

THE ROLE OF THE HEALTH SECTOR IN SUICIDES
AMONG FARMERS IN INDIA

By
PRIYA SINGH

A Thesis Submitted to The Honors College
In Partial Fulfillment of the Bachelors degree
With Honors in
Anthropology

THE UNIVERSITY OF ARIZONA

May 2010

Approved by:



Dr. Ivy L. Pike
School of Anthropology

The University of Arizona Electronic Theses and Dissertations Reproduction and Distribution Rights Form

Name (Last, First, Middle)	
Singh, Priya	
Degree title (eg BA, BS, BSE, BSB, BFA): BA	
Honors area (eg Molecular and Cellular Biology, English, Studio Art): Anthropology	
Date thesis submitted to Honors College: May 5, 2010	
Title of Honors thesis:	
The Role of the Health Sector in Suicides Among Farmers in India	
:The University of Arizona Library Release	<p>I hereby grant to the University of Arizona Library the nonexclusive worldwide right to reproduce and distribute my dissertation or thesis and abstract (herein, the "licensed materials"), in whole or in part, in any and all media of distribution and in any format in existence now or developed in the future. I represent and warrant to the University of Arizona that the licensed materials are my original work, that I am the sole owner of all rights in and to the licensed materials, and that none of the licensed materials infringe or violate the rights of others. I further represent that I have obtained all necessary rights to permit the University of Arizona Library to reproduce and distribute any nonpublic third party software necessary to access, display, run or print my dissertation or thesis. I acknowledge that University of Arizona Library may elect not to distribute my dissertation or thesis in digital format if, in its reasonable judgment, it believes all such rights have not been secured.</p> <p>Signed: _____  Date: <u>May 2, 2010</u></p>

Abstract: *Mental health in rural communities is a poorly understood global health issue. India represents an important case study for this phenomenon with a worrisome number of farm workers having taken their lives each year. This paper seeks to untangle the contextual factors that lead to such high suicide rates including the economic and political influences on the agricultural sector and the physical and mental strain on farmers in general. It also examines the state of rural and mental health in India and compares the suicide cases in India with those of other nations. This study was accomplished through a thorough review of literature published in the past two decades. The literature reviews suggests that owing to the risks and uncertainties associated with their occupation, farmers are at greater risk for suicide regardless of location. Additionally, there seems to be a large gap in rural mental health and rural health in general that could largely decrease suicide rates if mended. Targeting this group with health services is thus a global health imperative.*

Introduction

There have been startlingly high numbers of suicides among farmers all over India for over a decade now. Sources vary a great deal in reported numbers of suicides though estimates try to take into account the fact that most are not reported to the government for legal and financial reasons. Many studies make up for this using verbal autopsies and surveys of regions with high suicides. The states Karnataka, Maharashtra, Andhra Pradesh, Punjab, and Kerala have shown some of the highest suicide rates in recent times (Patnaik 2007). The suicide mortality rate (SMR) and the total number of suicides nearly quadrupled in Maharashtra, a western state in India which in 2001 accounted for 13.5% of all India suicides, between 1995 and 2004 (Mishra 2006). Estimates reported for Karnataka are approximately 15,000 suicides

between 1998 and 2002 alone (Assadi 2008). All over India estimates show that by 2003, 100,000 suicides may have taken place since ten years prior (Walker 2008).

These numbers are the highest of any country on the globe and have made headlines repeatedly. Despite this, most studies are epidemiological in nature and haven't sought to find the root causes of these suicides. But why is this happening in India and why now? There are many characteristics of India that might provide some explanation. Of India's extremely large population, a great deal of its people work in the agricultural sector. In the past two decades they have been subject to quickly changing policies and economic environments. Globalization has left them with a great deal of competition and the government cannot afford to help farmers by way of the types of subsidies that other countries can afford. Additionally, there is a lack of parity between rural and urban areas. There is much that contributes to this and only a detailed analysis of the economic and political conditions shrouding the agricultural sector can truly help to understand the situation facing farmers.

Considering that other people work in the same climate as farmers, it is important to try to understand why it is that farmers are particularly susceptible to suicide. The occupation itself is highly demanding both physically and mentally. This is contributed to by the strenuous nature of the work, the uncertainty accompanying crop production, the added pressure of administrative tasks, and many more issues. In addition to this, many studies suggest a link between pesticide exposure and subsequent mental illnesses. In many cases, these aspects of the job lead to anxiety and depression, sometimes very severe in nature, and must therefore be further explored.

It is important to understand that this is a global public health issue. The fact that health factors contribute to suicide implicates the role of India's health system in the progression of individuals to suicide. It is therefore necessary to analyze the presence of rural and mental health

programming in India. This can provide valuable insight and aid in the process of discovering what needs to be changed. Furthermore, a comparison of suicides among farmers in other countries shows that this is a problem elsewhere as well. Though India is a particularly saddening case, this is an global issue and should therefore be paid more attention worldwide.

Section 1: Agricultural Economic Context of the Farmer Suicides

Historical Context of the Agricultural System in India

Indian agriculturalists are suffering grave misfortunes that in many cases lead to suicide. The current situation is an amalgamation of many issues and policies that have existed over the past several decades. The problems among farmers began prior to the current droughts in India (Patnaik 2004: 36). This means that environmental factors are merely exacerbating factors rather than primary causes of the current situation. It is essential then to look at other possible influences and systems related to the farming industry in order to determine the effect those systems may have had on farmers' livelihoods. These may include economic reform and political changes where they coincide with the agricultural sector. An understanding of what factors have helped shape the agrarian crisis of India is central to determining what processes are impacting farmers and their families. It is also important to contextualize the suicides of so many farmers in India to comprehend why these specific market failures, droughts, and modifications to the country's economy have generated more cumulative stress among the agricultural population than in the past. At the very least, it is necessary to understand the unprecedented number of suicides that have occurred.

Major changes in the agricultural sector can be seen as far back as a few decades ago. The Green Revolution, particularly the period during the early 1970's, led to capitalist development of the agricultural sector where new seed varieties, fertilizers, and irrigation were introduced (Assadi, 2008). This policy increased food production in India but success varied by region and regional access to resources and thereby created disparities between groups of farmers (Assadi, 2008). A shift to synthetic pesticides and fertilizers as well as monocrops, which tend to overwork the land and contribute to its dilapidation, also occurred during this period (Walker 2008). The Green Revolution still influences India's farmers today as "...only one-third of India's agricultural land is still in good condition, the other two-thirds being degraded or sick to some extent" (Walker 2008: 578). It is patterns such as these which also contribute to initial high yields of crops that are inconsistent and misrepresentative of the future of the crops once the land has been partially destroyed. Moreover, since this period small farmers have had a harder time accessing irrigation systems and are subject to large farmers who occasionally have equipment that draws water away from other farmers in the region (Walker 2008).

The intervening period between the Green Revolution and the new millennium was marked by many new technologies which actually contributed to the difficulty of farmers in some cases. Among these innovations was the novel usage of genetically modified crops (Assadi, 2008). While some of these advancements can be extremely beneficial, they can contribute to farmers' failure. Dealing with new crops and materials has proven difficult without adequate training and monetary aid. The lack of support for handling new technologies and the inability to successfully implement them - due to minimal education and proficiency with the new technologies - often contributed to the failure of crops as well as the increased uncertainty

and stress of the farmer (Deshpande 2002). This can be amended simply by ensuring that farmers using new technologies have access to assistance. Resources in the form of advice or education might prove extremely valuable.

There are also major areas where the crops are “capital-intensive” where there are a higher number of suicides observed on average (Walker 2008). It is essential to determine where and for what reasons there might be correlations between the crops utilized and the manner in which the market interacts with these crops. It is true that many of the technologies have contributed in positive ways to increased food production and other aspects of agriculture. However, this does not mean that the government does not need to pay special attention to the negatives of these technologies. Thus far, especially when paired with international goals and interests, government policies have had some dire consequences for the Indian farmer.

Agriculture in the Context of Globalization

Farmers’ needs seem to be at odds with globalization and the regulations imposed by the World Trade Organization (WTO). The intense distress in the agricultural sector illustrated by the high number of suicides seems to be part of the issue which aided in the collapse of WTO trade negotiations of the Doha Development round (Raina, 2007). There is now an increased market for outside goods at much more competitive prices which is greatly inhibiting the survival of Indian farmers. For instance, companies involved in trading and food processing can import wheat from the United States at lower costs than those at which Indian agriculturalists can afford to sell them (Swain 2009). This results from India’s inability to afford the same the kind of farming subsidies as a developed nation, an issue which caused problems in the Doha Round on multiple occasions (Swain 2009). In the 2006 Doha Round negotiations, the United States

refused to cut subsidies until the import tariffs in other countries were lowered (Swain 2009).

