HUMAN SECURITY AND HELTH SECURITY IN ORISSA

Report by:

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Chapter 1: State of Health in Orissa

1.1 Introduction

With the recent inception of human security in the international field, state and federal governments are being held to a higher standard in the treatment of their citizens. The 20th century concept of people existing for the purpose of the state is no longer relevant. It is in point of fact the purpose of the state to exist for the progress of the health and wellbeing of the people. Human security dictates that individuals have the fundamental right to be free from want and fear, which is to be ensured by the government.

The state of Orissa, found on the eastern coast of India, is one of the most insecure states in the union. While it is rich in resources, has a diverse environment, and is one of the most ethnically heterogeneous states in the country, Orissa is inundated with disease and instability. Not only is Orissa lacking in infrastructure and support from the state and federal governments, its climate is one of the key contributing factors to the prevalence of malaria

The average temperature and humidity is prime for malaria vector breeding compounded with the percentage of people that live below the poverty line and have the lack of access to health care and toilet facilities has created one of the highest rates of human insecurity in the country. Orissa has found itself lodged in a vicious cycle where one factor only exacerbates another until it brings down the overall heath security scenario of the state.

1.2 Concept of Human Security and Health Security

Tadjbakhsh and Chenoy observe that human security draws a distinction between the conventional thought of security in which a state is safe from military threats to the notion that individual citizens are secure (2007). Essentially, human security is the belief that the state needs to provide people with not only physical security from outside or internal threats, but socio-economic and political safety as well. There are seven different components that make up the whole of human security and are as follows: economic security, food security, health security, environmental security, personal security, community security, and political security

(ibid). For the purpose of this report, we will be looking specifically at health security and its linkages to economic security.

While the birth of human security is generally characterized by the 1994 United Nations Development Report in which the concept is explicitly spelled out, Christie and Acharya suggest it can trace its roots farther back to the 1980s and even the 1970s. In the 1970s, with the notion of negative and positive peace and in the 1980s with the Brandt Commission and the advent of international development on the basis of humans (2008). It was not however until the end of the Cold War when human security morphed into a school of thought and over the past two decades has gained more of a following. In the post-bipolar world, there has been a massive shift that recognizes there is a greater need for preserving the dignity of individual human life as opposed to stockpiling weapons for the sake of preserving the state.

As such, the state is responsible for ensuring all aspects of human security and in the case of this report, health and economic security. The 1994UNDP *Human Development Report* defines health security as protection from the threat of disease and injury where the public sector has provided basic health care and services (Tadjbakhsh and Chenoy 2007). Furthermore, primarily women and children who come from a poor, rural areas tend to have higher health insecurity. Economic security is when individuals have a guaranteed primary income that is garnered though employment by the government (ibid).

Human security dictates individuals are granted a life with "freedom from fear" and "freedom from want." Different schools of thought argue one has primacy over the other but it is the position of this report that they are co-dependent on each other. A state cannot be free from fear if it is not free from want and vice versa. Tadjbakhsh and Chenoy describe freedom from want as providing for "not only the basic needs of food, shelter, and services, but also the more strategic needs that support long-term development." They further go on to describe freedom from fear as "the provision of security and a violence-free day-to-day life for everyone" (2007).

While the concept of human security has been gaining notoriety since the end of the Cold War and has become more accepted in academic circles, it is important to note that it is still a relatively young concept with several issues plaguing it. For example, there is not even an agreed upon definition for what human security is. There is however a plethora of definitions by different factions within the field, mainly the Japanese, Canadian, and Scandinavian delegations, which are geared more towards their own foreign policy stances.

When compared to the models of human rights and human development, human security is relatively new. Nevertheless, human security should be thought of as the top of the pyramid in which human rights forms the base, and human development occupies the middle. All three concepts share a mutual goal in which humans have a right to life with a higher standard of living and dignity.

1.3 Health Scenario in Orissa

For years Orissa has been met with rampant disease contributing to overall poor health and its lack of socio-economic wellbeing is at the heart of these issues. While the climate and geography of the state can be attributed to the prevalence of malaria, the fact that a vast majority of the population has little to no basic health education has perpetuated the problem. Literacy, income, health, and socio-economic status are all intertwined and create the human insecurity which is beleaguering Orissa.

Over 36% of the population is comprised of marginalized groups, specifically scheduled castes and scheduled tribes, who bear the brunt of health insecurity. They are both socially downtrodden and face extreme poverty due to their social status in conjunction with their way of life. According to the Health and Family Welfare Department of the Government of Orissa, almost 81% of these marginalized populations are day laborers with no land and barely any assets (2003). Scheduled tribes also have a third affront to their health security due to the fact that they believe deeply in traditional medicines and will visit shamans as opposed to seeking proper medical attention.

