

## FINAL REPORT

**Strengthening Epidemic Intelligence in Malaysia: Fishermen in Kuantan**

**World Bank  
(7159547)**

**Overview**

There has been a 22% increase in the number of fishermen in Malaysia over the last 10 years.<sup>1</sup> In a comparative study on global HIV prevalence among fishermen, researchers estimate that HIV prevalence among Malaysian fishermen at 10 times that of the general population.<sup>2</sup> According to the HIV registry at the Ministry of Health, which uses reported cases of HIV as a proxy indicator of national HIV prevalence, 3.75% of a total of 87,710 reported HIV cases in Malaysia are among fishermen.<sup>3</sup> The majority of HIV infections are from injection drug use. With a view to strengthen epidemic intelligence, this study takes a closer look at HIV risk among fishermen, in particular behaviour associated with acquiring and transmitting HIV. HCV and syphilis were also examined as possible co-morbidities.

To revisit, the main study objectives and summary of the research methodology as follows:

- Estimate HIV, HCV and Syphilis prevalence among a random sample of fishermen
- Examine sexual behaviors and sexual risks
- Identify risk determinants of drug use and sexual behaviors
- Recruit by respondent driven sampling (RDS)
- Survey implemented via audio computer assisted self-interview
- Participants will provide venous blood for HCV, syphilis and undergo a HIV rapid test with pre- and post-test counseling/information.
- Referral to relevant healthcare service to be conducted in tandem with testing.

On 15<sup>th</sup> December 2011, data collection ceased in Kuantan, having reached sampling equilibrium in 12 recruitment waves. Equilibrium was calculated based on HIV status, IDU, IDU Network, and Vessel License Type. A total of 406 fishermen participated in the study, of which 234 were coastal fishermen, and 169 were deep-sea fishermen. 46% reported using drugs—38% via injection. Statistical analysis of the data is currently in progress. Preliminary results estimate HIV prevalence among fishermen in Kuantan at 12%, rising to 26% among fishermen who inject drugs. HCV and syphilis prevalence were estimated

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<sup>1</sup> Department of Fisheries 2008

<sup>2</sup> Kissling et al. 2005

<sup>3</sup> Ministry of Health 2009

to be 49% and 3% respectively. The following report provides an overview of the study from research design to implementation, and discusses preliminary results and next steps.

## Methods

### Survey Instrument

The survey instrument has 11 sections as itemized in Table 1 below.

**Table 1: Survey Sections by Topic Area**

A	RDS Network Information
B	Sociodemographics
C	Employment, Migration and Mobility
D	Alcohol and Drug Use
E	Sexual Behavior, Norms, and Health
F	HIV/AIDS and Condom Use Knowledge
G	Psychological Distress (BSI)
H	Quality of Life, Concerns and Overall Health
I	Social Support and Networks
J	Male Attitudes Scale
K	Interest in Intervention

### Measures

Where possible, internationally validated measures have been incorporated in the survey. Table 2 below lists the prospective measures. Reliability coefficients are from previous studies undertaken in the United States and internationally.

**Table 2: Measures of socio-demographic, multilevel covariates and dependent variables**

Construct	Measure/Scale Name	Reliability
<b>Sociodemographic Variables</b>		
Age, ethnicity, religion, income, etc.	Sociodemographic Questionnaire	--
Migration Characteristics and Nationality	Migration Questionnaire	--
<b>Individual Level Independent Variables</b>		
Psychological Distress – depression symptoms	Brief Symptom Inventory (BSI) Depression Subscale	.70
Current and past criminal justice involvement	Sociodemographic Questionnaire	--
Current drug and alcohol use	Risk Behaviour Assessment	.67-.88
HIV Risk-Reduction Knowledge	HIV/STI Risk-Reduction Knowledge Scale	.87
Quality of Life	WHO Quality of Life Scale - Brief	.66-.80
<b>Community Level Independent Variables</b>		
Social Support and Social Network	Social Support and Social Network Questionnaire	--
Access and Utilization of Health Care Services	Health Service Utilization Questionnaire	--
<b>Macro Level Independent Variables</b>		
Attitudes towards Gender Roles	Masculine Traditional Ideology Scale	.70
<b>Dependent Variables</b>		
Number and proportion of drug use, needle sharing, unprotected sex acts across sexual partners, proportion of condom protected acts and number and type of sexual partners	Risk Behaviour Assessment Timeline Follow Back Measure	.78 .67-.88
HIV, HCV and syphilis status	Laboratory Assay and self-report	--

### *Respondent driven sampling (RDS)*

RDS is a modified version of chain-referral sampling intended to reduce bias and adjust for network size to produce asymptotically unbiased samples of hidden populations.<sup>4</sup> While fishermen, in general, are not a hidden population per se, they are highly mobile and no adequate sampling frame exists for them: current official lists are restricted to Malaysian vessel owners (both commercial and non-commercial) with no database specifically capturing non-vessel owning fishermen (i.e., deckhands aboard vessels) as well as non-Malaysian nationals who tend to operate illegally. Furthermore, for the purpose of this estimation, it is important to adequately recruit fishermen who are involved in illicit (i.e., substance use) behaviours that are not easily captured by standard surveillance methods. Recruitment in RDS utilizes chain-referral sampling methods, where a small, purposefully diversified set of initial subjects known as “seeds”, are first recruited for participation. These seeds then proceed to recruit other eligible individuals from their social network. Recruitment proceeds in waves, with each wave of participants recruiting the subsequent wave. Participants are remunerated for participating in the study and for recruiting their peers. This dual-incentive system has been demonstrated to effectively recruit large numbers of individuals from otherwise hard-to-reach populations and is particularly efficient for recruiting people who use drugs.<sup>5</sup> The study begun with 6 seed participants – 3 did not use drugs, and 3 were active injection drug users. 2 injection drug users were re-seeded mid-way through the study due to attrition.