This would not be accepted by the European Union (EU), Japan, and India until the United States promised cutting of more subsidies for their farmers (Swain 2009). In 2008, India and other so-called developing nations wanted access to markets in the EU and the United States and the EU and the U.S. wanted the same, indefinitely resulting in a stalemate (Swain 2009). Until one country chooses to compromise on these matters, this will continue to be a problem. Even the discourse about economic policies at WTO organizations does not show a great deal of consideration for the agricultural plight experienced in the past couple decades by some of the “developing” and transitioning countries.

In India, the economic situation which was showing immense growth in many sectors seemed to leave the agriculturalists behind. Spending on rural growth more than halved between the 1985-89 economic interval and the period between 2000 and 2001 (Patnaik 2004: 36). Around 1990, India borrowed money from the International Monetary Fund (IMF), an institution set up by the Bretton Woods Institutions, and consequently took their advice and loan conditions (Patnaik 2005). In doing so the government decreased agricultural subsidies on input costs, decreased credit, devalued the rupee, and began spending less on irrigation, employment production, and rural and drought-prone assistance programs (Patnaik 2005). Farmers therefore had more expenses before production of goods even occurred than they previously shouldered on their own. They also had a lessened capacity to gain the capital to accomplish crop production as a result of the reforms. The cutting of programs meant that displaced farmers did not have as many new jobs to escape to. Additionally, less aid was being offered in response to drought and degradation, both of land and economic viability in rural areas. It is not difficult to imagine a dramatic increase in the stress levels of farmers in light of the sharp withdrawal of assistance that

occurred during this period. Not only that, but the lack of options to increase one's position and the absence of many kinds of public support could likely leave the rural population with a great sense of isolation and uncertainty.

Not only did the Indian government remove support previously provided to farmers, but at the same time it also adopted new liberal trade policies with which the farmers also had to quickly accustom themselves. India became a member of the General Agreement on Tariffs and Trade (GATT) in 1994 (Patnaik 2005). The rules of the GATT were standardized for all member countries though about half of them were considered "developing countries" and which had highly dissimilar economies from some of the other member countries (Swain 2009). This allowed for the adoption of policies that were not necessarily favorable to all sectors of the quickly shifting Indian economy. Tariffs that had already decreased from 100-150% to 35% found themselves even lower in the following 2-3 years, decreased to 5% (Mishra 2006). This allowed in a great deal more competition from countries such as the United States who could afford to subsidize far greater dollar amounts of agricultural inputs and in some cases export for less than the production cost of a given crop (Mishra 2006). This is something that was definitely not true for India. In this way, farmers who were exporting goods from India were not only subject to decreased government aid in the cost of inputs but were also dealing with drastically decreased output or selling prices. This made it extremely difficult for farmers to make a profit or a living.

In the 1990's India began to globalize products. Farmers saw a decrease in tariffs by nearly a factor of three for crops and more than a quarter for processed foodstuffs (Patnaik 2005). There was concurrently a "40-50 percent decline in unit dollar prices" in the global market due to difficulties faced by the economies of many of the advanced countries (Patnaik

2005). This largely increased the competition faced by Indian farmers from imported goods sold by other countries. Under the GATT, India also enforced more taxes on exported products and state purchasing organizations paid Indian farmers less than the prevailing global market prices for goods (Swain 2009). This was detrimental to exporting farmers as well as those selling within the country and resulted in a “transfer of income from rural farmers to urban dwellers” (Swain 2009: 226). Shifting the flow of money helped to increase the disparity between rural and urban areas and raised the stakes for many agricultural laborers (Assadi, 2008).

Additionally, it has been found that prices are often fixed at the state level or higher and do not always comprise existing cost and market fluctuations (Assadi 1998). Thus the agriculturalists were attempting to deal with harsh environmental conditions as well as a quickly transforming agricultural economy that did not take into account or adjust for their plight.

Withdrawal of government subsidies and rising initial costs to farmers seem to be the major factors that drove them to look to other sources of money. Some lending institutions seemed to cause more problems among farmers than others. A comparative study surveying farmers victim to suicide in Karnataka and a control group from the same village – and therefore facing similar economic and environmental climates – found that the families with suicide victims had borrowed more and in larger amounts from moneylenders, which could include relatives, than did the families in the control group (Deshpande 2002). Overall, people borrowing money preferred regional rural banks, then moneylenders, and finally commercial banks as their financial sources (Deshpande 2002). Moneylenders charge between 36-60 percent interest, a very high interest rate compared with other lenders (Assadi 1998). However, they find other ways to attract borrowers, including lending money before crops are harvested (Assadi 1998). This is advantageous to the lenders who could extract payment in the form of produce but

who are usually disinterested in payment in the form of land because of the fickle nature of the agricultural market (Assadi, 2008). Their timing, in addition to the fact that their loan process is much less formal and complex, is enticing to potential borrowers enough to offset the fear of a high interest rate (Deshpande 2002). Banks and formal lending organizations require the bulk of repayment at the end of the fiscal year when other financial burdens such as “marriage season” and the new year become pressing matters as well and are less coveted sources of money for that reason (Deshpande 2002). In a study of suicides in Maharashtra, debt was identified as the most common risk factor among the victims especially when they were considered to be harassed about loan repayment (Mishra 2006). With the lack of credit available and the increasing cost of input prices, it was almost inevitable that farmers wound up with the amount of stress due to debt as was present. This is a key point when considering what kind of relief is needed in the agricultural sector.

The Urban-Rural Divide

The predicaments faced by agriculturalists and all rural dwellers were highly interlaced. The success or strife of the rural citizen was relevant to the average farmer that relied on those populations as well. In the 1990's, the Indian government set rules on food subsidies of the Public Distribution System (PDS) so that the population was divided into groups who lived above and below the poverty line in what was attacked as an arbitrary fashion (Walker 2008). Those who were classified as living above the poverty line paid the dominant market prices on necessities including food (Walker 2008). The PDS exists to ration food for below the market value to those living in poverty and this challenged its ability to truly do so since many people were incorrectly classified (Walker 2008). To make matters worse, PDS foodstuffs prices

increased by about a factor of two in only three years and were either unaffordable or inaccessible to the people who needed them (Walker 2008). This led to an increase in starvation deaths and a surplus of PDS products that were clearly not reaching those who needed them but were instead being wasted in storage (Walker 2008).

Additionally, the government's determination of the poverty line was fixed by comparing it, using a price index, to the poverty line from two and three decades earlier, depending on the period in question (Patnaik 2005). In 2004 this value amounted to a daily allowance value of a quarter of a U.S. dollar based on the 2004 exchange rate between dollars and rupees (Patnaik 2005). This also translated to a maximum energy intake of 1970 calories for 1993–94 and 1890 calories for 1999–2000 where the required daily allowance of the Indian Council for Medical Research is 2400 (Patnaik 2005). When using the required daily allowance for energy intake to calculate it, the percent of the rural population living in poverty between 1993–94 and 1999–2000 is 75% whereas the government computed version based on a price index was 37% and 27%, respectively (Patnaik 2005). This means that the government is preparing or willing to help a much smaller portion of the population than is in need of that assistance. Many people are therefore left to fend for themselves and many hungry and impoverished people are unable to even be allowed decreased prices. In turn, as people became unable to afford the market prices, farmers find themselves less successful in selling their harvest. This is evidenced by the fact that demand in the rural sector for foodstuffs and necessities has decreased (Patnaik 2005).

While greater numbers of the rural population are growing hungry and more and more Indian farmers are facing economic strife, it becomes necessary to understand all of the possible situations that lead to the severe stress of the farmer. It is clear that environmental and economic conditions are leading both to crop failure and the indebtedness of many farmers to lenders.

Debt and repayment in the form of land caused many farmers to become homeless; the percent of the rural population which was landless in 1951 was reported to be approximately 28% while three decades later it was 37% and by 2000 it had reached 41% (Walker 2008). When the marginal were included as well as the landless the percentage they comprised of rural dwellers in 2000 totaled 63% (Walker 2008). Being landless meant that agriculturalists had, in reality, lost hold of their livelihoods. This is extremely detrimental to the chances of farmers' and their families' success and it is in situations like this when family members must look to other forms of employment. Furthermore, drastic life changing circumstances such as these are the types which cause acute stress to individuals (Assadi 1998). In fact, the loss of land is also seen as a threat to someone's identity or "social existence" (Assadi 1998: 768). Therefore the imposing threat of losing one's land is not merely an economic crisis but a crisis of self as well and an overwhelming social issue.

