

# Corruption and oil exploration: expert agreement about the prevention of HIV/AIDS in the Niger Delta of Nigeria

Isidore A. Udoh<sup>1\*</sup>, Ronald M. Stammen<sup>2</sup> and Joanne E. Mantell<sup>1</sup>

## Abstract

The Niger Delta, according to the Nigerian Ministry of Health, has a disproportionately high HIV infection rate, which is double the national average. The United Nations Development Program attributes the spiraling HIV infection rate in the region to poverty, migration and gender inequality. This paper examines two complementary suppositions: Is the high prevalence of HIV in the Niger Delta related to incompetent leadership and corruption? Is it related to the negative effects of oil exploration in the region? Currently, there is a dearth of research on the effectiveness of government programs or the role of the oil industry on the impact of AIDS in Nigeria. To address this gap, we conducted a survey with 27 internationally renowned experts from diverse disciplines using a three-round modified Delphi to formulate consensus about the impact of weak governance and oil corruption on AIDS in the Niger Delta. Results from the Delphi suggest that these factors and others have exacerbated the transmission of HIV in the region. To mitigate the impact of AIDS in the region, efforts to engage oil companies in implementing HIV prevention programs as part of their corporate environ-

mental responsibility to the community are urgently needed.

## Introduction

Evidence suggests that HIV/AIDS prevalence in Nigeria increases exponentially as one moves from the Southwest to the South-South of the country where oil exploration is concentrated [1]. Three states within the Niger Delta (Akwa Ibom, Cross River and Rivers), which are home to significant oil exploration activities, have prevalence rates equal to or higher than the national average in 2005 ranging from 3.9% among adults aged 15–49 years (UNAIDS, 2006) to 4.4% among adult women aged 15–49 years [National HIV Seroprevalence Sentinel Survey, National AIDS and STDs Control Program (NASCP), 2006], causing alarm among the population and policy makers [2]. Unlike other parts of the world, where oil-producing communities benefit from investments and support from oil companies or favorable revenue-sharing plans with the government, the Niger Delta does not appear to benefit from the extraction of its natural resources [1, 3]. The negative environmental and socioeconomic effects of oil exploration in the Niger Delta have been the subject of recent news headlines. Within the last decade, however, widespread HIV transmission and subsequent AIDS-related mortality are the most critical threats facing the beleaguered region [1]. However, there is little research on the underlying factors driving HIV prevalence in the Niger Delta region, especially the socioeconomic impact of oil exploration [1, 2].

<sup>1</sup>HIV Center for Clinical and Behavioral Studies, Columbia University, 1051 Riverside Drive, Unit 15, New York, NY 10032, USA and <sup>2</sup>School of Education, North Dakota State University, Fargo, ND 58105, USA

\*Corresponding to: I. A. Udoh.

E-mail: ui2105@columbia.edu

To explore the sociopolitical environment that facilitates the high prevalence of HIV in the Niger Delta of Nigeria, we solicited expert opinions from 27 AIDS research and advocacy leaders, using the Delphi method, regarding their perceptions of the factors (i.e. weak government leadership, corruption and the negative effects of oil exploration) that contribute to the high HIV rates in this region. This paper presents data on the role that these structural and behavioral dynamics play in HIV transmission. Study findings can be used to guide more effective prevention models for similar sociopolitical contexts and identify critical issues for future research.

### **HIV/AIDS in Nigeria**

Nigeria has the second largest number of people living with HIV/AIDS in the world [1, 4–6]. Currently, the country is faced by complex economic, social and political challenges to development due to a legacy of a costly and bloody civil war, prolonged and disruptive military dictatorships, ethnic and religious conflicts, corruption, economic mismanagement and the decay of educational and health infrastructures [7–9]. The Niger Delta's micro HIV epidemic exists within this troubled sociopolitical context that is exacerbated by weak national integration and control and local/regional political and economic chaos.

