



LESSONS FROM THE CUBAN HEALTH SYSTEM: Comparative Mortality of Cuba, India, and the United States

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In three countries as diverse as Cuba, India, and the United States, it is difficult to draw parallels relating to health, given that each of the three countries has such varied economies, social structures, and health indicators. However, comparing health indicators across these countries allows a unique perspective on the advantages and drawbacks of each of these countries' health systems. This paper will compare mortality, morbidity, and other health systems indicators for India, Cuba, and the United States, and will attempt to explain the underlying reasons behind main differences in health statuses between these three countries. Public health interventions, equality and access to health care, and other social determinants of health will be explored as explanations for the varied health outcomes of these countries. In order to improve health indicators in the United States and across India, the Cuban and Kerala models of increased social equity, education, and access to health care should be implemented.

The mortality statistics from the World Health Organization on Cuba, India, and the United States provide startling information. One may expect the numbers to be dismal in India, and they certainly are – the probability of dying between ages 15-60 in India is more than twice the probability in the United States¹. The infant mortality rate in India is eight times that of the infant mortality rate in the United States, and the maternal mortality rate is more than thirty-eight times the rate in the US². With a population of over one billion people and with more than 34% of the population living on less than 1 US dollar a day, the repercussions of extreme poverty and inadequate political and economic structures are clearly seen in the health of the Indian population³.

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Year	Mortality Indicator	India	Cuba	United States
2005	Probability of dying (per 1,000 population) between 15 and 60 years (adult mortality rate), males	280	128	137
2005	Probability of dying (per 1,000 population) between 15 and 60 years (adult mortality rate), females	207	83	81
2005	Infant Mortality Rate (per 1,000 live births)	56	5	7
2000	Maternal Mortality Rate (per 100,000 live births)	540	33	14

One may easily assume that the differences in economic development, per capita income, and health expenditures between India and the United States would account for these drastic differences in health outcomes. Although the United States does spend a significantly larger portion of its gross domestic product on health care and while the United States does have a much higher gross national product compared to India⁴, the argument that economic development is largely responsible for health improvements is obliterated when the Cuban health statistics are factored into the mix. Cuba spends only 6.3% of its gross domestic product on health expenditures compared to the 15.4% spent by the U.S., and has a much lower gross national product than the United States⁵. Despite these disparities, as well as substantially lower per capita health expenditures in Cuba (\$229) versus the United States (\$6,069), Cuban health indicators are largely equal to those of the United States. Spiegel et al comments on the Cuban health paradox: "Cuba's experience challenges the conventional assumption that generating wealth is the fundamental precondition for improving health⁶." Indeed, males between the ages of 15 and 60 have a higher chance of dying in the United States (137 per 1,000 members of the population), than in Cuba (128 per 1,000 members of the population)⁷. Females in this age range have roughly the same chance of dying in the US and Cuba (81/1,000 to 83/1,000), and the infant mortality rate for Cuba is the best out of all three countries (5 deaths per 1,000 births, compared to 7 in the U.S. and 56 in India)⁸. Life expectancy in years is almost identical for both males and females in the United States and in Cuba⁹. Cuba and India share very similar levels of per capita GNP (\$3,649 in Cuba versus \$3,460 in India), yet the health outcomes for Cuba are considerably better than India. The great similarity in health indicators between the United States and Cuba despite their vast differences in economic development point to another argument for underlying causes of health. Thus, I selected this mortality data in order to highlight that the economic growth and development of a country is not the only method of improving health in a country.

Year	Morbidity Indicator	India	Cuba	United States
2005	HIV prevalence among adults aged 15+ years (per 100 000 population)	747	52	508

If a developed economy is not the answer, what then, is a potential explanation for better health indicators in Cuba versus the United States and India? A comparison of morbidity statistics and other health services statistics in Cuba, India, and the United States support the theory that public health interventions may play a large role in producing good health outcomes. The HIV prevalence among adults over 15 years of age is dramatically less in Cuba compared to the United States and India. Only 52 per 100,000 members of the population in Cuba are affected, versus 747 per 100,000 in India and 508 per 100,000 in the United States¹⁰. The Cuban response to the AIDS crisis is largely responsible for this decreased incidence and prevalence of HIV/AIDS in the population. In response to the growing HIV threat, the Cuban Ministry of Health implemented mandatory HIV testing for all its citizens, including pregnant women, and quarantined those with the virus in order to monitor their anti-retroviral therapy. As a result of this increased screening, the risk of HIV transmission through infected blood

