AN ATTEMPT AT THE INTEGRATION OF INDIGENOUS
AND WESTERN MEDICINES IN BOLIVIA

by

N. Clay Mann

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SUPERVISORY COMMITTEE APPROVAL

of a thesis submitted by

Newell Clay Mann

This thesis has been read by each member of the following supervisory committee and by majority vote has been found to be satisfactory.

August 18, 1989

Charles C. Hughes
Chair: Charles C. Hughes

August 18, 1989

F. Ross Woolley

August 18, 1989

Richard E. Johns, Jr.
To the Graduate Council of the University of Utah:

I have read the thesis of Newell Clay Mann in its final form and have found that (1) its format, citations, and bibliographic style are consistent and acceptable; (2) its illustrative materials including figures, tables, and charts are in place; (3) the final manuscript is satisfactory to the Supervisory Committee and is ready for submission to the Graduate School.

Charles C. Hughes
Chair, Supervisory Committee

Approved for the Major Department

F. Marian Bishop
Chair, Dean

Approved for the Graduate Council

B. Gale Dick
ABSTRACT

An analysis was made of cultural components related directly to health and illness among rural inhabitants living on the high plains of the Andean mountains of Bolivia in order to identify constraints that may hinder the integration of traditional and Western medical regimens in the area. The paper includes: an empirical analysis of social structure, political power, environmental factors, economic development, and religious aspects of disease present in the area; a demographic health survey of two village populations living on the high plains; an examination of the possible use of a modified empowerment model to access traditional and Western health care systems; an investigation of the communicative value of symbols and pictographs to communicate health information to illiterate populations present in the highlands of Bolivia.
to Lori and Camron
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INTRODUCTION

Even though billions of dollars have been spent financing thousands of medical and health aid projects since World War II, over one-half billion of the earth's inhabitants continue to "exist" in dire circumstances.\(^1\) Referring to the quality of life in nonindustrial countries Robert McNamara, former director of the World Bank, said:

> Some 800 million individuals continue to be trapped in what I have termed absolute poverty: a condition of life so characterized by malnutrition, illiteracy, disease, squalid surroundings, high mortality, and low life expectancy as to be beneath any reasonable definition of human decency.\(^2\)

In developing countries, more than 70% of the populace suffers from infectious and communicable diseases. These diseases are easily transmitted due to poor sanitation, housing, and water. Additionally, nutrition and education affect the vulnerability of the individual. The most profound effect of these substandard living conditions is transferred to the children of these communities in the form

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of diarrhea. Diarrheal dehydration is one of the major causes of death in children under 5 years of age in developing countries. An estimated 75 million children each year suffer from diarrhea; deaths estimated at anywhere from 3,000,000\(^3\) to 18,000,000\(^4\) per year.

All of the above cited factors responsible for these deplorable statistics are themselves dependent on income. The lower the income, the lower the educational and nutritional status, and the poorer the quality of water, and housing.

This close association between income and health lends support to the theory that many of the ills of society will not be eradicated until the absolute income of the poor can be increased. Although simply raising the real income of the poor through unilateral aid programs satisfies the short term needs, it does not take into account the underlying factors responsible for disease. Therefore, increases in the poor's real income must be long lived if sustainable progress is to be experienced. Such an effort could be undertaken only by individual Third World governments committing to an underlying political platform aimed at producing a

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redistribution of income for all. Grey said about The Black Report:

As it clearly states, to address the facts of unequal material circumstances without acknowledging the underlying structure which may promote, and even depend upon, the continuing existence of such inequalities is simply to adopt the ameliorative approach which has become a characteristic of much of social medicine and social policy, and which has co-existed with the obscured continuation and possible widening of health inequalities. (It) identifies the inevitable effects of material circumstances on the obscured patterns and trends in health inequalities', and notes the extent to which the generation and maintenance of such material differences are important, perhaps dependent, characteristics of social and economic structures.⁵

Even though the redistribution of power, influence, and ownership is a theorizable solution, it would be ludicrous to extend large amounts of resources promoting such a philosophy in practice. The elite in a country, who, to a great extent, control the composition and direction of government expenditure, will never give to the poor to the extent that their own relative position is threatened. Realizing this fact, developers have been forced to depend on programs that offer "band-aid" solutions to health problems. This thesis offers such an approach to the problem of Western drug utilization among Third World populations.

Although the above discussion paints a dismal picture of the world community and possible solutions, there have been some development successes. For example, in the areas

of health and nutrition, millions of children have been immunized against measles, diphtheria, typhoid and other diseases, and the producing power of many primitive regions of the earth has been enhanced by the urbanization and the mechanization of agriculture. Nonetheless, the legitimate development of successful and sustained medical care pales by comparison when measured against the many failures and the amount of money that has been spent to provide meaningful and measurable medical services.

In recent years, studies have been developed to determine appropriate methodologies that allow for the integration of the two health care systems.\(^6\) The motivation underlying these innovative studies was in part created by manpower mandates established by the World Health Organization (i.e., WHA [World Health Assembly] 29.72, 30.49, and 31.33).\(^7\) To date, important integration studies have taken place in Bangladesh, Kenya, Ecuador, India, Iran, Mexico, Guatemala, Nepal, and Brazil.\(^8\) Some studies have

\(^6\) Edward Green, "Can Collaborative Programs Between Biomedical and African Indigenous Health Practitioners Succeed?" *Social Science and Medicine* 27, no. 11 (1988): 1125.


\(^8\) Bonita Stanton et al., "An Educational Intervention for Altering Water-Sanitation Behaviors to Reduce Childhood Diarrhoea in Urban Bangladesh: Formulation, Prepartion and Delivery of Educational Intervention," *Social Science and Medicine* 24, no. 3 (1987); Thomas Eisemon, Vilma Patel and Sarone Ole Sena, "Uses of Formal and Informal Knowledge in
indicated that several programs have experienced a fair amount of success in the integration process. One study of African ethnomedicine reports that 90% of interviewed ethnohealers reported using modern medicine to some degree and 81% of healers expressed a desire to receive additional biomedical training. In another article, the benefit received from teaching traditional midwives aseptic birthing techniques in Algeria is manifested in lower infant morbidity and mortality rates. Other researchers have recorded remarkable successes in teaching native people the proper


practice and use of rehydration therapy and topical antimicrobial preparations such as Neosporin and Gentian Violet. Nevertheless, other studies indicate that ineffective integration of Western and traditional medical regimens have led to inappropriate utilization of Western pharmaceuticals and diagnostic instruments. For example, one article reported that 10,000 people die from chloramphenicol-induced aplastic anaemia each year in India.17

In this research paper, I will attempt to describe a unique approach to the integration of traditional and Western medical regimens into a workable system in a developing area of Bolivia. The conclusions forwarded in this manuscript are


12 Green, "Can Collaborative Programs Between Biomedical and African Indigenous Health Practitioners Succeed?" 1127.


17 "Antibiotics on the Way Out?" Daccan Herald (Bombay), July 1883, p. 23.
based on both empirical and analytical data gathered during two site visits to Bolivia in 1987, during which the survey identified in Chapter IV of this paper was administered. I do not propose to advance this approach as a nostrum guaranteed to alleviate all culture-bound barriers hindering the proper and effective use of Western medicines in all underdeveloped nations. Nevertheless, the concepts I will describe in this thesis are being implemented in areas of the Bolivian Altiplano\(^{18}\) and are successfully withstanding the test of time.

One of the important aspects of this approach is the need for variation in order to account for regional and culture-specific differences. That is to say, the model that will be introduced in this paper should not and cannot be construed to apply universally to world health development efforts. Nevertheless, I feel that the principles suggested by this model may be tailored to fit individual health programs and/or projects.

In order to introduce this development model, this thesis will begin by presenting an overall view of important factors that will play a part in the integration of traditional and Western medical regimens in Bolivia. This discourse will define cultural components of health that are

\(^{18}\) Altiplano translates from Spanish to mean "high altitude plain."
present on the Altiplano, which if not considered, will complicate the process of integration.

Chapter II of this paper will present a previously unpublished demographic health survey performed in two rural villages in the district of La Paz under the direction of Dr. John M. Hill of Brigham Young University. These statistics will be analyzed and presented to illustrate the extent to which environmental, cultural, and behavioral inhibitors to "good health" are actually present in the research area.

Following this analysis, Chapter III will introduce the above mentioned development model to suggest a process or strategy whereby the immediate medical needs of the rural poor can be addressed, and at the same time, provide long-term capacity for building self-sustainability and networking skills. This section will highlight a repertoire of appropriate developmental social technologies that have materialized during actual projects in the highlands of Bolivia. These technologies have been empirically recognized as being intuitive, supportive, and able to induce the kind of social momentum that will be necessary to overcome the discussed cultural barriers that might compound the implementation of future development projects.

The final chapter of the paper will present the results of a cross-sectional questionnaire I administered on the Altiplano during two site visits to Bolivia in 1987, which was developed to identify written symbols that have cultural significance. Culturally nonreactive symbols identified by
this research will be used as part of a diagnostic regimen in a village medical kit developed to allow indigenous healers to dispense Western medicines that have been endorsed by the World Health Organization.\textsuperscript{19} It is thought that this village health kit may act as an effective vehicle for the integration of specific treatment modalities within Western and traditional medical practice. A prototype of the village health medical kit is expected to be piloted in Peru in the spring of 1990. The survey also investigates the communicative value of symbols and icons in the Altiplano region. It is hoped that, as part of a future project, universally known symbols (if identified) can be evaluated as to their effectiveness in communicating important health information to near illiterate populations. Many different types of symbols were evaluated on semantic, syntactic, and pragmatic dimensions. The analysis of the cross-sectional questionnaire will represent the portion of my research that constitutes an original contribution to the body of knowledge in the field of public health.

CHAPTER I

CULTURAL COMPONENTS OF HEALTH

Culture

In 1948, Kroeber defined culture as "the mass of learning and transmitted motor reactions, habits, techniques, ideas, and the behavior they induce." 20 Although this definition is instructive in identifying the form or structure that develops as a result of the phenomenon known as culture, it does little to explain how and why "culture" potentially guides the behavior of men and women.

In the book entitled Custom-Made, Hughes offers the following definition of culture in an effort to initiate a process of understanding into the many dimensions associated with the concept of culture:

A "culture" is a learned configuration of images and other symbolic elements widely shared among members of a given society or social group which, for individuals, functions as an orientational framework for behavior; and, for the group, serves as the

communicational matrix which tends to coordinate and sanction behavior. 21

Culture, then, is primarily concerned with assumptions, norms, and rules that social groups learn, share with each other, and value. Social behaviors or attitudes that follow a particular customary behavior can be identified as being culture-bound by the fact that such social manifestations usually serve a specific function that has similar meaning for all members of the group. These learned "actions" generally follow a pattern. Repeating an approved action gives structure of form to that behavior and validates it as a socially acceptable idea or expression. 22

Once "meanings" are attached to attitudes or actions a fixed form or meaning arbitrarily develops and the customary behavior becomes a symbol. Cultural symbols allow members of the same social group to share common understandings that would be unknown to someone outside of the cultural system. 23 Socially validated actions or themes promote unity within the social group and add stability to the social system by providing universally accepted goals, rules, and standards for all to follow.


That is not to say the expressions of culture are not subject to change. Culture is constantly experiencing modification along a chronological time line. Ripples in the stability of a culturally motivated concept are initiated by some type of innovation, either in the form of a new and creative adaptation to the presently existing system or the infusion of a new belief or assumption transferred from a competing cultural system.24 Once an innovation has been injected into a cultural structure, it is either accepted and spread through the social system through diffusion or rejected and lost.

Leslie White defined culture as "man's extra-somatic means of adaptation,"25 in other words, one's ability to learn and transmit a store of acquired information to future generations. Thus, cultures have been shaped by humanity and have evolved through an incremental process of slow modification and adaptation.

Ralph Linton emphasized the idea that culture exists on a continuum when he stated that culture extends from "the beginning of human existence to the present."26 For culture


to exist, cultural innovations must be invented, passed on from individual to individual and accumulated without any break in the continuity. A break in the infusion of learning into the social group would lead to the disappearance of the cultural system.

Therefore, culture is composed of complex, yet interrelated associations; that is, a collection of related social elements, values, or manifestations that are in a constant state of interaction and interdependence. Each element is essential to the normal functioning of the culture unique to its origin and each, in turn, draws on the others for its own continued existence. These elements, alone and in conjunction with others, acts as a response to the resolution of social, political, economic, and structural problems.

Foster stated that;

Cultures are delicately balanced systems which do not change piecemeal, and seemingly beneficial

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27 Ibid., 10-11


innovations in one area (e.g., agriculture) may turn out to produce secondary and tertiary changes in another area (e.g., health) that may outweigh the anticipated benefits narrowly viewed.\textsuperscript{31}

As alluded to in the quote by Foster, culture may be viewed as a social construct that acts as a bridge between one's inner nature (e.g., a biological entity) and the nature of their environment.\textsuperscript{32} In this context, the above cited social elements related to culture develop as people act within their environment to maximize gains or advantages and minimize losses or disadvantages (the maximation theory).\textsuperscript{33} This notion of cultural development is very pronounced in Third World countries where the physical environment continues to greatly impact upon the lives of its inhabitants. Nevertheless, other elements related to community living have evolved in developing countries that complicate the manifestation of culture.

In Bolivia, social relations, political authority, the environment, economic development, and religion are all important elements intimately related in native culture. This interrelation makes it nearly impossible to discuss


\textsuperscript{33} Fredrick Barth, \textit{Nomads of South Persia. The Basseri of the Khamseh Confederacy} (Olso: Oslo University Press, 1961).
health issues in rural Bolivia without introducing many of the above mentioned components of culture into the discussion. This chapter will present a detailed look at each of the above mentioned elements of culture in order that the reader may be able to more fully understand how culture precipitates the effectiveness and efficiency of health related projects.