Since 1986, when the first case of AIDS was diagnosed in Nigeria, the disease has spread aggressively [1, 10]. The infection rate was estimated to have risen from 1.8% in 1990 [1] to 3.9% among adults aged 15–49 years (UNAIDS, 2006) and 4.4% among adult women aged 15–49 years (National HIV Seroprevalence Sentinel Survey, NASCP, 2006). These numbers may be underreported, as many of those infected are unaware of their HIV status [12]. With a population of ~131 million, Nigeria is believed to have one of the most explosive epidemics in West Africa [12].

Like other parts of sub-Saharan Africa, the HIV epidemic in Nigeria is gendered; more than half (1.6 million) of the 2.6 million adults currently infected are women [12]. There is also a growing number of HIV-positive children, with 90% having contracted

the disease from their mothers [13]. Nigeria is believed to have one of the largest numbers (930 000) of AIDS orphans in the world [1, 12].

AIDS-related mortality is high, with 220 000 estimated deaths in 2005 [1], affecting the country's most productive members of society and socioeconomic development [1]. With an estimated one in 11 people infected with HIV/AIDS worldwide living in Nigeria, committed leadership is needed to prevent a severe explosion of the disease in the country, a situation that could threaten the rest of West Africa because of Nigeria's size and political and economic influence on the continent [3, 14].

### **Political leadership, corruption and HIV/AIDS transmission in Nigeria**

The literature suggests that a strong commitment from local, national and international leaders is necessary before any HIV/AIDS prevention program can have an impact [15, 16]. Historical and geopolitical factors make this task more complex and challenging. The legacy of the British colonial practice of forcing together formerly independent, thriving and competing ethnic societies and kingdoms by carving patently artificial new national boundaries presents particularly complex leadership challenges [17]. With ~250 ethnic and linguistic groupings [7, 8, 18, 19], Nigeria—Africa's most populous and culturally diverse country—lacks a cohesive national identity [9]. Consequently, this crisis thwarts efforts to forge a coordinated and effective national response to the epidemic because each ethnic group is only committed to interventions that help its own community.

Prior to 1998, the successive military governments that ruled Nigeria failed to address the burgeoning public health crisis or the limited capacity of the health care infrastructure to respond to the HIV/AIDS epidemic [13, 20]. Instead, efforts to control the epidemic were directed by a few non-governmental organizations (NGOs) that were local and autonomous [1]. In 1988, the military government launched the NASCP [1, 13, 21], which was allocated only US\$2.5 million to conduct a media campaign around World AIDS Day and a national

AIDS conference [20]. The government of President Olusegun Obasanjo, who was elected in May 1999, recognized the immense threat posed by HIV/AIDS and established national structures—the Presidential Committee on AIDS and the National Action Committee on AIDS (2000)—to coordinate resources, advocacy and rights protection, research, community and participatory action for the economic empowerment of women and PLWHAs and care for HIV/AIDS orphans [1, 13, 22]. In addition, State and Local Action Committees are being organized to lead local responses to the epidemic [23]. These local instruments are critical for organizing more community-based and grass-roots responses to the epidemic.

In April 2001, a special summit of the African Union held in Nigeria produced the *Abuja Declaration on HIV/AIDS, Tuberculosis and Other Related Infectious Diseases* that declared a ‘state of emergency’ for Africa [24]. Like many other countries around the world, Nigeria’s HIV/AIDS program is believed to face management and transparency challenges, which are particularly worrisome, given the country’s reputation of corruption problems. In a report for Transparency International, Ekeanyawu *et al.* [7] indicate that ‘corruption in Nigeria is endemic and pervades every facet of life, as well as every strata of society ...’. Thus, in our Delphi survey, we examined whether participants believed that a lack of transparency and competency in government leadership affects the viability and effectiveness of Nigeria’s HIV/AIDS program and whether corruption surrounding oil exploration activities in the Niger Delta contributes to HIV transmission in the region.