As previously stated, literacy and education play a substantial role in health security. In 2001 the literacy rate of Orissa was 63.08% which fell just behind the national average of 64.84% but it was still ranked 26th in literacy out of the 35 states and union territories of India. However, there is a great discrepancy between that of the male literacy rate (75.35%) and the female (50.51%). Among the scheduled caste population there is a literacy rate of 55.50% while the scheduled tribe population's rate is a mere 37.40%. It can therefore be concluded that the districts which have a higher scheduled caste and scheduled tribe percentage, combined with its female population, have a higher prevalence of health insecurity (Ali, et al. 2010).

Orissa's climate and geographic location have a direct influence on the rate of malaria infection. Dr. Shantanu Kumar Kar asserts the optimal temperature for malaria parasite breeding is that of 20 – 30 degrees C with 60% humidity. In the morning, Orissa has a mean relative humidity of 61.5 – 85.7% and in the evening 52.8 – 80.4% (Kar, 2007). While Orissa only has 3.74% of the country's population, it has 23% of its malaria cases and 27% of its deaths as a result of malaria (ibid).

Poor sanitation as a result of a mass exodus from rural to urban areas has created a wide network of urban slums and accordingly a greater incidence of open sewage. Individuals seldom have access to toilet facilities and use public forums instead. This increasing trend has aided in the attraction of disease carrying parasites and provided a wealth of water borne diseases that the state does not have the medical facilities or manpower to combat.

1.4 Methodology

The following methods were used to generate relevant data and feedback for the study:

- Review of secondary literature and sources such as the Human Security Index & Impact Assessment Methodology for the State of Orissa, Below Poverty Line census, and State of Health in Odisha 2010 Report by the Human Development Foundation.
- Review of secondary literature concerning human security such as Human Security: Concepts and Implications, and Human Security Research: Progress, Limitations, and New Directions.

1.5 Time Frame

This report was undertaken over a time frame of two months beginning on 30th June, 2010.

1.6 Potential Uses

i. Uses for development: Garnering support from non-governmental actors and non-profits for the sake of improving overall health security in Orissa.

ii. Uses for advocacy: Urging international donor agencies such as the World Bank and USAID to start initiatives which promote human security in relation to health security around the world.

iii. Uses for education: Applied as a case study for university classes involved in human and global security

Chapter 2: Human Security Index for Orissa

2.1 Introduction

One of the greatest obstacles facing the realm of international development is the argument over how to asses growth and relapse. While the United Nations has established the Human Development Index, the inherent problem is the notion that one set of norms is applicable to every developing country in the world. In a country as multifaceted as India, it is preposterous to even assume that an indicator in one state is as important to another. One could not look at the infection of malaria in Orissa in comparison to Sikkim due to the sheer lack of correlation. As such, a composite index has been developed for the state of Orissa regarding its major threats to health security. These indicators look at the core and largest contributors to human insecurity on the basis of health security.

2.2 Selection of Health Security Indicators

Human security is a complex issue and covers all aspects of human growth. As such, the indictors for the report focus purely on the aspect of health security and do not breach the other aspect of human security such as environmental or political security. Furthermore, the availability of certain information was not possible, nor was the necessary means by which to obtain it over the given time frame. Therefore the only disease looked at in this report is malaria but it is important to note that Orissa is grossly afflicted by other life threatening illnesses such as tuberculosis and typhoid.

Human Security Indicators

Indicator 1: Percentage of People Living Below the Poverty Line (BPL)

The percentage of people living below the poverty line is indicative of the overall welfare of the population. It is representative of the economic security as well as the availability of paying

work the state possesses. Individuals that live below the poverty line are less likely to spend their money on proper health care while forsaking food and other primary necessities. BPL is representative of a person's material possessions such as land ownership, housing, quality of nutrition, as well as clothes and mosquito nets which protect from malaria. BPL also is a general commentary on an individual's literary level, means of livelihood and explains trends of migration. This indicator describes the degree to which a population has "freedom from want" and provides a competent base to look at the overall security of Orissa.

Indicator 2: Number of People affected by Malaria (per lakh)

Malaria is one of the most prevalent and life-threatening diseases in developing nations around the world. Over 100 countries are infected with the disease and it threatens 48% of the world's population and it is attributed to 1 million deaths per year (Human Security Index). Most commonly it has a greater affect on the poor, the rural, and the illiterate.

Orissa is perfectly situated and has the most advantageous climate for malaria vector breeding. It has between 60 and 90 rainy days per year and has an average rainfall of 1482 mm and a mean temperature of 32.8º C which creates optimum humidity for vectors to thrive (Kar). The amount of people affected by malaria has a close association with their socio-economic status, the state of their environment, and water management systems (Human Security Index). This indicator looks at *personal security threats* and is included in the concept of "freedom from fear."

Indicator 3: Percentage of Households that do not have Access to Toilet Facilities

The number of toilet facilities available shows first and foremost how developed or underdeveloped a state is but also is telling of the amount of raw sewage that is pumped into the streets every day. Fecal matter is the cause of many diseases such as typhoid and amoebic dysentery found especially in over-populated areas like slums. A lack of proper sanitation and water management facilities is expressive of the socio-economic standing of a population and the infrastructure a state possesses.