Personal Indicators and Social Structure

Rather than reciting an exhaustive list of statistics categorizing Bolivia's health, economic, and political position in relation to neighboring countries, a description of the conditions endured by the rural poor on the Altiplano will be provided to better illustrate the specific challenges confronting health developers. Descriptive statistics outlining the present state of the rural poor in Bolivia will be offered in Chapter II. The following is a set of five indicators, modified from a list developed by Robert Chambers, that characterize the lifestyle of the peasants living on the Altiplano.34

Poverty. A poor household in rural Bolivia is one in which there are few assets, little land or livestock; sanitation is generally not a priority; and clothing is scarce and worn until severely tattered. The household's

34 Chambers, Rural Development: Putting the Last First, 108-9.
main productive asset is the labor of the family members. Thus, large families are seen as a necessity. The household has no stock of food or cash and as a result, the family is often locked into a relationship with a patron. All family members, except the very young, work as long as there is work.

Isolation. This term refers to the peripheral nature of Bolivian rural households. Their remote location away from towns and cities implies that trade and information centers are accessed only with great difficulty. This perpetuates illiteracy, resigns the household to specific kinds of income producing activities, and often precludes its members from exercising any political voice.

Physical weakness. A typical Bolivian rural household is one in which there exists a high ratio of dependents to able-bodied adults. The dependents include young children, the elderly, the sick and the handicapped. The adults are under tremendous pressure; their constant activity renders them especially vulnerable to parasites, sickness and malnutrition. In turn, low birth weights and small bodies stunted relative to their genetic potential are quite common.

Vulnerability. The overwhelming majority of rural households in the highlands are ill-prepared for contingencies. Droughts, floods, illness, the death of an adult, crop failure, or the death of livestock can devastate a family's ability to survive. Additional events not normally associated with physical disasters, such as
weddings, dowries, and funerals can also leave poor families in ruin because they are often forced to sell what few valuables they have just so they can finance that single event. These unplanned contingencies frequently occur simultaneously; e.g., floods may initiate illness and death.

**Powerlessness.** Rural Bolivian poverty is nearly always characterized by the absence of political and legal recourse. Ignorance of the law and economic disadvantages combine to render the poor easy prey to the rich or the powerful. The poor households have no negotiating power and must accept the labor or sale terms offered them. Often these conditions are merely accepted by the poor who do nothing to alter these political realities because such action might invite reprisals from the elite who control employment, markets, tenancy, loans, and protection in times of disaster.

Dr. Boris Velimirovic offers some insight into the effect of illness on lifestyle in less developed countries. He said;

> In general, life is seen as full of pains and traumas, of which illness is only a part that must be borne with dignity. An individual should continue his normal activities and be strong in the face of illness. Women who work must continue to work when ill, as their earnings are of great economic significance to the whole family. An individual is not responsible for being ill, but is considered the innocent victim of forces such as poverty, bacteria, and spirits that are the ultimate causative factor.\(^\text{35}\)

Existing under the above cited conditions, it is expected that the family would play an important role in the medical maintenance and health of the individual in the form of home cures that are handed down from generation to generation. Many home remedies have great value. Others have less. Some may be risky or harmful. For many sicknesses, time-tested home remedies work as well as Western medicine or even better and are often cheaper to the villagers. In some cases they are safer. For example, many of the herbal teas villagers use for home treatment of coughs and colds do more good and cause fewer side effects than cold syrups and strong medicines doctors may prescribe.

It is important to respect the people's traditions and build on them. A good example of how technology has been counter-productive to the health of the people of Bolivia is the decline in the use of breast milk for infants. For hundreds of years tradition held that breast milk was the best type of nutrition that an infant could receive. Almost five decades ago, large baby food companies set up extensive advertising campaigns that were focused on the idea that canned milk was better for a baby's health than breast milk. As a result of these campaigns, thousands of newborns died.


37 Gordon Schendel, Medicine in Mexico: From Aztec Herbs to Betatrons (Austin: University of Texas Press, 1968), 92.
from infection or dehydration due to the lack of natural antibodies in canned milk. Similar programs in other developing countries have also led to an increase in the infant mortality rate.

It is important to remember that no part of traditional life should be tampered with until the rationalization behind the practice is understood. An example of this is discussed in a paper written by Hughes that explains an incident in North Vietnam in which a government sponsored change in the traditional location of a group of people, referred to as the plain dwellers, caused an endemic of malaria. Hughes wrote:

Dwellers on the plains lived in low, squat houses in which they sheltered their cattle on one side and did their cooking on the other. When these rice growers moved to the hills they constructed houses according to the same general plan. In the hills, however, the incidence of malaria among them became so high as to limit further such movement....The incidence of malaria was low among the indigenous hill people, who constructed their homes on stilts, sheltered their animals underneath, and did their cooking inside the house....The presence of animals underneath the house and of smoke inside the house (where the cooking was done) created an unrealized protection for human inhabitants.


Not only can changes in geographic and/or environmental circumstances disrupt the adaptive capability of populations, but psychosomatic belief in non-Western pharmacopoeia can magnify the therapeutic efficacy of many family home remedies. Some home remedies have a direct effect on the body. Others seem to only work because the people believe in them. The healing power of belief can be very strong. David Werner, a health specialist working with rural populations in Central and South America, tells the following story;

Once I called to see a woman who had just had a miscarriage and was still bleeding a little. There was an orange tree near her house. So I suggested that she drink a glass of orange juice (oranges have vitamin C, which helps strengthen blood vessels). She drank it even though she was afraid it would harm her.

Her fear was so great that soon she became very ill. I examined her, but could find nothing physically wrong. I tried to comfort her, telling her she was not in danger. But she said she was going to die. At last I gave her an injection of distilled (completely pure) water. Distilled water has no medical effect. But since she had great faith in injections, she quickly got better.41

The idea of linking cultural belief to health is of great importance in Bolivian culture. Many maladies that are considered sickness are caused in part by the person's beliefs, worries, or fears. Included in this group of sicknesses are: bewitchment or hexing (brujeria), unreasonable or hysterical fear (susto), uncertain aches and

pains (especially those of teenage girls or older women),
anxiety or nervous worry (bilis), and in some cases of
asthma, hiccups, indigestion, stomach ulcers (empacho),
migraine headaches and even warts. A more exhaustive list
of indigenous illnesses is offered in Appendix A.

In the early 1950s, anthropologists studying public
health programs in Latin America discovered that traditional
peoples who had access to scientific medical services felt
that illnesses with certain etiologies could be cured or
prevented by physicians so that, despite the initial
distrust, they sought their services. Illnesses with other
etiologies, however, were felt best treated by home remedies
or by traditional healers, because it was believed that
physicians did not recognize, and hence could not be expected
to cure such cases. Referring to the choice of treatment,
Kunstadter summarized this assumption when he said,

When Western practice applies treatment which is
perceived or classified as inappropriate in the local
system for the category in which the disease is locally
placed, treatment will be rejected because of the
'cultural conflict' or cognitive dissonance.

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42 Ibid., 22-9.

43 George M. Foster, "Relationships Between Theoretical

44 P. Kunstadter, "Do Cultural Differences Make a
Difference? Choice Points in Medical Systems Available in
Northwestern Thailand," in Culture and Healing in Asia
A second type of cognitive dichotomy also appeared significant. There seem to be a distinction between "our" diseases and "their" diseases. William Madsen quoted a Mexican-American Healer:

I do not know why God has afflicted only us with the evil eye, *empacho*, fallen fontanelle, fright and other diseases. But God is merciful. He sends us these affictions but he also taught us how to cure them...They come to us and only we understand them.45

This dichotomy in disease perception necessitated, or in some cases was created by, a wide range of healers in the rural and urban areas of Bolivia. The treatments offered by these healers are specific to certain ailments, making each a specialist in his/her area of emphasis. The following list of healers can be found in any district of Bolivian society: *parteras* (midwives), *curanderos* (curers), *brujos* (witches with magical powers to answer the questions who? and why?), *hueseros* (bonesetters), *chifleras* (herbalists), and *shamans* (those in direct contact with the spirit world).

The indigenous healers of Bolivia have developed a complex series of categories that compartmentalize illnesses into separate areas that are handled by a specific healer. An interesting study performed by McKee involving highland populations in Ecuador indicated that folk taxonomy used to differentiate and diagnose categorical gastrointestinal

diseases highly correlated with the scientific descriptions of the symptoms of the same disease states in the Merck Manual.46 The idea of referring a patient to someone who is more qualified to handle a specific illness is not new to this society. The Bolivian culture appears to adhere to the general idea of equilibrium in human pathology. Illness, at least in part, is due to an excess of "heat" or "chill" in the body.47 This belief system, present through most of Central and South America, is well illustrated in Harwood's article, "The Hot-Cold Theory of Disease."48 Indigenous healers also believe that parts of the body, such as the fontanelle at birth, may be displaced and can be manipulated back into place.49 Illness is commonly treated with herbs, plasters, enemas, and cupping.

Even with this extensive system of health care providers and complex categorization of symptoms, the health status of the people in Bolivia is among the most deplorable in the


Nevertheless, this intricate health care structure could potentially lend itself well to an integrative attempt at introducing Western pharmaceuticals in a culturally meaningful way. Such a structure may inhibit problems associated with self-medication and compliance that might arise if such a founded, indigenous system did not exist.

The power and influence of indigenous healers in the rural areas of Bolivia should not be discounted. In many cases the native healer is respected above all other members of the village. The power exerted by resident healers over the minds and behavior of fellow villagers is exemplified by an incident Lewis witnessed, in which a complex, multifaceted health project in a Mexican village was completely shut down due to the influence of a single native healer.51

Political Authority and Power

Ethnic difference has always been an important component of Bolivia's political economy. During the revolution of 1952 and the massive agrarian reform that followed it, ethnicity was supposedly abolished as the major divisive factor of society. Politicians insisted on the ideology of


"mestizaje," which placed emphasis on the idea that a new Bolivia was arising from the social and cultural mixing of its component peoples, therefore, deemphasizing ethnic differences.

However, with the reestablishment of democracy in 1982, ethnicity has once again become a rallying point of political discussion. The word "Indian," which had become socially unacceptable after the agrarian reform, is once again popular and acceptable in polite discourse.

An important distinction arose from the fact that indigenous communities occupied a clear rural status and to hold land in them was to meet the criteria under the law defining Indian communities. Many of these Indians have held their standing since colonial times. In the 1970s, the government legislated "reforms" mandating the break up of the supposedly antimodern communities and encouraged members of the exclusive Hispanic society to obtain the land for haciendas. This was the beginning of an intense struggle in which the groups of Indians and Hispanics were both opposed in fierce and often violent struggle.

This becomes an important historical fact to remember when dealing with the native people. Foreign health workers


might be more widely accepted if they understand that segregated health programs may be the only way to initiate an effective health project in a section of Bolivia that has adjoining Indian and Hispanic neighborhoods.

Bolivia's "ethnic" groups include Quechuas, Ayamaras, and Guaranis. They represent the three major non-Hispanic language groups in the country. No one talks about "our Hispanics." The Hispanic groups are considered outsiders.

Through the social differentiation resulting from the whole historical process of Spanish intervention in Andean life, there arose two ill defined middle groups who in some cases maintained simultaneous access to land in the communities and a residence in towns and cities. They have divided themselves into two groups according to occupation. The two groups are the "cholos" and the "mestizos." The cholos were relatively more indigenous while the mestizos were more Hispanic. Their patterns of dress and language use are distinct. Members of both groups consistently travel the highways between the city and their rural, non-nucleated communities. Many of them maintain temporary residence in the city, working there during the off periods of the agricultural cycle.

La Paz, the major urban center neighboring the Altiplano, is residentially segregated, although not by law per se. The market mechanism present in the city fills the task well. Most of these former peasants work as artisans, laborers in construction, domestic servants, and small scale
entrepreneurs. Many of these peasants are driven by the desire for social mobility. Many try to give one of their children professional status. However, on the other hand, they have strong language loyalty and a strong sense of distinction from the traditional urban elites, induced by their marginal standing within the city's economy and the frequent cultural (racial) prejudice they experience. The modern peasants of La Paz are neither full-time proletarians nor full-time peasants, but exist in a tentative zone of constant motion as they struggle to survive in the most difficult economy of the Americas.

The poorer peasants who live full time as agriculturalists in the mountains of the Andes have seen the most abrupt change. Culturally, the peasants have seen the spread of Aymara radio stations. These stations have strengthened the ties across the Altiplano, from village to village.

A major political and labor movement exalting indigenous languages and culture has arisen and seriously and consciously challenged the mestizo dominance of the country and the legitimacy of Spanish speakers and other Bolivians. This political movement represents all of the peasant population, but centers on the "nativeness" of the peasants who still work the land as they have for centuries.

An example of the political voice of this group is recorded below. This editorial is included in this discussion in an effort to help the reader understand the existing
political movement to boost the economic and social status of the peasant people. Knowing and understanding this social movement will be helpful in understanding the wants and desires of the rural poor.

The Confederacion Unica de Trabajadores Campesinos de Bolivia (The Unique Confederation of Peasant Workers of Bolivia) rejects with indignation and definitively the campaign that the neo-nazi-fascist party ADN is carrying out....It may be that in the city are the professionals, those who direct, or want to direct once again the country, the planners of industrial development, their own opulence, their welfare, their happiness, of their businesses, of their frauds....

But there also are us, the humble people, the people whose hands are free of blood, of robberies, of illicit levies and business. We are the peasants, the workers, those who produce with our sweat and effort, with our calloused hands.

And in the countryside, we are proud of our ancestry, our origin, of our roots. Yes, we do have copper colored skin from working from sun up to sun down, from not having any of the conveniences like hygiene, instead of the most miserable degrees of hardship and poverty.

We are MEN. Thus in capital letters, in the most noble and generous and virile sense of the word....Let (them) know that we are FREE, no longer servants, no longer houseboys.

We are more Bolivian than they whose last names denounce Teutonic, Irish, Catalan, Sephardic, and other origins. For that reason WE ARE NOT SECOND CLASS CITIZENS. And our votes are worth as much or more than theirs.

This editorial illustrates the peasant people's desire for Bolivian elites to recognize and validate their ethnicity. It may also reveal a radically motivated repudiation of Western developed health care because of its

association with aristocratic emigrants and its incompatibility with accepted and practiced traditional norms in native health care.

The Bolivian government tried to elicit rural sponsorship in the 1985 national elections by usurping influence from the momentum created by the peasant movement. The candidates, in their own way, attempted to obtain the peasant vote. The following example indicates how a governmental candidate attempted to draw influence in the rural populations by "piggy-backing" off the trust the ACF had developed through its projects.