Government response to farmer suicides and the severe distress facing Indian farmers has included relief packages (Raina, 2007) and donations made to families affected by suicide (Patnaik 2004). However, these attempts at amelioration of a very harsh issue have been attacked as meager and inadequate. They are seen as band-aids rather than long-term solutions to the problems facing Indian agriculture. What is suggested instead is to implement changes in policy and as well as to reinstate old programs or create new programs that will help provide employment and aid the rural areas and farmers in particular. Since the number of suicides has held high over a period of years now, it seems that drastic action is necessary to get farmers out of the current situation in India. However, the issue is not simply an economic and political one; the distress of farmers is felt also within the boundaries of other contextual factors that have to

do with their lifestyle and health experiences as farmers and rural dwellers. For this reason economic and political decisions must be made with these dynamics in mind as well.

Section 2: Difficulties of the Agriculturalist Lifestyle

Physical and mental strain of farming lifestyle

In this section, a review of the currently available literature examines the links among the physical mental strain associated with agricultural occupations. Occupations in agriculture can be extremely demanding, both physically and mentally. It is a trade that requires a considerable time investment and careful attention. The manner in which agricultural jobs create strain merits close scrutiny in order to understand more clearly how farmers can better deal with the burdens placed upon them.

Farmers work for very long portions of the day and their schedules are subject to uncertainty. Depending on the season and climate, the amount of work they must do varies greatly (Gregoire 2002). In addition to all of the labor that goes into maintaining their crops, agriculturalists generally must pour a great deal of energy into paperwork and procedural endeavors as well. Small farmers feel this more keenly because they feel they receive no assistance and are less favored by agricultural policies (Gregoire 2002). Indeed, a survey conducted among farmers at an agricultural show found that dealing with administrative tasks was one of the most stressful aspects of their occupation and that this undertaking frequently overlaps with stressful farming periods (Gregoire 2002).

The Hordaland Health Study examined the difference between work-related factors of farmers and non-farmers to determine the levels of anxiety and depression associated with the

job. It found that 40% of full-time male farmers worked more than fifty hours per week while only 8% of part-time farmers and 4% of non-farmers reported the same (Sanne et al. 2004). Additionally, men had more paid work hours per week than did women on average (Sanne et al. 2004).

The study also cited that farmers are subject to more “psychological job demands” than non-farmers (Sanne et al. 2004: 95). The trend of an increased level of anxiety/depression witnessed due to mental tasks of farmers in comparison with non-farmers is also reflected in the physical requirements of the job. Full-time farmers required a higher level of physical activity from their professions than did part-time farmers, and part-time farmers put forth a higher level of physical activity than did members of other trades; among farmers, men exhibited a higher level of physical activity in the job than women (Sanne et al. 2004).

The physical strain posed to farmers is intense and while it frequently contributes to exhaustion and stress, it may also result in injuries. Weariness may indeed contribute to the likelihood of accidents and injuries occurring while on the job (Nag and Nag 2004). A look at studies pertaining to the physical demand of farming activities in India analyzed a few of the most time consuming tasks to determine the intensity of the work required by farmers to complete those tasks. Seedbed preparing activities included plowing, hoeing, trimming, and more and consumed approximately 8% of the total time contributed to farming tasks throughout the year (Nag and Nag 2004). The work intensity for these ranged from moderate to extremely heavy (Nag and Nag 2004). These parameters were determined based on the aerobic capacity – in volume of dioxygen (O_2) - and energetic demand required by the work and categorized them based on this into levels of light, moderate, heavy, and extremely heavy work (Nag and Nag 2004). Weeding and “intercultivation” account for approximately 15-20% of the total time

contributed to harvest production and was considered light to heavy in work intensity depending on the methods employed (Nag and Nag 2004: 153). Using weeders and all of the efficient methods caused postural stress (Nag and Nag 2004). Irrigation is heavy work when done manually and harvesting, which takes around 10% of crop production hours was considered light to heavy in work intensity (Nag and Nag 2004). It is clear that many of the tasks carried out by Indian farmers may be heavy work depending on the conditions. Some studies are looking into the ergonomic advancements that may be made within the field to maximize energy expenditure. This would be extremely valuable since the current nature of the profession requires a great deal of physical commitment.

One of the major concerns with Indian agriculture is that a lot of the work, particularly on smaller farms, is done manually and is therefore more physically taxing. However, machinery also poses threats and can be extremely dangerous. Many accidents in machinery usage are caused by “human manipulative errors due to design-induced limitations” (Nag and Nag 2004: 160). There is a great deal of machinery in use and it is being introduced at a high rate. However, the amount of farming land in India is even greater. There are now approximately 140 million hectares of cultivated land in India and agriculture employs around 225 million people (Nag and Nag 2004). At the rate which they are introducing tractors it would take more than thirty years to cover this land; thus, many farms currently rely on the 520 million hand tools and 37 million “animal drawn implements” to accomplish the many of the same tasks (Nag and Nag 2004: 160).

A large portion of the studies conducted on farmer stress, particularly those which concern mental stress, have come out of the West, many from the United Kingdom and the United States. However, there are many aspects of the culture of agriculture which render the

situation quite unique in India. This may include the frequency of having large families – sometimes joint families – and consequently many dependants and extra fiscal responsibilities, government corruption, inadequate agricultural infrastructure, lack of participation in farmers' unions, and smaller land areas (Venugopal 2000). This issue is multifaceted, but the point to consider is that little attention has been paid thus far to the distinct problem in Indian agriculture. Understanding the aspects of mental strain in other regions can be helpful, but is not a precise enough description of the problems occurring among Indian farmers to produce apt solutions.

India represents about a tenth of the globe's agricultural labor force in over 640,000 villages (Nag and Nag 2004). As a major producer of foodstuffs and contributor to the global economy, the wellbeing of this group of agriculturalists should be consistent with the interests of the rest of the world. As a humanitarian issue, the suffering of so many people is equally relevant. Without even considering the strain contributed to by a destructive political and economic climate, the mental hassle of the farming lifestyle is already more difficult to deal with than is found in many other professions. Though India is a special situation, the concerns expressed with regard to the mental and physical shape of the members of their agricultural sector pertain to the members of the same group in other countries as well. The health threats posed to this group should thus be considered as a global health issue.

Presence of anxiety and depression in farmers

Studies on the stressful nature of farmers' lifestyles have hinted toward their link with anxiety and depression. There are obviously many factors that may help cause anxiety and depression in farmers, but if this is a major issue it is something that can and needs to be addressed. As it is, in India there is not a great deal of focus on anxiety and depression in

farmers. There have not been major studies there either, but research from other countries may provide context on the prevalence of disorders or levels of anxiety and depression in farmers in general. Findings show that it is an issue in many countries.

The Hordaland Health study, which was previously mentioned, was conducted in Western Norway and found that farming was linked with higher levels of anxiety and depression than is true for other occupations. The study utilized the Hospital Anxiety and Depression Scale to find levels or scores of anxiety (HADS-A) and depression (HADS-D) (Sanne et al. 2004). Full and part-time farmers showed notably higher HADS-D scores than members of other professions and male full and part-time farmers had much higher HADS-A scores than non-farmers (Sanne et al. 2004). Men, in general, had higher HADS-D scores than women (Sanne et al. 2004). Farmers were also more likely than non-farmers to have the possibility of depression (Sanne et al. 2004).

Studies associate these findings of anxiety and depression among farmers with both the mental and physical manifestations of these conditions. In a study conducted in Canada, farmers and a random urban sample were analyzed for self-reported occurrences of stress symptoms. Symptoms were present in higher levels for farmers than in the urban sample and farmers most frequently reported “chronic fatigue, forgetfulness, loss of temper, concentration difficulties, back pain, and sleep disruptions” (Walker and Walker 1988: 14). Another study found back pain to be one of the most significant predictors of suicide among other persistent physical conditions that are commonly felt by victims who ultimately attempt or commit suicide (Gregoire 2002). It is suggested that these physical ailments may be predictors of suicide as well as manifestations of stress, anxiety, or depression. This was supported by findings in the UK where 43% of suicide cases examined had an important physical issue and 74% of these physical issues were

chronic (Booth et al. 2000). In the same study, 52% of the farmers were considered to likely have a mental health issue and the diagnosis of the mental health problem was depression in 82% of these individuals (Booth et al. 2000).

Such data suggest that suicide in farmers may be both predictable and treated. In the aforementioned study, farmers had contact with psychiatrists, some for a long time and some simply prior to their suicides. This may not be the case in India and must be addressed in that light. It may be the case that farmers also do not know that their physical ailments are things that can or should be dealt with by a physician, and in India access to care may be the most limiting factor. However, since the suicides have grown to be such a catastrophic trend, the possibility of forming support groups or getting medical attention to the rural sector in India should be seriously considered.