Indicator 4: Households not Having Access to Safe Drinking Water

This indicator encompasses both "freedom from want" and "freedom from fear." It shows what sort of access each household has to the basic necessity of clean drinking water. People should not be afraid to ingest their own water for fear of illness and death and are left wanting for an essential human necessity. A plethora of water-borne diseases are caused by inadequate drinking water that contains fecal matter, parasites, and bacteria. It is the state's duty to ensure safe drinking water and this indicator shows how prepared the state is to provide such a fundamental need and how wanting the given population is.

2.3 The Sources of Data and its Limitations

A. Percentage of People Living Below the Poverty Line (BPL)

Sources: BPL census (Department of Panchayat Raj, Government of Orissa) for the period of 2001.
The BPL data taken for this report was from the 2001 census. The given time periods were filled in using the same statistical methods used to create the composite index discussed in section 2.4.

B. Number of People Affected by Malaria (per lakh)

Sources: Directorate of Health Services for 2002, and 2007
The figures only include individuals who sought medical assistance through government medical facilities and does not include those who used private hospitals and clinics.

C. Households Not Having Access to Safe Drinking Water

Sources: Rural Water Supply and Sanitation, Bhubaneswar, Govt. of Orissa for years 2002 and 2007
The data covered by this report does not include urban areas and slums, only the rural populations.

D. Percentage of People who do not have Access to Toilet Facilities

Source: District Level Household Survey, International Institute for Population Services 2007

The data for both the 2002 and 2007 periods was extracted from the 2007 report.

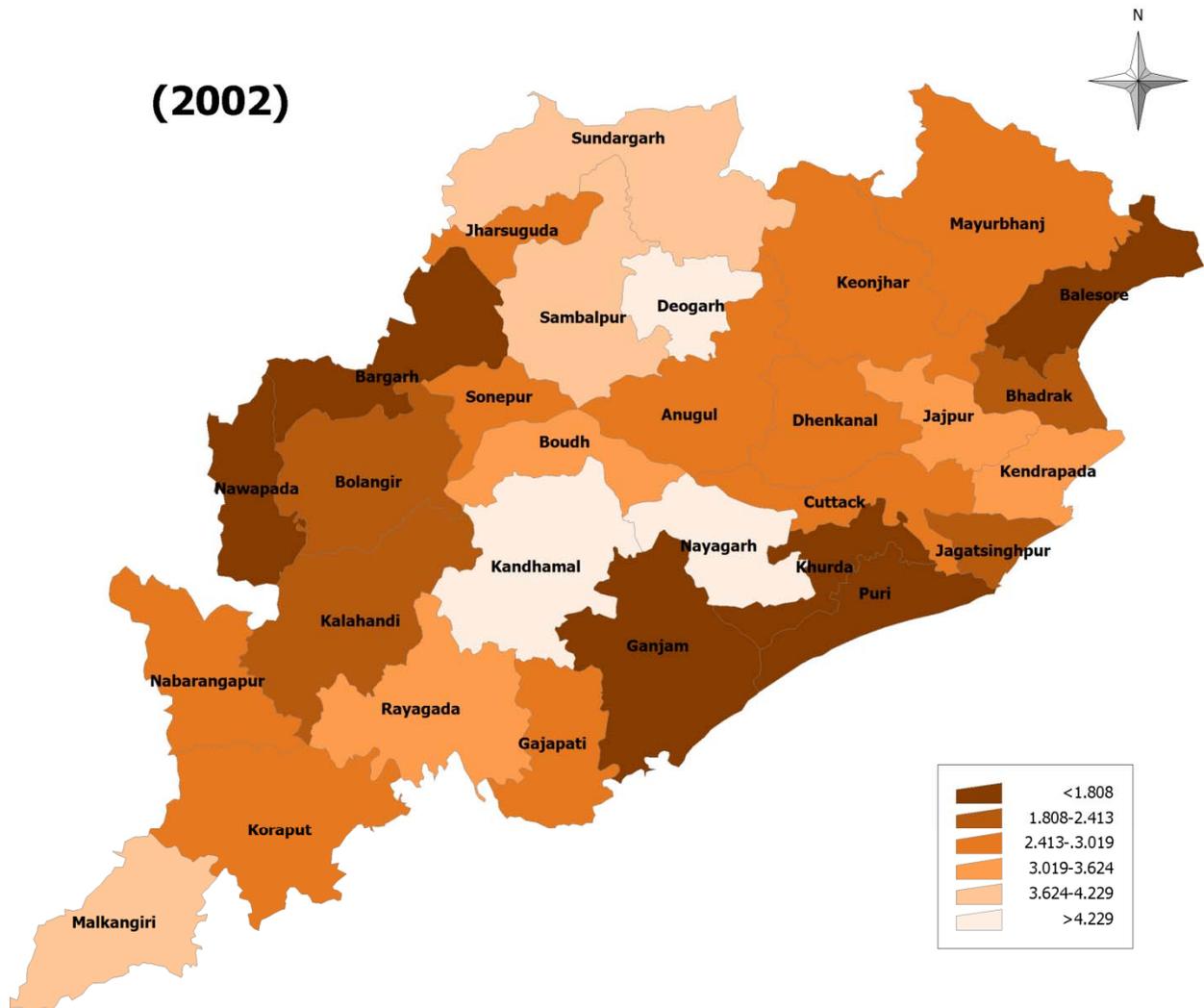**2.4 Methodology Adopted for Developing the Health Security Index**

