BAJA CALIFORNIA INDIAN WOMEN’S CONCEPTS
OF ILLNESS AND HEALING

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Baja California Indian Women’s Concepts Of Illness And Healing

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ABSTRACT OF THE THESIS

Northern Baja California Indians were traditionally hunter-gatherers and linguistically linked to other Yuman groups in California and Arizona. Impoverished and isolated, many have severe health problems and receive inadequate care. Relevant background, theory and concepts useful in understanding the present situation include past and present California Indian life; inter-disciplinary comparisons of biomedicine, epidemiology, and anthropology; body/mind, disease/illness, and curing/healing dichotomies; potential cultural effects on illness meaning and expression; practitioners’ social power; illness causation theories; efficacy concepts; and power in Indians’ cosmology. In order to gain a broad understanding of their health-related beliefs, I surveyed Baja California Indian women’s concepts of illness and healing.
Native promotores conducted face-to-face interviews with 313 women ≥ 18 years of age from six communities, about 89.4% of the eligible population. The most frequently reported adult illnesses were diabetes, hypertension, high cholesterol, cold/flu, diarrhea and low/variable blood pressure. Common childhood illnesses were diarrhea, cold/flu, bronchitis, cough, fever and empacho. Informants used botanical therapy more often for childhood than adult illnesses, and favored traditional therapy alone and both modern and traditional therapy for a higher proportion of childhood illnesses (p < 0.001). They had pluralistic non-biomedical and biomedical concepts of illness causation and treatment. Non-biomedical treatment included sobadora intervention for empacho and extensive botanical therapy. They reported either biomedical or traditional treatment as the best therapies and usual treatments for some illnesses (e.g., diabetes) and, for others, biomedical therapy alone (e.g., cancer) or traditional methods alone (e.g., sprains and empacho). Most endorsed biomedical concepts concerning physicians’ ability to prevent but not cure illness, and associated bloody sputum with tuberculosis, stroke with hypertension, and kidney disease with diabetes. Nearly all recognized that children are benefited by immunization and by increased fluids if they have diarrhea. A majority recognized modern indications for a physician visit. Many reported the non-biomedical illness, low/variable blood pressure, or past empacho.

Low/variable blood pressure was related to depression symptoms (p < 0.001) but not past empacho (p = 0.10). A language-based acculturation index and an ethnic identity scale were unrelated to endorsement of traditional therapy for adult or childhood illness (p > 0.10) and were significantly but only modestly correlated (r = 0.34, p < 0.001).

A “biocultural synthesis” of human ecology and critical medical anthropology (CMA) that includes historical, biological, cultural and economic factors leads to understanding their high rates of serious illness, poor access to biomedical care, rich ethnobotanical heritage and embodiment of low/variable blood pressure. Promotores have successfully advanced important biomedical concepts and, in the absence of major social-structural and political-economic improvement in Baja California Indians’ living conditions and access to care, they have the most potential to improve their health.
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Esthela Zamora of La Huerta; and Gladys Arballo of the Kiliwas. Drs. Gene Gilbert and Kathryn Fleuriet provided useful advice on the questionnaire, Elizabeth Tarlowski assisted with data entry, and Janis Yao provided statistical consultation.

**INTRODUCTION**

California Indian concepts of illness and healing have evolved over thousands of years and can be viewed through the varied perspectives of medical anthropology (e.g., Baer 2003; Brown et al. 1998; Hahn 1995; Singer 1992). Their current concepts of illness and healing are important to medical anthropologists and clinical practitioners in optimizing preventive care and obtaining the best treatment outcomes. This thesis describes an anthropological-epidemiological survey of northern Baja California Indian women’s concepts of illness and healing.

An important potential benefit of the survey for the Indians is improved coordination of their concepts and practices with Mexican biomedical health care to advance illness prevention and treatment. Future surveys with similar methods could assess results of these public health efforts. The study also records a cultural heritage for present and future generations of Indians and for scholarly comparison with concepts of other American Indians.

**CHAPTER 1**

Knowledge of the Baja California Indians’ history, especially their marked demographic decline resulting from European colonization, as well as their present harsh living conditions and poor access to biomedical health care is critical to this investigation.

Baja California Indians are closely related to American Indians north of the U.S./Mexico border and were nearly annihilated by disease and violence introduced by Spanish colonizers. They tend to be marginalized from the rest of Mexican society and generally are destitute with inadequate social services and biomedical health care. Extensive traditional therapy, including ethnobotany, continues to be practiced.
INDIANS OF CALIFORNIA AND BAJA CALIFORNIA

Present-day California contained seven of the 12 major language families in pre-contact North America, among which there were 104 distinct languages and dialects with associated cultural specifics (Goddard 1996; Kearney 1984). California tribal groups were differentiated by linguistic and kinship connections. Kroeber (1962) characterized California Indian sociopolitical organization as “triblets,” autonomous, independent sociopolitical tribal subdivisions comprising aggregates of village communities who recognized a common chief’s leadership. Within California, there was great geographic and ecological variation. Southern California Indians manifested some traditional cultural features in common with southwestern Indians. Although California Indians were characterized by hunter-gatherer subsistence, many of the groups manifested cultural features that are characteristic of more complex social organizations, including social ranking with chiefdoms, active management of natural plant and animal resources, wealth accumulation, infrequent residence relocation, craft specialization, food storage, and trade with neighboring people (Heizer 1978; Kroeber 1925).

In addition to violence, Old World diseases brought by the Spanish decimated them, and measles, smallpox and other diseases could have been introduced to Baja California as early as 1533 when Hernán Cortés’ agent, Furtún Jiménez, and 20 crewmen were killed while attempting to land there (Beebe and Senkewicz 2001:28). Between that time and the establishment of the first Baja Spanish mission at Loreto in 1697, explorers and pearl divers periodically visited, and trade routes facilitated disease transmission (Preston 1996). The Spanish also introduced disease into what is now the southwest U.S., and smallpox reached the Luiseño in southern California by 1519 (Weiner 1993a:96). Secondary factors contributed to the California population collapse as well, including property destruction, desertion of villages, capture, forced displacement of individuals and increased internecine violence (Cook 1976).

At the time of European contact, the Kumeyaay occupied much of the southernmost part of present-day California and the adjoining area of northern Baja. The two overlapping, cultural/linguistic divisions, Ipai and Tipai, describe the people of the northwestern and remaining parts of the tribal territories, respectively. The term Digueño was applied to Kumeyaay who lived near the San Diego Presidio and Mission of San
Diego de Alcalá (Hedges 1975). The international border runs through the original territory of the Tipai division of the Kumeyaay (Luomala 1978), an “artificial separation” that is reflected by continuing parallel elements in oral traditions (Wilken Robertson 1993).

Early missionaries documented extensive southern California Indian ethnobotany (ethnopharmacology). For example, sage, rosemary and nettle-plant were applied as a plaster to external lesions. Black rosin (chilicote seed) was burned and the smoke inhaled for abdominal pain (Boscana 1978:195fn). Delfina Cuero reported about 70 plants with medicinal properties that were used by the Kumeyaay in the 19th century (Shipek 1991:40). Meigs concisely recorded Kiliwa herbal therapy (1939), Hohenthal (2001:276-282) and Owen (1962) made mid-20th century ethnographic observations of Baja California Indian health practices, and Almstedt (1977) and Fleuriet (2003b) did additional fieldwork. However, five elderly Kumeyaay and Paipai women’s recently published narratives did not include health matters (Magaña Mancillas 2005).

CONTEMPORARY NORTHERN BAJA CALIFORNIA INDIAN LIFE

Indigenous northern Baja California Indians self-identify by their native language names, the Kumeyaay (Kumiai/Cochimi), Paipai, Cucapá and Kiliwa of the Yuman language family (Hokan stock) (Hohenthal 2001; Kroeber 1925:709; Meigs 1939; Shipley 1978), and most reside within 100 kilometers of the U.S./Mexico border. Early linguistic fieldwork identified another Yuman tribe, the Nakipa (Massey 1949:364), but no Indians now claim descendency from them. Intermarriage with members of other tribes, mestizos (people with “mixed” European/indigenous ancestry but non-indigenous identity) and others has led to considerable genetic admixture, but a 2004 census revealed self-reported tribal affiliation and numbers to be: Kumeyaay (879), Paipai (597), Cucapá (202) and Kiliwa (107), excluding residents of a few uncounted areas (CUNA 2005:9). Thus, only 1,785 descendents were documented from a pre-contact population of 40,000 to 55,000 (Fleuriet 2003a:140). In general, they have acculturated more slowly than their U.S. counterparts to the surrounding dominant culture. For example, Luomala (1978) wrote that some Baja California children still learned Kumeyaay as their first language in the 1960s.
Northern Baja California Indians are geographically isolated and socially marginalized from the surrounding mestizo society (Figure 1). Today’s Kumeyaay primarily live in the communities of Juntas de Nejí, San José de la Zorra, San Antonio Necua and La Huerta. The Paipai are southern neighbors of the Tipai with a language similar to that of the Yavapai, Walapai and Havasupai of Arizona (CUNA 2005:6, Hohenthal 2001, Kroeber 1925:709), and most live in the Sierra Juárez (about 3500 feet elevation) near a mission built in 1798 by Dominicans who were expelled when the Paipai destroyed it in 1840 (Owen 1962:4). Before contact, the Cucapá lived in and near the Colorado River delta (Hohenthal 2001:63); most reside in Cucapá Meztizo, Cucapá el Mayor and Cucapá Indiviso near Mexicali (CUNA 2005:9). Relatively little is known of the Kiliwa, the smallest and southernmost extant Baja California tribe, whose traditional territory extended from the Paipai and Cucapá areas south at least as far as Santo Domingo (Hohenthal 2001:60); they now live predominately in Arroyo de León.

Most Baja California Indians live in eight federally recognized and two locally recognized communities (Figure 1), each with a single indigenous identity, based mainly on historical occupation areas. El Instituto de Culturas Nativas de Baja California (CUNA, Native Cultures Institute) is a non-governmental organization in Ensenada that promotes the well-being of northern Baja California Indians by promoting formal education and adoption of public health principles, coordinating health care, improving water quality, stimulating private enterprise, preparing reports for government agencies, sponsoring an annual Kuri Kuri (beach gathering of Mexican and U.S. indigenous groups), and other activities.

A recent CUNA document emphasizes the high unemployment, as formal education is low and local income sources are largely limited to farmwork on nearby ejidos (communal land grants), local vineyard and cattle ranch work, and indigenous artisan work, such as basketry. Destitute living conditions include a deficiency of potable water (Fontanoz 2005) and little or no electricity (2005:28)—many residences have only a single, bare light bulb. There is also a pervasive deficiency in basic services such as schools, and foods are limited. Compared with U.S. Indians, Baja California Indians receive scanty government support and have little opportunity to generate income through such business as tourism; notably, there are no casinos. Many of them,
especially men, seek employment in cities, such as Tecate, Tijuana, Ensenada and Mexicali or enter the U.S. in search of work. Impoverishment, family disruption, contaminated water and dietary deficiency are common. Alcoholism and illicit drug use also occur, although reliable comparison rates with nearby non-Indian communities are unavailable. Although there is ample evidence of severe social problems, relevant governmental agencies underestimate the number of people involved, as they require native language-speaking ability to define an individual as indigenous, a skill many Indians lack (CUNA 2005:2).

Health problems often receive poor treatment, traditional medical practice is threatened, and access to biomedical health care is poor (CUNA 2005; Fleuriet 2003a). For example, the distance from the Indian communities to the nearest hospital ranges from 25 to 165 km, and poor dirt roads impair travel in many areas, especially in the winter rainy season. Physicians visit the communities infrequently. Diabetes, hypertension, malnutrition, infectious diarrhea and acute respiratory illnesses are common (Fleuriet 2005b; Fontanoz 2005; Kornylo 2005). Because of largely inaccessible biomedical health care and efficient, inter-generational transmission of traditional medicine—although jeopardized by intellectual property issues, modified plant introduction and stigmatization of traditional herbal practices—a rich heritage of ethnobotany survives. Hohenthal (2001:274) and Fleuriet (2003b:40) found that most herbalists are women. Currently, there is a pluralistic blend of traditional and biomedical illness beliefs and practices (Fleuriet 2003b).

CHAPTER 2

Some background concepts have broad relevance to medical anthropology and to this thesis, in particular.

BODY/MIND, DISEASE/ILLNESS AND CURING/HEALING

The seventeenth-century French philosopher, Rene Descartes, expounded the dualism of body and mind, leading those who followed to infer separate management of disorders of these two divisions. This distinction is reflected in the disease/illness
concept. Since the eighteenth century, *disease* has been a physician concept of the biological or biochemical malfunction. In contrast, *illness* is a broader concept of a sick person’s experience, which has social, psychological and cultural components (Eisenberg 1977). *Curing* applies to the successful treatment of a specific biological disease or injury; for example, eradicating an infection. This biomedical concept contrasts with *healing*, which is a broader concept that refers to the whole person, including physical and spiritual elements. In a given cultural context, one of these concepts may predominate (e.g., curing in biomedicine and healing in complementary or alternative medicine), or they may be combined. However, curing may depend on emotional status, and healing may be influenced by biological status (Strathern and Stewart 1999:7-8). Biomedicine may be more successful in many contexts by accommodating the healing concept (1999:7).