The issue of pesticide exposure

There is much conjecture surrounding pesticide exposure with regard to the farmer suicides in India. For one thing, pesticides are the method of choice for a large portion of the suicides committed among Indian farmers. This is something that is consistent with populations of other nations as well. It has been reported that “developing” countries use 25% of the pesticides produced globally but account for 99% of deaths related to pesticides (Vijayakumar and Babu 2009). Pesticides have also been implicated as a contributing factor leading to suicide due to the chemical effects of poisoning on human biology either from previous poisonings or longtime exposure. This chronic exposure occurs since a large portion of sprayed pesticides and herbicides land on the ground rather than the crops, water is frequently polluted by runoff,

intentional pollution, and absorption from the air, and the pesticides can seep into the plant material being sprayed (World Health Organization 1990).

A cross-sectional study analyzing responses from American farmers and their spouses found that the farmers who had previously been ill due to pesticides more commonly expressed feelings of fear and failure (Stallones and Beseler 2002). These are considered depressive symptoms by the Center for Epidemiological Studies Depression (CES-D) Scale and may be more likely than other symptoms to predict the suicidal state of an individual (Stallones and Beseler 2002). Many pesticides have been suspected to be among the more dangerous and a few have been studied more thoroughly than others. Organophosphate exposure, for example, has been researched a great deal and has been linked with mood swings that include bouts of depression as well as sudden stints of aggression (Davies et al. 2000).

Exposure to organophosphates has also been linked with subsequent neurological impairment and disorders. Among fruit farm workers in South Africa and Costa Rican plantation workers, those who had been previously poisoned with pesticides reported much higher levels of neuropsychiatric symptoms than those who had not been (London et al. 2005). In the Costa Rican study, depressive symptoms were particularly high for previous poison victims, a finding that was mirrored in a study of migrant workers in the U.S. who had higher levels of depressive symptoms when compared with a control group that had not been previously poisoned (London et al. 2005). These findings suggest that exposure to certain chemical pesticides especially through chronic exposure or severe poisoning can cause psychiatric disorders and depression, factors that are considered to increase the likeliness of suicide.

The notion that suicide may be contributed to through exposure to chemical pesticides is an important point for several reasons. First, many studies claim that the availability of

pesticides is one of the main problems encouraging their usage in suicide and suggest that they be banned or removed. Understanding that pesticides might not simply be a method of suicide but also a physiological instigator could possibly help shift the responsibility from the suicide victim (London et al. 2005). This might also lead to a decrease in stigma attached to the families of the victims or to those who attempted suicide. Secondly, if psychiatric disorders or depression are results of pesticide exposure, rural populations and agriculturalists can be specifically addressed with medical attention to help treat these problems. Finally, it could motivate individuals, governments, and investors (non-governmental organizations, local groups, etc.) to attempt to switch to alternative methods in lieu of chemical pesticides.

A study in Andhra Pradesh, India determined the impact of switching from chemical pesticide usage to non-pesticide management of crops on suicide levels in four different villages. Non-pesticide management (NPM) attempts to conform to the natural phases of insects and to use crop diversity and natural products to keep pest invasions at bay (Vijayakumar and Babu 2009). The study compared statistics from 1998 to 2006 for the four villages who had implemented NPM between 2000 and 2003 and other randomly chosen villages who had not adopted the alternative method (Vijayakumar and Babu 2009). Before the implementation of NPM in 2003, 14 suicides were recorded in the villages who later adopted NPM and 15 in the control group which did not (Vijayakumar and Babu 2009). Since 2003, three suicides were observed in the NPM villages and 8 in the control group. This may be indicative of a connection between pesticide use and suicides. However the samples studied are small and may contain a large margin of error. Nonetheless, it is valuable to note that the non-pesticide management seemed to work in these villages which have kept it since introduction between 2000 and 2003 signifying that it might be a viable substitute for chemical pesticide use. The sustainability of

NPM would be a natural subject for future research in looking at alternatives to long-term pesticide exposure for farmers.

WHO stated that a similar method, integrated pest management (IPM) was employed in Nicaragua and was economically successful in reducing pest damage to crops (World Health Organization 1990). It also cited other studies which have examined the use of pest-resistant crop varieties and have shown that some can provide the same yield and may even increase it (World Health Organization 1990). This may be a possible solution in India as well as the rest of the populations suffering from pesticide poisoning and damage and is worth looking into. The data provide persuasive evidence that pesticide exposure causes irreversible damage among the farming community. The only way to completely avoid this is to find viable alternatives or better protection for farm laborers.

Section 3: Rural and Mental Health in India

Importance of Understanding the Health Sector

The farmer suicides are often contextualized in terms of globalization, the market and financial climate, and agricultural trends. However, as described above, we have seen that indebtedness is not the sole cause of suicide among so many agriculturalists. Exposure to toxic chemicals may be an important contributor to the clear presence of anxiety and depression among farmers. Because the influences leading up to suicide appear to be linked to health, both mental and physical, a closer look at access to health care is warranted. There have not been a great number of studies devoted to understanding whether or not these farmers gained access to treatment at any point prior to attempting or committing suicide. It may be beneficial therefore

to instead look to the current scenarios of mental and rural health in India to determine where there may be a lack of access or resources.

The Rural Health Situation

The rural population is the vast majority of India's total population. Despite this, it seems that the attention paid to rural health is either lacking or poorly seen through. As of 2002, there were over 750 million rural dwellers in India, comprising approximately 72% of the Indian population and half of these individuals were determined to be living below the poverty line (Patil et al. 2002). This is highly significant as it means that a great deal of India's population is living in poverty and implies that they do not have a great deal of money to spend on medical care. Looking at these numbers, one would also hope that the distribution of medical attention would be reflective of the population distribution. This, however, is not the case in India. A person's success within and access to the medical system seems to be dominated by the question of where they live. It appears that access is not distributed equally, nor largely centralized.

Evidence shows that the impoverished are particularly susceptible to deathly ailments. The one-fifth of the Indian population who live in the most poverty account for almost 70% of deaths in India and 92% of deaths caused by contagious disease (Patil et al. 2002). Many rural deaths are caused by infectious diseases, parasitic and respiratory diseases, and waterborne infections, in other words illnesses which can be prevented (Patil et al. 2002). Many of India's programs aim to use education, health awareness promotion, and preventative medicine to avert illnesses of this sort. There are many reasons why this may not be working. The medical financial burden in India tends to be great, access to care has still largely been condensed in

metropolitan areas, there is a disparity between levels of funding provided by states, and privatization seems not to favor rural dwellers.

Nearly three fourths of all health infrastructure in India is located in urban areas (Patil et al. 2002). Rural areas have just under a third of the hospitals, one fifth of the total number of beds in health centers, 40% of dispensaries, and about 40% of the total number of doctors (Patil et al. 2002). In addition, less than one tenth of the health budget is distributed to the rural sector (Patil et al. 2002). There is a clear discrepancy in the amount of resources being poured into the rural sector's health care system. Without enough money to even establish adequate infrastructure, it is difficult for communities to make health programs successful.

The rural primary health care infrastructure is comprised of 84% Sub-centres, 14% Primary Health Centres (PHCs), and 2% Community Health Centres (CHCs) (Dummer and Cook 2008). Sub-centres have one male and one female health care worker and provide basic drugs and basic health care (Dummer and Cook 2008). PHCs have trained doctors and other health workers, are referred to by six sub-centres, and provide both curative and preventative medical attention (Dummer and Cook 2008). CHCs have four medical specialists and many medical staff members and provide specialized care (Dummer and Cook 2008). CHCs have the greatest number of beds and medical technologies, sub-centres the least (Dummer and Cook 2008). Thus Sub-centres have the least amount of resources (staff members, technologies, drugs, etc.) and a reduction in training or specialization level of staff members where CHCs have the greatest. It is predictable then that Sub-centres would be the most prevalent and CHCs the least; however, the proportions of the different types of centers are still shocking and it's clear that most people likely go to Sub-centres and receive substandard care. Urban healthcare, in contrast, is structured more as a two-tiered network rather than the three tiers of the rural health structure.

If lack of resources is a major issue, part of the problem is the way in which the health care sector is funded. The government likely finances a third at most of health care (Patil et al. 2002). Of this, hardly any of the financial support is centralized; indeed, state governments account for 90% of public spending, which may have implications for quality of care when compared to wealthier states (Dummer and Cook 2008). The private sector accounted for 67% of health spending in 1993, a sharp increase from just twenty years prior (Patil et al. 2002). The decrease in centralized funding helped to cause the increased privatization of health spending. The private sector and corporations together own nearly 67% of hospitals, 63% of dispensaries, and 78% of doctors. The private sector now also accounts for nearly 80% of funding for health care services resulting in two-thirds of households using private sector health care (Dummer and Cook 2008). This privatization of the health care industry has not been beneficial to rural dwellers or the impoverished. All-India surveys reported medical treatment to be one of the main causes of rural debt second to the dowry (Patil et al. 2002). In addition, almost all of private spending consists of “out-of-pocket” payments rather than private health insurance (Dummer and Cook 2008).