There are a variety of multivariate statistical techniques available when tabulating a composite index. In the context of human security, indicators are generally interrelated and researches typically do not have the capacity to study a set of independent variable's relationship in the realm of security. Therefore, a different dimension reduction technique needs to be engaged so the entirety of the data can be recapitulated without losing information from the original figures. Essentially the goal of multivariate analysis is simplification which requires a large body of data to be summarized with very few limitations (Chatfield & Collins, 1980).

As such, this index was created by post multiplying the original data matrix by the Eigen vector for each individual district. The Eigen vector agrees with the largest Eigen value of the projection matrix, which gives the indicators their necessary weight, as depicted in table 1. The variables of each indicator have been made scale-free by means of standardizing the variable to attain unit variance, which is done by dividing each variable by their particular mean. Rather than assuming insecurity indicators have a high correlation in a particular space, in this report, it is assumed that significant insecurity indicators have a propensity to be unevenly distributed over a space. As such, indicators that have a higher dispersion are given a higher weight in comparison to those that have a lower dispersion.

Table Number 1: The weight assigned to indicators by assigning PCA		
Indicators	Weight 2002	Weight 2007
Percentage of people BPL	0.734	0.489
Number of people affected by malaria	0.592	0.744
Percentage of people who have access to toilet facilities	0.66	0.78
Households not having access to safe drinking water	0.558	0.48
Variation explained	**41.193**	**40.779**

Table Number 2: Human Security Index and Ranking for 2002 and 2007

District	HII – Value	Rank 2002	District	HII – Value	Rank 2007
Kandhamal	4.185	30	Nayagarh	4.835	30
Deogarh	3.802	29	Deogarh	4.677	29
Nayagarh	3.727	28	Kandhamal	4.302	28
Sambalpur	3.419	27	Rayagada	4.037	27
Malkangiri	3.41	26	Malkangiri	3.917	26
Sundargarh	3.33	25	Sambalpur	3.493	25
Rayagada	3.248	24	Koraput	3.248	24
Boudh	3.237	23	Keonjhar	2.927	23
Jajpur	2.864	22	Nabarangapur	2.824	22
Kendrapada	2.864	21	Sonepur	2.612	21
Gajapati	2.731	20	Boudh	2.581	20
Keonjhar	2.665	19	Gajapati	2.43	19
Koraput	2.663	18	Kalahandi	2.297	18
Nabarangapur	2.594	17	Anugul	2.296	17
Cuttack	2.57	16	Jharsuguda	2.226	16
Anugul	2.531	15	**Orissa**	**2.211**	
Dhenkanal	2.459	14	Sundargarh	2.171	15
Sonepur	2.426	13	Dhenkanal	2.154	14
Mayurbhanj	2.4	12	Mayurbhanj	2.078	13
Jharsuguda	2.397	11	Kendrapada	2.047	12
Orissa	**2.389**		Jagatsinghpur	2.005	11
Jagatsinghpur	2.154	10	Bolangir	1.928	10
Kalahandi	2.038	9	Bargarh	1.892	9
Bhadrak	1.974	8	Jajpur	1.76	8
Bolangir	1.934	7	Nawapada	1.629	7
Nawapada	1.849	6	Cuttack	1.584	6
Ganjam	1.775	5	Bhadrak	1.582	5
Puri	1.688	4	Ganjam	1.51	4
Bargarh	1.644	3	Balasore	1.425	3
Balasore	1.416	2	Puri	1.405	2
Khurda	1.411	1	Khurda	1.203	1

(2002)

	<1.808
	1.808-2.413
	2.413-.3.019
	3.019-3.624
	3.624-4.229
	>4.229

(2007)