**BIOMEDICINE, EPIDEMIOLOGY AND ANTHROPOLOGY**

Although practitioners of modern, Western medicine make little use of the term biomedicine (also called allopathic medicine), social scientists use this name to distinguish it from other forms of medicine (Hahn 1983). The primary focus of biomedicine is on human biology, particularly physiology and its derangement. It is no less a socio-cultural system than traditional American Indian medicine—both are forms of ethnomedicine, systems that address disease, social behavior, and human adaptation (Fábrega 1975:974). The primary central tenets of biomedicine are mind/body dualism and physical reductionism, the separation of the body from psychosocial and behavioral factors; therefore, biomedicine is sometimes criticized for treating disease, not people.

Biomedicine is a cultural system that includes specialized domains, behavioral norms regarding practitioner performance and relations with patients and colleagues, and a knowledge hierarchy (Hahn 1995:131-172). Acquired knowledge is extensive, including a large vocabulary. Practitioners must exercise “vertical reasoning” in linking information from a hierarchy of scientific fields, grounded on the mathematics-based “hard” sciences of chemistry and physics and ascending to the “soft” science of clinical psychology (Blois 1988). This process can potentially acknowledge important non-biological aspects of disease, but student education can obviate this if students sacrifice
their empathetic “caring” qualities for “competence” in the biomedical paradigm. It can depersonalize, even dehumanize, patients in the physicians’ construction of an ill person as a diseased organ or group of organs, called by some anthropologists the “clinical gaze” (Good and Good 1989). This biomedical construction of the patient can begin early in medical school with anatomy instruction using cadavers (Hafferty 1991). Biomedical knowledge is produced through research that is both stimulated and limited by preceding discoveries and, as with the physical sciences, major advances often require a conceptual break from former models, a “paradigm shift” (Kuhn 1962). The failure of the reductionist biomedical model to comprehensively explain and guide illness management led physician George Engel to advocate a more holistic clinical approach; however generalized adoption of his “biopsychosocial” model (1977) in practice has been incomplete.

In contrast to the typical biomedical focus on individuals, epidemiology investigates disease occurrence and causal disease processes by focusing on human populations. Although most epidemiologists have a biomedical background, Fraser (1987) wrote that this “low-technology” science (i.e., a “soft” science on the vertical hierarchy of scientific fields) resembles the liberal arts (hence the humanities, with which some anthropologists identify) due to its use of the scientific method, analogic thinking, deductive reasoning, problem solving within constraints, and concern for aesthetic values. Epidemiologists and anthropologists differ, as summarized by anthropologist-epidemiologist Robert A. Hahn (1995:99-128), including the tendency for anthropologists to explore specific context-associated, cultural associations rather than universal principles; some focus on interpretation in analyzing meaning. In contrast, epidemiologists search for universal causal processes and try to minimize biases in assessing causal associations among variables. Anthropologists seek a holistic, in-depth, emic perspective from participant observation fieldwork, but they do not typically assess whether the studied individuals (termed informants or participants) are representative of the entire group in important features, in contrast to epidemiologists’ common use of standardized questionnaires to obtain focused information from each member of a representative sample of a population in the same way, having presumed in advance what is relevant to measure. Thus, epidemiologists’ work is reproducible by other
investigators using the same methods and is often rather quantitative and statistical, but
standardized interviews can sacrifice validity while seeking reproducibility.
Anthropologists’ findings tend to be more qualitative and can be influenced by their own
interpretations of informants’ reports (Geertz 1988).

Both anthropology and epidemiology are concerned with health-related behavior
and tend to characterize groups rather than individuals. Furthermore according to Hahn,
practitioners of both types fail to recognize common epistemological features. He wrote,
“anthropologists are unwitting epidemiologists in their work” and “epidemiologists
practice anthropology unawares” (1995:101). He explained that anthropological
construction of context is essentially an epidemiological procedure. Furthermore,
consideration of the non-biological contributions to risk factor/health outcome
associations by epidemiologists—deciding which contextual variables to exclude and
which local aspects of knowledge, values, meaning and communication to include—is
anthropological. The disciplines can have important complementary functions; for
example, anthropologists can ascertain the meaning of events to people, and
epidemiology can guide methods of hypothesis testing regarding the anthropological
attribution of beliefs and practices. Both qualitative and quantitative methods have been
fruitfully combined in many important investigations (Janes et al. 1986; Kleinman
thus lies in exploring the nexus between the health consequences of behavior and the
social and cultural correlates of that behavior” (Dunn and Janes 1986:3).

Such collaboration sometimes fails, however, as described by DiGiacomo (1999).
She blamed her unsuccessful work with Barcelona epidemiologists to improve the early
diagnosis of cancer on their detailed methodological descriptions and quantification of
“risk factors” (1999:442) that shaped their research questions and interpretations. She
wrote that epidemiologists thought her work was too subjective and biased and quoted
one as saying ethnography is “very nice, but so many words!” (1999:449). The report is
hers alone and incomplete; the epidemiologists’ actual thoughts about her and
anthropology as a whole are not well documented. Her complaints only underscore the
known differences between the disciplines, including their writing styles—the simple,
succinct style of much biomedical writing might not interest some social scientists—and
might not be generalizable to other epidemiologists. Above all, her experience could merely reflect her own inability to contribute to a team effort, which many other anthropologists have done successfully, even though they may have had to confront feeling like handmaidens to a more dominant system. (Janes et al. 1986; Kleinman 1995:92fn9).

Anthropologist-physician Robert Anderson (1996:34-42) explained that medical anthropology, being inherently inter- and multi-disciplinary, helps link the levels of scientific reasoning along the vertical hierarchy. Thus, the typical biomedical focus on the lower levels of science (e.g., chemistry and biology), the cultural anthropological emphasis on the higher levels (e.g., polity, ecology and economy), and the varied concerns of epidemiology can be coordinated by medical anthropologists in search of holistic answers to questions on health and illness.

**CULTURE, ILLNESS AND COMMUNICATION**

An individual’s cultural context contributes to the meaning of illness and how it is manifested and communicated to practitioners. Specifically, culture influences whether or not external stimuli are regarded as stressful and whether or not bodily and emotional states are labeled as illness (Kleinman 1979:79). A pure biomedical model of illness ignores this important cultural component. Thus, a comprehensive view of health and illness requires recognition of the particular cultural milieu as well as biological and psychological factors. This principle was illustrated when a Kumeyaay man reacted violently to a hospital nurse’s bathing him because he interpreted her actions as an unwanted sexual advance. In the San Diego Anglo setting where this occurred, the psychiatrists incorrectly diagnosed schizophrenia, as they were unaware—they had made no inquiry that might have helped—that his reaction was normal for a Kumeyaay (Shipek 1991:73-75). A perspective that acknowledges the social construction of mental illness (Kleinman 1988) explains their mistake.

Kleinman et al (1978) term culturally based assumptions about illness and treatment “explanatory models.” They espoused these as an individual’s culturally influenced concepts of a particular illness that are important knowledge for their practitioners to provide optimal care. They are best elicited with open-ended questions
and comprise the patient’s notions of symptom cause, onset, pathophysiology, severity, course and proper therapy. Although Kleinman was more circumspect about this interpretive theoretical construct years later, citing Geertz’s influence, he still thought it had clinical usefulness (Kleinman 1995:8-9). For example, Kaufert and O’Neill (1993) found that these models influence the disparate concepts of obstetrical risk of Inuit women and Canadian physicians. Whereas the women have a community-based and experiential view that occasional death during childbirth at home is part of a natural process, the obstetricians view any such death as tragic and promote evacuation of high-risk women to modern medical facilities for delivery. Such differing explanatory models of practitioners and patients is manifested by disparities in the language of risk, which complicates the development of a shared framework that is required by informed consent for clinical procedures. The authors successfully manage this issue with the assistance of native interpreters who, besides being language translators, help bridge intercultural gaps.

Culturally sensitive health care must also acknowledge the important role of the patient’s family and community context and the potential for a different speech style to falsely imply informed consent to therapy. The principle of autonomy in an individual’s endorsement of health care may not apply in populations where a person’s extended family, community leaders or tribal elders have greater decisional capacity than the individual (DuBray and Sanders 1999; Muller 1993). Also, Indian cultural features may include a passive communication style characterized by soft, terse speech with long pauses. Piquemal (2001:72) describes such passivity as an “ethic of non-interference” in acquiescence to research; that is, Indians may not fully consent, but they may answer in a way that researchers interpret as providing consent. Similarly, Kaufert and O’Neil (1993) report a tendency for Inuit and other Native Canadian patients to passively accept “medical consent rituals.” The use of interpreters introduces more issues. Kaufert and Putsch (1997) detail a code of ethics for interpreters in health care that addresses issues of confidentiality, accuracy, completeness, self-determination, conflict of interest and non-judgmental attitude. It conveys cultural frameworks to researchers and clients and also seems applicable to patients and practitioners.

Additional linguistic and semiotic factors contribute to illness meaning and communication. For example, Navaho concepts of the universe and of illness attributed
to a disturbed human relationship with nature are reflected in the verb structure, which
does not allow the expression of a person performing an action or as one upon whom an
action is performed. Rather, the person is linguistically assigned to a class that is tied to
an action already defined, reflecting their adjustment to a powerful universe, having been
merely assigned a position in the movement of nature (Warner 1976). Semantic change
is evident from Tucson Mexican Americans’ “code switching” when they use a different
term for the same childhood disorder, depending on whether the child was born in the
U.S. or Mexico, and they often name illnesses by the symptom [e.g., dolor de oído
(“earache”)] or its attributed cause [e.g., susto (fright)], which can complicate
communication with biomedical practitioners whose scientific nosology is etiology-based
(Kay 1979). “Mexican diseases” [e.g., caida de mollera (“fallen soft spot”) and mal de
ojos (“evil eye”)] have no English counterparts, and their persistence helps perpetuate
cultural identity (Kay 1979:87). Kay (1979) found that various forms of semantic shift
had evolved; most notably, shifts in meaning of many lexemes themselves, including: 1)
emotional disorders [e.g., envidia (envy) is synonymous with cellos (jealousy) but shifted
to indicate poor mental habits]; 2) hyperbolic expressions [e.g., susto (fright) was
formerly a great shock but decreased to mere unpleasant surprise]; and 3) elevation [e.g.,
bilis (bile) was originally associated with the gall bladder expelling bile due to anger but
became elevated to mean gall bladder disease that is corrected by surgery, a biomedical
concept originating from a folk conception]. Corroborating Basso’s “field theory of
semantic change” (1967) that “meaning change should be considered … against a
comprehensive background of social structure and function” (Kay 1979:90), an entire
lexical set changed after exposure to biomedicine.

In addition, Sobo and Seid (2003) emphasize that effective biomedical care
requires practitioners to recognize that their health system is a culture that is often foreign
to patients and, regardless of the patients’ racial/ethnic features and cultural context, they
must have “functional biomedical acculturation” to optimally interact with this
ethnocentric system. The communicative competence required of practitioners to help
patients achieve this requires special abilities, especially language skills.
SOCIAL POWER AND PRACTITIONERS

The independence of patients’ decisions can also be degraded when they regard the social power of the health care system as greater than theirs. The bases of social power have long been recognized (French and Raven 1959:155-164). A person is influenced by the power of a social agent (another person, a role, a norm, or a group or part of a group). The five types of social power are: 1) reward power, which increases in proportion to the person’s perception of the magnitude of the reward; 2) coercive power, which stems from the person’s perception that he will be punished if he does not conform to the social agent’s influence; 3) legitimate power, stemming from an internalized cultural norm or value that prescribes the person’s behavior, which allows him to accept the agent’s influence; 4) referent power, an attraction for the person to identify with the agent; and 5) expert power, coming from the person’s deference to the agent’s special knowledge or expertise. All five types of social power are potential factors in practitioner/physician relations, and “the biggest thief of autonomy is sickness” (Cassell 2005:330), so practitioners should realize the pernicious potential of their social power.

According to Finkler (1991:70-72), however, Mexican physicians have less prestige and power than their U.S. counterparts because the Mexican bureaucracy undermines their power, fragments their profession, prevents biomedical domination by promoting botanical therapy, and trains too many doctors who have trouble finding employment and depend on the U.S. for innovations.

ILLNESS CAUSATION THEORIES

Foster (1976) expounded the differences between naturalistic and personalistic causation theories. A personalistic system attributes illness to the effects of malevolent or punitive agents, such as sorcerers or ancestors. The sick person is a victim of aggression or punishment directed at him alone and for reasons that concern him alone; accidental causality is not considered. In contrast, naturalistic explanations involve impersonal, systemic terms and incriminate properties of the body itself and non-intentional aspects of causation, typical of biomedical explanations. Strathern and Stewart (1999:11-34) point out that personalistic agents of sickness are often connected with moral issues and community problems, while the only moral aspect to naturalistic
systems is blame for “careless living” and other choices. A complex interaction among people’s concepts of body function, emotions, morals, and spirit and cosmic forces require consideration in relation to health, illness and healing in such societies.