products and pregnancy has been greatly minimized¹¹. Providing free anti-retroviral therapy, food, housing, and work pay compensation to all persons found HIV positive and quarantined in a facility, has allowed Cuba to maintain effective control over the disease. Despite U.S. claims about Cubans stripping their citizens of basic liberties, most quarantined patients choose to stay in the sanatorium even after the stay becomes optional because of the good treatment there¹². Educational interventions to teach schoolchildren about HIV, sexually transmitted diseases, and contraception have been widely implemented in schools and the media¹³. These education campaigns have been so successful that the total fertility rate for women has fallen below that of the United States and far below that of India (1.6 children per woman, compared to the 2 for the U.S. and 2.9 for India). The Cuban government has worked closely with the Cuban Ministry of Health to decrease the social stigma surrounding HIV and to provide equality of care and access to essential medicines in order to combat this deadly disease. This dramatic public health intervention is probably largely responsible for why Cuba has such a diminished rate of adults living with HIV in comparison to the United States and India. Although there are some ethical issues that are raised with Cuba's treatment of HIV patients, such as the erosion of social liberties and autonomy when diagnosed with the disease, it cannot be denied that Cubans are simply living with far fewer cases of HIV/AIDS than most countries in the developed and developing world. In 1989, the Cuban Vice-Minister of Public Health gave a powerful defense of the Cuban AIDS initiative: "In Cuba, nobody lacks economic resources because of being an AIDS carrier. In Cuba, no one dies abandoned on the streets for lack of access to a hospital. In Cuba, no homosexual has been persecuted because he is assumed to be likely to spread the virus. In Cuba, we don't have the problem of national minorities or drug addicts with high rates of AIDS¹⁴." This coordinated effort to fight AIDS in Cuba has not been replicated in either Cuba or the United States, and both are feeling the impact. The United States harbors a large social stigma towards HIV, which often prevents identification, treatment, and the subsequent spread of new cases. Anti-retrovirals are extremely expensive and hard to obtain in both the U.S. and India, unless one has significant financial resources. The lack of a national effort to fight AIDS in India is greatly hurting the country, as there is a huge lack of data on even the current estimates of deaths due to HIV. The WHO was not able to compile this information, due to inadequate reporting and tracking methods. In 2006, UNAIDS estimated that there are currently 5.6 million people living with AIDS in India, but as facts are unclear, the extent of the epidemic is unclear and therefore very difficult to treat¹⁵.

Along with Cuba's effective AIDS policy, other public health interventions have had a large impact on the health of the population. As seen in Table C, Cuba has been especially focused on vaccinating children and detecting and treating cases of tuberculosis in the recent years. The percentage of 1-year olds in Cuba who have been properly vaccinated with all three doses against Hepatitis B (99%) far surpasses that of India (8%) and even the United States (92%)¹⁶. The continued public health efforts to vaccinate children has had a great impact on the infant mortality rate of Cuba, leaving it better than that of even the United States. Additionally, the DOTS case detection rate of tuberculosis in Cuba of 98.2% is well over that of India (62.3%) and the United States (85.1%). Since tuberculosis is a very large cause of death in India and is still prevalent even in the United States, this kind of concerted public health campaign to identify, treat, and monitor tuberculosis patients would have a substantial impact on the health of people in India and in the United States. In an article in the American Journal of Public Health, M. Susser states: "When a health hazard like dengue fever or malaria is identified, there is a coordinated nationwide effort to eradicate it. Cubans no longer suffer from diphtheria, rubella, polio, or measles and they have the lowest AIDS rate in the Americas, and the highest rate of treatment and control of hypertension¹⁷." This national effort, such as mass vaccination campaigns, to treat and monitor people regardless of social status or ability to pay for services is part of the reason that Cubans have such good health indicators.