### **Oil exploration and HIV/AIDS**

The link between poverty and the transmission of HIV/AIDS has been well documented [4, 25–31]. Poverty creates a context that increases the likelihood that vulnerable individuals will engage in HIV-related risk behaviors [32, 33]. The Niger Delta is one of the poorest regions in Nigeria, with an average poverty rate of 83.3% compared with the national average of 78.3% [8]. Although the region is the

main source of crude oil and natural gas, accounting for nearly 90% of Nigeria’s foreign exchange earnings and 80% of Nigeria’s federal revenue over the past several decades [3, 34, 35], little of the oil revenue has been applied toward alleviating its pervasive poverty [1]. This situation, exacerbated by negative effects of oil exploration, makes the transmission of HIV in the area explosive and complex.

According to Bery [36], the oil and extractive sectors reported that 25% of their workforces were infected with HIV/AIDS. Udonwa *et al.* [19] suggest that wealthy oil workers in the region use their wealth to gain access to impoverished girls in the Delta to engage in unprotected sex. Oil exploration pollutes farmlands and kills fish, which are the key economic resources for the rural community, reducing opportunities for subsistence and development. Since most rural women do not migrate to find employment in oil industrial centers, the destruction of the rural economy can force some women to engage in unprotected transactional sex that exposes them to the risk of HIV/AIDS [3, 35, 37]. The suggestion in the literature of possible links between corruption and oil exploration with HIV/AIDS in the region led us to explore this connection with a Delphi survey of experts.

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## **Method**

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### **Delphi technique**

The Delphi method is an iterative technique used to gather and collate informed judgments from a panel of experts, without bringing the panel together, on specific issues or subjects, where information is scant [38]. The opinions of experts are polled on a series of statements or questions, with an iterative process of feedback provided to the participants between rounds on the panel’s scores and comments [39] to achieve consensus. At least three HIV/AIDS studies have used the Delphi, for example to determine the reasons that HIV/AIDS in the United States has persisted, and what could be done to reverse the trend [43]; to determine the elements necessary for obtaining HIV infection estimates [44] and to create ‘adolescent AIDS drug abuse’ interventions [45].

In this study, we used a three-round web-based Delphi process to survey AIDS experts' perceptions about the high HIV prevalence in the Delta. Since funding constraints precluded field research in Nigeria, a web-based Delphi process enabled the collection of responses from a large group of expert panelists around the world in a timely manner. Like most Delphi research, this study was not primarily concerned with causal inference and randomization.

### Panel selection

Selection of participants for a Delphi panel is based on participant expertise rather than on a random process [39, 45]; therefore, consensus of the Delphi is based upon the degree to which the participants are indeed experts [47, 48]. In this study, panelists were selected because of their expertise in the areas of HIV/AIDS, Nigerian society and the Niger Delta region. Two categories of experts were determined, defined and recruited: experts with knowledge of (i) HIV/AIDS (Category A Expert Group) and (ii) Nigeria's historical, geographical, sociocultural, -political and/or -economic circumstances (Category B Expert Group). These criteria were set to ensure that the expert panel represented the diverse and holistic perspectives regarding HIV transmission in the Niger Delta.

The Group A experts were HIV/AIDS researchers or NGO program directors who (i) either resided in or conducted research on sub-Saharan Africa, Nigeria or the Niger Delta and (ii) had at least 5 years of experience with HIV/AIDS in these areas. Category B Expert Group participants were expected to (i) be knowledgeable about the historical, cultural, social, political, economic or geographic determinants of health in sub-Saharan Africa, Nigeria or the Niger Delta; (ii) be Nigerian by birth or a current resident of Nigeria or (iii) have 5 years of professional experience in Nigeria or the Niger Delta.

Two US-based Nigerian scholars were asked to nominate prospective participants that met the criteria for participation in the Category A or B Expert Groups. These two scholars nominated 50 experts from around the world. At the same time, we compiled 70 names of published scholars identified

through refereed journals and books on HIV/AIDS in sub-Saharan Africa. The higher concentration of nominees and identified scholars from some institutions and regions than others led us to use a stratified sampling process to select 50 experts (Group A = 30; Group B = 20) from the list of 120 prospective participants to ensure institutional and regional diversity.