Although early anthropologists reported that traditional societies manifested beliefs in natural causes of illness along with magico-religious beliefs, Anderson (1996:73-86) wrote that anthropologists have not devoted enough attention to natural causes. In particular, the Human Area Relations Files mainly summarized personalistic (e.g., mystical, animistic and magical) causes (Murdock et al. 1980). Naturalistic and personalistic categories are rarely mutually exclusive in a particular society. For example, in the Afro-Caribbean Creole culture studied by anthropologist-psychiatrist Roland Littlewood (1988), some physical illnesses are regarded as having naturalistic causes and are managed with “bush” medicine, a rural practice based on medicinal plants. In contrast, “madness,” which amounts to psychosis in many cases, is thought to result from obeah, a type of sorcery that is a personalistic concept. The binary hot/cold model of Latin America and the Caribbean comprises an equilibrium model in which the therapy chosen confirms to the “principle of opposites;” for example, “cold” therapy for a “hot” disorder (Foster 1987:355). Some people associate with a particular illness or injury a proximate natural cause and an ultimate personalistic cause (Anderson 1996:85). It may be difficult to classify some causes with this system; for example, illness caused by wind may be regarded as personalistic, but pathogens can be transported through air, a naturalistic concept. Although personalistic explanations are typical of many traditional cultures, characterizing such societies as “pre-scientific” may be unjustified, as many constructed knowledge through empirical observation and testing, methods ascribed to “science” (Nader 1996).

In any health care setting, traditional or modern, patients’ and practitioners’ explanatory models of illness often differ. Careful practitioner elicitation of patients’ models and explanation of practitioners’ models is important, and negotiation—perhaps dialog is a preferred term as it is less legalistic—mechanisms may be needed to obtain the best treatment outcomes (Kleinman et al. 1978).
TREATMENT EFFICACY

The biomedical concept of efficacy requires measurable proof and differs from traditional Indian concepts. The most respected biomedical method of proving efficacy is via a controlled clinical trial of a modality versus another treatment or placebo in separate patient groups, which includes clear inclusion and exclusion enrollment criteria, random allocation of subjects to the groups, and “double-blinding” of patient subjects and researchers to the group assignment (Thompson 2005:85-109). Statistically significant differences in outcomes are required to demonstrate efficacy. Waldram (2000) cited the traditional American Indian medical system as having a broader concept of improvement or cure that included symbolic aspects of treatment. With this viewpoint, it is possible to be “healed” without being “cured” (e.g., Christian religious healing). The perceptions and interpretations of the patients themselves are more important than objectively documented change. This view values the placebo response and constitutes a large part of efficacious, modern medical care, even though it is discounted by researchers who are only interested in the effect of the tested agent exceeding that of placebo factors (Thompson 2005). This conflict of traditional and biomedical views of efficacy complicates the evaluation of traditional medicine and contemporary alternative and complementary medicine (Mason et al. 2002). For example, there is no possible placebo for comparison with shaman dancing and singing.

Many Mexicans have a broad concept of healing that views illness as having multiple causes and places particular importance on emotional factors (Finkler 1991:197-216). Treatment efficacy and full recovery result not just from biomedical ministrations, but often also require improvement in various aspects of the individual’s day-to-day life; for example, socio-economic state and family dynamics.

POWER AND CALIFORNIA INDIANS

Among traditional California Indians, Bean (1975) delineated a tripartite cosmology with power paramount: 1) an upper world inhabited by powerful anthropomorphic beings and spirit beings with which humans could interact to their own benefit; 2) a middle world, typically the center of the universe, where people resided; and 3) a lower world occupied by super-ordinary beings that were usually malevolent and had
distorted humanoid or animal features. There were four assumptions about power: 1) Power is sentient and the primary causative agent in the universe. 2) Power is distributed differentially throughout the three realms of the universe and is possessed not only by “life” but also by anything with the will “to act,” including seemingly inanimate things. 3) The universe is in a state of dynamic equilibrium in relation to power. 4) Humans are the central figures in this interacting system of power holders.

Power had various sources, including dreams and dream helpers, instruction from shamans and mind-altering drugs, such as *toloache* (*jimsonweed*, *Datura*). There was no distinction between the natural and the supernatural regarding power, believed to be present in all things, living or not. Elapsed time was unimportant, and shamans could use their power to travel from the present to the past, in contrast to the Western view of irreversible, linear, unidirectional time. Power and social control were maintained mainly by fear of sorcery, not codified law.

Shamans functioned in traditional California Indian culture as practitioners of magic, medicine and religion, who mediated between ordinary people and supernatural entities. They typically acquired their knowledge during intense sensory episodes while on vision quests, periods of isolation and prayer (Fagan 2003:177-190). Bean (1975:27) described California shamans as “boundary players of power,” as they could travel throughout the upper, middle and lower worlds. Great power enabled them to both cause and cure illness (Kearney 1984).

Spier’s (1923) Kumeyaay shaman (*kuseyaay*) informants reported blowing or spitting on and rubbing patients, and they burned hair clippings and nail parings to prevent them from causing their owner to develop fatal insanity. Delfina Cuero reported a 19th century Kumeyaay belief that red ant bites could both prevent and cure illness; however, she had tried this and had felt sicker afterward. She also reported the need to consult “an old woman or the ‘snake man’” for cases of snakebite and that nobody could touch the victim but an old person. After a snakebite or spider bite, the victim’s garden might grow better, but the person could ruin somebody else’s garden by entering it (Shipek 1991:47-48). She reported “bad spirits in certain springs of water” that could kill a person who drank from them (1991:49). The common traditional California concept of illness being caused by a foreign object lodging in the body due to witchcraft and the
practice of shamans restoring health by sucking it out are supported by archaeo-
eological evidence of stone “sucking tubes” among the Kumeyaay (Polk 1972) and Luiseño
(O’Neil 1983). Almstedt’s (1977:1) elderly 1967 Kumeyaay informant described a
shaman removing a live bird and a hair from her neck when she was a child, restoring her
singing ability.

A little over one-half century ago, Hohenthal (2001:253-256) interviewed a Baja
California Kumeyaay man who had been a rattlesnake shaman but had lost his power ten
years earlier for uncertain reasons. He described rubbing the snakebite victim’s body
away from the heart and sucking venom from the wound. He had known shamans in
earlier days who could cure other problems by singing and blowing smoke over the
victim and sucking out intrusive objects. Owen’s informant told him that the last Paipai
shaman had died before 1940 (1962:68).

CONTEMPORARY BAJA CALIFORNIA INDIAN CONCEPTS OF ILLNESS
AND HEALING

Limited information is available on contemporary northern Baja California Indian
concepts. The first comprehensive report of northern Baja Yuman-speaking Indians’
concepts of illness and healing was Owens’ dissertation (1962). He used traditional
anthropological participant observation to gather information on the 165 Santa Catarina
Paipai. Since his fieldwork in 1958-1959, the population has grown two and one-half-
fold, and his findings may not apply completely nearly half a century later. He described
the Paipai as fractious and hostile and concluded that they believed illness could be
caused by witchcraft, accidents, upsetting the balance of nature; they also endorsed some
biomedical explanations. He also described herbal therapy, including methods of
preparation and specific illnesses and injuries for which botanical preparations was used.
Among his functionalist theoretical explanations, he felt that their illness beliefs and
practices lowered their illness-related anxiety, elevated the importance of otherwise
insignificant people when ill, and encouraged people to remain in Santa Catarina where
any needed health care would be available. He wrote provocatively that their illness
traditions introduced variety into mundane lives, stating: “the people of Santa Catarina
‘enjoy’ sickness when it occurs to someone else and sometimes, even when they
themselves are the victims” (1962:166). Almstedt (1977) summarized some of Owens’
observations, health-related ethnographic descriptions of other U.S. and Baja Yuman
groups recorded earlier, and those of her own.

Fleuriet’s dissertation (2003b), which is more current, is the other major
assessment. As in my study, she employed a technique from epidemiology, the
standardized questionnaire. Her preliminary interviews of 59 adults in four villages (La
Huerta, San Antonio Necua, San José de la Zorra and Santa Catarina) revealed a blend of
biomedical and non-biomedical etiologic concepts for acute and chronic illnesses.
Emotional etiologies only applied to chronic illness, and non-biomedical concepts of
acute illness causation were always combined with biomedical causes; for example, *gripa*
(signifies both viral upper respiratory [“cold”] and influenza symptoms) was attributed to
micro-organisms delivered by cold winds. People reported two “folk illnesses” (“culture­
bound” disorders without biomedical recognition) of Mexican origin, *susto* (a symptom
complex attributed to being frightened) and *empacho* (regarded as intestinal obstruction
due to emotional disturbances, typically in children). Victims consulted a variety of
traditional and non-traditional practitioners. She found no evidence of the traditional
supernatural witchcraft (*latido*) (e.g., shaman-induced) reported over 40 years earlier
among the Paipai by Owens; rather, she found a milder mestizo form of supernatural
power that can cause emotional states or folk illnesses. Thus, Fleuriet found few
"indigenous” concepts except for herbal usage, which is also a mestizo tradition. She
found a general preference for biomedicine that was related to perceptions of efficacy and
prestige associated with mestizo culture. However, extensive herbal therapy was
practiced (2003b:318-324), which she attributed primarily to poor access to biomedical
care.

The second phase of Fleuriet’s fieldwork focused on the people of San Antonio
Necua, a village that is more economically advanced, has more infrastructure and is more
accessible than other communities, but it is still very poor. She interviewed 84 of the 87
registered adults and 13 health care practitioners, both biomedical and non-biomedical,
who served them. Many Necuans believed that severe emotional factors could cause
hypertension, diabetes and low/variable blood pressure, a common non-biomedical, self-
reported illness. They associated increasing illness rates with a non-indigenous life-style (e.g., consumption of processed foods), and this concept was accompanied by a sense of obligatory assimilation (loss of cultural identity) into mestizo society, although assimilation actually has been incomplete, as evidenced by their sense of socio-cultural and political distinction (Fleuriet 2003b:9). Importantly, Necuans did not regard themselves as “sick” with diabetes until they had diabetes-associated symptoms, some of which occur because the disease is not properly treated. Therefore, they tended to seek care later than their doctors preferred. These disparate illness concepts between patients and physicians caused the Mexican biomedical doctors to regard them as non-compliant and even ignorant for not seeking care sooner. Necuans typically did not regard visits to biomedical care providers as opportunities to learn about illness prevention or therapy. She identified important power-related issues that influence care, possibly associated with the role that power has played in their world view since antiquity and their loss of power through oppression. They blamed disease on their non-traditional diets, and they blamed some diseases on acculturation to the dominant society. She suggested that the common complaint of low/variable blood pressure was “a very useful idiom of distress for voices otherwise silent in San Antonio Necua and Mexico, such as the poor and women” (2003b:251). Therefore, she thought that increased practitioner understanding of the patients’ psychosocial stress could be useful.

The differences between northern Baja California Indian and biomedical concepts of illness and healing influenced their interaction with the Mexican biomedical care system. Specifically, Indians who espoused a traditional affinity with nature and the spirit world and had concepts of illness causality at variance with biomedical models could be reluctant to fully accept Western medicine, which characteristically ignores the spiritual aspects of health and focuses on scientific principles instead (Bigby 2003:105). The identification of past oppression with their health care providers could further widen the disjunction between their traditional concepts and those of their caretakers. She described a disparity between Baja California Indian health concepts and those judged to be valuable by modern practitioners and suggested evidence that depression is a common but unrecognized problem among them (Fleuriet 2003b).
CHAPTER 3

The study was planned to expand knowledge that could improve health care of the Baja California Indians. Methods included the use of a standardized questionnaire administered by local promotores. Computerized data processing and statistical analysis were conducted. A large proportion of eligible women participated and provided information on common adult and childhood illnesses and their preferred and usual treatment. Patterns of biomedical and traditional therapy, including details of extensive botanical treatment, were documented. Biomedical knowledge and beliefs varied, depending on the topic. There was also moderate inter-community variation concerning illness occurrence, treatment and biomedical knowledge and beliefs. Acculturation and ethnic identity were only modestly correlated. Low/variable blood pressure was associated with depression symptoms.

RESEARCH AIMS AND METHODS

The purposes of this investigation were to survey northern Baja California Indian women on their concepts of illness and healing, including self-reported illness and medicinal herbal practice, to assess their degree of acculturation and to screen them for depression. I intended to expand the investigation of some of the issues Fleuriet (2003b) evaluated, specifically common adult and childhood illnesses and their most effective and usual treatment, illness causation and endorsement of biomedical concepts with standardized questionnaire data provided by a large number of informants. Furthermore, I hypothesized that the women’s preference for traditional methods of therapy for illness are inversely related to Mexican acculturation and ethnic identity and that their non-biomedical (“folk” or “culture-bound”) low/variable blood pressure is related to depression.

Questionnaire Design

I drew extensively from Kathryn Fleuriet’s dissertation (2003b) in composing the questionnaire because her findings resulted from extensive participant observation, including standardized interviews. I obtained advice on the questions from Dr. Fleuriet and Dr. Jean Gilbert (medical anthropologists), Michael Wilken-Robertson (CUNA
Ianthropologist) and Dr. Lynn Gamble (SDSU anthropologist), and I constructed the
questionnaire in light of design principles (Converse 1986; Dillman 1978; Labaw 1981).
Javier Ceseña, President of the CUNA Board of Directors and a Kumeyaay native of San
Antonio Necua, helped translate the questionnaire and other material into Spanish. I
limited the study to women primarily because they were more available for interview
than men, many of whom work away from home. Also, the herbalists are usually women
(Fleuriet 2003b:40; Hohenthal 2001:273), and women often take responsibility for their
families’ health care, so it seemed reasonable that they would be productive sources of
health-related information.