LEGEND	
	<1.873
	1.873-2.335
	2.335-2.797
	2.797-3.260
	3.260-3.722
	>3.722
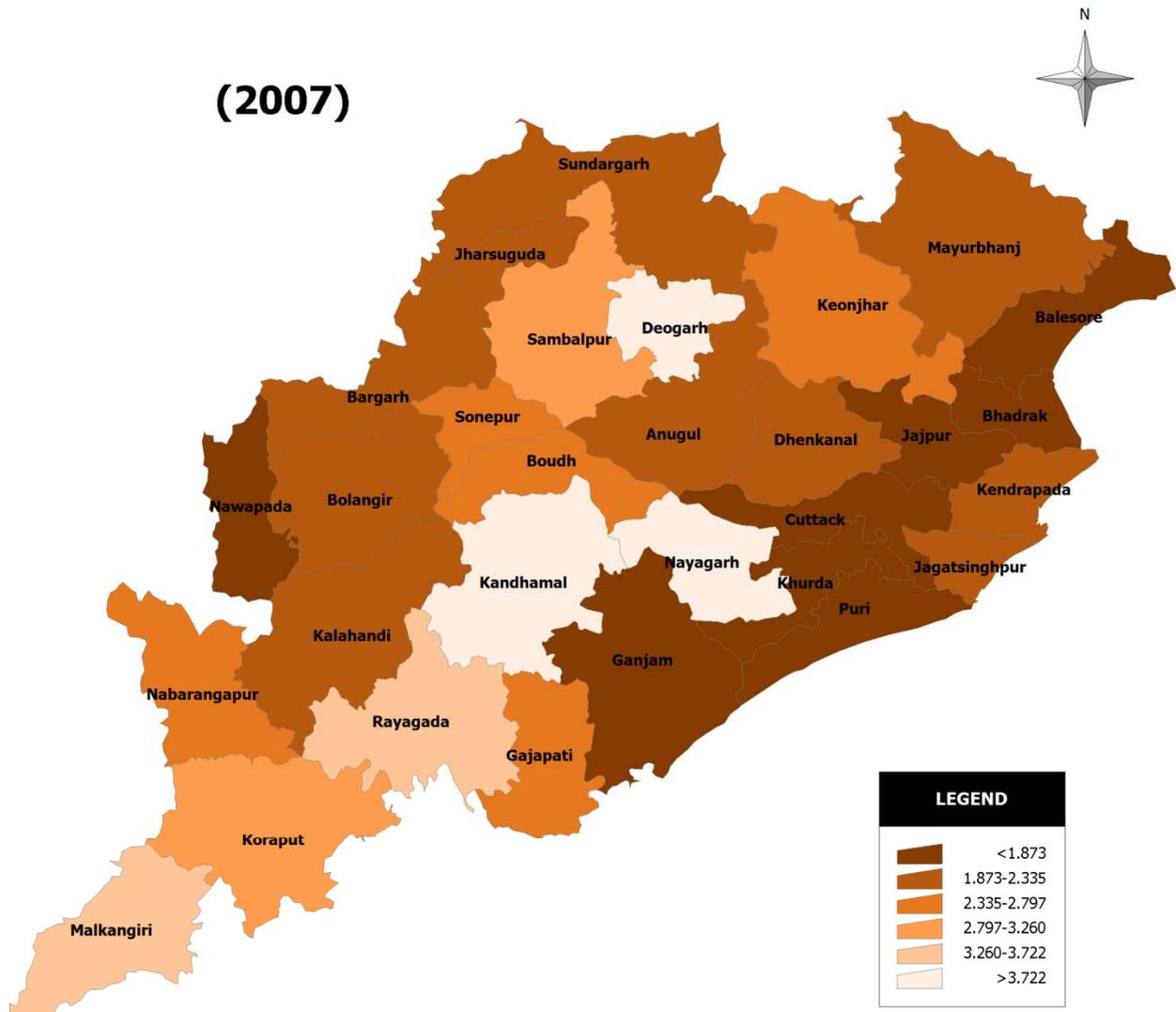
Chapter 3: Districts Possessing the Lowest and Highest Levels of Security

3.1 Ranking of Districts

The calculations for identifying human security levels of districts of Orissa are multiplications of the standardized neighborhood total values for each of the variable and the independent variable's weight, which was found previously with the Principal Component Analysis method. The last step of the calculation involves the summation of all weighted variable values for each of the neighborhoods and ranked according to hierarchy of their variables based on the greater threats they pose to human security

3.2 The Districts with the Highest Rates of Health Insecurity

In 2002, the districts which presented with the highest rates of health insecurity were Kandhamal, Deogarh, Nayagarh, Sambalpur, and Malkangiri. These districts had the highest rates of insecurity due to high rates of malaria infection, high percentages of individuals BPL, and only a small percentage of households having access to toilet facilities.

Kandhamal found itself as the most insecure for the reason that it had one of the highest rates malaria infections at 5,288 when the state average was 1,678 and 76.34% of its population BPL when the state had an average of 56.30%. Deogarh came in at second with 87.44% of its population BPL and 31.2% of households did

District	HII – Value	Rank 2002
Kandhamal	4.185	30
Deogarh	3.802	29
Nayagarh	3.727	28
Sambalpur	3.419	27
Malkangiri	3.41	26

not have access to safe drinking water when the state average was 19.09%. Although Nayagarh was below the state average in all other indicators, it came in right behind Deogarh due to the fact that it had the highest amount of people affected by malaria per lakh at 5,471. Sambalpur was next because it had 37.06% of its households with no safe drinking water and 2,842 cases of malaria per lakh. Malkangiri was the fifth owing to the fact 73.03% of its population was BPL,

it had 4,242 cases of malaria per lakh, and 94.1% of households did not have access to toilet facilities when the state average was 78.63%. **For the 2002 period, 67% of districts fell below the state level.**