Five months from the actual election, the phone rang at the headquarters of the Andean Children's Foundation. A representative of one of the candidates running for the presidential office was calling. He explained that he had heard of the great success our program had experienced and asked if it would be possible to have our picture taken with the candidate that he represented.55

These political and racial barriers previously identified make it seem highly unlikely that the Western trained doctors, nurses, and paramedics of Bolivia's cities will meaningfully provide sustained health care in the countryside, because of the questions of economics, status, and career ladders. This fact was illustrated when in 1986, The Andean Children's Foundation attempted to access

55 Timothy S. Evans, Bootstrap Development Project in Bolivia, Andean Children's Foundation Project Notes (18 December 1986): 7.
Government sponsored medical residents to man rural health clinics as part of an OB-GYN clinic funded by the Foundation. Village health workers informed us that Western trained medical students are not commonly found in rural health clinics because medical residents routinely "pay off" village elites to avoid fulfilling their rural clinic obligation.56

The important component in successfully integrating traditional and Western medical regimens into a workable system involves enlisting Bolivian medical personnel as change agents to facilitate progressive interrelationships between the traditional specialists and Western medicine.57 Politically this is problematic not only because of what has already been discussed but because of the fears in Bolivia on the part of the mestizo elites of the Indianist movement. Socially, this integration would be difficult because of its potential to upset the power balances that exist in a number of the study communities.58 Without knowing the specifics of this dimension, the networks of power and the place of the medical specialists, be they traditional or modern, it would be difficult to design a means of relating the two a priori.


57 Akerele, "The Best of Both Worlds: Bringing Traditional Medicine Up To Date," 178.

Environmental Factors

The climate of the Bolivian highland area is generally cool and dry. The average annual precipitation for the region is 28 inches. The amount of rain varies highly with locality; however, most of the precipitation falls during the summer months between November and March. Relatively little rain falls during the rest of the year. As a consequence, the availability of water is a problem for most of the year.

The quality of the soil in the region is quite low. Approximately 20% of the soil is classified as moderately fertile. Crops are planted and rotated on a rigorous cycle. Fifty percent of the soil is suitable only for general forest cover and grazing purposes. The remaining 30% supports only restricted types of vegetation.

Human modification of the land is almost nonexistent. For example, some small ditches are maintained to carry water from small streams to the garden patches of industrious villagers, but no intercommunity irrigation systems exist.

Oscillations in food production are often violent due to shifting weather conditions. Floods, early frosts, or other inundations would lead to starvation and predispose the populace to epidemics, which, in turn, cause critical shortages in labor. Textile production based on sheep and


60 Ibid., 33-5.
alpaca wool is very important in the highlands. Apart from the abrajes (commercial herds) situated near the towns, this production is closely integrated with the rural economy.

As the target of a prospective interventional health program, Bolivia's highlands present several challenges. Because of geography, these high-altitude populations experience the effects of the hypoxic environment on their health.61, 62 Although studies show some degree of adaptation to the high altitude, cardiovascular, respiratory, musculoskeletal, genitourinary and digestive disease related to high altitude living are endemic among some Ayamara Indian populations.63 In rural areas, the lack of a developed transportation system and disinterest on the part of the Bolivian government to improve the situation are serious obstacles to the use of existing medical facilities in near by cities.64


Economic Development

Political instability and expeditious population growth have combined in recent years to worsen the already-poor health status of the Altiplano peoples of Bolivia. Low income levels and the lack of educational training have led to restrained economic development. Numerous studies have documented that income and knowledge can be major constraints to improved nutrition and sanitation, income being especially important among poorer groups. Nevertheless, studies of intervention programs in less developed nations have shown that family expenditures often exceed government expenditures. This provides evidence that despite endemically low income levels on the part of the participants, self-reliance is an appropriate goal for interventional programs in developing nations.

The poor nutritional status of mothers and infants, combined with deplorable sanitation conditions, results in an


adult population stunted both physically and mentally. This inhibitive development pattern in turn lowers productivity. Low productivity initiates sluggish economic growth and the development of a vicious cycle is established. 69 Restraints on income lead to poor caloric intake and protein nutrition and low sanitation standards; which in turn leads to poor health by the introduction of parasitic, infectious, and nutritional deficiency diseases; which in turn leads to low productivity; which again restrains the income of the poor.

Interventional programs of the past have sought to provide symptomatic relief, usually in the form of nutritional programs, to disrupt this cycle. Unfortunately, programs that provide generous unilateral aid increase the dependence of developing nations on donations and undermine national productivity by hindering agronomic incentive. Unilateral aid, in and of itself, often creates a vicious cycle of dependency and humiliation that magnifies the existing problems they try to alleviate. 70

Government-sponsored aid is often given with the intention of moderating government policy as a way of affecting positive change in the lifestyle of the people. Unfortunately, developing nations often have militaristic, undemocratic governments that usurp monies only to strengthen


the existing power relationships by directing funds to programs that benefit the elite without addressing the primary causes of rural poverty.\textsuperscript{71, 72, 73} Although, a few innovative Third World governments have shown progress towards the propensity to redirect some funds to help the poor.\textsuperscript{74, 75} Nevertheless, the literature explicitly states that aid does not alleviate oppression. It is noteworthy to point out that the Bolivian government spends on average only 0.6\% of the Gross Domestic Product (GDP) on health.\textsuperscript{76}

In order to address effectively the health needs of the village populations on the Altiplano, specific deterrents to disease must first be identified, quantified in terms of

\textsuperscript{71} F. M. Lappe, J. Collins, and D. Kinley, \textit{Aid as Obstacle: Twenty Questions About Our Foreign Aid and the Hungry} Institute for Food and Development Policy (San Francisco: The Institute, 1980), 36-42.

\textsuperscript{72} F. M. Lappe, et al., \textit{Nutrition Planning}, Institute for Food and Development Policy (San Francisco: The Institute, 1981), 84-5.


\textsuperscript{74} A. Coulson, \textit{Tanzania: A Political Economy} (Oxford: Carendon Press, 1982).


\textsuperscript{76} Comision Econima Para America Latina y el Carbine, \textit{Anuaroi Estadistisco de America Latina y el Caribe} (Publication De Las Naciones Unidas, 20: E/S. 88.II), 48.
ability to effect change, and prioritized in order of importance. By carefully assessing individual health needs, resources will not be directed to unprofitable or inappropriate activities. The concluding chapter of this paper will offer a discussion of environmental as well as social constraints that, if recognized and accounted for, will allow for valid assessments of individual and community needs.

Religious Beliefs About Disease

Velimirovic stated that "illness, health maintenance, religion, and social relations may be interwoven in any culture." As discussed at the beginning of this chapter, this is true of the country of Bolivia.

In rural Bolivia, the majority of the diagnoses of illness and health care either comes from within the family or from medical/religious specialists within the peasant communities themselves. Indigenous diviners and herbalists, particularly from the Ayamara region, provide these services on a basis of preexisting ties of communal and personal reciprocity. Western medicine is noticeably lacking.

We do not, however, know much about the social organization, its culture and economics, of the total spectrum of those who provide health care: from the

chifleras, who sell herbs in the market place and provide information on dosages and disease diagnosis, to the local herbalists, diviners and shamans, to Western medical specialists. Specifically we do not know much about the specifics of the medicine or about the decision-making process by the individual and households in terms of which of the variety of services to seek. However, it is possible to mention a variety of little known medical practices that are employed to cure illnesses.

As mentioned earlier, it is important to remember that the indigenous healers who are present in the area in which one is working probably hold more power and respect than any other native. Even though leaders of the Roman Catholic church are called upon often to give blessings or protect persons, the true influence (in terms of a living person) within the community belongs to the native healers.

The bulk of this power lies with those who practice witchcraft ("white" or "black" magic). Many peasants will pay large amounts of money at "magic centers" to claim a cure from witchcraft. The power of those who practice black

78 Akerele, "The Best of Both Worlds: Bringing Traditional Medicine Up To Date", 178.


magic can be real. If those who seek this type of magic truly believe, one must respect that magic as if it were as efficacious as any Western medical treatment.

In the above paragraphs, the influence of the Roman Catholic church is slightly discounted. The purpose in doing this was to help the reader distinguish between God as an interventionalist and the native specialist as a healer. In rural Bolivian communities, God is considered that ultimate benefactor. He is the healer of illnesses caused by general misfortune. Bolivians frequently seek the intervention of saints, the Virgin, or Christ, by lighting candles and praying at the altar. Often vows of solemn promises are made if the deity intervening will grant the believer's request. For example, constant crying in an infant is a sign that a supernatural agent is after the child's soul. Such a child must be baptized immediately and placed under the protection of God to foil the evil spirit.\(^{81}\) Usually a combination of religious and native methods of healing is utilized. In this way the patient is able to control all of the forces that might intercede on his behalf.

In this chapter, I have attempted to outline important cultural fragments of Bolivian life that are important to consider when developing a successful health project for the peasants in rural areas of Bolivia. It is important to note

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\(^{81}\) McKee, "Ethnomedical Treatment of Children's Diarrheal Illnesses in the Highlands of Ecuador," 1152.
that it would be impossible to adequately handle problems of ethnic differentiation in a paper of this size. It will always be necessary to address such problems as they arise with honest understanding and communication.
CHAPTER II

DEMOGRAPHIC ANALYSIS OF HEALTH ON THE ALTIPLANO

Introduction

A demographic health survey was administered in two rural villages in the Altiplano region of the La Paz district of Bolivia under the direction of John M. Hill of Brigham Young University. In the village of Parajachi, 31 of 74 (42%) families responded to the survey while 30 of 52 (62%) families responded in the village of Artasavi. Data were gathered from January 15 through January 30, 1986. Subjects were evaluated according to the following categories: Literacy and Education, Financial and Economic Status, Home Production and Storage, Physical Health, and Infant Mortality. The actual survey results and statistics are contained in Appendix B for reference.

Methods

The diagnostic tool utilized for this survey is a "quality of life" measurement developed by John M. Hill. It was determined that a population-based survey would be the most productive survey to utilize in this instance for two reasons. First, it could provide representative information
on the health status and service use of the whole population. Second, it could provide person-based rather than episode-based estimates of the extent of ill-health and the use of service. The survey was administered by two groups of seven volunteers. Volunteers were trained to properly administer the survey by Earthwatch, a foundation with experience in quality of life measurements. Each of the two groups entered one of the villages and spent 13 days administering the survey.

The survey required that volunteers interview community members, record observations, participate in community meetings, and evaluate the predicted accuracy of responses and any difficulties in the administration of the diagnostic instrument in "think tank" sessions. After the data were gathered, they were tabulated and compared to computerized community profiles.

**Literacy and Education**

The average age for the heads-of-household in the two rural areas was 45.0 years. The average life expectancy for a Bolivian native is 50.7 years, the lowest life expectancy of 27 Caribbean, North and South American countries. Bolivian

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1. Ian Timaeus et al., "Health Surveys in Developing Countries: The Objectives and Design of an International Programme." *Social Science and Medicine* 27, no.4 (1988): 359-68.

also experiences the highest mortality rate in the same
group, with an average annual rate of 15.8/1000. In 13.3% of
the families reporting, females were considered the head of
the household. This high percentage appears to result from
death, divorce, abandonment, or from fathers spending most of
their time working in larger cities. The high number of
households headed by females exacerbates the already critical
economic condition among these people. Females who are
widows or divorcees (i.e., heads of households) commonly move
to La Paz or another large town to find work or send the
children out to beg (children begging is a very common sight
in La Paz).

The rural inhabitants in the villages seemed to think
that three to four years of formal education is adequate.
Children in the Bolivian highlands are considered to be
agricultural assets, performing many of the livestock and
field chores. The average number of years of education for
the heads-of-households for the rural villages of Artasavi
and Parajachi was 3.6 years. Of fathers within the two
villages, 20% had no formal education while 43% of the
mothers had no formal education. It is instructive to note
that the average number of years of education in the United
States is ten years. The average literacy rate in these rural

3 Ibid., 12.

4 United States Bureau of the Census, Statistical
areas is 78.5%. The national Bolivian literacy rate, as calculated by UNESCO, is 95%. Bolivia's literacy estimate is rated "low to median" among 26 Latin American countries with a 25.6% illiteracy rate among adults over 15 years of age.6

Financial and Economic Status

Unemployment was low among the two villages (6.25%). The present urban unemployment is 20.0% (average annual rate), the highest of any South or Central American country.7 The two rural groups reported that 83.5% of the working force was self-employed. This statistic indicates that most of the heads-of-households in the villages consider themselves employed as subsistence agriculturists. One man in Artasavi indicated that he owned and operated a business. Although some men identified themselves as part-time carpenters and construction workers, all were land holders and maintained some type of farm. In Parajachi, 89.2% of the heads-of-households listed themselves as self-employed. One respondent listed himself as an employee and two respondents indicated that they were owners of businesses. It is significant to point out that in both villages combined, 17% of the respondents indicated a low level of job satisfaction.

5 Grant, State of the World's Children 1982-83, 35.
6 Comision Econima Para America Latina Y El Carbine, Anuaroi Estadistico De America Latina Y El Caribe, 75.
7 Ibid., 18.
Income levels reported in the two villages varied. In Artasavi, the average monthly income was 8,570 bpesos. In Parajachi, the average monthly income was 6,621 bpesos. At the time of the survey (January 12, 1986) one U.S. dollar brought 1500 bp.\(^8\) This converts to an average income of $5.71/month or $68.56/year for the residents of Artasavi and $4.41/month or $52.97/year for the residents of Parajachi.

This small ratio of cash flow on the Altiplano may reflect the extensive use of a barter system. It should be pointed out that this survey was conducted in January, two months prior to harvest time (March, April, and May) and therefore yearly estimates may be deflated due to extreme circumstances that usually prevail just prior to the harvest season. Another possible explanation for the reported low income level of these people is the fact that they practice subsistence production and therefore may store much of their harvest for family consumption rather than sell it. However, monthly food budget figures indicated that 104% of income was spent on food. This high percentage reflects the dire circumstances present during this time of the year. Some families did indicate that, in general, they had sufficient money for clothing, transportation, and education. Not one family from either village reported any substantial savings

or debt. This is probably due, in part, to the villagers' inability to obtain credit.