The questionnaire, Appendices A (Spanish) and B (English translation) contained
items on age, common adult and childhood diseases and their preferred treatment, illness
causation beliefs, present and past “folk illness,” and endorsement of some biomedical
principles, including indications for a physician visit and community of origin (items 1-
21 and 28). It also contained a five-part language-based, acculturation scale (items 22-
26) that was validated on U.S. Hispanics (Marín et al. 1987). I modified the scale to
compare Indian with Spanish language use instead of the original English versus Spanish,
deleted written language (the Indian languages are seldom written) and derived an index
from the scale as the mean of answers. An additional question (item 27) sought self-
reported ethnic identity. The final two questions (items 29 and 30) are validated,
preliminary measures of depression in the U.S. (Whooley and Simon 2000). If U.S.
residents answer at least one question affirmatively, depression is suggested, and
additional questioning is indicated to more definitively identify depression.

Surveyors and Informants

The CUNA staff selected promotores (health educators) from each of the six
surveyed communities who were natives of the community they would survey (San José
de la Zorra, San Antonio Necua, La Huerta, Juntas de Nejí, Santa Catarina, and the
Kiliwas). Michael Wilken-Robertson and I held a training meeting for the promotores in
Ensenada and discussed the project and the questionnaire with them. We explained the
proper conduct of interviews to minimize bias (Brislin et al. 1973:59-81) and asked the
promotores to attempt to survey all eligible women ≥ 18 years of age in their
communities via face-to-face interviews at their homes. Exclusion criteria were unwillingness to participate, oral Spanish illiteracy and physical (e.g., deafness) or mental (e.g., retardation) disability. We gave each promotor written interview instructions, (Appendix C; English translation, Appendix D). We also instructed each of them to introduce themselves and the survey with a preliminary message to each prospective participant, which explained their voluntary participation as required by the SDSU Institutional Review Committee (Appendix E). Kiliwas were not mentioned on the questionnaire acculturation items or Appendices C, D and E, as I did not realize they would be surveyed before the study. After their participation, I reported this matter to the Institutional Review Board (IRB). Anonymity was maintained by identifying participants by census code number, and confidentiality was maintained by locking the questionnaires in the CUNA office. I reimbursed travel and meal expenses for the promotores to attend the training meeting and gave them questionnaires, interview instructions, pencils, clipboards and preliminary messages for prospective informants. I also paid them $2 for each completed questionnaire, an amount that the CUNA anthropologist deemed non-exploitive, as recorded by Vianey Diaz Excárrega (CUNA accountant), and reimbursed Ms. Excárrega and Mr. Ceseña for assistance. The informants were unpaid.

The IRB approved the protocol on November 17, 2004.

**Data Processing**

After an assistant entered data from the questionnaires onto an Excel spreadsheet, I checked the data entry from every questionnaire and corrected errors. I followed certain procedures for managing the ambiguous answers and other issues: 1) If both “No sé” (I don’t know) and a specific answer were circled (e.g., item 3), I entered the specific answer. 2) For the acculturation and ethnic identity if, if both single and combined choices were circled, I entered the combined answer. If three choices were circled, I entered nothing. 3) If an item requested circling of all endorsed beliefs (e.g., item 9) and “todo” (all) was written with nothing circled, I entered all choices except “No sé”. 4) For item 16, if both “Más líquidos...” (More liquids…) and “Menos líquidos...” (Less liquids) were circled, I entered nothing. 5) When more than one illness was entered when
only one was requested in items 3-5 and 11-14 requesting up to three illnesses, I entered the first three written in each item series, ignoring any additional items. 6) When different informants used synonymous illness terms; for example, *calentura* and *temperatura* (both mean fever), I used only a single term throughout. 7) Because choices “*visistar a un químico*” (visit a chemist) and “*tomar medicina de un farmacéutico*” (take a pharmacist’s medicine) in items 3-5 and 11-14 are similar (chemists and pharmacists are the same), I combined them to indicate the latter. 9) Since “*presión baja*” (low blood pressure) and “*presión baja y alta*” (low and high blood pressure) have the same meaning (Fleuriet 2003b:191fn1), I collapsed them into a single syndrome, low/variable blood pressure. 10) If informants reported separately on items 18 and 19 that the same illness is usually treated by physicians and by traditional methods, I excluded these data from the table that summarizes illnesses treated by one method but described them in the text.

**Statistical Analysis**

Due to the advanced statistical analysis planned and approximately 1200 completed questionnaire pages, I contracted with a statistician to analyze the data with SAS software (SAS/STAT 1997). Measures of central tendency of continuous data were expressed as mean ± standard deviation (SD) and median (non-normally distributed data). Comparisons of group categorical data were made with the Chi-Square test, Fisher’s Exact Test (for small cell counts), or McNemar’s Test (when some informants answered both compared questions), and continuous data were compared by the two-sided Wilcoxon Two-Sample Test or Kruskal-Wallis Test (for non-normally distributed data). The statistician compared the acculturation index and ethnic identity scale with the Spearman rank correlation test. The level of statistical significance was p < 0.05 (Glantz 2005).

**RESULTS**

The *promotores* invited 330 women to participate, of which four were less than 18 years of age (ineligible), eight declined to participate, four were incapable due to disability, and one did not understand Spanish, leaving 313 of women at least 18 years of
age for analysis: San José de la Zorra (37), Juntas de Nejí (25), San Antonio Necua (32), La Huerta (20), Santa Catarina (168) and Kiliwas (31). The 2004 census did not include sex or age categories (CUNA 2005). Therefore, I estimated the female, adult population of the six communities by adjusting the total census for the communities (1,136 people) by percentages of females (51.2%) and individuals ≥ 18 years of age (60.3%) reported from the 2000 Mexican national census (Instituto Nacional de Estadística Geografía e Informática 2005), which yielded 350 women ≥ 18 years of age. Based on this adjustment, the 313 surveyed women comprise 89.4% of eligible women ≥ 18 years of age. The age of 277 survey participants was 37.4 ± 16.1 (mean ± standard deviation) years; range, 18 to 87 years. Thirty-six women did not report their age.

The number of times an adult illness was reported as one of the three most common illnesses is shown in Table 1 for all communities. The six most often cited illnesses were diabetes, hypertension, high cholesterol, cold/flu, diarrhea and low/variable blood pressure. Table 2 reveals that the three most reported illnesses overall were among the top five illnesses in each community except in Santa Catarina where hypertension and high cholesterol were less frequently reported; however, low/variable blood pressure was commonly reported there and in San Antonio Necua. Table 3 shows that cold/flu, diarrhea, bronchitis, cough, fever and empacho were the most commonly reported childhood illnesses overall. The three most reported illnesses overall were among the top five illnesses in each community except that juntas de Nejí, La Huerta and Kiliwa informants reported less bronchitis; there were common reports of amebas in Juntas de Nejí and dehydration among the Kiliwas (Table 4). The “kidney problem” included in Tables 1 and 3 is how many Mexicans refer to low back pain (Finkler 1991:34).

Tables 1 and 3 indicate that the women thought physicians and drugs were the most effective treatments for most adult and childhood illnesses. The major exception was the preference of sobador therapy by all 26 women who reported that childhood empacho was common. Also, herbal therapy was more highly regarded for childhood than adult illnesses, as 285 informants endorsed it 318 times and 313 informants endorsed it 75 times for childhood and adult illnesses, respectively. Statistical comparisons (McNemar’s Test) between proportions of childhood illnesses and adult illnesses (n =
that are most helped by modern therapy (physician or pharmacist), traditional therapy (sobador, curandero or herbs), or both therapies revealed similar proportions are helped by modern therapy (282 [99.0%] versus 283 [99.3%], respectively, p = 0.56), but more childhood illnesses than adult illnesses are most helped by traditional therapy (83 [29.1%] versus 44 [15.4%), p < 0.0001) and both therapies (81 [28.4%] versus 42 [14.7%], p < 0.001).

To capture all information on botanical therapy, I included specified therapy from informants’ responses to adult illnesses (items 3-6, n = 77), childhood illnesses (items 12-14, n = 108) and usual treatment type, physician versus traditional (items 18-19, n = 13). Table 5 details this therapy, including English and scientific names obtained from various sources (Almstedt 1977; Kay 1996; Fleuriet 2003b; Ford 1975; Owens 1962; Rivas 1988; Shipek 1991; United States Department of Agriculture 2006). Informants reported 31 botanical preparations and specified their use 129 times and 77 times for childhood and adult illnesses, respectively. Paring of therapies with specific illnesses varied widely; for example, they recommended ten botanical products for diarrhea, ten for cold/flu, nine for diabetes, six for cough, five for hypertension, four for bronchitis and three for fever. However, many products had only single endorsements, and certain illnesses were treated predominantly with certain products: “kidney problem” (back pain) with cañutillo, cough with gordolobo, diarrhea with hierba buena, diabetes with nopal, hypertension with olivo and fever with sauco.

Many women reported that physicians usually treat the three most common adult illnesses (diabetes, hypertension and high cholesterol) (Table 6). There was general agreement among communities with some exceptions. Seventy-six women believed that diabetes is usually treated with traditional therapy (Table 7); 72 of these informants were from Santa Catarina. In addition, 36 women reported diabetes for both items 18 and 19; that is, most diabetics are treated with both methods, and two women answered similarly for hypertension. All 38 of these women were from Santa Catarina. Regarding other common illnesses, they reported predominantly traditional therapy for low/variable blood pressure, cold/flu, kidney problems, cough and diarrhea, and they cited solely physician therapy for cancer. Regarding less common illnesses, they reported traditional therapy alone for sprains, empacho, fever, muscular pain, caida de mollera and eight other
illnesses reported only once, including witchcraft and susto; they reported only physician treatment for tuberculosis, pneumonia, amebas, asthma, nerve problem and six other illnesses reported only once.

The women endorsed biomedical (naturalistic) causes and non-biomedical (personalistic) causes 2,051 times and 329 times, respectively, including six biomedical causes and two non-biomedical causes; however, there was marked inter-community variation (Table 8). Generally, Kiliwas reported few causes of both types, and many Santa Catarina informants reported each of the eight causes except lack of immunization. Relatively few San José de la Zorra and Juntas de Nejí informants attributed causality to sadness and susto. San José de la Zorra informants rarely endorsed viruses, and San José de la Zorra and San Antonio Necua informants tended not to endorse lack of immunization. No informant endorsed the non-biomedical causes of anger, bad thoughts, dreams, envy, Gods’ punishment, others’ bad thoughts, wind and worry or the biomedical causes of daily use of aspirin or heredity.

Biomedical knowledge and beliefs are summarized in Table 9. There was general acceptance that physicians can prevent illness, only a minority of women thought they can cure illness, and nobody reported they can cause illness. Nearly all women knew that a cough with bloody sputum can be caused by tuberculosis, and few answered incorrectly that hypertension can cause this symptom. Nearly all informants recognized that hypertension can cause a stroke, but none knew it can lead to headache (when hypertension is severe). Also, most women knew about diabetic kidney disease, and only a small minority incorrectly attributed arthritis and appendicitis to diabetes. The four clinical scenarios for which a woman should consult a physician were endorsed by a majority of women, but only a minority accepted all of them. Furthermore, symptoms and signs that can indicate diabetes, severe gastrointestinal infection, bacterial infection and breast cancer were not endorsed as reasons to see a physician by about 15 % to 30% of women. Nearly all women approved childhood immunization, and over 90% knew that a child with diarrhea should drink increased liquids.

The medical history (Table 10) revealed current low/variable blood pressure in nearly one-third of informants overall; notably, no woman from La Huerta reported it. Nearly the same proportion of women reported a past history of empacho; the lowest
percentage was reported from San José de la Zorra. Over one-third of women overall answered affirmatively to each of the depression questions; however, few residents of San José de la Zorra and La Huerta did so. Statistical comparison (Fisher’s Exact Test) of the women who reported symptoms of depression (items 29 and/or 30) versus those who did report them with endorsement of current low/variable blood pressure (n = 285) or past empacho (n = 285) revealed that more women with depression symptoms reported low/variable blood pressure (65 [22.8%] versus 25 [8.8%], p < 0.001), but similar proportions reported past empacho (44 [15.4%] versus 40 [14.0%], p = 0.10). Thirty-five and eight women responded “I don’t know” to the low/variable blood pressure and empacho, items, respectively.

I estimated Mexican acculturation by calculating an index as the mean value of items 22-26, requiring a minimum of four of the five questions answered (n = 300). I assigned a numerical scale to self-reported ethnic identity (item 27): one = answer 1 (Mexican), two = answer 3 (Mexican and Kumeyaay) or 5 (Mexican and Paipai) and three = answer 2 (Kumeyaay), 4 (Paipai) or 6 (Kiliwa or combinations of Kumeyaay, Paipai and Kiliwa, which occurred only in Juntas de Nejí where three women reported both Kumeyaay and Paipai). The distribution of numerical values for ethnic identity was one (39), two (170) and three (91). The corresponding calculated acculturation indexes for these values were 1.26 ± 0.57 (median, 1.00), 2.07 ± 1.06 (median, 2.00) and 2.70 ± 1.30 (median, 2.60), respectively.

Statistical comparison by two-sided Wilcoxon Two-Sample Test of the calculated index (n = 300) with endorsement of any traditional therapy as most effective for any adult illness revealed indexes of 2.36 ± 1.28 (median, 2.20) from 43 women who endorsed traditional therapy and 2.08 ± 1.12 (median, 1.12) from 257 women who did not (p = 0.14). Similar comparison for childhood illness revealed indexes of 2.00 ± 1.03 (median, 1.80) from 79 women who endorsed traditional therapy and 2.12 ± 1.17 (median, 2.00) from 199 women who did not (p = 0.89). Comparison by Chi-Square Test of ethnicity scale values (n = 297) with endorsement of any traditional therapy for any adult illness revealed numbers of informants for values one, two and three of (four [1.3%]), (26 [8.8%]) and (12 [4.0%]), respectively, p = 0.71. Similar comparison for
childhood illness revealed numbers of informants for values one, two and three of (seven [2.6%]), (47 [17.1%]) and (24 [8.7%]), respectively, p = 0.34.