### *Data Collection*

Upon receiving a valid coupon, interested respondents could participate in the study at one of 3 data collection points; they are, the Kuantan and Kuala Pahang Fisheries Development Authority (LKIM) jetties, and at the fishermen village at Beserah. These sites were selected to ensure sufficient capture of different vessel types to facilitate respondent participation. A summary of data collection points by vessel capture is provided in Table 3 below.

**Table 3: Vessel Types by Data Collection Point**

<b>Vessel Type</b>	<b>Kuantan</b>	<b>Beserah</b>	<b>Kuala Pahang</b>
Deep Sea Trawlers	✓		
Deep Sea Purse Seiners	✓		✓
Small Trawlers	✓		✓
Small Commercial Vessels	✓	✓	✓
Unlicensed Vessels		✓	✓

Participants completed the survey on computer (with the option of audio aid). The survey takes between 1.5 to 2.5 hours to complete depending on self-reported risk behaviour.

<sup>4</sup> Heckathorn 2002, 1999

<sup>5</sup> Malekinejad et al. 2008

## Results

406 respondents who participated in the study were between the ages of 19 and 78 years, with a mean age of 37.8 years. Estimated drug use and HIV prevalence with selected sociodemographic characteristics are provided in Table 4 below.

**Table 4: Overview of Preliminary Results**

	n	%
<i>Estimated Prevalence</i>		
Drug use	185	46.0
Injection drug use (IDU)	152	37.4
HIV	48	11.8
HIV among IDU	40	26.3
<i>Sociodemographic Characteristics</i>		
No formal education	20	5.2
Completed high school	120	29.6
Muslim	401	98.8
Married	148	36.5
Never married	211	52.0
Living on vessel	28	6.9

71% (N=187) reported having used drugs in the vessel while on fishing trips, of whom 72% state that their skippers know of their drug use, half of whom said their skippers loaned them money to purchase drugs, and 63% have used drugs with other crew members. 86% (N=117) reported injecting drugs in the vessel during their last fishing trip prior participating in the study. 8.4% (N=119) shared needles or syringes with other crewmembers the last time they injected drugs while out at sea. 89% of 63 respondents indicated that they have injected more than one drug at a time in the past one month. Of the types of drugs injected by fishermen in our sample, Table 5 below provides a brief summary.

**Table 5: Types of Drugs Injected**

	n	%
Buprenorphine	80	79.2
Ketamine	28	58.3
Pil Kuda	101	78.3
Heroin	129	88.4
Methamphetamine	38	46.9
Methadone	1	1.3
Benzodiazapene	38	90.0

Of 403 respondents, a quarter (25%) reported being sexually active and had a primary female partner, of whom 59% (N=100) were married and 23% had a girlfriend. Table 6 below provides an overview of respondents' condom usage with their primary partners and other sexual behaviours.

**Table 6: Types of Sexual Behaviour Engaged**

	n	%
Condom use with primary partner	52	27.0
Anal sex with primary partner	10	10.0
Sex with other than primary partner	6	6.0
Sex trading	6	6.0
Sex with men	8	2.0

**Discussion**

It is clear that fishermen in Kuantan are at increased risk for HIV, driven largely by injection drug use. The one-in-four proportion of HIV among injection drug users is nonetheless similar to the 22% found in the 2009 Integrated Bio-Behavioural Survey among injection drug users conducted in Kuala Lumpur. Of interest is that drug use may be inherent in the occupational structure of fishermen, with almost three quarters of fishermen who use drugs reporting that their skippers know of their drug use, 6 in ten have used drugs with other crewmembers, and the majority of fishermen who inject drugs having injected drugs the last time they were working at sea.

Findings from this study are in contrast with other studies that found sexual risk to be the primary transmission route among fishermen.<sup>6</sup> Only a quarter of the respondents sampled here were sexually active. Nonetheless, low levels of condom use remain a cause for concern. Further, the study highlights possible systematic bias inherent in the use of reported HIV cases as proxy estimation for prevalence.

**Next Steps**

Statistical analysis is currently being conducted to explore possible associations between HIV risk and individual, community and macro determinants. Findings will be published in academic journals and presented at conferences.

Plans are underway to expand the study to Tumpat and Bachok fishing districts north of Kuantan in neighbouring Kelantan state. These sites will employ the same methodology as Kuantan to allow data to be pooled and for comparative analysis. Data collection is scheduled to begin in March 2012.

An integrated socio-medical intervention program is currently being planned for Kuantan fishermen. Results from the study will feed into the larger discussion on effective HIV prevention intervention models feasible for use with fishermen and other mobile populations.

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<sup>6</sup> Bene and Merten 2008; Samnang et al. 2004