Health insurance in India is minimal. Estimations of the amount of India’s population which has any form of health insurance at all have been reported to be as low as 3% (Dummer and Cook 2008). The higher end of estimates comes from the Ministry of Health and Family Welfare which reports that 10% of the population is covered (Dummer and Cook 2008). Those who are covered are primarily civil servants or formal sector employees and insurance coverage is by no means widespread (Dummer and Cook 2008).

Health care is locally controlled in operation as well as funding. Though the Ministry of Health and Family Welfare is a national organization that creates and executes public health

programming, the control over operation and existence of the programs falls to state governments (Dummer and Cook 2008). The National Health Policy of 1983 which moved Indian health care from a curative model to a more holistic method using preventative measures and education was largely unsuccessfully implemented on a local scale undermining the intent of the policy (Dummer and Cook 2008). From the way national policy is translated to local policy, it seems that the centralized Indian government does not follow up on state government realization of programs. For this to be remedied, either states have to find a way to better fund and execute health services or the national government will need to step in and take responsibility for health and ensuring that local governments carry out the necessary steps.

In 1991, 93 percent of India's population inhabited fifteen of its major states (Purohit 2003). These included high income states Goa, Gujarat, Haryana, Punjab, and Maharashtra; middle income states Andhra Pradesh, Karnataka, Kerala, West Bengal, and Tamil Nadu; and low income states Bihar, Madhya Pradesh, Orissa, Rajasthan, and Uttar Pradesh (Purohit 2003). In all of the income level groups of states, the rural population was a definite majority over the urbanized population (Purohit 2003). The lowest income states had the highest percentage of rural population followed by middle and finally high income states (Purohit 2003). Suicide estimates based on interpolated and extrapolated census and suicide data showed that between 1995 and 2004 the states from these groups which had the highest suicide levels among male farmers were, in alphabetical order, Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Tamil Nadu, and West Bengal (Mishra 2007). For female farmers these were Andhra Pradesh, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Tamil Nadu, and West Bengal (Mishra 2007). It is interesting to note that the majority of these states fall within the middle income category.

While health spending cannot be expected to explain the high number of suicides on its own, an analysis of this may be beneficial in understanding the health climate in which suicidal farmers are living. It has been observed that low income groups “in absolute terms are spending relatively more on medical, public health, water supply, and sanitation” (Purohit 2003: 40). However, per capita spending is greatest in high income states, followed by middle and finally low income states; the total population is also lowest in high income states and highest in low income states (Purohit 2003). Population density is actually greatest for the middle income states (Purohit 2003). Middle income states also have the lowest number of government hospitals and thus rely more on privately funded hospitals than do other states (Purohit 2003). However, low income states have the least manpower in terms of medical staff (Purohit 2003). It is clear that patterns vary greatly by state and state income and this may be part of the problem. An individual’s access to healthcare within a nation should not be contingent upon which part of that nation they live in.

In 2005, the National Rural Health Mission was established to monitor infectious diseases and issues of sanitation, water quality, and nutrition by training 250,000 female volunteers and health activists to provide basic care and advice (Dummer and Cook 2008). This is an important issue when we consider that many rural deaths are unnecessary. For instance, infant mortality rates are higher in rural areas than urban and urban areas have also seen a larger percent decline in the infant mortality rate (Dummer and Cook 2008). This may result from a lack of sanitation or preventative knowledge and medicine (Dummer and Cook 2008). This program could help decrease the desperation of some rural communities whose members can barely afford health care; however, there is a bit of concern relating to funding and a lack of resources for the National Rural Health Mission (Dummer and Cook 2008). Though it has not

been greatly reviewed yet, initiatives like this are ones where the national government may need to provide financial support where states may be unable to.

For the sake of the entire community and the productivity of the nation, rural health needs to be better developed. With regard to agriculturalists, we know that most farmers live and work in rural areas. We know that most farmers are already bearing the burden of a hefty financial debt. We also know that their jobs are physically and mentally taxing. With physical ailments but no money to tend to them due to a largely privatized industry and a general lack of resources, the picture is gloomy for agriculturalists. The rural health sector needs to be fixed for their sake as well.

Mental Health in India

Mental health, including issues of anxiety and depression, is an important problem for all farmers and in particular farmers in India at present. It is a major issue for many other Indian citizens as well. In developed countries, studies have shown mental illness to be a risk factor associated with suicide and some have found as many as 90% of suicide victims to have a history of mental disorders (Vijayakumar et al. 2005). India has been known to be involved in mental health research and has not generally ignored the issue as a whole. However, it seems that just as with rural health issues there is a lack of implementation and much of the Indian population is left without access to very significant mental health services. As of 2001, around 10 million of India's population was afflicted with a serious mental illness and 2 to 3 times as many or more were suffering common mental disorders (Weiss et al. 2001). In the case of agriculturalists, it is likely that some of these symptoms lead to fatality.

For this reason, the state of mental health in India is critically important to Indian farmers. From the available discourse on the subject, it does not seem that agriculturalists are specifically targeted by most mental health and community-based programs. At the very least, then, it is important that there are at least accessible resources to which they can reach out. Even if suicide is not caused by mental health ailments, the level of suicide can describe the mental health of a given population in general (Das 2009).

Mental health policy in India has been greatly influenced by international trends (Weiss et al. 2001). In one way, it has been shaped by recommendations of the World Health Organization (WHO). Their 1975 report “Organization of Mental Health Services in Developing Countries” emphasized a decentralization of mental health and its incorporation with primary care (Jain and Jadhav 2008). Before this time, there was hardly any national policy concerning mental health care (Weiss et al. 2001). Additionally, mental health care services being centralized prior to this seemed problematic as much of the mental health care was concentrated in urban areas (Weiss et al. 2001).

In 1982, the National Mental Health Programme (NMHP) was instituted and was influenced both by the WHO report of 1975 and experimental programming conducted in communities during the intervening time period (Jain and Jadhav 2008). These included two projects initiated in 1975. One was the establishment of a Community Psychiatry Unit at the National Institute for Mental Health and Neurosciences which worked together with a rural health center set up in Sakalwara the next year (Jain and Jadhav 2008). This program has influenced the construction of many other community mental health ventures (Weiss et al. 2001). Together they experimented with implementation of training, research, and providing mental health care (Jain and Jadhav 2008). The other was a study of mental health care in Raipur Rani

that analyzed health workers and their ability to provide mental health services (Jain and Jadhav 2008).

The outcome was that these studies, in conjunction with WHO influence, caused the NMHP to attempt to train health staff and community members in mental health care and to do so in a locally oriented manner. This decentralization was accomplished through the District Mental Health Programme (DMHP) which used a model and extended it to districts all over the country; however, the model was usually not accurately mimicked (Jain and Jadhav 2008). It has also been criticized of failing to follow through in implementation or to actively and effectively engage the public sector with which they were dealing. The NMHP was also inhibited by budgetary constraints and a lack of sufficient financial support (Jain and Jadhav 2008). Many sources describe the NMHP as rigorous and “technically sound” but recognize that it largely failed (Jain and Jadhav 2009). Speculation over why this would be an issue is the tendency of the program to remain bureaucratic (Jain and Jadhav 2009) and “top-down” in approach, ultimately misunderstanding “the community” (Jain and Jadhav 2008: 563). This was probably due to lack of training in community development especially in conjunction with staff trained in mental health care (Weiss et al. 2001). While good in theory, the programs simply were not implemented as was intended.

The state of mental health care in India now seems to consist of a *mélange* between urban centers and rural community “outreach” programs. As of 2001 there were forty mental hospitals in all of India; these were not spread evenly and some states had multiple hospitals where others had none (Weiss et al. 2001). The description of mental health hospitals creates a picture of overcrowded, largely unfinanced institutions which failed to turn out sufficient training and thus care for incoming patients. Not only does this imply that many people are receiving less than

perfect treatment, but the lack of quality in these institutions may also help stigmatize mental disorders (Weiss et al. 2001). At the same time, most psychiatry units existed in hospitals of capitals of states and large cities (Weiss et al. 2001). This was extremely important for the urban areas, but seems to leave out rural populations. As of 2001, 90% of the rural population was still left without mental health care access even though NMHP has attempted since 1982 to put community-based programs into action (Weiss et al. 2001).