Statistical comparison of the acculturation index with the ethnic identity scale using the Kruskal-Wallis Test revealed the acculturation index varied across the ethnic identity scale (p < 0.001). The Spearman rank correlation coefficient of the acculturation index and the ethnic identity scale was r = 0.34 (p < 0.001).

CHAPTER 4

The investigation expands knowledge on the women’s perceptions of common illnesses and most effective therapy, and it details some of their biomedical and traditional treatment practices. The non-biomedical illness, low/variable blood pressure, appears to be an embodiment of various aspects of their social arrangements (“structural violence”) (Farmer 2003), as considered within the theoretical framework of a “biocultural synthesis.”

DISCUSSION

This questionnaire survey of healing and illness concepts comprised a large majority of the adult Indian women in six northern Baja communities. It was primarily informed by Fleuriet’s recent ethnography (2003a, 2003b) and contained both open-ended and forced-choice questions and combined anthropological and epidemiological methods (Hahn 1995). The results extend previous observations and have implications for improving health care.

Common Illnesses

The most common adult illnesses reported were diabetes, hypertension, high cholesterol, cold/flu and diarrhea. Although Fleuriet found diabetes, hypertension and cold/flu to be common, she did not obtain personal or family histories of high cholesterol or diarrhea (2003b:78), possibly because her forced-choice questionnaire lacked these illnesses, whereas I used open-ended illness questions. Her Necuan informants most often reported eye problems (44% of respondents), and they reported gallbladder
problems and obesity more often than did my informants as well as two common problems that I did not detect, allergies and parasites. She did not limit the number of illnesses investigated, whereas my questions elicited only the three most common problems, which could underlie these disparities. Similar to my results, Fontanoz (2005) recently confirmed that diarrhea is common in four of the communities and, importantly, documented high levels of drinking water contamination with pathogenic bacteria, particularly *E. coli*.

Diabetes, obesity, and high cholesterol deserve emphasis because diabetes, central obesity (enlarged waist-line), abnormal blood fat levels (low HDL cholesterol and high triglyceride levels) and hypertension often cluster as the metabolic syndrome (Alberti 2005) and predispose sufferers to serious cardiovascular consequences (O’Keefe and Cordain 2004). The most common citation of diabetes as a serious adult illness accords with Fleuriet’s personal and family diabetes histories of 14.3% and 80.7%, respectively, in San Antonio Necua (2003b:78) and Kornylo’s recent self-reports of physician-diagnosed diabetes in 13% of residents of eight Baja Indian communities (2005:23). However, self-reported data on diabetes and high cholesterol are questionable without laboratory confirmation. The prevalence rate of obesity depends on definitions, but my observations of the people suggest that excessive weight is more common than Fleuriet’s self-reports of personal and family histories of obesity of 8.3% and 22.6% (2003b:78).

Only one informant cited gallbladder disease among the three most common illnesses, but Fleuriet recorded personal and family histories of gallbladder disease of 9.5% and 24.1%, respectively, which would be expected in light of North American Indians’ gallstone predisposition due to polygenetic factors (Carey and Paigen 2002). For example, Southwestern U.S. Indian tribes have a high prevalence of gallstones—as many as 80% of Pima women and 70% of Pima men develop them—and diabetes, obesity and high cholesterol are also common among American Indians. Mexican *mestizos* who have American Indian genes also have high rates of these disorders. The “thrifty gene” hypothesis is that the scarce, intermittent food supply available to Paleo-Indians crossing the deglaciating Bering Strait land bridge (Beringia) during the last Great Ice Age about 10,000 to 20,000 years ago resulted in the natural selection of individuals who could store calories as fat (Carey and Paigen 2002; O’Keefe and Cordain
While this genetic adaptation would have originally served hunter-gatherers well, it would now be a detriment to them by contributing to diabetes, obesity, blood fat abnormalities and gallstones after they change to a high-calorie, high-fat diet and became more sedentary. Indeed, Pimas became obese during Father Kino’s observations, and traditionally lean and physically active Tarahumaras gained weight and had increased cholesterol levels within five weeks of adopting a Western diet (2002:786).

Only one woman reported “uterine problem” as a common illness. I suspect that menstrual symptoms, including abnormal bleeding, are more common than this finding suggests. Possible explanations for low reporting of gynecological symptoms is their acceptance of them as non-illness and self-silencing by women to avoid questions about their fidelity (Rustad 2004) or accusations regarding sexually transmitted disease.

Among childhood illnesses, the women most often reported cold/flu, diarrhea, bronchitis, cough and fever. Children are especially vulnerable to acute diarrheal illness, and it is a common cause of mortality in developing countries, especially among babies. Fleuriet (2003b) did not specifically elicit information on childhood illnesses, but she and Fontanoz (2005) found that respiratory symptoms are common overall. Burning wood for cooking in poorly ventilated homes could be a factor. It is uncertain which of the various causes of fever underlie this common symptom, but acute gastrointestinal and respiratory illnesses are likely contributors.

**Illness Treatment**

This survey confirmed Fleuriet’s (2003b) finding that Baja California Indians regard physician and drug therapy as most effective for the major illnesses. She emphasized that their profoundly deficient access to biomedical care obligates them to depend on traditional therapies, especially herbal treatment. The women more often reported botanical therapy as effective for common childhood illness than common adult disorders, and they often acknowledged its usefulness for infrequently reported adult and childhood illnesses. Furthermore, there was statistically significant reporting of a benefit of traditional therapy alone and of both traditional therapy and modern therapy for higher proportions of childhood than adult illnesses. They reported that modern therapy alone is effective for similar proportions of childhood and adult illnesses.
Notably, *empacho* was uniformly regarded as best treated by *sobodoras*. *Empacho*, a non-biomedical disorder (“folk illness”) described in various Latino ethnic groups, is regarded as a syndrome of food or other material obstructing the stomach or intestines, primarily in children (Pachter 1994). Dietary indiscretion, teething and changes of infant feedings are thought to cause the illness, which is manifested as nausea, abdominal discomfort or pain, and diarrhea. There is remarkable consistency in beliefs about the syndrome across cultures (Weller et al. 1993). *Sobodoras* are folk therapists who provide abdominal massage and advise dietary change and botanical therapy. *Caida de mollera* or fallen fontanelle, reported only once and as also calling for a *sobador*, is depression of a baby’s anterior fontanelle, which is regarded as an ominous sign of various causes (Kay 1993). Cominsky (1983:163) also found compartmentalization of diseases and their corresponding treatments in Mesoamerica; for example, “folk illnesses” such as *susto* and “evil eye” are cured by traditional approaches, whereas other illnesses (e.g., bronchitis or diarrhea) are treated with modern medicine.

A great variety of ethnobotanical therapy is evident. To my knowledge, this is the first systematic appraisal of this therapy by Baja California Indians with differentiation of its use for childhood and adult illness; women more often reported using it for children. This assessment is more quantitative that others (Fleuriet 2003b; Owens 1962), and it reveals preferences of specific herbal preparations for certain illnesses; however, there was great variation in therapy of most illnesses. Many botanical preparations have proven pharmacological properties, and this discussion does not comprehensively cover research on the reported therapies; however, Kay’s extensive reference (1996) reports such data on six of the preparations. Notably, she cited blood sugar-lowering ability of *nopal* (1996:202), but she reported no proven analgesic properties of *cañutillo*, no anticoagulation properties of *gordolobo*, no anti-diarrheal properties of *hierba buena*, no antipyretic effect of *sauco*, and she did not discuss *olivo*. However, extracts of *Gnaphalium* species, to which *gordolobo* belongs, have considerable antimicrobial activity. Therefore, the relatively condition-specific use of *nopal* and *gordolobo* and associated bioactivity suggest a scientific basis for their use, as preliminarily reported for Maya gastrointestinal herbal medicine (Berlin et al. 1996). Importantly, many botanical agents have not had adequate pharmacological testing.
For common illnesses, there was general consensus on whether usual treatment is physician therapy or traditional treatment, except for diabetes, for which Santa Catarina informants tended to report both categories. Notably, low/variable blood pressure was nearly always reported as usually receiving traditional treatment; however, the 26 women who listed it as a common illness all indicated that physician treatment is most effective; only five also selected herbal therapy. This disparity between usual and most effective treatment could be attributable to poor access to what they regard as the best therapy or a belief that biomedical practitioners do not recognize the disorder; however, these questions were not addressed.

**Illness Causation**

Illness causation concepts comprised a pluralistic blend of biomedical (naturalistic) and non-biomedical (naturalistic) causes; the former predominated, and communities appeared to vary on this matter. Notably, the most commonly cited causes were alcohol and smoking, supporting the effectiveness of public health promotion efforts. Recognition of the danger of dirty water is important, as water-borne bacterial diarrhea is common in the population; however, 20% of women did not cite this danger, and 24% did not endorse bacterial causes, suggesting areas for further public health education. The endorsement of overweight by 80% of women as an illness cause contrasts with the infrequent listing of obesity as a common illness. Perhaps they think most overweight people in their communities are not overweight enough to have health consequences. Importantly, Fleuriet (2003b:69) found that Baja California Indians did not consider themselves “sick” unless they had symptoms, which could influence attitudes about obesity and other issues. She found this pattern especially typical of diabetics but mentioned that some people did regard hypertension as a chronic illness (2003:162fn6). Although 77% of the women thought fatty food is hazardous, the survey did not measure specifically how they thought fat causes illness. Only 42% thought viruses cause disease, yet cold/flu was reported as the fifth most common illness, pointing out potential areas of education to reduce viral disease transmission. The rather low report of lack of immunization (33%) contrasts with the very high acceptance of childhood immunization as beneficial. Although daily aspirin can cause stomach and
duodenal ulcer disease, none realized this, likely due to inaccessibility to the radiologic or endoscopic procedures required for diagnosis, preventing them from knowing about it. Failure to recognize heredity as an etiologic factor accords with Fleuriet’s (2003b:83) finding that they do not endorse the idea of genetic inheritance.

Non-biomedical causes comprised only susto and sadness. Fifty-six % of women endorsed susto, which Fleuriet described as an “attenuated form” (2003b:79), as it does not entail soul loss, as characterizes traditional Mexican susto. Her Necuan informants believed that susto can cause diabetes, high blood pressure, low/variable blood pressure and chronic anxiety (2003b:225-226). Although I did not detect worry as an illness cause, my documentation of sadness as an etiology may reflect the concept of multiple illness causes that is typical of Mexicans, often with emotional causes paramount over physiological or physical environmental ones (Finkler 1991:31-44).

**Biomedical Knowledge and Beliefs**

Besides deficient knowledge regarding water-borne illness, chronic illness without symptoms, and viral disease, the survey revealed a generally higher opinion of biomedical care than traditional care and acceptance of physicians’ ability to prevent illness, but less awareness that they can cure illness. This disparity seems ironic as, aside from the important interventions of immunization and early diagnosis of such illnesses as diabetes and hypertension, much improved illness prevention in this population must stem from environmental and economic changes to which physicians can contribute relatively little. Physicians’ social power may have variable influence in different domains and may be lower among the Indians than in the U.S., as generally characterizes Mexican physicians (Finkler 1991:70-72). They had a moderate level of biomedical knowledge regarding tuberculosis, hypertension and diabetes, but they had little belief that physicians can cure illness, which is only partially mirrored by their beliefs about the types of symptoms that should prompt them to seek physician care. However, their dire lack of access to health care could be a more important influence than biomedical knowledge on their attitudes and, unfortunately in practice, make moot some of these matters relating to physicians.
Low/Variable Blood Pressure and Depression

The non-biomedical illness construct, low/variable blood pressure rated only sixth as a common adult illness, yet 31.1% of women self-reported it, similar to Fleuriet’s report of the disorder in 26% of Necuan women (2003b:208). Although no botanical therapy was specifically directed to this illness, many respondents thought physicians provide the best treatment. Still many Santa Catarina women regarded it as best treated by traditional means, which were not defined in this survey. Fleuriet found that variable blood pressure is always self-diagnosed and low blood pressure is only infrequently diagnosed by physicians (2003b:210)—she did not mention that documented low blood pressure in the absence of excessive medication effect, dehydration or cardiac or other disease is usually benign—and collapsed them into a single syndrome with variable symptoms: lack of appetite, fatigue, weakness, lack of motivation, headache, dizziness/trembling, ear ringing and anxiety (2003b:228). She could not explain it as poorly treated diabetes or low blood sugar, pointed out many symptom similarities between low/variable blood pressure and susto, and proposed it to be “a newer form of susto,” having become paramount over the latter disorder over time (2003b:229). Her finding that Necuans with both susto and a history of empacho, those who used herbs medicinally, and people reporting poor health were predisposed to low/variable blood pressure, which led her to suggest it is a signal of overall poor health.