In 2007 the poorest performing districts were Nayagarh, Deogarh, Kandhamal, Rayagada, and Malkangiri. Nayagarh was ranked the least secure because of its high rate of households not having access to safe drinking water at 9.26% and 3,679 people affected by malaria when the state averages were 3.6% and 1,212 respectively. Deogarh fell second as a result of 96.09% of its population BPL when the state average was 44.92%, 91.30% of its households hot having access to toilet facilities with a state average or 82.59%, and 10.35% of households

District	HII – Value	Rank 2007
Nayagarh	4.835	30
Deogarh	4.677	29
Kandhamal	4.302	28
Rayagada	4.037	27
Malkangiri	3.917	26

did not have access to safe drinking water. Kandhamal fell third as a result of 74.26% of its population BPL, 4,243 malaria cases per lakh, and 94.1% of households lacking toilet facilities. Rayagada followed after because of 4,278 cases of malaria per lakh. Malkangiri was fifth due to the fact that 96.4% of its households did not have access to toilet facilities, 5.12% did not have safe drinking water available and 64.18% of people were BPL. **For the 2007 period 50% of districts fell below the state average.**

3.3 Districts with the Highest Levels of Health Security

The districts that witnessed the most health security in 2002 were Khurda, Balasore, Bargarh, Puri and Ganjam. This was due in large part to the small number of households that were not equipped with toilet facilities and relatively decent access to safe drinking water.

While Khurda scored relatively average in terms of population BPL and toilet facilities, it only had 192 cases of malaria per lakh for the period and virtually every household had access to safe drinking water with a .02% of households not having access. Balasore placed second as a result of 168 cases of malaria per lakh and only 2.08% of households not having access to safe drinking water. Bargarh followed next with 50% population BPL, 324 individuals affected by

malaria per lakh and just 4.37% of households not having access to safe drinking water. Puri came in fourth due to the fact that there were merely 16 cases of malaria per lakh and 65.2% of households did not have access to toilet facilities. Ganjam placed fifth owing to the fact its population was comparatively low at 34.81% and it only had 581 cases of malaria per lakh.

District	HII – Value	Rank 2002
Khurda	1.411	1
Balasore	1.416	2
Bargarh	1.644	3
Puri	1.688	4
Ganjam	1.775	5

The 2007 data shows that the districts of Khurda, Puri, Balasore, Ganjam, and Bhadrak were the most secure out of the state while Bhadrak broke top five and Bargarh dropped to number nine. Khurda this time placed first because even though it had an above average BPL population of 53.61%, all of its households had access to safe drinking water, it only had 180 cases of malaria per lakh and 53.9% of households had access to toilet facilities. Puri also did exceptionally well this period having 8 cases of malaria per lakh and .31% of households that did not have access to safe drinking water. Balasore was third for having a low malaria rate again with 44 per lakh

District	HII – Value	Rank 2007
Khurda	1.203	1
Puri	1.405	2
Balasore	1.425	3
Ganjam	1.52	4
Bhadrak	1.582	5

and 1.87% of households not having access to safe drinking water. Ganjam followed with only 14.62% population BPL and 1.69% households lacking safe drinking water. Bhadrak was fifth even though 92.10% of households did not have access to toilet facilities it only had 261 cases of malaria per lakh.

3.4 Health Insecurity Trend in Orissa from 2002 to 2007

From the 2002 to the 2007 period there was a general increase in health security over every indicator with the exception of households with access to toilet facilities. Overall the state has had a gradual improvement over the five year period and shows that the state has taken measures to advance the general quality of life as a whole and provide greater health security.

There was an average 11.37% decrease of individuals living below the poverty line. Sonepur and Deogarh were only two districts that increased their percentage of people BPL from 2002 to 2007. For both periods Deogarh found itself as one of the top five least secure districts and Sonepur went from being ranked 13th in 2002 all the way up to 21st most insecure in 2007, having one of the most significant increases of all districts. Gajapati had almost significant decreases of individuals BPL with 33%. Bolangir, Cuttack, Dhenkanal, Ganjam, and Kalahandi also had over 20% decreases in their BPL population.

Concerning malaria, there were 466.07 less cases of malaria per lakh on average. Anugul, Ganjam, and Rayagada were the only districts that had an increase in malaria infection per lakh with Rayagada having the highest increase of 748 more malaria cases per lakh. Rayagada was also the fourth least secure district for 2007. Sundargarh by far showed the greatest improvement with 4,100 less cases of malaria per lakh. Kandhamal, Malkangiri, and Nayagarh also performed notably well with more than 1,000 malaria cases per lakh.