These statistics seem to support the assumption that the economic picture painted by the above income levels may be skewed due to seasonal fluctuations in resources. Nevertheless, the figures reported reflect the extreme economic duress under which these people survive. Even if the income levels reported here are slightly deflated due to environmental variables, studies in other developing countries indicate that families spending more than 60% of their annual income to provide food for family members were unable to provide the proper nutrition. Children of such families displayed marked symptoms of physical and mental retardation.\textsuperscript{9, 10, 11}

Disregarding market and environmental variations from country to country, the existence of a world market producing staples allows some comparison to be made between Bolivia and other countries. Such a comparison establishes the critical nature of the resource management problem present in rural


Bolivia. This problem is accentuated by that fact that the rate of food production in Bolivia is down 5.5% and the average annual rate of real gross national disposable income is down 10.4% since 1985.\textsuperscript{12}

Large family sizes were found in the two villages, 8.3 members being the average. The 1986 average household size for Bolivia as a whole was five to eight members.\textsuperscript{13} The larger size of low income families also tends to heighten the critical nature of the economic situation in the two groups of people, reducing the per capita income of the family and the potential buying power of their already low income.

Nearly half of the respondents in the two villages reported having land available for gardens. The amount of land available per family ranged from three square meters to one kilometer. Eighteen of the 61 respondents reported using the land for gardens. Most of the gardens were dedicated to the cultivation of vegetables (i.e., quinoa, haba, and peas). The disparity between the available land for garden use and the actual number of gardens may be due to the high cost of fertilizer, the scarcity of water, and the short growing season. All these variables tend to limit the use and effectiveness of gardens on the Altiplano.

\textsuperscript{12} Comision Economia Para America Latina Y El Caribe, \textit{Anuario Estadistico De America Latina Y El Caribe}," 367.

\textsuperscript{13} Ibid., 18.
Home Production and Storage

In the two villages, two families reported having a year of food storage and two families reported having one-half a year. The remaining 59 families reported an average of nine days of available food (range 0 to 60 days). These statistics may reflect the time of year in which the study was done. Food supply would be expected to be low this close to the harvest season. It should also be pointed out that the two growing seasons prior to the administration of this survey were marked by severe drought conditions.

Physical Health

It appears that the low level of income present among the people on the Altiplano is the core indicator that initiates the many deplorable peripheral indicators that have resulted in poor nutrition and unsanitary living conditions.

It can be demonstrated that an inverse relationship exists between income level and the number of days of diarrhea and fever experienced by the children in industrial and developing nations.14 The study of the two villages indicated that children under the age of six living within Artasavi and Parajachi villages experienced 90 days/year of fever and/or diarrhea and 86 days/year respectively. This

value can be compared to a rate of two to six days/year for developed North America and European countries.15

An effort was made by the researchers to discover the rate of fever and/or illness experienced by the same population of children, in the last 14 days, in order to verify the above statistics; but little confidence can be placed in these data due to the sporadic nature of the responses. This failure to respond to these questions either demonstrates a technical problem with the survey or a lack of proper health assessment skills on the part of the parents. Therefore, the validity of the rate of fever and diarrhea statistics is diminished. Unfortunately, no data were compiled indicating the rate of intestinal parasitism among the study groups. WHO statistics estimates the average rate of infection at 60%.16

Immunization rates among the study populations varied greatly. In Parajachi, 80% of the children under six were fully immunized. In Artasavi, the immunization rate for children under six was substantially lower (30%). The almost complete lack of vaccinations for certain disease groupings and the high levels of vaccinations for other groupings indicates a "campaign" style of primary health care

15 Ibid.

rather than regularly scheduled trips to local health clinics.

Sanitation and Hygiene

Among the two study populations only 1.5% reported having access to purified water. Only one family reported boiling water as a method of purification. No families reported using chlorine bleach. These statistics indicate an ominous need for proper sanitation related training.

The study determined the scarcity of water by determining the amount of time that was required to bring water to the house. The average time for the two populations was 14 minutes. Water often was obtained from central water sources. Two families responded that they received their water from rainfall (the study was performed during the rainy season). Although no analysis of the central water sources was performed, community water sources often serve as mechanisms for disease transmission. The distance to water sources exemplifies the difficulty in increasing agricultural activity.

A second possible vector for disease transmission is the high incidence of animals in the kitchen area. Only 51% of kitchen areas were inside the home. Of the respondents with indoor kitchens, 54% reported allowing animals in the kitchen area. The most prevalent cooking methods were a fire on the ground (63%) or a wood or gas stove (34%).
Finally, proper disposal of human waste and personal hygiene was investigated as a third possible source of disease transmission. Only 19% of respondents reported having latrine facilities (inside or outside), although 84% of the respondents stated that they did practice hand washing.

On average, community members changed clothes 1.6 times/week and brushed their teeth .55 times a week. Only 38% of the children surveyed wore shoes.

Infant Mortality

The survey discovered a 29% infant mortality rate in the village of Artasavi and a 28% mortality rate in Parajachi. These rates appear deflated when compared to statistics calculated by WHO. The very nature of a prevalence survey would lessen the actual infant mortality rate if many of the children in the study population were still quite young. This was the case with this study population. A more accurate mortality rate could be achieved if a historical, cross-sectional design were implemented.

Conditions such as diarrhea, vomiting, cough, cold, and weakness were reported by parents as the major symptoms that led to the death of their children. All these conditions can be linked to unsanitary living conditions, insufficient nutritional and caloric intake, and poor peri- and prenatal

17 Ibid., 47.
care. Statistics of average per capita daily caloric intake indicate that Bolivia is the second lowest (2061 g. per person) of all South and Central American and Caribbean countries. This amounts to 86.2% of the minimum daily requirement.\textsuperscript{18}

When the study examined treatments for fever and diarrhea, a great variety of folk medicines were listed. This seems to indicate that no conformity exists either within the family or among indigenous healers as to the best way to cure these ailments. Potentially, the study populations may be receptive to the introduction of a more effective and appropriate type of treatment.

Conclusion

The analysis of the survey results indicated that low reported income levels provided the barrier that reduced the potential buying power of families (outside the barter system). This in turn accounted for the lack of potable water and adequate nutrition. Insufficient educational training compounded the situation by providing no method of correcting problems related to poor sanitation conditions. The combination of these two indicators has created an environment in which infant mortality rates are 19 times higher than that of developed nations.

The introduction of an intercommunity irrigation system would increase the availability of water (both potable and nonpotable). The availability of water would increase garden yields and possibly lower the incidence of disease by eliminating the use of contaminated water.\textsuperscript{19}

As mentioned in the introduction to this thesis, the establishment of unilateral aid programs will not realize significant and/or long-term reductions in critical health indicators. This change can be realized only by changing the health and hygiene habits of the populace by introducing education in basic health and home management techniques. The rate of literacy among the respondents of the survey indicates that an educational program is potentially feasible. The low average number of years of education of the heads-of-households and the sporadic use of many low cost-to-benefit ratio health practices seems to indicate that proper educational training has not been offered or understood. These two indicators lend strong support to the proposition that this type of an approach may diminish many of the poor health and sanitation conditions experienced by these people.

\textsuperscript{19} Anderson, \textit{Health and Nutrition Impact of Potable Water in Rural Bolivia}, 45.
CHAPTER III

EMPOWERMENT AS A DEVELOPMENT MODEL

The Empowerment Model

In essence, the empowerment model is a strategy that enables the peasant to understand his/her reality, envision possible alternatives, and create opportunities for learning, practicing, and mastering skills needed to change rural life for the better.¹ The "empowerment model" is a mechanism by which the rural poor identify deficiencies and realize the actual obstacles that are interfering with the fulfillment of those needs. Participants learn to design and implement programs constructed to overcome these barriers and satisfy the identified needs.²

The empowerment model initiates an ongoing process of capacity building that leads to project self-sustainability, confidence, willingness, and the capability needed to engage in locally initiated self-development programs. The


² Ibid., 93.
following diagram illustrates the interactive and interdependent nature of the empowerment process. As mentioned in the introduction of this thesis, the key antecedent of this model indicates the need for flexibility.

Adapted from a diagram developed by Steven D. Pierce of the Andean Children's Foundation.
to allow for variation in culture-bound tenets of health. In short, the process of empowerment should be tailored by culture and social needs to ensure that its implementation will make significant and meaningful contact with the rural poor. An effective way to illustrate the essence of this model is to detail what it is not.

Robert Chambers has identified six biases that are surmounted by the use of the empowerment model. 4

Spatial bias. The concept of spatial bias indicates that much of the understanding of rural conditions is dictated by the accessibility of study populations. Chambers suggests that many research and project sites are chosen, at least in part, due to their accessibility by road. This practice often results in the focus of attention towards the less poor and away from the poorest of the poor.

Project bias. Project bias can be regarded as the favoritism for the promotion of "showpiece projects." Government and large development agencies flaunt such projects to attract attention. Public awareness can ensure success through continued funding. This type of project can commonly be found near urban center which cultivates the


4 Chambers, Rural Development: Putting the Last First, 13.
"rural development tourism" syndrome that detracts attention from the most needy.

**Dry season bias.** In many cases, development personnel do not witness the rural disasters caused by violent shifts in weather conditions. Often, the poorest of the poor are neglected at precisely those times when conditions are at their worst.

**Person bias.** Development tourists and researchers generally feel the need to maintain contact with the more active community members to strengthen political and bureaucratic ties. These people are most often male, bright, healthy, and elite.

**Professional bias.** Western trained developers and researchers are commonly attracted to more progressive farmers. Often, project time constraints necessitate the utilization of more educated people as subjects for answering questions or experimenting with new technologies. Unfortunately, those who most need the training and technology are by-passed to save time and ensure the objectives of the project are completed. Professional bias may also materialize by conceptualizing poverty through a narrow set of academically built constraints. Such bias precludes the developer from seeing poverty from the peasants' point of view—an interrelated set of circumstances that extreme specialization may overlook.⁵

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⁵ Ibid., 23.
Diplomatic bias. Bureaucrats may ensure that the poorest conditions are never seen by visitors out of courtesy. Poverty can be a cause of shame to local officials, and therefore may be concealed. Politeness may also be the reason why "developmental failures" sometimes are not visited.

The empowerment model inherently contains the incentive for developers to design projects that emphasize participation and decentralization; involving the people in their development at every level, from design, implementation, to evaluation.6 Gow and Van Sant argue that:

Decentralization and the participation of beneficiaries are believed to increase the possibility of projected success. It is argued that, if the local population--particularly the poor--is to benefit from development and obtain a larger share of government services and resources, the decentralized and participation in planning and decision making must be elicited from beneficiaries at the local level.7

According to the prescription of this strategy, the empowerment model has been modified to integrate cultural elements inherent to the Bolivian highlands and to reflect village specific concerns. This transformation was developed, in part, through the efforts of Dr. Timothy Evans, Chairman of the Andean Children's Foundation (ACF). The ACF


is a private voluntary organization involved in development projects in the high plains region of Bolivia and Peru.

Both ideology and financial necessity have compelled the ACF to develop programs that are participation and labor oriented, rather than capital intensive. This development approach has significantly enhanced their project implementation methodology.

In the book, Pedagogy of the Oppressed, the author discusses how by reflecting upon themselves and their environment, people can come to a new awareness that transforms them from passive objects into subjects capable of acting to change their world for the better.\(^8\)

The ACF has released the dynamics of the empowerment model by utilizing three phases of local participation that appear to support self-sustaining development through an evolutionary process. These three activities have been modified based on Dr. James Mayfield's written critique of Y.C. James Yen's People's School.\(^9\)

**Entry phase.** During the entry phase, participating villages are mobilized to identify the needs of the community. A Development Facilitator (defined in Chapter IV) involves local leadership in this assessment to promote


trusting relationships within the community. It is during the entry phase that community members become aware of important development deficiencies and possible solutions to their problems.\textsuperscript{10, 11, 12}

\textbf{Preparation phase.} Appropriate information, skills, and technology are introduced in this phase to meet the needs identified by the community. The preparation phase allows local people to become involved in project goals, plans and implementation activities.

\textbf{Withdrawal phase.} In this final phase, local, coordinated, self-sustaining organizations emerge within the participating rural communities. These organizations take form from either rural cooperatives, animation rurale, or community development projects depending upon the development method chosen for the specific project.

Yen's Credo exemplifies this structure.

Go to the people
live among the people, \textit{Entry Phase}
learn from the people,
plan with the people.

Work with the people,


\textsuperscript{11} M. Keehn, \textit{Bridging the Gap}, Save the Children Foundation (Westport, Conn: The Foundation, 1982).

\textsuperscript{12} David Werner and Bill Bower, \textit{Helping Health Workers Learn} (Palo Alto, California: Hesperian Foundation, 1977), 4-1.
start with what the people know, Preparation Phase
build on what the people have,
teach by showing,
learn by doing.

Not a showcase but a pattern,
not odds and ends but a system, Withdrawal Phase
not piecemeal but an integrated approach,
not to conform but to transform,
not relief but release.13

Areas of Need

Past project directors of the ACF have identified three
basic areas of need that are common to all five Altiplano
villages currently receiving support. The most obvious area
of need is that of survival preparedness. This need includes
primary health care, nutrition, sanitation, shelter, and
income generation, all of which are required to sustain human
life. In an effort to prioritize their intervention efforts,
development agencies may distinguish between everyday
survival elements and those factors that contribute to being
able to cope with contingencies such as droughts and floods.
Constantly shifting weather conditions create a very harsh
environment on the Altiplano and maintain margins that are
always narrow. Therefore, providing a delineation between
survival needs and contingency preparedness on the Altiplano
is irrelevant.

The second area of need identified is that of
sociopolitical organization. The rural poor must have an

13 Mayfield, Go To The People: Releasing the Rural
Poor through the People's School System, 17.
avenue by which demands can be made on the government in order to acquire goods and avoid being exploited by the various elites. Various indigenous organizations presently exist in communities throughout the developing world. Unfortunately, many of these groups are generally inexperienced and lack the necessary skills. Before their collective voice can effectively establish viable linkages with other public, private or geopolitical entities, proper training and initial mobilization must take place.