### Procedures

#### *Recruitment*

A letter of invitation to participate in the Delphi survey was sent by electronic mail in December 2005 to each of the 50 experts. Five experts declined to participate due to other commitments. Twenty-seven (54%) responded to the invitation and consented to participate in the study. The efforts made through electronic mail and telephone to contact those who did not respond were unsuccessful. Of the 27 who agreed to participate, 13 were in Group A and 14 in Group B. Six of the Group A experts and two of Group B experts were female, while seven of the Group A experts and 12 of Group B experts were male.

According to Dalkey and Helmer [39], a sample of 15 participants is adequate to obtain a high degree of reliability in a Delphi study.

As represented in Table I, Group A participants consisted of Africa-focused HIV/AIDS research scientists and epidemiologists from research and advocacy institutes, schools of psychology, medicine, communication, geography and rural health in the United States, Canada, Belgium, Australia, South Africa and Burkina Faso. Eleven of 14 Group A experts held PhD degrees, one held a MD degree and one was a PhD candidate and assistant professor in a school of medicine. Group B participants came from Nigeria, Ghana and the United States, and included Nigeria-focused HIV/AIDS research scientists from schools of communication, medicine, education, political science and public health. Others included physicians, a human rights activist, a sociologist, a mathematician and two clergymen. Eight of 13 Group B experts held PhD degrees, four held MD degrees and two were PhD candidates.

**Table I.** Profiles of Groups A and B Experts who participated in the Delphi study

S/N	Group A	Group B
1.	Participant, PhD, University professor, Economics, South Africa	Participant, PhD, University professor, Public Health, USA
2.	Participant, PhD, Research Institute, Microbiology, Belgium	Participant, MD, DPharm, University professor, Pharmacy, USA
3.	Participant, PhD, University professor, Social Science and Behavior, Australia	Participant, PhD, Research Center, Public Health, USA
4.	Participant, PhD, University professor, Nursing, USA	Participant, PhD, University professor, Sociology, USA
5.	Participant, PhD, University professor, Political Science, USA	Participant, PhD, University professor, Communication, USA
6.	Participant, PhD, University professor, Telecommunications, USA	Participant, PhD, Human Rights Advocate, USA
7.	Participant, ABD, University professor, Public Health, Australia	Participant, PhD, University professor, Mathematics, USA
8.	Participant, PhD, University professor, Psychology and Obstetrics & Gynecology, Canada	Participant, MD, Physician, USA
9.	Participant, PhD, University professor, Geography, USA	Participant, PhD, University professor, Political Science, USA
10.	Participant, PhD, MPH, HIV/AIDS Rights Advocate, Canada	Participant, MD, Physician, USA
11.	Participant, PhD, MPH, University professor, Psychology, USA	Participant, JCL, ABD, Clergy, Ghana
12.	Participant, PhD, Research Institute, Epidemiology, Burkina Faso	Participant, MD, Physician, USA
13.	Participant, PhD, University professor, Psychology, USA	Participant, MBA, ABD, Clergy, Nigeria
14.	Participant, MD, MPH, Research Institute, Senior Scientist, USA	

### *Ethics approval and informed consent*

The North Dakota State University's Institutional Review Board formally approved the study. The informed consent process with potential participants was conducted via the web. A letter advising participants of their rights as participants and freedom to refuse participation or withdraw from the study was placed on the study's Web site and if they consented to the content of the letter, they participated in the study. Study participation was confidential, not anonymous.

### **Delphi questionnaire**

#### *Assessment*

Two HIV/AIDS experts and three scholars from the Niger Delta reviewed the survey questionnaire for

content validity and four educational experts from North Dakota State University, School of Education, and a retired professor and former policy analyst for the government of Saskatchewan, Canada, reviewed the instrument for construct validity. Comments made by each reviewer were used to modify the questionnaire. The questionnaire consisted of statements developed from a review of the literature: six statements under the category 'government leadership and HIV/AIDS in the Niger Delta' (Category 1) and four statements about 'oil exploration and HIV/AIDS in the region' (Category 2).

#### *Delphi Survey I*

In addition to five statements generated for Category 1, the expert panelists were asked to suggest other issues to be included in subsequent rounds of the

survey. At the completion of the first round, they suggested that item 4, which involved ‘corruption and incompetent leadership’ in Nigeria’s HIV/AIDS program, be split into two statements, which was incorporated into the second round of the survey.

