness of this messaging to men in particular. A cohort of seasonal migrants in Senegal revealed radio-mediated prevention messages had been heard for nearly a decade during their seasonal migration and since these men (of a wide age range) were living together, this mixing led to an improved knowledge of AIDS. It was found that better AIDS knowledge was delivered through radio and television and men surveyed had a more positive perception of condom use (Lagarde et al. 1998). Also, quantitative studies in Uganda have consistently shown that radio has been the main source of information on HIV/AIDS across fishing communities with varied accessibility to other outlets of information,(Grellier et al. 2004). Nonetheless, further research on this is needed to ascertain if improved knowledge of HIV/AIDS converts to behaviour change through this medium.

As previously discussed, there is a significant need for a multidisciplinary approach to challenging HIV in these settings. Testing and treatment services must also be accessible, and can themselves promote health seeking behaviour since it is known

that VCT-exposed people are more likely to practice safer sex (Matuvo and Makumbi 2007). This study found that having had an HIV test reduced the odds of seeking a traditional healer by 91% (*ibid.*). Other interventions which reported a significant effect on men's sexual behaviour and knowledge showed that the use of peer educators can demonstrate changes in sexual behaviour in high-risk men (Elwy et al. 2002). A cross sectional study on condom use promoted through group membership and peer education in Kenya revealed that the peer educator approach was effective in encouraging safer sexual behaviours. The duration of membership of anti-AIDS self help groups is associated with more consistent condom use (Ferguson et al. 2004). Bars and hostels should be targeted for peer educators and be the arena for disseminating information to challenge false understandings of safe sex (*ibid.*; Bond and Dover 1997; IAVI/CRC 2008; Merten and Haller 2007). It has been asserted that if adolescents are given condom handling and negotiation skills then a generation of peer educators could be created (Jackson et al. 1997). However, other research has identified that school attainment level is low (Maddox 2007) and therefore peer education may be effective for other community members rather than for fishers. Peer education has been cited as successful in settled communities, though is still unable to reach fishermen due to their mobility in contrast to the situated nature of education sessions. Taking the peer educator model a step forward for mobile populations, is the concept of nomadic Community Health Workers (CHW) who would receive training and who therefore travel with nomadic groups (Sheik-Mohammed and Velema 1999). Opportunities for action research exist in training fishers to peer educate as CHWs. It was proposed that nomadic CHWs would be enabled to identify and contain disease as well as support STD control programmes with health committees by arranging the referral of serious cases to the nearest health facility (Sheik-Mohammed and Velema 1999), perhaps selected fishers could do the same?

Summary

Throughout the reviewing process a sense was gained that much more information exists within project level reports that could not accessed because they are not in the public domain available through the review methodology. There is also a notable dearth of studies which are the output of detailed quantitative data collection. A method of collecting organisational reports, preliminary baseline assessments and situation analyses should be established to consolidate the learning done by implementers already working within these communities. This could be done through the growing use of online information sharing networks. Donors which fund programmes in the fisheries sector should require sector-wide learning activities to allow best practice to develop and translate to technical advice on how health

systems can meaningfully address the health needs of fisherfolk. Some particular research gaps can be summarised:

- Whilst inland and artisanal fisheries have been the focus of research, there is a distinct lack of research that reflects the broad variety of health and HIV/AIDS environments endured by fish workers. Although sporadic references to workplace HIV/AIDS policies in fishing companies are encouraging (Gordon 2005; Tanzania SAM, 2007; WHO 2007), no investigation into the appropriateness or effectiveness of these services could be found. There is a need to audit the formal fisheries sector for what services are available in the workplace. More investigations into the reality for coastal fishers needs to be established
- Mapping exercises of health services to establish the spatial disadvantage experienced by fishing communities should be conducted. These need to recognise that sites are transient in nature and give accurate information on the types of services available, population size over time, extent of fishing and other activities and HIV/AIDS prevalence. In the interest of accessibility, the relationship between migration over the different stages and health seeking behaviour should be studied thoroughly. This would include longitudinal data collection based on valid indicators of the relationship between attitude and behaviour.
- Broader investigation into the health needs of various community members should be reported. This could include ethnographic and participatory research methodologies that are able to collect the perceptions of health care of different community members. These studies need to be holistic, and not solely focused on communicable diseases but also look at incidence of malnutrition, soil- and water-borne diseases, as well as accidents and injury.
- Research needs to bridge the gap between the valuable evidence-base that illustrates how risk is gendered in these communities, and that which discusses how treatment-seeking and risk avoidance behaviours are affected by gender more broadly.
- There is urgent need to identify where fishing communities have been reached by initiatives that have succeeded in lowering the susceptibility of sub-groups to HIV/AIDS. Research to monitor behavioural change of fishermen will have to be innovative to adapt to their unidentified mobility patterns.
- There are opportunities for action research adapting approaches from initiatives that have been successful for other mobile workers. This should be

through multidisciplinary programmes that do not focus on IEC without the provision of appropriate testing and treatment facilities. These might include radio, building from existing behaviours (especially for men), using peer educators, mobile CHWs and micro-credit for women.

- Projects should disaggregate their impact assessments by the different community members involved to account for the diversity of these communities. Special considerations for reaching fishermen should be taken and monitored accordingly.
- Research into how to bring the health issues of fishing communities into mainstream health system and ART up-scaling policies would be constructive.

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