This area of need is especially critical to understand if decentralization efforts continue to be initiate. If local people are allowed to assume added responsibility without the proper development, training, and the establishment of linkages with potential resource entities, it will merely result in the extension of a centralized,


15 Gow, "Beyond the Rhetoric of Rural Development Participation: How Can It Be Done?" 427.


17 Peter Burman, Davidson R. Gwatkin and Susan E. Burger, "Community-Base Health Workers: Head Start or False Start Towards Health For All?" Social Science and Medicine 25, no. 5 (1987): 448.
exploitative infrastructure to regional and local level elites.\textsuperscript{18}

The final area is emotional and spiritual needs. This implies a concern for the cultural, political, religious, and traditional values of the people. This area is clearly the most ubiquitous and not easily definable and even more difficult to include in any implementation strategy. Nevertheless, such elements have been identified in several grass-roots development projects in Bangladesh, Brazil, Sri Lanka, Egypt, India, Thailand, China, and the Philippines.\textsuperscript{19}

The notion that the above mentioned values are central to development projects has only recently emerged as an issue in current development thought.\textsuperscript{20} The ACF has also recognized the importance of local traditions and beliefs in the success of project activities. The ACF initially attempted to qualify the emotional/spiritual needs of local people by applying Maslow's theory of the Hierarchy of Needs to individual family members.\textsuperscript{21} It was soon discovered that


\textsuperscript{19} Mayfield, Go To The People: Releasing the Rural Poor through the People's School System, 6-8.

\textsuperscript{20} David C. Korten in Mayfield, Go To The People: Releasing the Rural Poor through the People's School System, foreword.

\textsuperscript{21} Cheryl A. Lassen, "Reaching the Assetless Poor: Projects and Strategies for Their Self-Reliant Development,"
Western concepts of self-esteem and self-actualization had little meaning in the poverty-stricken region of the Bolivian Altiplano.

Nonetheless, the ACF was able to develop trusting relationships with the Ayamara people and soon identified several critical values of the rural poor and actively incorporated them into successful development projects. Several of those needs will be described here.

**Ethnic and community identity.** In rural Bolivia, little emphasis is placed on individual needs. Rather, the needs of the village or community are seen as paramount. Programs that stressed self-improvement were viewed as being self-serving and detracted from the "family spirit" present in the village.

By focusing on a primary perceived need that has villagewide interest, residents become anxious to address a development strategy even though it requires tremendous inputs from the villagers themselves. Involving the women of the village and raising their consciousness regarding important issues are also seen as appropriate when promoting a village-wide project.²²

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Projects that emphasize participation rather than capital also seem to be more effective. Projects that introduced technologies that promise to better the native way of life are supported by considerable community social pressure to be a part of the project. Once involved, villagers seemed to feel a belongingness to the community and gained a sense of cooperation and security. High levels of social energy have been generated within ACF projects by communicating and instilling an attitude of villagewide participation in projects. This phenomenon has been noted in similar projects.23

Reciprocity. On the Altiplano, reciprocity requires that, when a favor is asked, it must be complied with. In turn, the person of whom the favor is first asked, is free to ask (and expect) a favor from the person to whom he/she has given assistance. The same concept also applies to village-wide responsibilities. Village leaders are expected to diligently serve in the best interest of the village. In return, villagers offer goods and services to the families of village leaders to compensate for the time spent serving the community. This value is perhaps esteemed above all others. The opposite is also true. For example, during an ACF project performed in the village of Sorasora, the village

Project Director was lightly reprimanded for continuing work on a project without waiting for necessary instructions. The project leader was so hurt and embarrassed by his perceived failure to perform properly in his capacity as Project Director that he felt he had to leave the village and his family and move to the city of La Paz.²⁴

Failure to recognize this value could easily result in the demise of any given project, as the development institution would be perceived as insincere, dishonest, and incapable of keeping its part of the bargain.

**Collective chivalry.** Collective chivalry describes the well developed Andean norm that dictates the need to defend the helpless at all times. This chivalrous attitude can be fostered in projects. A health program designed to promote the vulnerability of village children to water-borne disease would inherently draw support based on this practice. As the community begins to understand that a threat does exist to its children, a practical, achievable solution to the problem would be readily accepted. Under such circumstances, it becomes socially unacceptable to neglect their defense.

**Creative release.** This need characterizes the pride in creation that can be observed in work and at play among the Indian population. This also includes their music, dance,

and artistic creativity, which plays an important role in village ceremonies and fiestas. When the local people perceive themselves as an integral part of a project, they will provide the highest quality workmanship and add decorative touches to embellish a project's physical appearance.25, 26

The inventive use of this need promotes a self-sustainability and a learning-by-doing demeanor that not only generates the development of new skills that are useful to the village and are marketable outside of it, but also aids in the commitment to the long-term maintenance of the project facility.

Interdependency of God(s), man, and nature. This value can be conceptualized as the need to belong to or fit into the higher scheme of things. These beliefs dictate everything from planting and harvesting schedules, to ceremonies and festivities, to child-rearing practices.

This interdependency requires that ways of evaluating the success of projects be developed without unnecessary intrusion into the culture of the area. In the La Paz district, a health project's worth could never be evaluated in terms of medical testing such as anthropometry, blood samples, etc. These intrusions have adverse consequences in


26 Coralie Bryant and Louise G. White, Managing Rural Development: Peasant Participation in Rural Development (Hartford, Conn: Kumarian Press, 1980), 24-9
Andean folklore. For example, to some rural Bolivian populations blood is a nonregenerative substance. Therefore, taking blood samples may not only make the patient feel that he/she is now more susceptible to "cold" diseases such as arthritis but the act of taking the blood may be thought of as inflicting deliberate harm. 27, 28

Implementing the Empowerment Model in a Future Bolivian Medical Integration Project

By using the above set of norms and values as a guide, the ACF should be able to be effective in the integration of village members, healers and local medical personnel into the project. However, nothing tangible has been proposed to introduce the "master link" of the health care delivery system, that master link being the development of a project plan that will allow the development of an intimate association between Western and indigenous healers in the project area. Integrating Western and indigenous medicine becomes problematic not only because of racial, status, and other reasons discussed earlier, but also because of the fact that at the present time neither party will recognize the need for the other. 29


29 Akerele, "The Best of Both Worlds: Bringing Traditional Medicine Up To Date," 178.
Preentry phase. The key activity of this phase is village selection. The ACF's minimum criteria for village selection are threefold: 1. that involved villages be located in a relatively isolated area; 2. that community leaders be willing to organize villagers and consider the most important and immediate medical needs of the community (i.e., the formulation of local health organizations); 3. that the village area healers agree to recognize and work with Western trained physicians to enhance their own medical practice.

Upon making contact with prospective villagers, several "general assemblies" will be held to discuss the proposed project, get acquainted with the ACF, and see if a working relationship can be established. During such meetings it will be critical to proceed with sincerity, never giving in to the temptation to make premature promises and offers. Good faith, forthrightness, and honesty are appreciated by the Aymara people and lend definition to future projects.

Entry phase. Once an agreement between the development catalyst (i.e., the ACF and the Ministry of Health) and the village healers has been reached and a project site has been decided upon, it will be critical that the institution fuel the initial confidence that has been placed in it by the

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project beneficiaries. The ACF hopes to accomplish this through a "culturally relevant" training session that will allow the two different groups of specialists to interact. The training session will allow both groups of specialist to be brought together to discuss relevant therapies, not to be taught by one another. It will be important that this training session be held in one of the rural villages to allow traditional healers to feel at home and to allow urban health personnel to see first hand the health conditions that need to be corrected.

Once a relationship has been established, it will become important to evaluate the usefulness of both Western and indigenous therapies on a target population. Much of native medicine may be too primitive, while much of Western therapy may be too sophisticated. As soon as a balance in treatment has been established it will be important to evaluate the effectiveness of this "medicine mixture" on the same target population.

Implementation phase. During this phase, skills will be practiced and improved through actual project implementation. An ideal vehicle for this process would be a traveling clinic in which both Western and indigenous healers could work side by side.

In order to facilitate optimum use of the clinic by the villagers, Aymara language broadcasting system, Radio Menendez, could be utilized to advertise the future destinations of the clinic. The idea of a traveling clinic
would also be valuable in developing referral systems that integrate different specialists, traditional and modern, in the target communities in socially specific and culturally meaningful ways.

In the Bolivian department of La Paz, two major languages are spoken, Aymara and Spanish. Typically, Aymara characterizes the rural zone while Spanish is spoken in the city. This could serve as a barrier to the success of the project. Therefore, it would be vitally important to allow for interpreters to be available at all times to allow for complete and unbiased communication.

Another key activity of the implementation phase is the establishment of linkages between the local village healers and potential outside resources such as hospitals for pharmaceutical replacement. This must be done with the utmost care, because many state owned organizations are quick to co-opt project benefits for themselves. This trend can be offset by at least acquiring passive approval for the project by "the powers that be," especially at the regional level.

Aside from the Project Director, all ACF staff members, community leaders, and Project Facilitators will be Aymara Indians or La Paz residents. In the long run this will prove to be an enormous advantage, but may pose a unique set of

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challenges. Urban and rural natives are often predisposed to internal competition, a tendency to "get all I can," an inability to see the entire picture, and little understanding of useful leadership principles.33

Withdrawal phase. The critical activity of the withdrawal phase is the emergence and solidification of autonomous, functioning local health organizations (LHO). These LHOs will benefit from linkages formed with the Ministry of Health and UNESCO.

Postwithdrawal phase. Although continued evaluation is an integral part of on-going project activities, a formal evaluation constitutes the major activity of this phase. There are two issues relevant to both final and intermittent evaluations that are of such significant import that they bear mention here.

1. The need to receive feedback from the local people (local villagers, participating urban health personnel, and rural healers) who benefit from the project cannot be overstated.34 Errors can often be averted by local people's knowledge and/or feelings about the project.35

33 Evans, Bootstrap Development Project in Bolivia, 23.


35 Chambers, Rural Development: Putting the Last First, 75-101.
2. Involving the local people in the evaluation process contributes to the generation of commitment and the establishment of project ownership. Both of these elements are essential if the project is ever to become self-sustaining.

It should be pointed out that many scholars view empowerment-type models as flawed because of their inability to follow up local mobilization with meaningful action. The shortcomings of participatory approaches most commonly cited in the literature are as follows: 1. Although conceived as "bottom-up" approaches, participatory models often become vehicles for promoting government policies; 2. Existing technical ministries often keep newly created participatory entities from engaging in programs that involve activities seen as exclusively theirs, even though they lack the resources to extend to the rural areas; 3. Participatory programs rarely can provide the necessary technical resources that will be needed to sustain the newly developed local


4. Development projects are usually under pressure to obtain quick results, which requires an unusual reliance on local elites who co-opt a disproportionate percentage of the leadership within the organization; 5. Participatory programs usually lack the ability to integrate village-level projects into the broader regional society.

All of the above mentioned weaknesses involve either local, regional, or national bureaucracies. Therefore, the question becomes how to involve government in the development process and, at the same time, avoid the destructive effects of corruption, paternalism, and inequitable results that plague many of the projects with state sponsorship or involvement. A possible solution to this dilemma may be the effective use of decentralization with all its complex implications, but that is beyond the scope of this paper.

Although, there are some simple steps that a project director can take in order to attain acceptable levels of local organizational performance. Quite often, in addition to training, local leadership must be instructed in the "art" of networking; i.e., the establishment of linkages between local organizations and other development agencies.

In rare cases, little organizational infrastructure exists and must be developed from scratch. In such cases, it may be advisable to develop new organizations that center

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directly around some project, such as a cooperative or a user's organization.
CHAPTER IV

AN ANALYSIS OF THE UTILITY OF ICONS AS A COMMUNICATIVE TOOL

Introduction

A study evaluating the usefulness of symbols and icons as a means of cross-cultural communication in the development of culturally relevant health information is presented in this chapter of the manuscript.

The overall goal of this research is to meet the need for culturally relevant primary health care in rural Bolivia and the critical need for culturally knowledgeable social technologies for health care delivery and pedagogical materials on sanitation, nutrition, and basic health.

As mentioned earlier, little is known about cultural medicine practiced by rural Indians on the Altiplano, as previous work has been focused on health attitudes of low altitude populations living traditional lifestyles in more urban settings. Specifically, no information exists that critically examines traditional *materia medica* and practices of indigenous healers including plants and other natural products that are used.
It is assumed that the rural populations are experiencing considerable social and cultural change due to "campaign" style Western health programs by various organizations that introduce Western philosophy into the Indian way of life.

It is anticipated that cultural adaptations have occurred and there has been some lessening of traditional beliefs and practices.\(^1\) It is hoped that this transition (i.e., exposure to Western medicine) will allow indigenous healers to see the value of integrating certain Western medical treatments into their culturally oriented medical practices.\(^2\), \(^3\), \(^4\)

This research project is designed to identify universally known icons and/or symbols that are culturally benign in the Aymara region to ensure that the indigenous healer's belief in witchcraft and/or magic would not influence the way that medications are dispersed. Culturally

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\(^1\) Barbara Parker, "Ritual Coordination of Medical Pluralism in Highland Nepal: Implications for Policy," *Social Science and Medicine* 27, no. 9 (1988): 920.


nonreactive symbols will be used as part of a diagnostic regimen in a village medical kit and manual that will allow indigenous healers to dispense Western medicines that have been endorsed by WHO. A sample page from a prototype manual illustrating the possible use of culturally nonreactive symbols in the above mentioned medical regimen is provided in Appendix C.

It is hoped that this research would prepare the way for the development of training materials, culturally relevant diagnostic flow charts, and simplistic medicinal information that will allow traditional healers to identify medical problems, diagnose specific ailments, and integrate Western and indigenous medicines in culturally meaningful treatment processes. The development of the village health kit and manual mentioned in the introduction of this paper could provide a vehicle in which efficacious treatment modalities, both Western and traditional, could be appropriately mixed to improve the physical health of rural Bolivians and Peruvians.

The publications that would stem expeditiously from this project will include didactic materials including pamphlets, discussions, lesson plans, etc. that integrate Western and indigenous health concepts. This research will potentially have applicability for a large population of more than 10

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6 Shamans, Parteras, Curanderos, Brujos, Hueseros, and Chifleras.
million persons in highland Bolivia, Argentina, Peru, Chile, and Ecuador who share a somewhat similar culture.