Year	Explanatory Variables	India	Cuba	United States
2005	Births attended by skilled health personnel (%)	48	100	99
2004	Physicians (density per 1,000 population)	1.6	5.91	2.56
2002	Hospital beds (per 10,000 population)	7	49	33
2005	Total fertility rate (per woman)	2.9	1.6	2.0
2004	Adult literacy rate (%)	61	99.8	99.8
2005	One-year-olds immunized with three doses of Hepatitis B (HepB3) (%)	8	99	92
2005	Tuberculosis: DOTS case detection rate (%)	61.3	98.2	85.1
2004	Population with sustainable access to improved sanitation (%), urban	59	99	100
2004	Population with sustainable access to improved sanitation (%), rural	22	95	100
2005	Net primary school enrollment ratio males (%)	92	97	94
2005	Net primary school enrollment ratio females (%)	87	95	90
2004	Total expenditure on health as percentage of gross domestic product	5	6.3	15.4
2005	Gross national income per capita (PPP international \$)	3460	3649	41950
2004	Per capita total expenditure on health at average exchange rate (US\$)	31.4	229.8	6096.2

Other public health efforts that have contributed to equal or superior health indicators in Cuba versus that of the United States and India include the quality of and access to primary health care services, as well as equality relating to a number of other social determinants of health. Spiegel et al explores the benefits of active execution of public policy affecting a wide variety of health outcomes in Cuba: "Implementation of health services such as financing, vertical and horizontal integration, prevention, and primary-care focus, as well as non-medical determinants of health, such as education, housing, nutrition, employment, community mobilization, and social cohesion largely explains the Cuban health paradox¹⁸." The large amount of community health workers and neighborhood clinics with trained doctors in Cuba ensures not only that everyone can see a doctor, but also that doctors pay regular visits to patient's homes and get acquainted with them and their lifestyles¹⁹. As shown in Table C, Cuba has twice the physician density per 1,000 members of the population as the United States, and over twelve times the physician density as India. These numbers have allowed Cuba to have one of the best doctor/patient ratios in the world and foster a sense of social cohesion between community members and health workers²⁰. The more that a physician knows about a patient, and his background, community, and values, the more trust a patient will have in the physician and the better the treatment and outcomes will be²¹. The ratio of hospital beds to the number of people in Cuba is also high considering Cuba's economic constraints, and is significantly better than India's ratio²². Additionally, the employment of so many doctors allows for 100% of Cuban births to be attended by a skilled delivery attendant, which is even higher than the number in the highly developed United States²³.

Also contributing to Cuba's excellent health status is its focus on non-medical social determinants of health. In 1961, the Cuban government published a report stating its views on development and health: "Medicine alone will not improve the overall health of the population. What will improve it is embedding medicine within a significant transformation of the socioeconomic structure to eliminate the problems of underdevelopment: the legacy of hunger, illiteracy, inadequate housing, discrimination, and the exploitation of labor²⁴." Cuba has worked extremely hard to increase the percentage of its rural population with access to sanitation, which remains around 95%. This number is stunning given that Cuba is still a developing country, and is especially remarkable compared to India's statistic of 22% of

its rural population having access to sanitation. A rationing system of the food in Cuba also ensures an "equitable distribution of basic dietary needs²⁵." Additionally, Cuba's rate of primary school enrollment for boys and girls is 97% and 95% respectively, which tops even the United States' primary school enrollment percentages²⁶. This has led to an adult literacy rate of 99.8%, exactly equal to that of the United States. One of the *strongest* adult health indicators is the level of education that one has, and there is a noticeable gradient relationship between the level of education one has and their mortality and morbidity throughout their life²⁷. Increasing education for women has done wonders for improving the infant and maternal mortality rates in Cuba and has empowered women to seek health care and employment on their own²⁸.

The Cuban commitment to equality in social services such as education, nutrition, and housing has had great impacts on the health of the Cuban people. Cubans have moved even a step beyond equity of health care services, and this equity has begun to produce equality of health states among different members of the population. There are dramatic differences between the Cuban health system and the United States health system. The largely private health-care system of the United States leads to many more out-of-pocket expenses than the public health care system in Cuba. Perhaps as a result, the number of bankruptcies due to medical reasons increased 23 fold between 1981 and 2001²⁹. These facts support the theory of reverse causation – that poor health can often cause a low socio-economic status in the U.S., in addition to the view that low socio-economic status can cause poor health³⁰. Many claim that the addition of free Medicare services to citizens after the age of 65 helps to alleviate inequalities in health among U.S. citizens. However, despite the alleviation of many of the inequalities in health insurance after the age of 65, there is still a steep gradient in health among members of the 65+ population³¹. Thus, access to medical resources throughout a lifetime plays a large role in adult health. Providing equality of services and access to resources is in all likelihood a contributing factor to the ability of Cuba to demonstrate such good health indicators. Link and Phelan state that, "In a dynamic system, resources like money, knowledge, power, prestige, and social connectedness are transportable from one situation to another, and as health related situations change, those who command the most resources are best able to avoid risks, diseases, and consequences of disease³²." Because Cuba maintains a better equality of access to these resources, there are fewer risks to its people because of a lack of access to health care.