### *Delphi Survey II*

The summary of panelists’ comments and panel scores involving frequencies, means and standard deviations (SDs) from Delphi Survey I was placed under each statement and posted on the web for the second round of the survey. Panelists were then asked, based on the feedback provided, to indicate to what extent they agreed or disagreed (using a four-point Likert-type response choice ranging from ‘Strongly Agree’ = 4; ‘Agree’ = 3; ‘Disagree’ = 2; ‘Strongly Disagree’ = 1; ‘Don’t Know’ = 0); Don’t Know was not included in the data analysis. with each statement. They were encouraged to reexamine their earlier judgment on each statement from the first round and rate each statement again. The goal of this second round was to achieve a coalescence of opinions and panel consensus on each statement. Eight statements met the group consensus (see Data analysis) and thus were removed from the questionnaire before administration of the third round of the Delphi survey.

### *Delphi Survey III*

The two remaining statements on which participants did not reach a group consensus, along with a summary of their scores and the participants’ comments, were posted on the web for the third round of the survey. At the end of this final round, participants’ views had converged, and consensus on the two statements was achieved. Consensus helped to determine what factors the experts believed were key contributors to HIV transmission in the Niger Delta.

### **Data analysis**

SPSS version 12.0 for Windows was used to calculate frequencies and descriptive statistics (means and SDs) of panel scores on each statement. The consensus level was set between 80 and 100% agreement or disagreement, and is considered to represent a high

standard of agreement/disagreement [49]. The statistical level of agreement with a statement was set at the mean response of  $\geq 3.00$  (Agree) or higher, with a SD of  $\leq 1.000$ , whereas the statistical consensus of disagreement with a statement was set at the mean response of 2.00 (Disagree) or lower, with a SD of  $< 1.000$ .

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## **Results**

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### **Research Question 1—Is the high prevalence of HIV/AIDS in the Niger Delta due to incompetent leadership and government corruption?**

There were six statements under this category. The statistical analysis in Table II shows a high concordance (at Round 2) with the Delphi statements by the entire panel, and a strong agreement separately by both Group A and Group B participants. However, more respondents from Group B than Group A agreed with Topic 5, possibly because, as Nigeria-focused experts, they are more familiar with the operations of Nigeria’s HIV/AIDS program. While panelists from both groups highly agreed with Statement 4 dealing with corruption, opinions were divided on the function of incompetent leadership in Statement 5. The comments regarding each Delphi statement reflect the views of several participants and provide a context for understanding these statements.

In Statement 1, participants were asked to indicate their level of agreement with the statement,

1. A strong commitment of local, national, and international leaders is required in order for any HIV/AIDS prevention program to have an impact.

Eight panelists (Groups A and B) commented, agreeing that government leadership was critical to successful HIV/AIDS intervention. One noted that, ‘In African countries, what has proven to be the catalyst has been the strong national leadership, usually directly from the President. International leaders, particularly from the West, can provide financial and moral support, but the initiative has

**Table II.** Descriptive statistics on Delphi panel (and Groups A and B) responses on political corruption and leadership and HIV/AIDS transmission

Statement	Panel Mean (SD)	Group A Mean (SD)	Group B Mean (SD)	Panel % agree	Group A % agree	Group B % agree
1	3.67 (0.679)	3.46 (0.877)	3.86 (0.363)	96.3	92.3	100
2	3.52 (0.593)	3.40 (0.699)	3.62 (0.506)	95.6	90.0	100
3	3.09 (0.526)	3.13 (0.354)	3.07 (0.616)	90.9	100	100
4	3.57 (0.507)	3.50 (0.535)	3.62 (0.506)	100	100	100
5	3.14 (0.793)	2.75 (0.866)	3.38 (0.605)	86.7	75.0	92.4
6	3.29 (0.624)	3.25 (0.622)	3.38 (0.651)	91.7	91.6	91.7

Strongly Agree = 4; Agree = 3; Disagree = 2; Strongly Disagree = 1; Don't Know = 0. Don't Know was not included in the data analysis. Wordings of the Delphi statements are noted in the text.

to be taken at the national level' (Male Group A expert). Leadership, according to several panelists, must be complemented by people's willingness to change their risky health behavior.