**Background Information**

Little or no research has been done to identify and understand ethnic specific Andean medicine as it relates to Western medicine methodology. Specifically, we do not know much about the pragmatics of cultural medicine or about the decision-making by the individuals and households in terms of which of the variety of services to seek.

We also do not have much knowledge about the Andean social definition of disease and its symptomatology. Nor do we know about how this varies across ethnic and class boundaries, not to mention community and regional frontiers. A few items like susto, aire, loss of axayu (soul), and K'arik'ari, are mentioned in the ethnographic literature, but the specifics of their definition, the dynamics of the cognitive field and its relationships with more Western categories are poorly understood.

Furthermore, we do not have more than a fragmented and partial understanding of the empirically verifiable effectiveness of the elements of traditional Andean medicine. Most of the formal knowledge comes from the work of Joseph McKee, "Ethnomedical Treatment of Children's Diarrheal Illnesses in the Highlands of Ecuador," 1150-52.

Bastien, which despite its high quality, stems from a limited ethnographic base and focuses on the Kallawayas and on vertical and transcommunal reciprocity.\textsuperscript{9, 10, 11, 12} We need a better understanding of how these things are organized across the general area and how their economies are affected by the intense spread of market transaction among the peasantry. Bastien's work requires serious consideration, evaluation and expansion.

There is also a need to pioneer the development of socially and culturally relevant didactic materials to provide a better understanding of hygiene and specific improvements in health care. Some of this has been done, particularly in the spectacularly successful Oral Rehydration Program implemented throughout Bolivia in 1985.\textsuperscript{13}


\textsuperscript{11} J. W. Bastien, \textit{Kallawaya Herbalists and their Medicinal Plants} (Salt Lake City: University of Utah Press, 1987).


\textsuperscript{13} Pamphlets sponsored by the government that implemented illustrations to teach the need and proper way to rehydrate.
Renaldo Maduro has done considerable work in identifying Latino views of disease and curing. However, Maduro makes little effort to cross-reference Latino views to Western ideology. Thus, this increased understanding of "curanderismo" (folk healing) does little to help integrate other types of healing into traditional practices.

David Werner, of the Hesperian Foundation, has made the best attempt at developing a Latin village health care handbook. However, the format of the book is directed towards moderately literate and trained village health care workers. Research has shown that the implantation of village health workers into rural areas in Latin America not only disrupts the already present referral system, but also endangers the status and income of prominent indigenous healers which sometimes leads to the banishment of personnel and programs from target communities.

The author of this research feels that utilizing the already existing health care infrastructure is the only way to improve the effectiveness and level of health care given (i.e., through the integration of Western and indigenous

14 Maduro, *Curanderismo and Latino Views of Disease and Curing*.

15 Werner, *Where There Is No Doctor*.

16 Werner, *Helping Health Workers Learn*.

ideologies) and at the same time preserving the rich culture developed and practiced by Aymara Indians.

The common theme that permeates most studies dealing with indigenous medical systems is that when comparisons are made between traditional medicine and bio-medicine systems, indigenous medical systems exhibit four pronounced advantages. First, traditional medicine is commonly more available both in terms of total supply of services or personnel and geographic distribution.\textsuperscript{18} Second, traditional medicine is generally more accessible due to cultural, social, psychological, and physical proximity.\textsuperscript{19} Third, traditional medicine is usually more acceptable.\textsuperscript{20} Because of its cultural relevance, indigenous medicine has been historically more widely accepted. Finally, traditional medicine is predominantly regarded as adaptive and thus able to survive contextual changes caused by the introduction of new elements interjected by cultural mixing.\textsuperscript{21}

\textsuperscript{18} Akerele, "The Best of Both Worlds: Bringing Traditional Medicine Up To Date," 177.


Olayiwola Akerele of the World Health Organization stated that:

If there is to be any real improvement in the health of the underserved populations of the world, there will have to be full utilization of all available resources, human and material. This is fundamental to the primary health care approach. Traditional practitioners constitute the most abundant and, in many cases, valuable health resources present in the community. They are important and influential members of their communities who should be associated with any move to develop health services at the local level.  

Objectives

Using social science methodology, a cross-sectional questionnaire was developed and administered that identified written symbols that have cultural significance. The use of culturally active symbols identified by the questionnaire will be avoided in the development of diagnostic flowcharts to ensure that traditional beliefs do not alter the administration of pharmaceuticals based on traditional connotations associated with certain symbols. For example, if a certain medication was labeled with the symbol of an "eye" for identification, categorization, and diagnostic purposes, the indigenous healer may avoid prescribing the said medication because the image of an "eye" connotes a magical curse called "Maj ojo" (the evil eye) that instills "susto" (fright) upon its victim. Susto is perceived by

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22 Akerele, "The Best of Both Worlds: Bringing Traditional Medicine Up To Date," Abstract.
villagers to be one of the prominent reasons for many of the deaths among young children in rural communities.\textsuperscript{23}

Methods of Procedure

Utilizing the empowerment model, the Andean 'Children's Foundation implemented this project in four phases:

\textbf{Phase I. The preparation phase.} The Andean Children's Foundation, during its continuing activities in Peru and Bolivia, received nearly two dozen community profiles and requests in the departments of Oruro and La Paz, to participate in the development of the program.

Once the Project Director (PD) was settled in La Paz, he selected the five most prepared communities and began establishing close interpersonal relationships with the people. Through the ties that already exist with the Rural Development Institute at the Catholic University in La Paz, the PD began briefing the Development Facilitators, Rural Development Institute students (DFs), about their roles in the success of the project. The DFs utilized in this project had developed a high level of trust and had become established members of host villages due to their efforts in past projects.

\textsuperscript{23} Susan C. M. Scrimshaw and Elizabeth Burleigh, \textit{The Potential for the Integration of Indigenous and Western Medicines in Latin America and Hispanic Populations in the United States of America}, The Pan American Health Organization (El Paso, Texas: The Organization, 1977), 35.
Phase II. The entry phase. Entry phase activities began when the DF reentered the communities. His/her first order of business was that of continued trust building which was accomplished through several methods including service, crisis management, and project planning. Experience has shown that the latter of the above methods is not only the most predictable but the most conducive to the development of human growth and self-sustainability. For example, in a small village the DF may determine, with the input of the village inhabitants, that one of their most serious problems is that of polluted water. The DF would help facilitate that conclusion through his/her explanations of disease transmission and the benefits of clean (sterile) water. Once the problem was recognized by the people, the PD would organize a committee through the resources of the Catholic University to discuss possible solutions.

Phase III. The implementation phase. After appropriate solutions for each village had been discussed, a one hour village health workshop was developed and presented to each village explaining ways specific village problems could be solved. After the workshop was over, villagers were invited to stay and complete the questionnaire developed for the research discussed in this chapter. It was during this phase of the project that site visits were scheduled to insure the proper administration of the questionnaire.

This questionnaire utilized a self-report, prevalence format that would aid in the identification of the above
mentioned culturally relevant symbols. Each adult in attendance was given the opportunity to fill out the survey. Each participant was given verbal instructions describing the purpose of the study, instructions outlining the proper way to fill out the survey, and instructions indicating that participation in the study was voluntary. Simplistic instructions, including consent information, were printed on the survey. Willing participants who were illiterate completed the survey via an interview.

Each participant was asked to give a small amount of demographic material (i.e., age, sex, and occupation). Participants were self-selected from attendance in the village health workshop. All participants were told about the survey after the workshop was over to ensure that villagers did not feel that they were expected to fill out the survey by attendance in the workshop. All participants were told that participation was voluntary and that they could terminate the survey at any time.

**PHASE IV. The support phase.** After the one hour village health workshop has been completed, the DF remained in the community for three weeks to ensure that positive action was taken, by the village inhabitants, to correct the discussed problem.

In total, the survey evaluated 78 symbols for cultural significance. Another section of the survey was designed to evaluate a symbol's communicative value, in Ayamara culture,
on three distinct dimensions: semantic, syntactic, and pragmatic measures.24

The semantic dimension refers to the relationship of a visual image to a meaning, or in other words, how well a symbol refers to something for someone.25, 26 One might evaluate the semantic value of a symbol by asking: How well does the symbol represent the meaning? Do people from various cultures misunderstand the symbol? Do people of various ages fail to understand the symbol? Is it difficult to learn the symbol? Has the symbol already been widely accepted? Does the symbol contain elements that are unrelated to the message?

The syntactic dimension refers to the relationship of one visual image to another. This indices provides a measure of how and which human perceptions are embedded in culture.27 This dimension may best be evaluated by asking: How does the symbol look? How well does the symbol relate to other symbols? Are the most important elements of the symbol


recognized first? Does the symbol seriously contradict existing norms?

The programmatic dimension refers to the relationship of a visual image to the user. Is the symbol recognizable? Is the symbol easy to remember? Is the symbol difficult to reproduce?

In actuality, these three dimensions are interrelated in complex ways. Nevertheless, recognizing them makes it possible to logically isolate and evaluate specific qualities. The strengths and weaknesses of 36 symbols, pictographs, and mini sketches were evaluated in relation to these basics of communication.

Results

Demographics. Fifty-seven villagers attended the village health workshops; 48 persons responded in full or in part to the survey (n=48). Five surveys were conducted via an interview by the project director. Seventy-eight percent of the respondents were male. All participants were of moderate to good health and ranged in age from 16 years to 60 years old. Fourteen percent of the study population listed


30 International Health News 7, no. 3 (April 1986), 13.
themselves as 16 to 25 years of age, 38% as 26 to 35, 36% as 36 to 45, and 12% as older than 46 years of age.

Although 82% of the respondents listed themselves as unemployed, it can be assumed that nearly all of the inhabitants of the study areas are agriculturalists involved in subsistence farming. Other listed occupations included part-time carpenter, mason, construction worker, and business owner. Eleven of the 48 respondents indicated that they are involved in native health care. No distinction was made to determine type of indigenous healer.\textsuperscript{31} The actual calculations of the survey results are not included in this section because of the structural complexities associated with integrating drawings with statistics. The questionnaire used to obtain these data can be found in Appendix D.

\textbf{Culturally reactive symbols.} Of the 78 symbols evaluated, 10 were identified as having cultural connotations, receiving a relative frequency of 23% or higher. The symbols found to be culturally reactive can be categorized into three classes.

One class of reactive symbols were drawings of animals native to the area. Four animals were identified as either having medicinal value in treating disease or actually being a disease vector ("lizard" rf=41/78, "snake" rf=36/78, "scorpion" rf=21/78, "bird" rf=19/78). Anatomical parts of

\textsuperscript{31} Shamans, Parteras, Curanderos, Brujos, Hueseros, and Chifleras.
all four animals are utilized separately or in conjunction with one another to treat various maladies including; goiter, leprosy, syphilis, diarrhea, and deafness.

The second class of reactive symbols represented various aspects of nature ("moon" rf=52/78, "cactus" rf=29/78, "tree" rf=19/78, "star" rf=18/78). During informal conversations that followed the administration of the survey, it was discovered that the high prevalence of respondents acting positively to the cultural significance of the icon symbolizing the moon centered around a folk belief that if the light of an eclipsing moon falls on a pregnant mother, her child would be born retarded or deformed.

The last class of symbols was identified as being culturally reactive because of their utilization in the medical practice of local brujos, a type of alchemist, and shamans ("candle" rf=19/78, "cross" rf=18/78). The overall cumulative relative frequency of the identified reactive symbols was 17.8%.

Semantic evaluation. In evaluating 36 pictographs, it was discovered that mini sketches utilizing facial expressions to aid in the identification of disease states were most likely to be misinterpreted (37% of the time). For example; a pictograph illustrating a man experiencing a bout with asthma was misinterpreted as representing susto 64% of the time, bilis 12% of the time, and mal de ojo 4% of the time (see Appendix A for an explanation of indigenous disease states).
Mini sketches that relied on anatomical views of diseased body parts were more effective than those utilizing facial expressions at communicating their meaning (misinterpreted 17% of the time). A pictograph visualizing a ring-worm infected forearm was misconstrued to represent leprosy 20% of the time, bolitas 17% of the time, and cancer 3% of the time.

Sketches of actual disease fomites were the least likely to be distorted (6% of the time). Respondents were asked to identify disease states initiated by agents such as barbed wire, ticks, and a bottle marked with cross-bones. Nevertheless, this type of pictograph displays the least degree of flexibility. Trying to develop mini drawings representing and/or distinguishing between the disease agents for childhood diseases such as chicken pox (varicella) and measles (rubeola) becomes problematic.

A weak correlation (.46) was discovered between the age of the respondent and the likelihood of an incorrect response. A possible explanation for this phenomenon may be an increased exposure to Western health education by the younger members of the villages due to recent governmental sponsored, campaign-style, health promotion programs and/or the recent acquisition of Radio Menendez on the Altiplano.

**Syntactic evaluation.** The researcher involved in the development of this survey tried to instigate several methods of focusing viewer attention for evaluation and comparison. Sketches that contained health measurement devices to focus
the attention of the viewer were only moderately successful. For example; the survey included two identical pictographs depicting a young boy with a fever. One sketch contained a head and shoulder view of the boy with flushed cheeks and a sweaty forehead. In the second drawing, the same sketch was used with the addition of a thermometer with an elevated mercury level. The addition of the thermometer to the sketch increased viewer's attention on the most important elements of the pictograph by 3.2 times. Other additions of medical devices to sketches were less successful.

The most likely method of focusing the viewer's attention was the presence of accent marks indicating pain or inflammation and the use of facial expression. One question in the survey asked participants to indicate the relative worth of three drawings illustrating the symptom of heartburn associated with the presence of an inflamed ulcer. The sketch receiving the lowest score (93% of the participants listing it as a "poor" representation of the disease state) displayed an anatomical drawing of a stomach with an area of deterioration in the lining of the stomach. Sixty four percent of respondents indicated a sketch of an abdominal area with accent marks indicating pain in the chest was only "moderately" successful in properly illustrating the idea of the presence of an active ulcer. The pictograph portraying a man clasp his stomach in a semi-supine position, with accent marks highlighting his abdominal area and displaying a
grimacing facial expression captured 83% of the participants vote as a "good" representation of the disease state.