Fleuriet wondered whether low/variable blood pressure could be an idiom of depression and tried to measure depression with the Center for Epidemiologic Studies Scale (CES-D); however, it failed linguistic equivalence assessment after translation and back-translation, invalidating it for use (2003b:249). Nevertheless, she suggested future work on this question. I found a strong statistical association between the self-reported, non-biomedical illness, low/variable blood pressure, and symptoms of depression. This finding and the symptom congruency between the two illnesses suggest that many women with low/variable blood pressure are depressed. Furthermore, the lack of statistical relationship between depression symptoms and a history of empacho suggests that the women are not predisposed to report any non-biomedical illness—in this case both low/variable blood pressure and empacho—in undifferentiated manner. U.S. physicians often overlook depression (Whooley and Simon 2000). There is no reason to
think it is recognized any better in the circumstances in which Baja California Indians live. Furthermore, the biological and socio-economic features in common for depressed Tijuana residents and the Indian women (low socio-economic status, female gender, disrupted marital status, unemployment and poor health [Vega et al. 1987]) would also be expected to contribute to depression in the latter group. The 29.1% of women reporting a history of *empacho* resembles Fleuriet’s finding of this history in 21.4% of Ncuans (2003b:79).

Fleuriet’s informants associated increasing illness rates with a non-indigenous life-style (e.g., consumption of processed foods), and this concept was accompanied by a sense of obligatory assimilation (2003b). Similarly, Weiner described the Luiseño (southern California) as blaming diabetes on loss of their traditional diet (1993a), and she also reported that many of them attributed cancer to food (1993b); she suggested that resumption of their traditional hunter-gatherer diet and food exchange could improve their health.

**Acculturation and Ethnic Identity**

Acculturation is a continuous process by which both individuals and groups integrate, transform and adapt to the value systems of another culture. Ethnicity is variably described as belonging to a distinct socio-cultural group, identification with those who have a similar cultural history or psychological identity, or is based on interconnections with larger socio-economic systems; therefore, it is both objective and subjective. Its measurement may be complicated by restrictive categories and unintended meanings. Ethnic identity, a self-description, is a completely subjective concept involving personal knowledge about a group and pride in belonging to it. In contrast, acculturation can be regarded as a continuum, categorical (acculturated, unacculturated, bicultural or marginal), or multidimensional, with more acculturation in some aspects than others, and it can be measured. Language is the most frequently used measurement (Clark and Hofsess 1998).

Fleuriet emphasized the lack of language variation among San Antonio Ncuans residents; all but one of her informants learned Spanish as the first language (2003b:230). However, the women in this survey from six communities reported a range of language-
based acculturation on an instrument (Marín et al. 1987) adapted from Spanish/English to Indian/English. In addition, they reported their ethnic identity. The data on adult and childhood illness did not support my hypothesis that their preference for traditional illness therapy is inversely related to Mexican acculturation or ethnic identity. Marginalization may be a more important factor. The Spearman rank correlation is a nonparametric statistic that assesses the extent to which two variables are ranked in ascending or descending order (Glantz 2005:296). Comparison of acculturation and ethnic identity revealed a statistically significant correlation, but the coefficient was small, indicating only a modest degree of association. Therefore, the data do not indicate that they are equivalent cultural constructs.

European/Indian pairing has occurred since the earliest colonists arrived, and mestizos are the predominant genetic category in Mexico. Inter-connectedness among Europeans, Indians and mestizos dates back so far that a concept of a “pure” ethnic cultural category is untenable, just as genetic mixing invalidates any biological “purity.” At present, these socially and geographically marginalized Indians have more in common with mainstream mestizos than differences from them. Therefore, these survey findings are not surprising. The bicultural status that Baja California Indian women manifest could contribute to their sense of marginalization, as this phenomenon has been described for northern Midwest U.S. and south central Canada Indian women, for whom it seemed related to distrust of biomedicine—they seemed to associate practitioners with oppressors—with potential detriment to their health (Dodgson and Struthers 2005).

Medical Anthropological Theories

Many applied medical anthropologists collaborate with biomedical practitioners. The latter typically rely more on their concepts of evidence-based principles than theoretical concerns in praxis, while applied anthropologists attempt to remedy weaknesses in the biomedical paradigm to improve illness management. Summarizing theoretical perspectives in medical anthropology is complicated by variation in theory categorization by authorities writing at similar times and by indistinct boundaries, particularly claims by proponents of an approach that it is broader or lacks the deficiencies ascribed to it by supporters of other theories (Baer et al. 2003:31-54; Brown
et al. 1998:10-19; Hahn 1995:57-75). Notably, stalwart advocacy of individual approaches is giving way to integrated frameworks, as the following discussion indicates.

Functionalism and structuralism initially guided medical anthropologists (Anderson 1996:129-153); subsequently, ecological perspectives, interpretive/symbolic theory and political economy have influenced theory building. Theories often have complementary roles in forming a useful framework of understanding, depending on the problem at hand. Human (medical) ecology is based on adaptation, either biological or cultural (Baer et al. 2003; McElroy and Townsend 1996; Sutton and Anderson 2004). The biomedical/epidemiological aspects of this approach have had particular usefulness in explaining change in gene frequencies and associated disease; for example, the association between sickle cell anemia and malaria resistance. However, because this framework considers illness as part of nature and apart from culture, it could minimize social structural factors; for example, Baer et al. (2003:34-35) maintain that the Tasmanians disappeared not simply due to maladaptation to introduced Old World diseases but largely because British colonists exterminated them. Interpretive and symbolic approaches have helped explain traditional healing rituals, but they have also acquainted biomedical practitioners with the practical usefulness of explanatory models, illness meanings and the cultural construction of illness (Kleinman et al. 1978; Kleinman 1979). To proponents of critical medical anthropology (CMA), the ultimate influences on illness are social, especially political and economic power differentials, not the proximate forces in the natural environment that are paramount to medical ecologists. The historical facts of European colonization and Indian annihilation may also have an important role. BraveHeart and DeBruyn (1998) emphasized their “unresolved grief” that is transmitted across generations and resembles that of Jewish Holocaust survivors and descendents of other inter-ethnic violent conflicts (Volkan 1997).

CMA, the “brash left wing of medical anthropology” (Baer et al. 2003:37), has writings that “read like political arguments as well as scientific analyses” (Hahn 1995:74) and, according to anthropologist-psychiatrist Arthur Kleinman (1995:91), implicate health care workers “as working with bad faith or false consciousness, mystifying the political reality via medical applications.” The CMA viewpoint that biomedical practitioners focus too much on disease and not enough on underlying non-biological
factors may fail to fully appreciate the practitioner’s challenges and limitations, as stated by Eisenberg and Kleinman (1981:18): “The patient who seeks help from the doctor is today’s victim, not salvageable by tomorrow’s hoped-for reform. His or her distress will not be put right by injunctions for political action.”

However, anthropologist-physician Paul Farmer (2003) admirably combines an intense devotion to caring for impoverished residents of developing countries, particularly those suffering from infectious disease such as multidrug-resistant tuberculosis (Kidder 2003), while countering powerful political and economic factors. His biomedical care and striving for social justice privileges CMA principles and is consistent with previous calls for biomedical integration of various levels of phenomena in understanding and managing illness, such as Engel’s biopsychosocial model (1977) and “vertical reasoning” by practitioners (Anderson 1996:34-42; Blois 1988). Few people have his ability and dedication to do both of these things.

Theory integration is also reflected by CMA proponents’ schematic representation of multiple levels ranging from the capitalist world system to psychobiological influences and the patient’s response to illness (Baer et al. 2003:39), recalling Fábrega’s (1975), Engel’s (1977), and Kleinman and his colleagues’ (1978) holistic approaches about three decades ago. That recent theory is not completely new is further reflected by the “biocultural synthesis” (Armelagos et al. 1992; Goodman and Leatherman 1998), which integrates models that emphasize ecological and social factors. This framework views the political economic concerns of CMA as cultural forces that influence biological disease factors and the resulting illness experience (Singer 1992). The need to study illness holistically makes medical anthropology an ideal arena for the application of this perspective.

It is clear to me that that significant biological, ecological, cultural, and socioeconomic factors determine Baja California Indians’ state of health and their illness-related behaviors. Furthermore, the history of oppression of American Indians, as emphasized by Adelson (2005), BraveHeart and DeBruyn (1998), Fleuriet (2003a), Walters and Simoni (2002), Weiner (1993a) and others, affects Indians’ behavior. Figure 2 schematically depicts how some of these factors can be viewed to cause illness and affect related behavior and outcome within a “biocultural synthesis” framework.
Biological (dietary, lifestyle and genetic), socioeconomic (social services, family coherence and biomedical care accessibility), and ecological (water, sanitation, housing and air quality) contribute strongly to illness. Cultural (biomedical knowledge and beliefs, illness causation concepts, ethnobotanical practice and use of traditional therapists) and historical (annihilation, forced assimilation, geographical and social marginalization and oppression) influence both illness acquisition and illness-related behavior. Therefore, multiple interacting factors affect illness and health outcome.

Non-Biomedical Illnesses and Embodiment

The concept of “folk illness” (“culture-bound syndrome”) is well represented by Rubel’s (1964) classical paper on the archetypical disorder, susto. Usually translated as “soul loss” or “magical fright,” he described people assuming a sick role with insomnia, fatigue, poor appetite and other symptoms that could not be explained with the biomedical paradigm. Believers hold that a person has a corporeal body and one or more immaterial souls or spirits that may leave the body and move about, especially when the person is asleep and dreaming. Rubel wrote that victims “elect the susto syndrome” (1964:282) when intra-cultural social stresses (not those of socialization into another culture) interfere with meeting their society’s expectations and, as a result, they lose their souls. Under similar circumstances, other people have personalities that enable them to adapt without suffering susto or by maladapting in other ways.

However, Hahn wrote, “the idea of culture-bound syndromes is a conceptual mistake…” (1995:40-41), as it promotes a nature/culture dichotomy; that is, an exclusionist interpretation that some illnesses are culture-bound and others are not. More inclusive interpretations conceptualize illness on a nature-culture continuum or postulate that all illnesses are equally biological, sociocultural and psychological. In concert with such views, it makes sense to regard low/variable blood pressure, susto, and empacho as non-biomedical illnesses rather than “culture-bound.” In the absence of a biomedical analogue, they can be understood though embodiment.

Social scientists propose that people “embody” the lived experiences in their social and ecological environments. This perspective requires us to reject the mind/body dichotomy. Embodiment can be viewed theoretically through conceptualizing the
“mindful body” of Scheper-Hughes and Lock (1987), which allow us to “put minds back in bodies, bodies back in minds, and society back into bodies” (Williams and Bendelow 1998:209) or the body “as the subject of culture” (Csordas 1990:5). For example, the body: 1) becomes inscribed with certain clothing, ornamentation and other signifiers of an individual’s world; 2) generates thoughts and emotions that are culturally constructed; and 3) manifests distress through sickness as cultural performance (Lock 1993).

Integral to this view is the concept that the “mindful body” is subject to three levels of analysis: 1) the individual body (lived self) as associated with the mind (in opposition to Cartesian dualism), 2) the social body in which structuralist and symbolic manifestations or metaphors for social factors are “embodied” as illness, and 3) the body politic, a dynamic concept of societal control of the body (Scheper-Hughes and Lock 1987). Low (1994) theorized some illness as “embodied metaphors”; for example, the nervios (nerves) reported in many societies that she explains is expressed in metaphoric language, such as “shaking like a leaf.” The powerful influence of social inequities on the body fits this view well into the CMA emphasis on political economy and its impact on agency at lower socio-economic levels; that is, the brutality of “structural violence” on people throughout the world (Farmer 2003). On the other hand, DiGiacomo (1992) stirs controversy into the “mindful body” concept with an abstruse argument that the perspective is actually based too much in biomedical duality by ignoring the ill person’s own narrative. Regardless of how such dueling abstraction evolves, I think Baja Indians, as do aboriginal Canadians (Adelson 2005), embody their history of oppression and continuing social inequities as illness.

Furthermore, Dressler and Bindon (2000) developed a framework based on consensus modeling as a method of making operational the embodiment of structural inequalities. Specifically, this model depicts embodiment as reflecting individuals’ manifestation of the distance they perceive themselves to be from locally defined cultural ideals. For example, Dressler and Brindon (2000:244) accounted for 10% to 20% of otherwise unexplained variation in blood pressure between African Americans and European Americans as the internalization of the stress of inequality. However, important biological, ecological, socioeconomic and historical factors could be under-appreciated from this theoretical viewpoint.
Discussions about the embodiment of existential stress as illness can raise concern about “medicalizing” life in its various forms (Nye 2003). For example, Illich (1976) described the “expropriation of health” from the individual through dependence on the exaggerated benefits of biomedicine to ameliorate the pain that is inherent in the human condition. Such a view could blame individuals for irresponsibly not caring for themselves, discourage them from seeking proper care, and minimize the ecological and social contributors to illness. Psychological disorders that lack a biological marker (e.g., infectious agent or anatomical change) are especially subject to this risk, and the call for judicious consideration of these effects on patients by mental health workers (Chodoff 2002) seems equally applicable to the population studies of anthropologists and epidemiologists. In particular, it should be emphasized that in biomedical contexts the process of medicalization is changing, as the role of practitioners is now subordinated by the influences of biotechnology (e.g., pharmaceutical companies and their drug promotion), consumers (e.g., the demand of U.S. residents for perfect health), and organizational change (e.g., U.S. managed care) (Conrad 2005).

Biomedical practitioners coined the term “somatization” for the reporting of somatic symptoms that have no pathophysiological explanation (Barsky and Borus 1995). These symptoms have socio-cultural and psychological determinants and, therefore, could be considered within the embodiment concept; however, embodiment is a broader framework for understanding all illness, whether due to demonstrable biological abnormalities or not. Lock (1993:1420) argues that the biomedical concept of somatization is a “pathologizing approach” that medicalizes embodied symptoms. She acknowledges neither the rejection of mind/body dualism by many practitioners nor the main reason patients go to doctors: to feel better. Although the practitioners are often limited in relieving symptoms, they often have even less ability to alter patients’ living circumstances that contribute to illness (Eisenberg and Kleinman 1981:18). Singer clearly implies an overlapping meaning of these terms: “social conflict and oppressive experience are somatized or embodied in illness” (1998:105).