The United States and India have large disparities in income and education across various groups, which also contribute to poorer health outcomes. 46 million people in the United States remain uninsured today³³ and deep levels of inequality in income, education, and medical services exist across urban and rural areas in India. Many disparities among geographic regions, caste groups, males and females, and religious and ethnic groups exist in India, and it is very difficult to classify the overall health system in India because it varies so much across these lines. Generally speaking, education and income disparities in a population cause members to self-report worse health, suffer more throughout their lifetime, and perhaps suffer from relative deprivation. It has been shown through numerous research studies that relative deprivation, or large gradients of inequality in income, has negative effects on health as well as community trust and social cohesion³⁴. Due to programs of land redistribution, other programs focusing on equity, and a socialist structure, Cuba has a much lower level of aggregate inequality in its society and its health care system than the United States and India³⁵. This increased amount of equity in Cuba certainly plays a role in its positive health indicators.

Another difference in the health systems of these three countries that could account for the varied health outcomes is the emphasis on health care prevention. Cubans have found it far more cost-effective to focus on prevention and primary health care through the provision of basic services such as vaccinations, prenatal care, essential medicines, and the availability of primary care physicians, then to let illnesses build up and pay for treatment. The Chair of the ISN's Commission for the Global Advancement of Nephrology, Dr. John Dirks, states that "Prevention is a central part of the mindset for the Cuban health system and individual practitioners³⁶." He notes that the integration of family doctors and the focus on prevention had led Cuba to have not only display a reduction of infectious diseases, but also a reduction of morbidity and mortality from chronic illnesses such as kidney failure³⁷. While Cuba's system is focused on averting illnesses before they become advanced and costly, the United States has mostly focused on treatment of diseases and infections. The rise of life insurance and private insurance plans in the United States has led to a substantial focus on the treatment of unexpected illnesses or life events, and many plans excluded clinical preventative services such as

general checkups, from the package of covered services . . . An emphasis on primary care services and providing families with continued access to a primary care practitioner has shown to yield substantial results on the overall health indicators of populations in other developing countries as well. In India, evidence from a study conducted in Narangwal supports the benefits of primary health care services: "After several experimental packages of integrated primary health care services were introduced into North Indian villages, significant reductions occurred in morbidity and mortality. Children's growth and nutrition improved, and family planning use increased. . . This was done at an extremely cost-effective manner, all at a combined cost of about \$US 2.00 per capita³⁹." In India, it is often difficult to implement primary health care services because the population is extremely spread out throughout rural areas (72% of the Indian population lives in rural areas)⁴⁰, and there is a lack of health workers to provide these continued services. However, implementing primary health care services and focusing on prevention rather than treatment would greatly impact the health outcomes of both India and the United States.

Although most people agree that the Cuban health system is among the best in terms of equality and quality, many assert that the Cuban model cannot be replicated because the socialist structure of the Cuban government is simply an anomaly in producing good health care. However, examples from Kerala, a state in India, have shown that focusing on social equity and empowering citizens has led to greatly improved health outcomes. Success with the Kerala model thus supports the Cuban theory that transforming inequalities in the socioeconomic structure leads to better health indicators for the entire population.

Kerala, a state in southern India, is home to the phenomenon now known as the "Kerala model." In the 1950's, Kerala had the highest population growth rate in the country⁴¹. Today, it is the lowest. Kerala boasts the highest literacy rate, the lowest infant mortality rate, and the highest quality of life and standard of living indicators in India⁴². The population health indicators of women in Kerala far surpass Indian national levels. Kerala's life expectancy rates are 73 years for females, and 68 years for males, which is substantially higher than the Indian average of 64 years for females and 62 years for males⁴³. The maternal mortality rate in Kerala is about 87 deaths per 100,000 women, which is by far the lowest rate in all of India⁴⁴. While this number is still higher than the maternal mortality rate of both Cuba and the United States, it is dramatically lower than the Indian average of 508 maternal deaths per 100,000 members of the population⁴⁵. Additionally, there is a favorable female to male ratio (1058 females per 1000 males in Kerala), which differs dramatically from the Indian national average of 933 females to 1000 males⁴⁶. Kerala had a fertility rate of below 1.5 in 2002⁴⁷, which is even lower than Cuba's fertility rate.