Unfortunately, the survey did not effectively measure the use of accent marks and facial expressions in combination to reduce the incidence of pictograph misinterpretation discovered during the semantic analysis.

Programmatic evaluation. The study revealed that participants preferred hand-drawn sketches to computer generated drawings at a ratio of 3:1. Similarly, "shadow" sketches were much less popular than animated drawings. The relative size of a pictograph seemed to play a role in recognition. Forty three percent of respondents indicated that a 2x magnification of a square inch pictograph increased recognizability. Drawings that visualized full length subjects or objects rather than particular anatomical areas were 2.9 times more likely to be identified correctly.

Remarks. In recent years several prominent social scientists have stated that the evaluation of symbolic meaning with an analysis conducted with linguistic models is inherently flawed.\textsuperscript{32, 33} To make the simple assumption that

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symbols carry meaning in the very same way that words carry meaning is problematic indeed. Dan Speger has said;

If symbolisation were a form of meaning that only differed from linguistic meaning by the type of signals it used and if the set of symbols (of a given culture) constituted a language, one should be able systematically to substitute certain simple or complex symbols for each symbol in all contexts as one can in language replace any word by definition....Anyone who has ever studied symbolic phenomena knows that their interpretation depends on the context and is generally modified by any substitution....Meaning...could not be held to be intrinsic to symbolisation. 34

It is for this very reason that the research survey utilized in the study was developed to allow symbolic images to maintain several simultaneous references depending upon the participants reference. This type of design inherently discounts outlying perceptions and accepts the most popular response as the norm.

Concerning the reliability of this research survey, it should be pointed out that because the research study was administered among the general population and not targeted specifically to traditional healers, the validity of this research rests solely upon the assumption that the belief system, found to be present among the general population, used to identify culturally reactive symbols reflect the belief system held by a specialized subgroup of the population (i.e., the indigenous healers). If in fact

indigenous healers exhibit a more complex set of culture-bound beliefs when practicing health care, the number of culture-bound symbols identified by this survey may be greatly deflated.

It should also be noted that several months prior to the administration of this survey, a government sponsored set of health advertisements were aired over rural radio stations. The purpose of these advertisements was to teach people to shy away from natural health cures that could deter the proper healing of disease states. For example, one such advertisement instructed people not to use animal dung to treat eye infections. These advertisements may have confounded our study results by influencing participants to over or under report culture-bound symbols.

The number of symbols that were found to have culture-bound connotations was lower than had been anticipated. Nevertheless, even if the percentage of identified culture-bound symbols is not statistically significant, the ominous consequence of one indigenous healer utilizing a diagnostic flowchart based on the traditional significance of a symbol could be grave indeed. The purpose of this survey was to identify and prevent this possible source of confusion in the development and implementation of a diagnostic flowchart system that would allow relatively uneducated native healers to dispense Western pharmaceuticals. To this end, the survey provided valuable data to aid in the assessment of the use of
symbols as a way to communicate with nearly illiterate populations.

This survey also provided valuable information dealing with the communicative value of pictograph designs among rural Bolivians that could prove to be of great importance in the development of health related publications. The results of similar studies performed elsewhere accentuate the findings of this survey.35

CONCLUSION

The purpose of this thesis was to identify cultural components of health and lifestyle present among the peasants of the Altiplano that would aid or hinder the smooth integration of Western and indigenous medicines in a health development project. The elements of social structure, political authority, environmental factors, and religious beliefs were all identified as being significant.

The results of a health survey administered in the research area were provided to illustrate the extent to which the above mentioned elements were influencing health. The empowerment model was then introduced as a vehicle to implement health development projects that promote decentralization and integration among project recipients to facilitate the learning, participating, and mastering of skills needed to ensure the self-sustainability of the proposed project.

It was also the purpose of this paper to analyze the communicative worth of symbols and pictographs. Symbols that were found to be culturally benign among the research community will be utilized in a village health kit that will direct indigenous healers in the proper use of Western pharmaceuticals. It is hoped that the development of the
village health kit will provide a mechanism by which indigenous and Western trained healers can combine their knowledge to best serve the rural populations of Bolivia.

It must be pointed out that before an overall attempt can be made to integrate traditional and Western health care practices, it is essential that additional research be done in order to "mix" the two appropriately. Specific areas of focus for undertaking future research would include:

1). The social organization of the target area, which includes the culture and economics of the total range of health care provision from the household to the marketplace and from the traditional herbalists to the Western physicians.

2). The pragmatics of decision making by the individuals and households in terms of which among the range of health care providers to patronize and in which order they move from one to the another. A less obvious but important reason for understanding referral flow is to avoid the problem of referral delay. If it is discovered that indigenous therapy is not being effective in the treatment of an illness, it is then found necessary to transfer the patient to a Western practitioner but it is often too late by the time the latter is reached.

3). The indigenous social definition of disease and its symptomatology and how this cognitive domain relates to that of more Western disease categories.
The acquisition of this additional knowledge will be tedious and difficult. When dealing with rural populations in Bolivia, several constraints examined in this paper including physical, environmental, and sociocultural factors inhibit the collection of reliable and usable data. Historical factors, such as ethnic origins, collective action patterns, and previous experience with other development efforts, all influence health utilization patterns. Demographic factors, including migration patterns and seasonal labor, affect local attitudes towards health care needs.

Health care utilization patterns often fluctuate with seasonal weather patterns. Drought, flood, or soil condition are obvious examples of changes in the physical environment that can completely disrupt the existing social structure and utilization patterns. In addition to environmental constraints initiated by nature, man-made constraints such as soil exhaustion and land-to-people ratios must also be addressed.

As described in Chapter I, delicate and complex relationships of religion, language, sex roles, kinship networks, and communication patterns influence project implementation. One must always be aware of village divisions by religious, caste, linguistic, or factional groups. On the other hand, an extremely homogeneous group poses another unique set of constraints in that they may not
wish to deviate from an accepted norm.\textsuperscript{36, 37} For example, in some villages malnutrition is so common that all children are small for their ages and extremely susceptible to disease. Since all children suffer alike, the villagers believe that their children are normal, not malnourished.

The purpose in presenting this rather cursory look at potential development constraints is to alert the reader as to the superficial nature of this thesis's discussion of conceptual components of health. This discourse in no way provides a workable method or model for the implementation of a native-Western health care system.

The purpose of this paper is to provide a foundation upon which future research can be based. The concepts discussed in this paper can be used, in conjunction with the recognition of possible constraints, to potentially mitigate costly mistakes or momentum-destroying time lags that ruin many well meaning projects.

APPENDIX A

A SELECTED LIST OF INDIGENOUS ILLNESSES FOUND ON THE ALTIPLANO

Mal aire, Pasmo, or Mal Viento. An illness associated with the hot-cold theory. It is generally caused by sudden exposure to cold or cool air when one is in a weakened state from overheating or extreme emotion.

Mal de ojo. An illness that occurs intentionally or unintentionally when someone with a "strong" gaze looks upon a weak individual. Those afflicted with this illness are usually children or infants. Overexertion, pregnancy, or drunkenness are among states that are thought to cause an individual to have a "strong" gaze.

Brujeria. Illness is inflicted upon an individual that does not duly worship sacra (i.e., supernatural beings, sacred objects or places).

Susto, or Espanto. Illness that is caused by fright or by stresses that in turn have caused anxiety. Susto is closely related to espanto, which is a disorder caused by seeing a ghost or demon and in which the soul is lost from the body and must be regained in order to effect a cure.

Bilis. An illness caused by extreme anger. It may be characterized by nervous tension, fatigue, and general malaise.
**Bilis.** An illness caused by extreme anger. It may be characterized by nervous tension, fatigue, and general malaise.

**Mollera caida.** Refers to the drooping of an infant's fontanelle. This disease results in extreme diarrhea and vomiting.

**Bolitas.** An illness caused by nerves that get out of place and bunch up, forming lumps in the arm or leg tissue.

**Latido.** A symptom associated with going without food for a long period of time.

**Empacho.** A illness that results when too much food is consumed or too much of the wrong food is eaten. The result of this illness is a gastrointestinal blockage or "ball" in the stomach that causes intestinal swelling.
APPENDIX B

DEMOGRAPHIC CALCULATIONS AND STATISTICS

(Data gathered from January 15 through January 30, 1986)

The towns of Artasavi and Parajachi on the Bolivian Altiplano (Aymara) were surveyed (30 families surveyed in Artasavi and 31 families surveyed in Parajachi).

A. Family Information

1. Female heads of households

<table>
<thead>
<tr>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8/31 or 35.4%</td>
</tr>
</tbody>
</table>

2. Education

   a. Father's education

      | Artasavi | Parajachi |
      |-----------|-----------|
      | Range 0-10 yrs. | 0-8 yrs. |
      | Ave. yrs. education 4.3 yrs. | 2.6 yrs. |
      | Percent w/no ed 4/30 (13%) had none | 6/20 (30%) had none |

   b. Mother's education

      | Artasavi | Parajachi |
      |-----------|-----------|
      | Range 0-5 yrs. | 0-5 yrs. |
      | Ave. yrs. education 1.33 yrs. | 1.0 yrs. |
      | Percent w/no ed 16/33 (53%) had none | 14/24 (58%) none |

   c. Sufficient money for education

      | Artasavi | Parajachi |
      |-----------|-----------|
      | 17/30 or 57% | 8/31 or 26% |
3. Employment

<table>
<thead>
<tr>
<th>Employment Category</th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculturists</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>Business Owner</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Employed by other</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

4. Income

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0-30,000 bpesos/mo</td>
<td>0-50,000 bpesos/mo</td>
</tr>
<tr>
<td>Average</td>
<td>8,570 bpesos/mo</td>
<td>6,621 bpesos/mo</td>
</tr>
</tbody>
</table>

5. Food Storage

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 yr. food stuff</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1/2 yr. food stuff</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Average</td>
<td>9 days</td>
<td>0 to 60 days</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Savings and debts

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Debt</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

7. Land available and used for gardens

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Families with garden space</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>Garden space utilized</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Range of space cultivated</td>
<td>3 sq. m to 10,000 sq. m.</td>
<td></td>
</tr>
</tbody>
</table>

8. Religious activity

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td># attending mass once a week</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td># attending no religious service</td>
<td>2</td>
<td>9</td>
</tr>
</tbody>
</table>

9. Attitudes on income

Those who felt that they had sufficient income for:
B. Health and sanitation

1. Vital statistics

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td># or pregnancies/mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1-12</td>
<td>0-15</td>
</tr>
<tr>
<td>Average</td>
<td>6.1</td>
<td>6.2</td>
</tr>
<tr>
<td># of miscarriages/1000</td>
<td>11 or 1.1%</td>
<td>125.75 or 12.6%</td>
</tr>
<tr>
<td>pregnancies</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of stillbirths/1000</td>
<td>11 or 1.1%</td>
<td>47.9 or 4.8%</td>
</tr>
<tr>
<td>pregnancies</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of live births/mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1-12</td>
<td>0-12</td>
</tr>
<tr>
<td>Average</td>
<td>6.0</td>
<td>5.39</td>
</tr>
<tr>
<td>Mortality of children</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of live births</td>
<td>179</td>
<td>167</td>
</tr>
<tr>
<td># of deaths (0-8 yrs)</td>
<td>52</td>
<td>46</td>
</tr>
</tbody>
</table>

2. Childhood deaths

<table>
<thead>
<tr>
<th></th>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>52/179 (29.1%)</td>
<td>46/167 (28.1%)</td>
<td></td>
</tr>
<tr>
<td>or 291/1000</td>
<td>or 281/1000</td>
<td></td>
</tr>
</tbody>
</table>

3. Causes of childhood death

Artasavi

<table>
<thead>
<tr>
<th>Age of Death</th>
<th>Number of Deaths</th>
<th>% of Total</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 months</td>
<td>27</td>
<td>52%</td>
<td>devil (1), cold attack diarrhea(2), blood (1), flu(4), cold(3), fever (3), weakness (5), pneumonia (1)</td>
</tr>
</tbody>
</table>
3 months - 1 yr 1 2% scarlet fever (1)
1 yr.+ - 2 yrs. 13 25% fever (7), cough (3), diarrhea (7), cold (1)
2 yrs.+ - 3 yrs. 2 4% 
3 yrs.+ - 4 yrs. 1 2%
4 yrs.+ - 5 yrs. 2 4%
5 yrs.+ - 8 yrs. 6 12% lightning (1), diarrhea (4)

Parajachi

<table>
<thead>
<tr>
<th>Age of Death</th>
<th>Number of Deaths</th>
<th>% of Total</th>
<th>Causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 months</td>
<td>12</td>
<td>26%</td>
<td>fright (4), diarrhea (3), fever (2), vomiting (2), cough (1)</td>
</tr>
<tr>
<td>3 mos - 1 yr.</td>
<td>2</td>
<td>4%</td>
<td>cold (3), fright (1), cough (1), drowning (1)</td>
</tr>
<tr>
<td>1 yr.+ - 2 yrs.</td>
<td>7</td>
<td>15%</td>
<td>crush/smother (1), diarrhea (4), cold (2), pneumonia (3), cough (2), fright (1)</td>
</tr>
<tr>
<td>2 yrs.+ - 3 yrs.</td>
<td>12</td>
<td>26%</td>
<td>cold (2), fright (2), chickenpox (2), fever (1), diarrhea (1)</td>
</tr>
<tr>
<td>3 yrs.+ - 4 yrs.</td>
<td>8</td>
<td>17%</td>
<td>diarrhoea (1), fever (1)</td>
</tr>
<tr>
<td>4 yrs.+ - 5 yrs.</td>
<td>2</td>
<td>4%</td>
<td>diarrhoea (1), fever (1)</td>
</tr>
<tr>
<td>5 yrs.+ - 8 yrs.</td>
<td>8</td>
<td>17%</td>
<td>fright (3), fever (2), excitement (1), unknown (2)</td>
</tr>
</tbody>
</table>