2. Since the HIV was first discovered in Nigeria in 1986, a succession of Nigerian governments failed to recognize and tackle HIV/AIDS as a gathering health crisis.

Panelists strongly agreed with this statement and said that the military governments that ruled Nigeria since the HIV virus was discovered in 1986 bear the greater responsibility for ignoring the epidemic. One male Group B respondent argued that, 'Nigeria's military is concerned only about Nigeria's military; military leaders up through 1999 democratic transition did not have concern for the epidemic'. Another Group B male panelist added that past regimes 'completely denied' that HIV/AIDS was a problem in Nigeria.

3. It was only after the election of a civilian government in 1999 that significant efforts were organized to combat HIV/AIDS in Nigeria.

A male Group B panelist argued that even after the 1999 general elections, 'the national commitment has been less than satisfactory'. Another male Group B participant added that the current Nigerian President Obasanjo's government appears to invest more in providing antiretrovirals than in prevention.

4. Although the current Nigerian government has organized institutions and action plans to

combat HIV/AIDS in the country, corruption remains as a serious challenge facing Nigeria's HIV/AIDS prevention program.

The panelists' comments underscore the significance of corruption as a factor undermining the success of Nigeria's HIV/AIDS program. One noted that, 'Yes, corruption is at the root of everything. From what I hear, the grants and funds meant for this (HIV/AIDS) are not used for it' (Female Group B expert). Another male Group B expert said that those in charge of HIV/AIDS programs try to look like capable leaders and give a good impression 'when donors and international visitors are around'. When the visitors depart, the day-to-day support for programs does not exist. Still another, male Group B participant, commented that a lot of money is 'flooding into' Nigeria's HIV/AIDS programs, but the managers of these funds lack the qualities of 'accountability and transparency'.

5. Although the current Nigerian government has organized institutions and action plans to combat HIV/AIDS in the country, incompetent leadership remains as a serious challenge facing Nigeria's HIV/AIDS prevention program.

Although there was a strong agreement with this statement, many panelists suggested that the real problem is not a lack of competent leadership, but corruption. One male Group A expert stated that, 'I don't know whether it is incompetent leadership or just a continuing lack of courageous leadership'.

6. Thus far, Nigeria's treatment program has been insufficient for providing life saving antiretroviral drugs to the people living with HIV/AIDS in that country.

Panelists suggested that a number of factors affect the quality of Nigeria's antiretroviral program. These include 'lackadaisical and selfish philosophy of governance', 'the poor quality of health care in Nigeria', 'international factors' (such as restrictions stipulated by foreign donors) and 'domestic restraints'.

### Research Question 2—Is the high prevalence of HIV/AIDS in the Niger Delta due to the negative effects of oil exploration in the region?

The four statements in Table III, derived from the review of literature, surveyed the expert participants' perceptions of the significance of oil exploration activities in the transmission of HIV in the Niger Delta.

Overall, the strong statistical concordance and comments by the entire panel and Groups A and B participants showed their strong agreement that the negative effects of oil exploration contribute to the transmission of the HIV epidemic in the region.

1. The environmental pollution caused by oil exploration activities in the oil producing communities of the Niger Delta of Nigeria has negatively impacted the agricultural and fishing sectors. This situation has impoverished the people of the area and contributed to the disproportionately high rates of HIV/AIDS infection in the Niger Delta.

A male Group A panelist observed that structural factors such as oil exploration 'influence HIV transmission', as does the almost complete ignorance on the part of the Niger Delta population of what it means to be HIV positive. A female Group A expert added that oil exploration engenders poverty, prostitution and sex trade, 'as alternative forms of making a living', including farming and fishing, are destroyed.

2. Women are the main stakeholders in the mainly agrarian rural economy of the Niger Delta of Nigeria. Therefore, oil spills that pollute waterways, kill fish, and damage agricultural crops have severely limited the economic well-being of the rural women of the area and rendered them vulnerable and susceptible to HIV/AIDS.