In urban areas there are often more trained psychiatrists whereas in rural communities mental health practitioners often have less training and more come from many different backgrounds (Weiss et al. 2001). In the climate of a strong private sector, there is little partnership between public and private sectors and this helps to maintain a system where rural mental health systems have less training and credentials (Weiss et al. 2001). This rural-urban distribution of mental health services is not unique to India. In Australia, incentives are offered as part of programs to attempt to bridge this gap (Behere and Bhise 2009). The United States created a federally controlled farmers' insurance program to attempt to aid farmers in economic times (Behere and Bhise 2009). There are perhaps some tactics that can be employed that would work in a country like India to address risk factors and improve access to care.

One study followed the "pill" through India's mental health care network. The pill literally refers to psychotropic medication but also figuratively describes treatment as a whole under NMHP policy. They find that the metaphorical "pill" or treatment tends to create an image of adequate treatment (Jain and Jadhav 2009). The medical staff members who are not properly trained in mental health care simply prescribe the "pill" or offer up textbook treatment and advice without tailoring it to the patient (Jain and Jadhav 2009). This means that there is an image of treatment whose existence prevents actual treatment from occurring. This, in turn,

works to silence the voices of community members who are receiving medical attention in some form even if not adequate and to fortify cultural barriers in the mental health care system (Jain and Jadhav 2009) It thereby reinforces the disconnect between the community programs and the people who need help from them.

There seems to be a fairly common concensus among scholars who call for mental health practitioners and staff to be better culturally educated about the communities they are working in so that they are not simply a “community” which the medical staff learns about but truly understands and knows. They also call for more flexible models of mental health care that can better integrate mental health so that it will not be left by the wayside when handled on a local level.

The Indian government has responded to the suicides of farmers in several realms. With regard to the mental health sector, there have been studies attempting to determine causes of suicide among agriculturalists. However studies have mostly been in the form of surveys that attempt to identify individual risk factors; this does not give a holistic or truthful view of the situation (Das 2009). Additionally, government policies do not tend to take into account social influences and stressors in response to farmer suicides. For instance, studies in other countries have shown that major issues such as poverty and social changes which can reflect changes at work, in finances, or in relationships, can result in depressive disorders which may lead to suicide when untreated (Das 2009). These are aspects of the suicides that government care packages are not taking into account.

It is important, then, that mental health be treated carefully. There needs to be a clear connection between practitioners and rural patients without the cultural barriers of “us” and “them.” There needs to be a deeper understanding of suicide risk factors that can be more

holistic. Finally, local government implementation of community programs should be carefully monitored. This is essential to the livelihood and productivity of the nation.

Section 4: A Brief Comparison of Global Suicides among Farmers

The Situation in Other Parts of the World

Why should we all care about the suicides among farmers in India? Besides the fact that horrendously high numbers of Indian farmers are taking their own lives every year because they are stuck in hopeless situations, we may consider the risk the rest of the world is in as well. Agriculturalists all over, from low and high income countries alike, are falling prey to the same disastrous circumstances. The available literature is unfortunately more concentrated for higher income countries and research is more scant in others. In many countries the farming occupation is at much greater risk than is the rest of the population for suicide. Keeping in mind that the people belonging to this profession are directly responsible for our food sources, that they have an enormous impact on the global economy, and that they are a large portion of the world's population, it should be clear their health and vitality are exceedingly important.

In order to compare the situation in India to that of other countries, it is helpful to have a basic understanding of their economic circumstances. The World Bank classifies India as having a low income level; this is based on GNI (Gross National Income) per capita and is out of the categories of low, lower middle, upper middle, and high income levels (The World Bank Group 2010). As of 2000, 28.6% of the Indian population was living below the poverty line (The World Bank Group 2010). This is important to keep in mind as nearly a third of the population is so impoverished that they probably do not have money to spend on health care services.

Additionally, this is likely representative of the population that it is in some form of debt. India has a life expectancy of 64 years of age at birth and it is part of the South Asian region which is calculated to be 70.5% rural (The World Bank Group 2010). The latter information is highly valuable in this study since it is the rural population that most heavily depends on agriculture for their source of income and livelihood (The World Bank Group 2010).

Because of its close proximity, Sri Lanka and its economy are somewhat tied to India. It too is part of the South Asian region which is vastly rural in population distribution. In 2002, 22.7% of the population was living in poverty and it was categorized as having a lower middle income level (The World Bank Group 2010). Sri Lanka has also seen a great deal of suicides among farmers in the past few decades, particularly by means of pesticide poisoning. A study of rural and semi-rural districts in Sri Lanka found 55.6% of suicide cases to be among farmers (Abeyasinghe and Gunnell 2008). The study researched the mental health statistics of the suicide cases as well and found links between depression or minor psychiatric illnesses and the suicides. Among all of the suicide victims, over a third were considered to have moderate or severe depression when they died and over 45% had depression of any kind (Abeyasinghe and Gunnell 2008). This means that Sri Lankan farmers too may be in need of better access to health services to deal with their depression and other ailments. While this would not target the entire population, the numbers are significant enough that it would likely help. Almost a third of the males and less of the females had previous suicide attempts after which they did not receive any form of psychiatric attention (Abeyasinghe and Gunnell 2008). In Sri Lankan suicides, alcohol seems to play a particularly strong role and over 60% of suicide victims were considered either dependant on or as having a problem with alcohol (Abeyasinghe and Gunnell 2008). This is an

aspect of suicides in Sri Lanka that must be particularly targeted and which does not seem to be a large problem in India.

Eastern Asia has also seen a spike in suicide among farmers in recent years, especially in China and Korea. There is very little data available, especially for suicides in Korea. China, like Sri Lanka, is considered to be in the lower middle income bracket (The World Bank Group 2010). However, the percentage of people living below the poverty level there is much lower, representing 2.8% of the population (The World Bank Group 2010). In East Asia and the Pacific which are grouped together by the World Bank dataset, the percentage of the total population which is rural is 55.9% (The World Bank Group 2010). Still, there seems to be a rural-urban disparity here too. Suicides are three times more common in rural China than in the urban areas (Phillips et al. 2002). Evidence shows that the majority of these are among the farming population. In a study of suicide cases from twenty rural and three urban areas of China that have high suicide rates, 59% of the suicides occurred among agricultural laborers (Phillips et al. 2002). Information was also collected on the mental health of the individuals who commit suicide. The study found that 63% “met criteria of a psychiatric illness” at the time of their death, yet only 7% had been seen for mental health issues (Phillips et al. 2002). Depression was the most common mental illness seen in the group (Phillips et al. 2002). These trends are reflective of the problem in India as well, and show continuity in theory that health plays a major role in farmer suicides in Asia.

The Southern hemisphere is affected as well. Suicide using pesticides, which is highly common among agricultural populations especially outside of western countries, has risen in many Central and South American countries (Bertolote et al. 2006). This is a factor which is newly understood and which raises previous estimates of pesticide ingestion on a global scale

(Bertolote et al. 2006). The Latin American and Caribbean region which includes Central and South American countries is 21.4% rural according to the World Bank, a much lower percentage than in Asia (The World Bank Group 2010). Brazil, which has records of high suicides in the agricultural sector, is considered an upper middle income country (The World Bank Group 2010). However, its poverty level is more comparable to that of India and Sri Lanka than China and estimates show 21.5% of the population to be living below the poverty line (The World Bank Group 2010). In Brazil, the suicide rate increased by approximately 30% between 1980 and 2006 though the suicide rates still vary greatly by region (Lovisi et al. 2009). This of course is true of most countries with high suicide rates and may reflect numerous socioeconomic factors. However, in Rio Grande do Sul which had the highest suicide rates in the country, suicide was found to be most prevalent among farm workers (Lovisi et al. 2009). Another region found farmers to have a presence of 80% more minor psychiatric disorders than the urban population (Faria et al. 2006). The study done in that region also reinforced the finding that pesticide poisoning was linked with subsequent mental health problems (Faria et al. 2006).

The situation for farmers is surprisingly similar in richer countries, though there are some key differences. Australia, for instance, is considered a high income country and has a life expectancy at birth of 81 years of age (The World Bank Group 2010). Their farmers, however, are still more likely to take their own lives than most of the rest of the population in the country. A study of suicide cases in Australia found that, particularly among younger men, suicide was more likely in small rural locations (Judd et al. 2006). This may be a result of health services being used less frequently in rural areas (Judd et al. 2006). Conjecture as to why services were not as commonly utilized in those locations cited the potential difficulty of gaining access to them or the stigma attached to asking for that kind of help (Judd et al. 2006). Another study

comparing suicides among farmers in South Australia with the all over Australia suicide rate between 1997-2001 found that the suicide rate among farming communities was even higher than that among rural areas (Miller and Burns 2008). Reasons for this thought to be specific to the Australian population were cited as the isolation of farmers and the low rate of farmers accessing health services as interventions (Misan et al. 2008). In general, Australians have access to a very good health care system. However, as in the case with India, there are very large disparities. Rural dwellers have lower access to health services and higher mortality rates (Misan et al. 2008).