4. Remedies for diarrhea and fever

a. diarrhea

Artasavi
n=30

Parajachi
n=30
<table>
<thead>
<tr>
<th>Treatment</th>
<th># response</th>
<th>Treatment</th>
<th># response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mate (all types)</td>
<td>28</td>
<td>Mate de K'OHA</td>
<td>15</td>
</tr>
<tr>
<td>Mate de K'OHA</td>
<td>12</td>
<td>Pepa Palta</td>
<td>2</td>
</tr>
<tr>
<td>Burnt Bread (tea)</td>
<td>2</td>
<td>Burnt Bread (rice)</td>
<td>2</td>
</tr>
<tr>
<td>Burnt Rice (tea)</td>
<td>2</td>
<td>Burnt grain</td>
<td>1</td>
</tr>
<tr>
<td>Herb Tea</td>
<td>4</td>
<td>Mate de Herb Tea</td>
<td>3</td>
</tr>
<tr>
<td>Chichacoma tea</td>
<td>2</td>
<td>Mate de Chichacoma</td>
<td>8</td>
</tr>
<tr>
<td>Lemon Juice</td>
<td>3</td>
<td>Water</td>
<td>1</td>
</tr>
<tr>
<td>Chuchuroma</td>
<td>2</td>
<td>Alminidon</td>
<td>1</td>
</tr>
<tr>
<td>Egg</td>
<td>1</td>
<td>Egg</td>
<td>1</td>
</tr>
<tr>
<td>Asmanoke</td>
<td>1</td>
<td>Asmanoke</td>
<td>1</td>
</tr>
<tr>
<td>Cocoa Tea</td>
<td>3</td>
<td>Cocoa</td>
<td>3</td>
</tr>
<tr>
<td>Hot Bath</td>
<td>1</td>
<td>Bath</td>
<td>1</td>
</tr>
<tr>
<td>Parsley Tea</td>
<td>1</td>
<td>Mate de Parsley</td>
<td>1</td>
</tr>
<tr>
<td>Paltaychira</td>
<td>1</td>
<td>Paltaychira</td>
<td>1</td>
</tr>
<tr>
<td>Coffee</td>
<td>1</td>
<td>Coffee</td>
<td>1</td>
</tr>
</tbody>
</table>

b. fever

**Artasavi**

<table>
<thead>
<tr>
<th>Treatment</th>
<th># response</th>
<th>Treatment</th>
<th># response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lemon Juice</td>
<td>7</td>
<td>Lemon</td>
<td>8</td>
</tr>
<tr>
<td>Mate de K'OHA</td>
<td>4</td>
<td>Mate de K'OHA</td>
<td>4</td>
</tr>
<tr>
<td>Urine Bath</td>
<td>3</td>
<td>Urine Bath</td>
<td>3</td>
</tr>
<tr>
<td>Asmanoke</td>
<td>4</td>
<td>Heat</td>
<td>1</td>
</tr>
<tr>
<td>Hot Bath</td>
<td>3</td>
<td>Hot Bath</td>
<td>5</td>
</tr>
<tr>
<td>Silo-sillo</td>
<td>2</td>
<td>Silo-sillo</td>
<td>2</td>
</tr>
<tr>
<td>Herb Tea</td>
<td>1</td>
<td>Atalf</td>
<td>1</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>1</td>
<td>Egg</td>
<td>1</td>
</tr>
<tr>
<td>Egg</td>
<td>1</td>
<td>Egg, lemon, water</td>
<td>1</td>
</tr>
<tr>
<td>Burnt barley</td>
<td>1</td>
<td>Barley</td>
<td>1</td>
</tr>
<tr>
<td>Soft Drink</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cola de Caballo</td>
<td>1</td>
<td>Healing</td>
<td>1</td>
</tr>
<tr>
<td>Healing</td>
<td>1</td>
<td>Hot papaya Drink</td>
<td>1</td>
</tr>
</tbody>
</table>

**Parajachi**

<table>
<thead>
<tr>
<th>Treatment</th>
<th># response</th>
<th>Treatment</th>
<th># response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mate (all types)</td>
<td>7</td>
<td>Lemon</td>
<td>8</td>
</tr>
<tr>
<td>Lemon</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mate de K'OHA</td>
<td>4</td>
<td>Mate de K'OHA</td>
<td>4</td>
</tr>
<tr>
<td>Urine Bath</td>
<td>3</td>
<td>Urine Bath</td>
<td>3</td>
</tr>
<tr>
<td>Heat</td>
<td>1</td>
<td>Hot Bath</td>
<td>5</td>
</tr>
<tr>
<td>Hot Bath</td>
<td>5</td>
<td>Silo-sillo</td>
<td>2</td>
</tr>
<tr>
<td>Atalf</td>
<td>1</td>
<td>Egg</td>
<td>1</td>
</tr>
<tr>
<td>Egg</td>
<td>1</td>
<td>Egg, lemon, water</td>
<td>1</td>
</tr>
<tr>
<td>Barley</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silo-sillo</td>
<td>2</td>
<td>Healing</td>
<td>1</td>
</tr>
<tr>
<td>Hot papaya Drink</td>
<td>1</td>
<td>Hot papaya Drink</td>
<td>1</td>
</tr>
</tbody>
</table>

5. The prevalence of diarrhea (diarrhea/child/year)

<table>
<thead>
<tr>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. children under six</td>
<td>57</td>
</tr>
</tbody>
</table>

b. reported days of days of diarrhea in last two weeks 198 34

**Artasavi**

198 days diarrhea $\times \frac{26/2}{\text{wk periods}} = 90$

days/yr/child 57 children 2 wks. year

**Parajachi**
34 days diarrhea x 26/2 wk periods = 26 days/yr/child
17 children 2 wks. year

6. Immunizations

<table>
<thead>
<tr>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=24</td>
<td>n=12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Yes</th>
<th>% children</th>
<th>Type</th>
<th>Yes</th>
<th>% children</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT</td>
<td>7</td>
<td>29%</td>
<td>DPT</td>
<td>8</td>
<td>67%</td>
</tr>
<tr>
<td>Typhoid</td>
<td>5</td>
<td>21%</td>
<td>Typhoid</td>
<td>9</td>
<td>75%</td>
</tr>
<tr>
<td>Polio</td>
<td>20</td>
<td>83%</td>
<td>Polio</td>
<td>8</td>
<td>67%</td>
</tr>
<tr>
<td>Sarampion</td>
<td>15</td>
<td>63%</td>
<td>Sarampion</td>
<td>8</td>
<td>67%</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>7</td>
<td>29%</td>
<td>Tuberculosis</td>
<td>9</td>
<td>75%</td>
</tr>
</tbody>
</table>

C. Nutrition, sanitation, and hygiene

1. Shoes worn by children.
   a. # of children surveyed 34 17
   b. Yes 16 or 47% 5 or 29%
   c. No 18 or 53% 12 or 71%

2. Water supply source.
   a. well 24/30 or 80% 12/31 or 39%
   b. stream or river 6/30 or 20% 19/31 or 61%

3. Purification
   a. chlorine bleach 0/30 or 0% 0/30 or 0%
   b. purified water 1/30 or 3% 0/30 or 0%
   c. no purification 29/30 or 97% 28/31 or 90%
   d. boiling 0/30 or 0% 3/31 or 10%

4. Availability of water
   a. Travel to obtain water
      1). Range 1-45 min. 3-30 min.
      2). Average 16 minutes 11 minutes
   *2 of the 29 families that responded got their water from rainfall.

5. Kitchen facilities
   a. Location
      1). inside home 11/30 or 37% 20/31 or 65%
      2). side of home 7/30 or 23% 7/31 or 23%
      3). away from home 12/30 or 40% 4/31 or 13%
   b. Animals allowed inside the home (kitchen)
      1). yes 9/30 or 30% 24/31 or 77%
      2). no 21/30 or 70% 7/31 or 23%
c. Cooking method
   n = 29   n = 31
1). fire on ground  24/29 or 83%  13/31 or 42%
2). adobe fireplace  1/29 or 3%   6/31 or 23%
3). wood/gas stove   4/29 or 14%  17/31 or 55%
* some homes utilized more than one type.

d. Food preparation surface
   1). wood  2/29 or 7%   2/31 or 6%
   2). clay table  27/29 or 93% 30/31 or 97%
   3). cement  0 or 0%  1/31 or 3%
* some homes utilized more than one type.

e. Dishwashing methods  n = 30  n = 31
1). cold water alone  19/30 or 63%  24/31 or 80%
2). cold water & soap  6/30 or 20%
6/31 or 20%
3). hot water alone  4/30 or 13%  0/31 or 0%
4). hot water & soap  1/30 or 3%  0/31 or 0%

f. Preferred vegetable

<table>
<thead>
<tr>
<th>Type</th>
<th>Artasavi Frequency</th>
<th>Parajachi Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinoa</td>
<td>13</td>
<td>potato</td>
</tr>
<tr>
<td>Chuno</td>
<td>13</td>
<td>beans</td>
</tr>
<tr>
<td>Potato</td>
<td>11</td>
<td>cabbage</td>
</tr>
<tr>
<td>Canahua</td>
<td>10</td>
<td>barley</td>
</tr>
<tr>
<td>Lettuce</td>
<td>9</td>
<td>aruejas</td>
</tr>
<tr>
<td>Onion</td>
<td>9</td>
<td>quinua</td>
</tr>
<tr>
<td>Carrots</td>
<td>8</td>
<td>corn</td>
</tr>
<tr>
<td>Peas</td>
<td>8</td>
<td>arberja</td>
</tr>
<tr>
<td>Habas</td>
<td>8</td>
<td>papalisa</td>
</tr>
<tr>
<td>barley</td>
<td>5</td>
<td>carrot</td>
</tr>
<tr>
<td>Rice</td>
<td>5</td>
<td>oca</td>
</tr>
<tr>
<td>Quinoa leaf</td>
<td>3</td>
<td>wheat</td>
</tr>
<tr>
<td>Tomato, aji</td>
<td>2</td>
<td>pita</td>
</tr>
<tr>
<td>Turnip, wheat, corn</td>
<td>1</td>
<td>Rice, Nabo</td>
</tr>
</tbody>
</table>

6. Sanitary facilities
a. Latrine

<table>
<thead>
<tr>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1). yes</td>
<td>2/30 or 7%  1/31 or 31%</td>
</tr>
<tr>
<td>2). no</td>
<td>28/30 or 93% 30/31 or 97%</td>
</tr>
</tbody>
</table>

b. Handwashing facilities

<table>
<thead>
<tr>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1). yes</td>
<td>28/30 or 93% 23/31 or 74%</td>
</tr>
<tr>
<td>2). no</td>
<td>2/30 or 7%  8/31 or 26%</td>
</tr>
</tbody>
</table>

7. Personal hygiene
a. Change clothes

<table>
<thead>
<tr>
<th>Artasavi</th>
<th>Parajachi</th>
</tr>
</thead>
<tbody>
<tr>
<td>1). # of families</td>
<td>n = 27</td>
</tr>
</tbody>
</table>
2). # of changes/week 37/27 = 1.37 13.42/14 = 0.95

b. Brushing teeth

1). # toothbrushing/wk. 25/27 = 0.93
2/14 = 0.17

2). No toothbrushing 11/27 or 41% 10/12 or 83%
APPENDIX C

DIARRHEA

La persona tiene la boca seca, los ojos hundidos, falta de orina, la pérdida de la elasticidad de la piel?

ST → Dar la bebida para rehidratación

Hay fiebre que dure más que 6 horas después de haber empezado el tratamiento?

ST → Dar ampicilina por 8 días

Diarrea moderada sin otras síntomas?

ST → Dar kaolin y pectina

No hay mejoría → Buscar atención médica

Diarrea con sangre o moco?

ST → Dar tetraciclinia hasta alcanzar curación

No hay mejoría → Buscar atención médica

Diarrea amarilla y muy espumosa

ST → Dar metronidazol por 5 días

No hay mejoría → Buscar atención médica

Otras síntomas → Buscar atención médica
APPENDIX D
(English translation)

ACF HEALTH KIT SURVEY

The following is a survey that is being conducted by the Andean Children's Foundation. The purpose of the survey is to evaluate the relevance of using symbols and pictographs as part of a diagnostic regimen in a village health kit that will allow indigenous healers to dispense Western medicines.

The survey will ask you to answer the questions by either putting a check in one of three boxes (labeled good, average, or poor) or by filling in a blank. The survey should take about 20 minutes to complete.

We invite you to complete the survey. But you are under no obligation to do so. You may quit the survey at any time. If you feel that you would like to terminate the survey, just lay your pencil down and turn your paper over and you are free to leave or wait for friends or relatives to complete the survey. We ask that you not put your name anywhere on the survey or answer any questions that you feel may breach the confidentiality of the test.

What is your sex?  

male  

female

What is your age?  

(16-25)  

(26-35)  

(36-45)  

(46-older)

What is your occupation?  

Are you a village healer?  

yes  

no
Identify which symbol represents the following diseases: pinworm, skin infection, and hemorrhoids. Each disease can only be used once.

Identify which symbol represents the following diseases: heartburn, allergic reaction, and lice. Each disease can only be used once.

What alternate religious or cultural meaning does the following symbols connote?

How well do the following symbols relate to the following disease?

Circle the picture that best represents dehydration.
How well does the following symbol represent the following meanings?
swallowed poisons  pain and inflammation  asthma

- [ ]
- [ ]
- [ ]

good  average  poor  good  average  poor  good  average  poor

What is the most important element recognized first in each symbol?

- [ ]
- [ ]
- [ ]

What disease is each symbol representing?

- [ ]
- [ ]
- [ ]

What disease is each symbol representing?

- [ ]
- [ ]
- [ ]

Circle the picture that best represents:

Pregnancy  Fever
Rate how well each symbol represents the disease condition of diarrhea.

Rate how well each symbol represents the disease condition of skin infection.

Rate how well each symbol represents the disease condition of heartburn.

Indicate what disease agent is being represented in each symbol.

List five physical abnormalities present in each picture.
Take a moment to look at all of the symbols on this sheet of paper. All of the symbols represent objects that you **might** be familiar with. Put a cross through the objects that you do not recognize.
Now that you have identified all of the symbols that you are familiar with, take a moment to consider any symbols that might have religious or cultural meanings associated with them. For example: the symbol may culturally represent "Maj ojo" (the evil eye) to some people. Write any alternate meaning for each symbol underneath the symbol.
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Timaeus, I. "Health Surveys in Developing Countries: The Objectives and Design of an International Programme." *Social Science and Medicine* 27, no.4 (1988): 359-68.