Krieger (2005:350) simplifies the embodiment concept of the simultaneous biological and social composition of people by stating succinctly how bodies “tell stories” that reveal the social patterning of health:
“bodies tell stories about—and cannot be studied divorced from—the conditions of our existence; bodies tell stories that often—but not always—match people’s stated accounts; and bodies tell stories that people cannot or will not tell, either because they are unable, forbidden, or choose not to tell.”

Thus, embodiment theory explains to biomedical practitioners the symptoms and illness self-reports that they are unable to fit within the less inclusive biomedical model, gives to bodily representations a communicative ability that may exceed that of speech and laboratory and radiological test results, and points to the multiple levels of intervention that may be required to comprehensively prevent and manage illness.

**SURVEY STRENGTHS AND WEAKNESSES**

This survey exemplifies the recommendation of Hahn and Kleinman (1983) for integration of anthropological and biomedical techniques in research, especially ethnography and epidemiology. I relied on Fleuriet’s (2003a, 2003b) ethnographic work—she also used the epidemiological technique of standardized interviews—to identify specific areas of inquiry that appeared to have cultural relevance to the population. I met the epidemiological standard of surveying a high percentage of the studied population, obviating the need to select a representative sample. Employment of community natives to do the face-to-face interviews circumvented the cultural and language barriers that I would have encountered trying to conduct them myself. The standardized questionnaire contained open-ended questions where I did not want to limit participants’ answers and forced-choice questions where I investigated their endorsement of specific matters. I minimized errors by checking the research assistant’s data entry of all questionnaires. An expert statistician helped with data processing and analysis.

However, extensive Indian intermarrying among the tribes and with other Mexicans complicates ethnic identification by ancestry. The tribal affiliations are primarily associated with communities of residence, which comprise small parts of their traditional living areas. In addition to genetic mixing, Indian cultural features have been influenced since European contact—and by other tribes before that—so acculturation has
a long history with both inter- and intra-tribal variation. Ethnic identity can change over time, depending on sociopolitical contexts, as manifested by the Chumash of California (Haley and Wilcoxon 2005). Therefore, multiple factors call into question the ethnic categorization of the participants. Since the promotores interviewers were promoters of biomedical health and sanitation policies and members of the social networks of some respondents, the participants could have been biased to give answers they that thought were most acceptable to them. I did not directly supervise the promotores nor assess the accuracy of their work; for example, by comparing questionnaires completed by multiple interviewers from the same participants. Also, the reliability of participants was not measured, by comparing two questionnaires completed on individual participants by the same interviewer. The Juntas de Nejí promotores were males, but females surveyed the other communities; therefore, the responses of the 25 (8.0%) women surveyed by males could have differed from how they would have responded to females.

Most of the reported illnesses are biomedical entities, and the basis for the women’s reporting (e.g., laboratory evidence of diabetes versus symptoms attributed to the disease) and validity of physician diagnoses are unknown. The meaning to the women of reported symptoms is also unknown; for example, Anglos variously consider diarrhea to be increased stool frequency or reduced stool form. Although the non-biomedical illnesses reported (low/variable blood pressure, empacho and susto) have established symptom correlates in the groups surveyed, heterogeneity could affect the particular meaning to each participant. Questions about what forms of treatment are most effective, what symptoms call for a physician visit, the value of immunizations, and other such questions do not measure what the women actually do. The preliminary depression questions (items 29 and 30) were not validated in the population, and it is uncertain whether the items have valid cultural transfer. Even in validated populations, they only suggest depression; additional information is needed for more certain diagnosis.

CHAPTER 5

Extensive self-reported data on illnesses reveal that many Baja California Indians suffer poor health. Their social arrangements underlie their health problems and the pluralistic therapies they employ. The study raises a number of questions, some of which
call for additional anthropological research, which could guide additional epidemiological investigation. Expanded use of promotores and increasing the Indians’ and practitioners’ awareness of the possibility of depression among the people could be beneficial.

**CONCLUSIONS**

Baja California Indians suffer poor health due to historical, biological, ecological, cultural and socioeconomic factors. Their pluralistic concepts of illness and healing embrace both biomedical and non-biomedical principles, but they have very poor access to modern health care, and they rely extensively on traditional therapy, especially for childhood illnesses. Their biomedical knowledge varies from high to low, depending on the issue, and there is inter-community variation. Preliminary data suggest that the common non-biomedical illness, low/variable blood pressure, is a socially constructed illness that signals depression, which can be regarded anthropologically as an embodiment of their distressed lives or biomedically as somatization of mental distress in response to their harsh existence.

**QUESTIONS**

This study raises many questions, including:

1) What are the symptoms upon which Baja California Indians base specific illness labeling? For example, are cold/flu, cough and bronchitis different names for the same symptoms?

2) Do concepts of illness causation differ for adult and childhood illnesses? If so, does this explain the increased use of herbal therapy for children? Is this botanical therapy preference more related to the acute nature of most childhood illnesses and need for more prompt care than is accessible through biomedicine?

3) Is there a scientific basis for their botanical therapy?

4) How can the Indians be engaged to regard obesity and related aspects of the metabolic syndrome as illness, even if they have no symptoms, and induced to manage them, given the barriers to dietary change and biomedical care?

5) What is their concept of depression? Is it socially acceptable for discussion?
6) Why did the women report virtually no gynecological symptoms to predominantly female interviewers?
7) Would group therapy, perhaps involving storytelling (Gittelsohn et al. 1996, Hodge et al. 2002), help them manage chronic illness?
8) How can they be best motivated and helped to at least partially resume their traditional hunter-gatherer diet and exercise habits for health benefits?

RECOMMENDATIONS

Because the *promotores*, working with CUNA, have advanced the people’s well being and it seems unlikely that substantially improved access to Mexican physicians will occur soon, an increased role for the *promotores* should be considered. This could include additional training with specific guidelines for management of common illnesses, such as diabetes and hypertension. They could also maintain a supply of over-the-counter remedies for common disorders, such as decongestants for flu/cold and oral rehydration solution for diarrhea. They could possibly further bridge the cultural gap that might confront biomedical practitioners—if any were available—in managing various illnesses. Learning about how the women manifest depression (e.g., how many people reporting low/variable blood pressure are depressed) could be particularly valuable.

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Bigby, JudyAnn


Blois, Marsden S.


Boscana, Geronimo


BraveHeart M.Y., and L.M. DeBruyn


Brislin, Richard W., Walter J. Lonner, and Robert M. Thorndike


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Engel, George L.

Fábrega Jr., Horacio.

Fagan, Brian

Farmer, Paul

Finkler, Kaja

Fleuriet, Kathryn J.


Fontanoz, Marisa Ada

Ford, Karen Cowan

Foster, George M

Fraser, David W.

French, J., and B. Raven

Geertz, Clifford


Glantz, Stanton A.

Goddard, Ives

Good, Mary-Jo DelVecchio, and Byron J. Good

Goodman, Alan H., and Thomas L. Leatherman

Hafferty, F.W.

Hahn, Robert A.


Hahn, Robert. A., and Arthur Kleinman

Haley, Brian D., and Larry R. Wilcoxon

Hedges, Ken

Heizer, Robert F.
Hodge, Felicia, Anna Pasqua, Carol A. Marquez, and Betty Geishirt-Cantrell

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Illich, Ivan

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Jonas, Wayne B.

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Kay, Margarita


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Kidder, Tracy

Kleinman, Arthur


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McElroy, Ann and Patricia K. Townsend

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Muller, Jessica H.

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Nader, Laura

Nye, Robert A.

O’Keefe, James H., and Loren Cordian
O’Neil, Dennis H.

Owen, R. C.

Pachter, Lee M.

Piquemal, Nathalie

Polk, Michael R.

Preston, W.

Rivas, Heriberto García

Rojas, G., J. Levaro, J. Tortoriello, and V. Navarro

Rubel, Arthur J.

Rustad, Jennifer

SAS/STAT

Scheper-Hughes, Nancy, and Margaret M. Lock

Shipek, Florence C.

Shipley, William F.

Singer, Merrill


Sobo, Elisa J., and Michael Seid

Spier, Leslie

Strathern, Andrew, and Pamela J. Stewart

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Whooley, Mary A., and Gregory E. Simon

Wilken Robertson, M.

Williams, Simon J. and Gillian Bendelow
Table 1. Common Adult Illnesses and Perceived Effective Treatments—All Communities (n = 313)

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*Diabetes: diet (3), *nopal* (prickly pear) (3), exercise (1); hypertension: exercise (6), *baños* amarillos (inhaling vaporized water) (1); high cholesterol: diet (1), exercise (1), *nopal* (1); dehydration: liquids (1); cataracts, oculist (2); anemia: vitamins (1); malnutrition: liquids (1); ulcers, diet (1); *empacho: aceite y anil* (commercial product) (1); hepatitis: diet (1).

Table 2. Most Common Adult Illnesses—By Community (n = 313)

<table>
<thead>
<tr>
<th>San José de la Zorra (n = 37)</th>
<th>Juntas de Neji (n = 25)</th>
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<tr>
<td>Diabetes (36)</td>
<td>Diabetes (19)</td>
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<td>Cold/flu (29)</td>
<td>Hypertension (18)</td>
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<td>Diarrhea (14)</td>
<td>High cholesterol (18)</td>
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<td>Tuberculosis (8)</td>
<td>Gastritis (3)</td>
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<td>Pneumonia (3)</td>
<td>Cold/flu (3)</td>
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<table>
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<th>San Anotnio Necua (n = 32)</th>
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<td>Hypertension (17)</td>
<td>Diabetes (15)</td>
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<tr>
<td>High cholesterol (9)</td>
<td>Cold/flu (13)</td>
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<td>Cold/flu (9)</td>
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<td>Low/variable blood pressure (7)</td>
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Table 3. Common Childhood Illnesses and Perceived Effective Treatments—All Communities (n = 285)

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</tr>
<tr>
<td>Kidney problem, 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprains, 1</td>
<td>1</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Cold/flu: Warm water foot bath (1); diarrhea: suero (rehydration solution) (4), water (3), cold coffee with lemon (1); fever: baños marias (breathe vaporized water) (6); empacho: aceite y anil (commercial product) (2), dehydration, liquids (1); malnutrition: vitamins (2).
Table 4. Five Most Common Childhood Illnesses—By Community (n = 285)

<table>
<thead>
<tr>
<th>Community</th>
<th>Illnesses</th>
</tr>
</thead>
</table>
| **San José de la Zorra** (n = 38) | Cold/flu (27)  
Empacho (21)  
Diarrhea (17)  
Bronchitis (2) |
| **San Antonio Necua** (n = 31)   | Diarrhea (31)  
Cough (17)  
Cold/flu (14)  
Fever (7)  
Bronchitis (3) |
| **Santa Catarina** (n = 143)     | Diarrhea (n = 132)  
Cold/flu (n = 121)  
Bronchitis (n = 88)  
Cough (n = 29)  
Leg pain (6) |
| **Juntas de Nejí** (n = 22)      | Cold/flu (15)  
Diarrhea (10)  
Fever (8)  
Cough (7)  
Amebas (5) |
| **La Huerta** (n = 20)           | Diarrhea (16)  
Cold/flu (14)  
Cough (9)  
Sore throat (8)  
Dehydration (3)  
Ear pain (3) |
| **Kiliwas** (n = 31)             | Cold/flu (n = 27)  
Diarrhea (21)  
Cough (15)  
Dehydration (10)  
Fever (5) |

*Only 4 illnesses reported*
Table 5. Botanical Therapy* And Illnesses Treated (n = 198)