The most varied research probably comes from the United Kingdom which is, of course, considered a high income country (The World Bank Group 2010). A study of British farmers found that while the farmers did not show high rates of psychiatric morbidity, when the rates were adjusted to account for psychiatric morbidity they were 2.5 times more prone to thinking that their lives were not worth living than people from private households (Thomas et al. 2003). This was true at higher percentages when only considering rural and semi-rural households (Thomas et al. 2003). Europe and Central Asia are calculated to be just over 36% rural (The World Bank Group 2010). Though this comprises a large group of countries and is thus distorted, it gives an idea of how the region compares to South and East Asia where much larger portions of the population are rural. Mental health is a problem for many farmers in the UK as well. It was found to be the most significant trouble felt by farmers in a study where 46% definitely and 23% probably had suffered from mental illness before the time of their death (Malmberg et al. 1999). Community-based research had even higher estimates and this was explained by the fact that the study with lower rates had more limited access to some groups of information (Malmberg et al. 1999). In the UK, farmers seeking help seems to be more

prevalent than in most other places. One study found that the health system may not be equipped to dealing with the way farmers express their illnesses, however, since many of them only impart physical symptoms (Booth et al. 2000). This shows the necessity for tailoring health services so that they are culturally appropriate.

There are problems among farmers in our own backyard as well and the amount of data available is sadly limited here too. However, studies have shown agricultural workers in the U.S. to have higher suicide rates than non-agricultural workers (Scarth et al. 2000). Past studies have shown rates of depressive symptoms to be as high as 35% for Ohio farmers and 26.1% of Missouri's rural population (Scarth et al. 2000). Rates of depressive symptoms in Colorado and Iowa were closer to 10% (Scarth et al. 2000). Higher rates in Iowa were attributed to an almost doubled frequency of having a substantially reduced income among Iowan farmers (Scarth et al. 2000). Rates also increased for males who were unmarried or had negative perceptions of their state of health (Scarth et al. 2000). Farmers in Iowa also showed a strong direct correlation between depressive symptoms and injuries pertaining to the job (Park et al. 2001). A field study in rural Alabama found the farming community to have several problems pertaining to health including a lack of health insurance, inability to gain mental health assistance, and no government aid during poorer seasons when it was needed (Tabereaux and Wheat 2002). Reports of more suicides issued during the current economic downturn and crisis help lines for farmers and agricultural laborers saw a 20% rise in mid-2009 compared with the year before (Moffeit 2009). This highlights the link between the agricultural sector and the economy but also shows that closer to home, this is a bigger issue and needs more attention now than it has in long while.

The data is clear. Suicides are occurring at abnormally high rates for farmers all over the globe and the fact that there are links between health and those suicides prove that this is not purely about droughts or the economy. The fact that many regions are omitted from this synthesis is a reflection on the availability of research and literature for those places. In any case, it is clear that farmers are a specific population with a clearly identified problem. They share certain similarities despite being in different nations. In many different countries, access to health care is harder to obtain in rural areas. In numerous places, suicides have been linked to mental and psychiatric disorders, including depression. This means that farmers have important public health needs and are a group that should be targeted with health interventions.

A Significant Similarity

Ideally farmers would be rid of debt and aided by the government particularly in times of crisis. They would achieve higher levels of education in general and would be more well-informed on matters pertaining to their work including machinery operation and cautious techniques of pesticide usage and storage. They would shift from pesticides altogether and move toward more health conscious alternatives. They would be less isolated from the rest of the society. Unfortunately, this is an unlikely scenario and if we could achieve it, it would take a great deal of time and concerted effort.

This is why the health sector is necessary in helping farm workers. But there is another reason as well. Even with a little less pressure in those areas, farmers would still find themselves subject to unforeseen negative life events and personal problems. Studies show that these can be decisive factors in cases of suicide. This is true especially combined with a sense of isolation or inability to gain help from others. It is also an aspect which makes suicides more impulsive in

nature. The large impact of negative social aspects has been evidenced in many suicide cases in India. In Maharashtra, India, 55% of the individuals who commit suicide had problems that they did not discuss with family members or others (Mishra 2006). Over a third of suicide victims had a recent change in social status for a variety of socio-economic reasons and over a fifth had disputes with neighbors (Mishra 2006).

This is true elsewhere as well. Even in a study where societal isolation was stated to not emerge as a major problem, 52% of the farmers who commit suicide did not have a confidant and nearly a third “lacked close friends” (Malmberg et al. 1999: 104). This contributes to their isolation and sense of having a life not worth living. Sri Lankan studies also cite negative life events such as the ending of an emotional relationship or having a close relative be poisoned as contributors to suicide (van der Hoek and Konradsen 2005). The same trend is seen with continuous family disputes or problems as well (Abeyasinghe and Gunnell 2008). In China, negative life events also contributed to suicide. Nearly half of the suicide cases in one study had friends or colleagues displaying suicidal behavior (Phillips et al. 2002). More than half had more than four negative life events in the past year and almost a third had a very intense negative life event take place sometime during the two days preceding their death (Phillips et al. 2002).

This is an area where health and mental health professions in particular can be of help. Farmers should not need to feel that overwhelming sense of isolation if it’s possible to relieve it. Health interventions could be beneficial provided the farmers know about and are willing to take advantage of that assistance. Spreading knowledge about mental health services in such a way that patients are not further isolated or stigmatized should consequently be a coinciding goal of the health industry. A study on discrimination in issues of accessing mental health found that in most places where mental illnesses have been researched there has been stigma attached

(Thornicroft 2008). This is not too hard to comprehend in light of the fact that there has been a “history of human rights violations of persons with mental disorders across the world” and at present most exist in “developing” nations (Patel et al. 2006). This perception would do a great deal to attach a negative image to the mental health industry and those who access it. For this reason, the health sector must take initiative in providing health services as well as making sure that they are understood and accessible, whatever that may entail.

Conclusion

This study aims to understand the reasons for the extensive numbers of suicides of farmers in India. Influences and pressures on farmers come from many directions. The political and economic spheres, through marginalizing policies and increased competition for farmers due to participation in an increasingly globalized market, have had very dire effects on farmers. They have increased uncertainty in crop production alongside droughts and have pushed farmers into heavy and burdensome debts. Furthermore, farmers are already under a great deal of strain from the major duties of their job, a factor which makes them more prone to suicide than members of many other occupations. Chronic exposure to pesticides and accidental poisonings only serve to worsen the health of farmers who already show a prevalence of depression and anxiety. This is enough to show the need of farmers for specialized health care attention. However, lack of implementation of public policies has left Indian farmers unattended. It is a very urgent problem in India; however this issue is growing in significance all over the globe and is hence something we should work to fix worldwide.

One of the main goals of the health sector should be to bridge gaps in access and to mend health disparities. Farmers make up a population that is disparate from other communities and needs targeted and tailored health interventions, particularly in rural health and mental health. Farmers from different nations and regions have dissimilar needs; this is why endeavors in this field must be culturally sensitive. We know that occupations in agriculture are extremely challenging, that farming is highly susceptible to economic and political conditions, and that access to health care among affected farmers is a very important factor. We also know that suicide is preventable and that certain health aspects that lead up to it, including presence of mental disorders or depression, are treatable. Not only are they treatable, studies also show that treatment can be cost effective (Patel et al. 2006). Fixing the health sector is feasible, and while it is not the only solution to this problem, it is a very vital component of reducing the soaring suicide rates among farmers.