Without outside help, Kerala has managed to transform its indicators of social development and health from one of the worst in India to by far the best. How has this region achieved this feat? Kerala has focused much of its funding on creating redistribution programs and fundamentally change social conditions through empowering minorities and women. Through redistributive land practices set forth by the government of Kerala, much poverty has been alleviated, and women have gained substantial authority because they can own their own land. The fact that women can own and inherit their own land, especially if a husband were to pass away, gives them a significant amount of autonomy in deciding their life course. It has been shown that women with more social and economic autonomy are much more able to make educated decisions about their own health and the health of their children⁴⁸. Additionally, Kerala has a strong basic practice of education for all, especially women. Numerous studies have made the link between education and health, asserting that the more years of education a person has, the farther up the life expectancy gradient they can expect to be⁴⁹. With a literacy rate of almost 98% overall and 95% for women, Kerala illustrates the fundamental link between increased education and better overall health status⁵⁰. Education allows citizens to better understand their own body, health, and warning signs, and get themselves to a doctor when necessary and before it is too late. Educated women also tend to marry later in life and have fewer children, which has positive impacts on both maternal and infant mortality. Additionally, universal education in Kerala allows for a larger percentage of women in Kerala to join the workforce. The percentage of women who work in Kerala is much higher than the average percentage of working women in all of India⁵¹. It has been shown that giving women jobs increases their socio-economic status and diminishes their economic dependence on men, which contributes to less domestic, and partner abuse⁵².

Kerala also has the lowest percentage of children who are malnourished in all of India, as well as the

lowest infant mortality rate, which exemplifies the benefits of Kerala's social planning efforts to reduce inequities in food distribution and prenatal and maternal care. Kerala also has placed much emphasis on social cohesion and political participation, by encouraging all members of its society to vote and rally behind community causes. As Link and Phelan demonstrate, this type of social cohesion has lasting effects on the overall health of individuals and therefore of the population⁵³. As displayed, reducing these gender inequalities has many broad and far-reaching positive implications on the status of women's health, which in turn leads to a healthier overall population.

By empowering its citizens, especially women, through education, land ownership, autonomy in the workforce, and other social development programs, Kerala has displayed success in improving the health status of its region. These programs have dramatically reduced the socio-economic and gender disparities previously discussed. Since the link is so clear between these inequalities and poor health, remedying these same inequalities in other societies is paramount to achieving similar health outcomes. The Kerala model demonstrates a very sustainable way to fundamentally remedy inequalities in society that will lead to better health for the population. Thus, one must take into account the importance of land redistribution, education, employment, and community development programs as critical components of any potential health policy plan to improve health in a country.

Through the Kerala model, it has been demonstrated that the Cuban model of focusing on social equality to improve health is not an anomaly. Other developed and developing countries should employ similar social equity programs and promote equality of access to health care in order to achieve equality of health outcomes. Cuba and Kerala have demonstrated the positive health outcomes that can occur when focusing on the social determinants of health such as education, employment, nutrition, and ensuring equality in health care. If the United States adopted similar policies to remedy social and economic inequalities, their health indicators would no doubt substantially improve. Large amounts of health care spending are not necessary to achieve the health outcomes that both Cuba and Kerala have illustrated. According to Michael Moore's latest film *Sicko*, the United States can learn a lot from the Cuban model of health care. The United States health care system needs to be revamped, and although many hate to admit it, following the health care models of developing regions such as Cuba and Kerala may very well be the direction in which to go.

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References:

- 1 - See Table A
- 2 - See Table A
- 3 - World Health Organization Statistical Information Systems. *Core Health Indicators – India*. http://www.who.int/whosis/database/core/core_select_process.cfm. Accessed November 18, 2007.
- 4 - See Table C
- 5 - See Table C
- 6 - Spiegel, et al. "Lessons from the margins of globalization: Appreciating the Cuban health paradox." *Journal of Public Health Policy*, Volume 25, Number 1, pgs. 85-110. 2004.
- 7 - See Table A
- 8 - See Table A
- 9 - http://www.who.int/whosis/database/core/core_select_process.cfm
- 10 - See Table B
- 11 - Perez-Stable, Dr. E.J. "Cuba's Response to the HIV Epidemic." *American Journal of Public Health*, May 1991. Volume 81, pgs 563–567. Accessed November 19, 2007.
- 12 - In a lecture by Dr. Elizabeth Buckley: *Health and Disease in the Developing World – Cuban Health*, March 2007.