Panelists agreed with this statement, but added that it is not only women who are affected by the damage done by oil exploration activities to agriculture. As a panelist observed, men also have stakes in an agrarian society such as the Niger Delta. Another panelist observed that it is the risky sexual behavior more than vulnerability to survival sex that enhances HIV transmission as 'one can be poor and still sell sex without contracting the disease if the individual practices safe sex' (Female Group A expert).

3. The oil and extractive sectors recently reported that approximately 25% of their workforces worldwide were infected with HIV/AIDS. The influx of wealthy oil workers into the poor villages and communities in the oil-producing areas of the Niger Delta has most likely contributed to the high rates of HIV/AIDS in the area.

**Table III.** Descriptive statistics on Delphi panel (and Groups A and B) responses on oil exploration and HIV/AIDS transmission

Topic	Panel Mean (SD)	Group A Mean (SD)	Group B Mean (SD)	Panel % agree	Group A % agree	Group B % agree
1	3.38 (0.498)	3.25 (0.463)	3.46 (0.519)	100	100	100
2	3.00 (0.447)	3.00 (0.471)	3.00 (0.447)	95.5	90.0	90.9
3	3.14 (0.468)	3.22 (0.667)	3.08 (0.277)	95.5	88.9	100
4	3.09 (0.417)	3.27 (0.467)	2.92 (0.289)	95.6	100	100

Strongly Agree = 4; Agree = 3; Disagree = 2; Strongly Disagree = 1; Don't Know = 0. Don't Know was not included in the data analysis.



One male Group A panelist suggested that it is not just the influx of oil workers but ‘the behavior they bring with them’. The panelist also added that the mining camps, military bases, oil sectors are settings that can greatly facilitate sexual HIV transmission. However, another commented: ‘the other side of the equation is the failure of the oil and extractive companies to educate and treat their infected workers so that they don’t pass on the virus to innocent poor’ (Male Group A expert).

4. The military or other security personnel who are stationed in the Niger Delta to provide security for the multinational oil workers contribute to spreading the HIV virus in the area.

Many panelists suggested that soldiers and police are vectors for HIV transmission and vulnerable to similar sexual health risks as oil workers.

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## Discussion

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This study addresses an important public health issue—HIV/AIDS in Niger Delta—in a way that other HIV/AIDS-related studies have not done. We position the spiraling HIV epidemic in the region within the wider social and political–economic context of Nigeria, where vast oil wealth coexists with extreme poverty, squalor and misery. This paper suggests opportunities for oil companies and the Nigerian government to recognize that production and wealth, without social conscience and responsibility, create multiplicities of vulnerabilities to HIV. The UNDP report [1] concurs that blatant corruption in the Niger Delta makes the local community feel cheated, especially when the leaders live in opulence in the midst of abject poverty and when there is no evidence of government presence in terms of development projects.

The current government of Nigeria appears to appreciate the magnitude of the threat the epidemic presents for its people. Unfortunately, it created an HIV/AIDS program that is barely able to meet the needs of the country’s large population [1]. The experts in this study and UNDP [1] suggest that

there is a lack of strong, competent and committed leadership to manage successful HIV/AIDS prevention and treatment programs in the Niger Delta. Moreover, many individuals have neither knowledge of nor access to available intervention programs. The UNDP states that ‘government commitment to activities to control HIV/AIDS has lagged behind the high prevalence in the Niger Delta region, although the institutional frameworks for preventing and controlling the spread of HIV and mitigating its impacts are now in place’ [1, p. 335].