As previously stated, households access to toilet facilities was the only indicator that regressed over the five year period with an average of 3.96% increase of households not having access to toilet facilities. There were just five districts that enhanced their toilet access with Khurda making the greatest progress with 18.4% less households lacking access to toilet facilities. Nabarangapur, Nawapada, Rayagada and Sambalpur also did well, however Sambalpur only had a 0.3% decrease. Even though Kandhamal did well with its reduction of malaria cases, it had the highest increase of households that did not have access to toilet facilities with a 20.3% increase. Gajapati, Kalahandi, Nabarangapur, Nayagarh, and Rayagada all had more than a 15% increase of households not having access to toilet facilities.

Orissa's households with access to safe drinking water undoubtedly improved the most out of the four indicators with a 15.49% decrease. Perhaps the best aspect of this decline is that there were no districts that actually increased the number of households that did not have access to safe drinking water. The highest performers for the period were Jajpur and Kendrapada, which decreased the number of households without access to safe drinking water by 46.64% and 42.94% respectively. Boudh, Cuttack and Sambalpur also lessened the number of households without access to safe drinking water by more than 30% each.

The state of Orissa appears to have the necessary funds allocated to provide a greater level of health security and human security, however, this money never sees the hands of the

ones that need it most. According to the Handbook of Statistics on State Government Finances and the Government of Orissa's Finance Department, the 2002-03 year's total social sector (social services, rural development, food, storage and warehousing) expenditure in revenue and capital was 414,412,000 rupees (roughly $9,209,156) and was 32.44% of the total state expenditure (2004, 2005). It appears as if there has been a decreasing trend of state funding and allocation to the social sector expenditure reaching its lowest level of fund allotment for the 2003-2004 year at 27.78%. While the projected allowance for 2006-07 was 602,700,000 rupees (about $13,939,333) it was only 31.65% of the total state expenditure which shows even though the state has generated greater revenue it is dispersing less and less to the social sector. **See Appendix C.**

 Although Orissa is still lagging behind the rest of the country in terms of human and health security it is important to note that it has largely improved from the 2002 to the 2007 period and if it continues at this rate of improvement it could certainly catch provide a state that is capable of promising human security and health security. While the increase in households without access to toilet facilities is disappointing and does not even include the number of households in urban areas, such as slums, the decrease in BPL, malaria cases, and habitations without safe drinking water is promising.

3.5 Recommendations

Based on the composite health security index in the context of human security, the following recommendations are proposed:

1. **State and district sponsored work programs to improve access to toilet facilities**. This would improve the overall BPL by means of providing a steady income to laborers and would improve the quality of water management systems. Not only would families have a sanitary means by which to dispose of waste but it would also decrease the rate of water-borne disease infection.
2. **Block-wide education programs on causes of malaria and disease infection**. One of the largest contributing factors to malaria infection is a lack of knowledge how to prevent the disease and the symptoms thereof. Non-governmental aid could be utilized to conduct communal meetings for each block within the district to educate communities on the causes of malaria, how it can be prevented, the proper ways to eradicate mosquito breeding grounds, the symptoms, and what should be done if someone is suspected of having malaria. Furthermore, mosquito nets should be handed out to attendees along with Diethyl-*meta*-toluamide (DEET).

3. **Mass drug dispensation to areas highly affected by malaria**. In districts such as Kandhamal, Nayagarh, and Rayagada that have some of the highest numbers of malaria cases per lakh there should be a mass administration of anti-malarial drugs accompanied with compulsory education of the aforementioned recommendation.

4. **Adopt the Health and Human Security model undertaken by the Centre for Health and Human Security, Cuttack City, Orissa**. (See Mishra, Devi Kalyan *Health and Human Security: A Case Study on Slums of Cuttack City, Orissa*, Bhubaneswar: Madhyam Foundation) Areas with the top 20% highest rates of malaria infection along with tuberculosis and leprosy should have this implemented and depending upon the rate of success the model will be applied to lower risk areas. Unique aspects of model:

   a. **Human Security Facilitator –** Individuals within the given area are sought out and given the proper medical training to identify common and high risk diseases, know the names of medicines and the proper administration thereof, and to prepare slides of those suspected of infection and undergoing treatment. The individual is a member of the human security team and regularly reports to the medical professional assigned to the area. Spends 4 – 6 hours in the community per day.

   b. **Human Security Card** – Document carried by patients of chronic infectious diseases that contains their: name, age, sex, address, diagnosis of the disease, diagnostic tests done, treatment given and date, signature of the human security facilitator and notes by the doctor.

   c. **Doctor involvement** – Doctors are assigned to each specific are and will periodically visit the locality and will spend 4 – 5 hours per visit. For 2 hours the doctor will go door-to-door enquiring on the general health of families, gives recommendations to the human security facilitator, and looks at the state of sanitation and safe drinking water. The doctor will also attend bi-monthly community meetings.