- 13 - Perez-Stable, "Cuba's Response to the HIV Epidemic." November 19, 2007.
- 14 - Farmer, Paul. *Pathologies of Power: Health, Human Rights, and the New War on the Poor*. University of California Press, 2003. Pg 73
- 15 - <http://www.avert.org/aidsindia.htm>
- 16 - See Table C
- 17 - Susser, M. "Health as a Human Right. *American Journal of Public Health*, Vol. 83, Issue 3, 2003, pg 418-426.
- 18 - Spiegel et al, pg 89.
- 19 - Susser, pg 422.
- 20 - Susser, pg 423.
- 21 - Schnittker, Jason. Lecture on October 22, 2007, in *Medical Sociology*.
- 22 - See Table C
- 23 - See Table C
- 24 - "Economic Underdevelopment, the Principle Enemy of Health." Cuban Government report published in 1961, cited in a lecture by Elizabeth Buckley: "*Health and Disease in the Developing World - Cuban Health*", March 2007.
- 25 - Harvard Public Health Review: *The Cuban Paradox*.
http://www.hsph.harvard.edu/review/review_summer_02/677cuba.html. Summer 2002
- 26 - See Table C
- 27 - Schnittker, Jason. In a lecture on Education and Health, on November 7, 2007. *Medical Sociology*.
- 28 - Spiegel et al
- 29 - Schnittker, Jason. Lecture on November 12, 2007. *Medical Sociology*
- 30 - Schnittker, November 12.
- 31 - Schnittker, Jason. Lecture on November 7, 2007. *Medical Sociology*
- 32 - Link and Phelan, "Social Conditions as Fundamental Causes of Disease." pg 4.
- 33 - Schnittker, Jason. Lecture on September 24, 2007. *Medical Sociology*.
- 34 - Schnittker, Jason. Lecture on November 7, 2007. *Medical Sociology*.
- 35 - Harvard Public Health Review, *The Cuban Paradox*.
- 36 - Gail, Reed. As quoted in *Medicc Review: Health Medical News of Cuba*. Volume VII, No. 6, June 2005. http://www.medicc.org/publications/medicc_review/0605/top-story.html.
- 37 - Gail, Reed. http://www.medicc.org/publications/medicc_review/0605/top-story.html.
- 38 - Gorden et al. "Prevention and the Reforming U.S. Health Care System." *Annual Review of Public Health*, 1999. Pg 493. <http://www.annualreviews.org/aronline>. Accessed November 23, 2007.
- 39 - Taylor, Carl E, and Parker, Robert L. "Integrating Primary Health Care Services – Evidence from Narangwal, India." *Oxford Journals – Health Policy and Planning*. Volume 2, pgs 150-161.
- 40 - Ashok Patil, K.V Somasundaram, and R.C. Goyal. "Current Health Scenario in Rural India." *International Association of Agricultural Medicine and Rural Health* 10. (2002): 129-135.

41 - Parayil, Govindan. Kerala: The Development Experience: Reflections on Sustainability and Replicability. New York: 2000. pg 4.

42 - Ibid, pg 17.

43 - http://www.who.int/whosis/database/core/core_select_process.cfm

44 - Government Departments of Kerala: http://www.kerala.gov.in/dept_health/healthstatus.htm Accessed November 21, 2007.

45 - See Table A

46 - K S Mohindra. "Women's health in a rural community in Kerala, India".

<http://jech.bmj.com/cgi/content/full/60/12/1020>. 2006, by BMJ Publishing Group

47 - Government Departments of Kerala: Health and Family Welfare.

http://www.kerala.gov.in/dept_health/healthstatus.htm. Accessed October 30, 2007.

48 - Velkoff, Victoria, and Adlakha, Arjun. "Women's Health in India" U.S. Census Bureau: The Official Statistics. U.S. Department Of Commerce: Economics and Statistics Bureau. Published December 10, 1998. <http://www.census.gov/ipc/prod/wid-9803.pdf>. Accessed October 30 2007.

49 - U.S. Census Bureau: The Official Statistics. <http://www.census.gov/ipc/prod/wid-9803.pdf>. Accessed October 30, 2007.

50 - Obtained from IndiaStat: <http://www.indiastat.com>

51 - Government Departments of Kerala. http://www.kerala.gov.in/dept_health/healthstatus.htm. Accessed October 30, 2007.

52 - Farmer, Paul. Pathologies of Power. Pg 273. 53 Link and Phelan. "Social Conditions as Fundamental Causes of Disease."

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