<table>
<thead>
<tr>
<th>Spanish name**</th>
<th>English name</th>
<th>Scientific name</th>
<th>Illness (n)***</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aguacate</em></td>
<td>Avocado</td>
<td><em>Persea</em> sp.</td>
<td>C-Diarrhea (7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C-Empacho (1)</td>
</tr>
<tr>
<td><em>Añil</em></td>
<td>Indigo</td>
<td><em>Indigo suffruticos</em></td>
<td>C-Empacho (2)</td>
</tr>
<tr>
<td>(in oil, commercial)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Alpiste</em></td>
<td>Canary seed</td>
<td><em>Phalaris canariensis</em> L.</td>
<td>A-Hypertension (2)</td>
</tr>
<tr>
<td><em>Barbas de elote</em></td>
<td>Corn silk</td>
<td><em>Zea mays</em></td>
<td>C-Diarrhea (3)</td>
</tr>
<tr>
<td><em>Cañutillo</em> (N)</td>
<td>Mormon tea</td>
<td><em>Ephedra californica</em> S. Wats.</td>
<td>U-Kidney problem (9)</td>
</tr>
<tr>
<td><em>Cholla</em> (N)</td>
<td>Cholla</td>
<td><em>Opuntia parryi</em> Engelm.</td>
<td>A-Cholesterol (2)</td>
</tr>
<tr>
<td>Root (tea)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Epasote</em></td>
<td>Wormseed</td>
<td><em>Chenopodium ambrosioides</em> L.</td>
<td>C-Diarrhea (3)</td>
</tr>
<tr>
<td><em>Estafiate</em> (N)</td>
<td>Tarragon</td>
<td><em>Artemisia Dracunculoides</em> L.</td>
<td>A-Gastritis (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A-Gallbladder problem (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C-Diarrhea (1)</td>
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<tr>
<td><em>Eucalipto</em></td>
<td>Eucalyptus</td>
<td><em>Eucalyptus</em> (Myrtaceae)</td>
<td>A-Diabetes (1)</td>
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<td></td>
<td>A-Hypertension (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A-Cough (1)</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>C-Cough (2)</td>
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<td></td>
<td>A-Gastritis (1)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>C-Cold/flu (1)</td>
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<tr>
<td><em>Gobernadora</em> (N)</td>
<td>Creosote bush</td>
<td><em>Larrea divaricata</em></td>
<td>A-Diabetes (1)</td>
</tr>
<tr>
<td>Root, branch, bark (tea)</td>
<td></td>
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<tr>
<td><em>Gordolobo</em> (N)</td>
<td>Cudweed</td>
<td><em>Gnaphalium</em></td>
<td>A-Cold/flu (4)</td>
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<td>C-Cold/flu (6)</td>
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<td>U-Cold/flu (1)</td>
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<td>U-Pharyngitis (1)</td>
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<td>A-Cough (4)</td>
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<td>C-Cough (20)</td>
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<td>U-Cough (1)</td>
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<td></td>
<td></td>
<td>C-Fever (1)</td>
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<tr>
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<td></td>
<td>U-Diabetes (1)</td>
</tr>
<tr>
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<td>Scientific Name</td>
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<tr>
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<tr>
<td><em>Guata</em> (N)</td>
<td>Bark (tea)</td>
<td><em>Juniperus californica</em></td>
<td>A-Asthma (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C-Diarrhea (1)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>U-Kidney problem (1)</td>
</tr>
<tr>
<td><em>Hierba buena</em></td>
<td>Spearmint</td>
<td><em>Mentha spicata</em></td>
<td>A-Diarrhea (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A-Amebas (1)</td>
</tr>
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<td>C-Diarrhea (13)</td>
</tr>
<tr>
<td></td>
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<td>C-Empacho (2)</td>
</tr>
<tr>
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<td>C-Amebas (1)</td>
</tr>
<tr>
<td><em>Hierba vaca</em></td>
<td>Bricklebush</td>
<td><em>Briellia californica</em></td>
<td>A-Diabetes (1)</td>
</tr>
<tr>
<td>Leaf or bark (tea)</td>
<td></td>
<td></td>
<td>C-Cold/flu (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>U-Cold/flu (1)</td>
</tr>
<tr>
<td><em>Hierba mansa</em> (N)</td>
<td>Lizard tail</td>
<td><em>Anemopsis californica</em></td>
<td>A-Arthritis (5)</td>
</tr>
<tr>
<td>Root (tea, foot bath)</td>
<td></td>
<td></td>
<td>C-Bronchitis (1)</td>
</tr>
<tr>
<td><em>Hierba mora</em></td>
<td>Nightshade</td>
<td><em>Solanium nigrum L.</em></td>
<td>A-Low/variable blood pressure (1)</td>
</tr>
<tr>
<td><em>Hierba salvia</em> (N)</td>
<td>White sage</td>
<td><em>Salvia apiana Jeps.</em></td>
<td>A-Cold/flu (2)</td>
</tr>
<tr>
<td>Leaf or root (tea)</td>
<td></td>
<td></td>
<td>A-Diarrhea (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A-Cough (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C-Bronchitis (1)</td>
</tr>
<tr>
<td><em>Hierba santa</em> (N)</td>
<td>Narrowleaf</td>
<td><em>Eridictyon agustifolium Nutt.</em></td>
<td>C-Bronchitis (1)</td>
</tr>
<tr>
<td></td>
<td>yerba santa</td>
<td></td>
<td>C-Cough (1)</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>C-Cold/flu (1)</td>
</tr>
<tr>
<td><em>Limón</em></td>
<td>Lemon</td>
<td><em>Citrus limon. Burm.</em></td>
<td>C-Cold/flu (7)</td>
</tr>
<tr>
<td><em>Locuate</em></td>
<td>Loquat</td>
<td><em>Eriobotrya japonica</em></td>
<td>A-Diabetes (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A-Hypertension (1)</td>
</tr>
<tr>
<td><em>Manubrio</em></td>
<td>?</td>
<td>?</td>
<td>A-Diabetes (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A-Hypertension (2)</td>
</tr>
<tr>
<td><em>Manzanilla</em> (N)</td>
<td>Manzanita</td>
<td><em>Matricaria matricariodes (Less.)</em></td>
<td>C-Cold/flu (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C- Stomach pain (1)</td>
</tr>
<tr>
<td><em>Mezquite</em> (N)</td>
<td>Mesquite</td>
<td><em>Prosopis sp.</em></td>
<td>U-Headache (1)</td>
</tr>
<tr>
<td>Leaf (bath)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><em>Nopal</em> (N)</td>
<td>Prickly pear</td>
<td><em>Opuntia leptocaulis</em></td>
<td>A-Diabetes (13)</td>
</tr>
<tr>
<td>Plant</td>
<td>Part Used (tea)</td>
<td>Scientific Name</td>
<td>Uses</td>
</tr>
<tr>
<td>-----------------</td>
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<td>-----------------------------------</td>
</tr>
<tr>
<td>Olivo</td>
<td>Olive tree</td>
<td><em>Olea europea</em></td>
<td>A-Cholesterol (2), A-Malnutrition (1), A-Hypertension (10), A-Diabetes (4), A-Low/variable blood pressure (1), A-Pharyngitis (2)</td>
</tr>
<tr>
<td>Orégano (N)</td>
<td>Mexican oregano</td>
<td><em>Lippia sp.</em></td>
<td>C-Cough (3), C-Diarrhea (1), C-Cold/flu (1)</td>
</tr>
<tr>
<td>Papaya</td>
<td>Papaya</td>
<td><em>Carica papaya</em></td>
<td>C-Amebas (1)</td>
</tr>
<tr>
<td>Pionilla</td>
<td>?</td>
<td>?</td>
<td>C-Amibas (2), C-Stomach pain (1)</td>
</tr>
<tr>
<td>Salvia real</td>
<td>Butterflybush</td>
<td><em>Buddleja perfoliata</em> H.B.K.</td>
<td>C-Cough (6), C-Bronchtis (1), C-Diarrhea (1), C-Fever (1), C-Cold/flu (4)</td>
</tr>
<tr>
<td>Sauco</td>
<td>Blue elder</td>
<td><em>Sambucus nigra</em></td>
<td>A-Diabetes (1), C-Fever (19), C-Cold/flu (2)</td>
</tr>
<tr>
<td>Valeriana</td>
<td>Valerian</td>
<td><em>Valeriana officinalis</em></td>
<td>A-Stomach pain (1), C-Diarrhea (3)</td>
</tr>
</tbody>
</table>

*English and scientific names and some information on plant parts used from: Almstedt 1977; Kay 1996; Fleuriet 2003b; Ford 1975; Owens 1962; Rivas 1988; Shipek 1991; United States Department of Agriculture 2006.***

**N = native. Unless otherwise indicated, an infusion (tea) is made from the leaves.**

***A = adults, C = children, U = unspecified life stage***
Table 6. Illnesses And Usual Treatment, Physician Versus Traditional—All Communities

<table>
<thead>
<tr>
<th>Physician</th>
<th>Traditional Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>High cholesterol (131)</td>
<td>Low/variable blood pressure (77)</td>
</tr>
<tr>
<td>Diabetes (89)</td>
<td>Diabetes (76)</td>
</tr>
<tr>
<td>Hypertension (26)</td>
<td>Cold/flu (11)</td>
</tr>
<tr>
<td>Cancer (21)</td>
<td>Sprains (11)</td>
</tr>
<tr>
<td>Tuberculosis (4)</td>
<td>Empacho (10)</td>
</tr>
<tr>
<td>Pneumonia (2)</td>
<td>Kidney problem (10)</td>
</tr>
<tr>
<td>Amebas (2)</td>
<td>Cough (8)</td>
</tr>
<tr>
<td>Asthma (2)</td>
<td>Fever (8)</td>
</tr>
<tr>
<td>AIDS (1)</td>
<td>Hypertension (8)</td>
</tr>
<tr>
<td>Cold/flu (1)</td>
<td>Diarrhea (6)</td>
</tr>
<tr>
<td>Cough (1)</td>
<td>Muscular pain (6)</td>
</tr>
<tr>
<td>Dehydration (1)</td>
<td>Caida de mollera (3)</td>
</tr>
<tr>
<td>Diarrhea (1)</td>
<td>Arthritis (1)</td>
</tr>
<tr>
<td>Nerve problem (2)</td>
<td>Foreign disease (1)</td>
</tr>
<tr>
<td>Heart disease (1)</td>
<td>Headache (1)</td>
</tr>
<tr>
<td>Kidney problem (1)</td>
<td>High cholesterol (1)</td>
</tr>
<tr>
<td>Low/variable blood pressure (1)</td>
<td>Insect bites (1)</td>
</tr>
<tr>
<td>Thyroid disease (1)</td>
<td>Stomach infection (1)</td>
</tr>
<tr>
<td>Vaginal infection (1)</td>
<td>Susto (1)</td>
</tr>
<tr>
<td></td>
<td>Urine infection (1)</td>
</tr>
<tr>
<td></td>
<td>Witchcraft (1)</td>
</tr>
</tbody>
</table>

*Illnesses in bold were reported to have only one type of treatment.
<table>
<thead>
<tr>
<th>Community</th>
<th>Physician</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>San José de la Zorra (n = 0)</td>
<td>Diabetes (18), Cancer (4), Hypertension (3)</td>
<td>Empacho (9), Fever (6), Caida de mollera (3)</td>
</tr>
<tr>
<td>Juntas de Nejí (n = 23)</td>
<td>Diabetes (16), Hypertension (6), Cancer (5)</td>
<td>Cold/flu (7), Cough (5), Fever (2)</td>
</tr>
<tr>
<td>San Antonio Necua (n = 22)</td>
<td>Diabetes (6), Hypertension (6), Cancer (4)</td>
<td>Muscular pain (6), Nerve problem (2), Sprains (1)</td>
</tr>
<tr>
<td>La Huerta (n = 11)</td>
<td>High cholesterol (112), Diabetes (62), Cancer (8)</td>
<td>Diabetes (102), Low/variable B.P. (72), Sprains (11)</td>
</tr>
<tr>
<td>Santa Catarina (n = 158)</td>
<td>Diabetes (25), High cholesterol (11), Hypertension (7)</td>
<td>Cold/flu (2), Diarrhea (2), Witchcraft (1), Foreign disease (1), Hypertension (1), Pain (1)</td>
</tr>
<tr>
<td>Kiliwas (n = 26)</td>
<td>Diabetes (25), High cholesterol (11), Hypertension (7)</td>
<td>Cold/flu (2), Diarrhea (2), Witchcraft (1), Foreign disease (1), Hypertension (1), Pain (1)</td>
</tr>
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</table>
Table 8. Illnesses Causes

<table>
<thead>
<tr>
<th>Cause</th>
<th>SJZ* (n = 40)</th>
<th>Nejí (n = 25)</th>
<th>Necua (n = 31)</th>
<th>La Huerta (n = 19)</th>
<th>SC** (n = 161)</th>
<th>Kiliwas (n = 31)</th>
<th>Total (n = 307)</th>
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<tbody>
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<td><strong>Non-biomedical</strong></td>
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<td>Others’ bad thoughts</td>
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<td>Sadness</td>
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<td>12</td>
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<td><em>Susto</em></td>
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<td>Alcohol</td>
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<td>32</td>
<td>18</td>
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<td>Aspirin every day</td>
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<td>Bacteria</td>
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<td>22</td>
<td>27</td>
<td>16</td>
<td>143</td>
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<td>Dirty water</td>
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<td>22</td>
<td>30</td>
<td>19</td>
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<td>Fatty food</td>
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<td>18</td>
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<td>Lack of immunization</td>
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<td>32</td>
<td>18</td>
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<td>Smoking</td>
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*San José de la Zorra, ** Santa Catarina, ***Both informants reported “drugs” (biomedical cause).
Table 9. Biomedical Knowledge/Beliefs

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<tr>
<th></th>
<th>SJZ* n (%)</th>
<th>Neji n (%)</th>
<th>Necua n (%)</th>
<th>La Huerta n (%)</th>
<th>SC** n (%)</th>
<th>Kiliwas n (%)</th>
<th>Total n (%)</th>
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<td>Bloody diarrhea with fever</td>
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A Child With Diarrhea Should Drink

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<th>SJZ* n (%)</th>
<th>Neji n (%)</th>
<th>Necua n (%)</th>
<th>La Huerta n (%)</th>
<th>SC** n (%)</th>
<th>Kiliwas n (%)</th>
<th>Total n (%)</th>
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<tbody>
<tr>
<td><strong>More liquids</strong></td>
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<td>24 (100)</td>
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Table 10. Medical History

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<th>SJZ* n (%)</th>
<th>Neji n (%)</th>
<th>Necua n (%)</th>
<th>La Huerta n (%)</th>
<th>SC** n (%)</th>
<th>Kiliwas n (%)</th>
<th>Total n (%)</th>
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<td>n = 302</td>
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<td>0</td>
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<th>n = 27</th>
<th>n = 19</th>
<th>n = 164</th>
<th>n = 31</th>
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