Appendices

Appendix A: Indicators of Health Insecurity for Districts in Orissa – 2002

District	Percent of people living below the poverty line	Number of people affected by malaria (per lakh)	Percent of households with no access to toilet facilities	Percent of households with no access to safe drinking water
Anugul	49.76	994	69.6	30.75
Balasore	58.95	168	62.4	2.08
Bargarh	50.00	324	88.6	4.37
Bhadrak	57.39	76	78	17.66
Bolangir	37.89	1538	88.8	4.94
Boudh	79.31	1023	88.1	35.80
Cuttack	60.63	202	65.8	37.53
Deogarh	87.44	2690	89.6	31.20
Dhenkanal	40.89	1939	71.4	20.86
Gajapati	28.45	1800	74.8	35.61
Ganjam	34.81	581	72.2	16.57
Jagatsinghpur	38.30	19	74.9	33.08
Jajpur	40.48	310	75	51.86
Jharsuguda	39.59	1514	71.9	24.14
Kalahandi	39.65	1970	78.1	5.55
Kandhamal	76.34	5288	73.8	22.89
Kendrapada	53.90	34	77.4	48.68
Keonjhar	58.70	1760	84.7	18.44
Khurda	56.39	192	72.3	0.02
Koraput	80.88	2210	75.6	6.30
Malkangiri	73.03	4242	94.1	5.58
Mayurbhanj	60.84	1124	79.4	17.67
Nabarangapur	68.33	1945	94.2	7.33
Nawapada	59.50	586	92.8	2.86
Nayagarh	57.70	5471	70.8	14.61
Orissa	47.15	1336	82.1	19.93
Puri	63.56	16	65.2	9.94
Rayagada	58.02	3530	91.1	15.65
Sambalpur	47.33	2842	78.3	37.08
Sonepur	83.75	1258	84.7	5.83
Sundargarh	56.17	5038	71.8	7.08
Mean Average	**56.29**	**1678.07**	**78.63**	**19.09**

Appendix B: Indicators of Health Insecurity for Districts in Orissa – 2007

District	Percent of people living below the poverty line	Number of people affected by malaria (per lakh)	Percent of households with no access to toilet facilities	Percent of households with no access to safe drinking water
Anugul	40.16	1355	81.10	1.95
Balasore	44.18	40	71.00	1.87
Bargarh	39.62	261	92.10	3.23
Bhadrak	48.08	25	81.30	2.07
Bolangir	14.72	832	89.30	3.10
Boudh	78.42	676	93.40	3.23
Cuttack	38.88	119	67.20	3.40
Deogarh	96.09	2260	91.30	10.35
Dhenkanal	19.15	1081	83.00	3.74
Gajapati	-4.48	1341	91.90	5.90
Ganjam	14.62	653	76.70	1.69
Jagatsinghpur	23.85	13	76.60	7.60
Jajpur	20.56	199	76.00	5.22
Jharsuguda	30.16	554	83.50	5.76
Kalahandi	16.59	1710	93.70	1.36
Kandhamal	74.26	4243	94.10	0.00
Kendrapada	47.91	22	78.70	5.76
Keonjhar	40.44	1740	87.60	4.43
Khurda	53.61	180	53.90	0.00
Koraput	77.95	1959	88.60	2.70
Malkangiri	64.18	2647	96.40	5.12
Mayurbhanj	43.94	612	81.50	3.40
Nabarangapur	63.00	1752	78.00	2.44
Nawapada	40.69	299	83.20	1.62
Nayagarh	47.49	3679	87.30	9.26
Orissa	39.90	943	83.10	3.09
Puri	57.99	8	77.00	0.31
Rayagada	44.01	4278	75.60	1.63
Sambalpur	34.88	2628	78.00	5.72
Sonepur	94.48	525	92.00	2.94
Sundargarh	47.12	938	77.20	2.64
Mean Average	**44.92**	**1212**	**82.59**	**3.60**

Appendix C: Social Sector Expenditure as % of Total State Expenditure and Per Capita Social Sector Expenditure

Year	Total Social Sector Expenditure (Revenue & Capital) Rs. In Crore	Social Sector Expenditure as % of total State Expenditure	Social Sector Expenditure as % of GSDP	Per Capita Social Sector Expenditure Current Prices as 1993-94 base in Rs.	Per Capital Social Sector Expenditure Constant Prices 1993-94 = 100 in Rs.
1996 – 97	2442.94	38.71	9.22	714.31	561.56
1997 – 98	2606.35	38.02	8.09	751.11	565.59
1998 - 99	3203.47	37.07	9.00	910.08	646.82
1999 – 2000	4667.62	45.72	12.08	1307.46	899.83
2000 – 01	3726.06	33.73	9.61	1029.30	661.08
2001 – 02	3914.34	32.44	9.04	1066.58	661.24
2002 – 03	4144.12	31.24	9.27	1114.01	659.96
2003 – 04	4324.66	27.78	8.39	1144.09	650.42
2004 – 05 RE	4980.19	28.00	8.78	1290.20	694.97
2005 – 06 BE	5366.04	31.63	8.60	1365.40	697.13
2006 – 07 BE	6027.00	31.63	8.64	1499.02	N/A

Source: Handbook of Statistics on State Government Finances, Reserve bank of India 2004/05 and Budget at Glance, 2005/06/07, Finance Department, Government of Orissa

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