The Delphi experts suggested that leaders divert or misuse funds donated or appropriated for HIV/AIDS prevention or treatment in Nigeria. In July 2003, the 25 HIV/AIDS treatment centers depleted their supplies of drugs and began distributing expired drugs [50]. At some of the centers, health officials were reported to demand bribes from PLWHAs before providing them with expired drugs [50, 51]. According to Health Access [50], the Nigerian government program that provides affordable antiretrovirals for PLWHAs lacked accountability and transparency and in April 2006, two Global Health Fund grants to Nigeria were terminated on the grounds of inadequate performance and misuse of funds [52–54]. Tayler [51] describes corruption, including embezzlement of funds and production of counterfeit pharmaceuticals, as limiting the impact of HIV/AIDS programs around the world. Expanding HIV/AIDS budgets, the lack of capacity to use the funds effectively and the absence of monitoring and oversight make it possible for corrupt officials to siphon funds in a weak health system such as that in Nigeria [55]. Tayler and Dickinson [55, p. 107] add that in the case of Nigeria, it is unclear whether distributing expired drugs reflects corruption or ‘a weak drug procurement, supply and distribution service that was unable to respond to the demands that the rapid scaling-up of the program had placed upon them’.

Both the UNDP report and the participants in our study suggest that the exploration for oil in the Niger Delta fuels HIV/AIDS in the region. The sexual behavior of wealthy oil workers and the few wealthy local oil beneficiaries support an unregulated sex industry, which exposes sex workers to

unprotected sex and the risk of sexually transmitted infections (STIs), including HIV/AIDS. Oil workers, separated from their wives or regular sexual partners for several weeks at a time, are also vulnerable to HIV and other STIs [1] through unprotected sexual contact with sex workers.

The apparent axis of corruption involving western oil executives, middlemen and local Nigerian officials results in ineffective management of environmental pollution, economic deprivation and other health hazards [1] that complicate the transmission and management of HIV/AIDS in the region [56]. Multinational oil companies, for example often refrain from confronting the siphoning of 'taxes, royalties and profits paid to the state into private coffers rather than to in-country spending' to improve health infrastructure and services in the Niger Delta [56, p. 14, 15].

The findings from this study should be viewed within the context of the Delphi method. First, asking Nigerian scholars based in the United States to identify potential expert participants in this study resulted in the identification of a select pool of experts [57], living in the United States. Eleven Nigerian experts who participated in Group B ( $n = 14$ ) are in the Diaspora; therefore, whether a sample from Nigeria-based experts would produce the same results is unknown. The high expert concordance notwithstanding the findings of this study needs to be viewed as experts' perceptions and opinions about HIV/AIDS transmission and prevention in the Niger Delta of Nigeria. The opinions of these experts do not necessarily represent the true characterization of the situation in Nigeria or the Niger Delta. However, the physical distance of experts in this study from the Nigerian scene and the fact that participants do not interact with peers in a focus group or in-depth interview situation may increase objectivity of their responses.

The above potential limitations notwithstanding this study make a unique contribution with regard to prevention of HIV/AIDS in the Niger Delta. Few efforts have been made to explore the effects of incompetent government leadership, corruption and oil exploration on HIV/AIDS transmission in the region or country as a whole.

Study findings underscore the need for various levels of government in Nigeria, in particular the Niger Delta Development Commission [58], to work in partnership with communities and the private sector, including oil companies, to implement effective integrated HIV prevention and treatment programs in the region. Such efforts need to focus on comprehensive development to target the essential determinants of HIV transmission in the region as well as provide treatment programs that penetrate the rural villages of the region.

Oil companies need to do more than simply providing HIV/AIDS programs for their employees [1]. They can invest in research to determine and understand the possible links between oil exploration, poverty and the transmission of the epidemic in the region, and ultimately, in programs that can alleviate the deleterious consequences of these factors. On a structural level, interventions that seek environmental and ecological restoration to limit the negative effects of oil exploration on the Niger Delta environment are needed. HIV/AIDS policy makers and program planners should take advantage of Nigeria's recent law requiring oil companies to invest 3% of their earnings in development projects in their host communities [54]. Oil companies can disburse funds from such allotments, working in partnership with government and community organizations in the region, to create integrated HIV/AIDS programs within a development framework to provide microfinance, HIV/AIDS empowerment education, skills training, free universal primary and secondary education, free universal basic health care, university scholarship programs, employment opportunities and direct food and housing subsidies for orphans, impoverished families and rural women.

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### Funding

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### Conflict of interest statement

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None declared.

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