References:

- Abeyasinghe R, and Gunnell D. 2008. Psychological autopsy study of suicide in three rural and semi-rural districts of sri lanka. *Social Psychiatry and Psychiatric Epidemiology* 43, (4): 280-5.
- Assadi, Muzaffar. 1998. Farmers' suicides: Signs of distress in rural economy. *Economic and Political Weekly* 33, (14): 747-8.
- Assadi, Muzaffar. 2008. Farmer's Suicide in India: Agrarian Crisis, Path of Development & politics in Karnataka, available on [http://viacampesina.net/downloads/PDF/Farmers_suicide_in_india\(3\).pdf](http://viacampesina.net/downloads/PDF/Farmers_suicide_in_india(3).pdf) (accessed February 3, 2010).
- Behere P.B., and Bhise M.C. 2009. Guest editorial: Farmers' suicide: Across culture. *Indian J.Psychiatry Indian Journal of Psychiatry* 51, (4): 242-3
- Bertolote, J. M., A. Fleischmann, A. Butchart, and N. Besbelli. 2006. Suicide, suicide attempts and pesticides: A major hidden public health problem. *BULLETIN- WORLD HEALTH ORGANIZATION* 84, (4): 260.
- Booth N, Briscoe M, and Powell R. 2000. Suicide in the farming community: Methods used and contact with health services. *Occupational and Environmental Medicine* 57, (9): 642-4.
- Das, A. 2009. Farmers' Suicide in India: Implications for Public Mental Health. *International Journal of Social Psychiatry*.
- Davies, R., G. Ahmed, and T. Freer. 2000. Chronic exposure to organophosphates: Background and clinical picture. *ADVANCES IN PSYCHIATRIC TREATMENT* 6, : 187-92.
- Deshpande, R. S. 2002. Suicide by farmers in karnataka: Agrarian distress and possible alleviatory steps. *Economic and Political Weekly* 37, (26): 2601-10.
- Dummer, Trevor J. B., and Ian G. Cook. 2008. Health in china and india: A cross-country comparison in a context of rapid globalisation. *Social Science & Medicine*. 67, (4): 590.
- Faria NM, Victora CG, Meneghel SN, de Carvalho LA, and Falk JW. 2006. Suicide rates in the state of rio grande do sul, brazil: Association with socioeconomic, cultural, and agricultural factors. *Cadernos De Saúde Pública / Ministério Da Saúde, Fundação Oswaldo Cruz, Escola Nacional De Saúde Pública* 22, (12): 2611-21.
- Gregoire A. 2002. The mental health of farmers. *Occupational Medicine (Oxford, England)* 52, (8): 471-6.
- Jain S, and Jadhav S. 2008. A cultural critique of community psychiatry in india. *International Journal of Health Services : Planning, Administration, Evaluation* 38, (3): 561-84.

- Jain, Sumeet, and Sushrut Jadhav. 2009. Pills that swallow policy: Clinical ethnography of a community mental health program in northern india. *Transcultural Psychiatry* 46, (1): 60-85.
- Judd, Fiona, Anne-Marie Cooper, Caitlin Fraser, and Julian Davis. 2006. Rural suicide-people or place effects? *Australian and New Zealand Journal of Psychiatry* 40, (3): 208-16.
- London L, Flisher AJ, Wesseling C, Mergler D, and Kromhout H. 2005. Suicide and exposure to organophosphate insecticides: Cause or effect? *American Journal of Industrial Medicine* 47, (4): 308-21.
- Lovisi G.M., Santos S.A., Legay L., Abelha L., and Valencia E. 2009. Epidemiological analysis of suicide in brazil from 1980 to 2006 . *Revista Brasileira De Psiquiatria* 31, (2): S86-94, http://www.scielo.br/scielo.php?pid=S1516-44462009000600007&script=sci_arttext&tlng=en (accessed April 14, 2010).
- Malmberg A, Simkin S, and Hawton K. 1999. Suicide in farmers. *The British Journal of Psychiatry : The Journal of Mental Science* 175, : 103-5.
- Miller, K., and C. Burns. 2008. Suicides on farms in south australia, 1997-2001. *AUSTRALIAN JOURNAL OF RURAL HEALTH* 16, (6): 327-31.
- Misan G, Lesjak M, and L Fragar. 2008. Health of rural populations. In *A textbook of australian rural health.*, ed. Liaw, S and Kilpatrick, SI, 71-81. Canberra: Australian Rural Health Education Network, <http://www.arhen.org.au/publications/docs/textbook/chap5.pdf> (accessed April 3, 2010).
- Mishra, S. 2006. Farmers' suicides in maharashtra. *ECONOMIC AND POLITICAL WEEKLY* 41, (16): 1538-45.
- Mishra, Srijit. 2007. Agrarian scenario in post-reform india: A story of distress, despair and death.
- Moffeit M. 2009. "Suicide Rates Show More Colorado Farmers Losing Hope." *The Denver Post*. 3 June. Web. 3 Apr. 2010. <http://www.denverpost.com/ci_12506134>.
- Nag PK, and Nag A. 2004. Drudgery, accidents and injuries in indian agriculture. *Industrial Health* 42, (2): 149-62.
- Park H, Sprince NL, Lewis MQ, Burmeister LF, Whitten PS, and Zwerling C. 2001. Risk factors for work-related injury among male farmers in iowa: A prospective cohort study. *Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine* 43, (6): 542-7.
- Patel V, Saraceno B, and Kleinman A. 2006. Beyond evidence: The moral case for international mental health. *The American Journal of Psychiatry* 163, (8): 1312-5.

- Patil, Ashok Vikhe, K. V. Somasundaram, and R. C. Goyal. 2002. Current health scenario in rural india. *Australian Journal of Rural Health* 10, (2): 129-35.
- Patnaik, Utsa. 2004. Principal task on the agrarian front. *Social Scientist* 32, (8): 36-41.
- Patnaik, Utsa. 2005. The agrarian market constraint in india after fourteen years of economic reforms and trade liberalisation*. *South Asia: Journal of South Asian Studies* 28, (2): 233-47.
- Patnaik, Utsa. 2007. Neoliberalism and Rural Poverty in India. *Economic and Political Weekly* 42, (30): 3132-3150.
- Phillips MR, Yang G, Zhang Y, Wang L, Ji H, and Zhou M. 2002. Risk factors for suicide in china: A national case-control psychological autopsy study. *Lancet* 360, (9347): 1728-36.
- Purohit, Brijesh. 2003. Inter-state disparities in health care and financial burden on the poor in india. *Journal of Health & Social Policy* 18, (3): 37-60.
- Raina, Vinod. 2007. India: Neoliberalism, caste politics, and farmer suicides. In *The state of resistance: Popular struggles in the global south.*, ed. Francois Polet, 156-159 (accessed February 3, 2010).
- Sanne B, Mykletun A, Moen BE, Dahl AA, and Tell GS. 2004. Farmers are at risk for anxiety and depression: The hordaland health study. *Occupational Medicine (Oxford, England)* 54, (2): 92-100.
- Scarth RD, Stallones L, Zwerling C, and Burmeister LF. 2000. The prevalence of depressive symptoms and risk factors among iowa and colorado farmers. *American Journal of Industrial Medicine* 37, (4): 382-9.
- Stallones, L., and C. Beseler. 2002. Pesticide poisoning and depressive symptoms among farm residents. *Annals of Epidemiology* 12, (6): 389-94.
- Swain, Satya Ranjan. Trade externalities of agricultural subsidies and world trade organization. *American Journal of Economics and Business Administration* 1, (3): 223-229, <http://www.scipub.org/fulltext/ajeba/ajeba13223-229.pdf> (accessed February 3, 2010).
- Tabereaux PB, and Wheat JR. 2002. Preventive agricultural medicine: A student's perspective of farmers' mental health. *Journal of Agromedicine* 8, (2): 33-43.
- Thomas HV, Lewis G, Thomas DR, Salmon RL, Chalmers RM, Coleman TJ, Kench SM, et al. 2003. Mental health of british farmers. *Occupational and Environmental Medicine* 60, (3): 181-5.

- Thornicroft G. 2008. Stigma and discrimination limit access to mental health care. *Epidemiol.Psychiatr.Soc.Epidemiologia e Psichiatria Sociale* 17, (1): 14-9.
- van der Hoek W, and Konradsen F. 2005. Risk factors for acute pesticide poisoning in sri lanka. *Tropical Medicine & International Health : TM & IH* 10, (6): 589-96.
- Venugopal D, Jagadisha. 2000. An indian perspective of farmer stress - A priority area for future research. *The International Journal of Social Psychiatry.* 46, (3): 231.
- Vijayakumar, L., and R. S. Babu. 2009. Does 'no pesticide' reduce suicides? *INTERNATIONAL JOURNAL OF SOCIAL PSYCHIATRY* 55, (5): 401-6.
- Vijayakumar L, John S, Pirkis J, and Whiteford H. 2005. Suicide in developing countries (2): Risk factors. *Crisis* 26, (3): 112-9.
- Walker JL, and Walker LJ. 1988. Self-reported stress symptoms in farmers. *Journal of Clinical Psychology* 44, (1): 10-6.
- Walker, K. L. 2008. Neoliberalism on the ground in rural india: Predatory growth, agrarian crisis, internal colonization, and the intensification of class struggle. *JOURNAL OF PEASANT STUDIES* 35, (4): 557-620.
- Weiss MG, Isaac M, Parkar SR, Chowdhury AN, and Raguram R. 2001. Global, national, and local approaches to mental health: Examples from india. *Tropical Medicine & International Health : TM & IH* 6, (1): 4-23.
- The World Bank Group. Development data catalog. 2010 [cited 4/16 2010]. Available from <http://data.worldbank.org.ezproxy1.library.arizona.edu/>.
- World Health Organization., and United Nations Environment Programme. 1990. *Public health impact of pesticides used in agriculture.* Geneva: World Health Organization.