Efficacy of Alternative Medicine: Biomedical Hegemony

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Abstract:
Complementary or Alternative medicine (CAM) in western societies has been susceptible to the influence of the dominant biomedical health care system. In many ways, the biomedical model of thinking has affected alternative medicine, especially on evaluating the efficacy of the practice. There is no singular view of efficacy, neither is there a universal standard in approaching efficacy. Biomedicine, taking a scientific approach in looking at efficacy, demands an “efficacy” with standardized and systematic scientific protocols. Despite the methodological incompatibility with alternative medicine’s underlying philosophy and the nature of its practice, biomedical “efficacy” has achieved its dominance. Through the analysis of selected articles, this paper intends to investigate the embedded biomedical hegemony in evaluations of the efficacy of alternative medicine.

Introduction:
The United States, like many other western societies, is a society of medical pluralism. Besides the dominant biomedical health care practice, there are many other non-conventional health care practices. Those health care practices are referred to as complementary or alternative medicine (CAM) from a biomedical perspective. The cultural authority of the science-based biomedical health care model places other medical practice in the category of “un-scientific.” Recently, the use of alternative medicine has gained in popularity. A study conducted in the U.S.in 2002 reveals that 62% of adults used alternative medicine in the past year (Barnes et al., 2004). Despite its soaring popularity, the efficacy of the alternative medicine remains questionable from the perspective of science and biomedical practice. Various researchers have
advocated the scientific evaluation of alternative medicine to ensure its quality (Patel, 1987, Jäger, 2005, and Gbodossou, 2000).

To establish cultural legitimacy in a society dominated by the science-based biomedicine, the assessment of alternative medicine’s efficacy must use widely accepted scientific standards. Medical scholars and physicians demand that alternative medicine needs to have enough scientific evidence or proofs in order to confirm it as effective. In the U.S. there are various government-based institutions and research centers established by medical universities encouraging and supporting the scientific evaluation of alternative medicine. The National Center for Complementary and Alternative Medicine (NCCAM) is a federal agency set up to explore alternative medicine in the context of science (NCCAM, 2010). Various courses involving alternative medicine are taught within the context of biomedicine in medical schools across the U.S. (Eisenberg, et al., 1998). Despite the fact that aspects of scientific evaluation are not compatible with some fundamental elements in alternative medicine, hundreds of research studies are published every year in the medical journals using scientific methodologies (Keshet, 2009).

Efficacy involves the change a particular act induced. Anthropologist Allen Young (1979) advocates three approaches to efficacy: empirical, scientific and symbolic. Scientific thinking is an inseparable part of the biomedical health care model. This thinking has dominated the evaluation of alternative medicine in western societies as well. The phenomenon can be well-illustrated through the concept of hegemony, a concept developed by Antonio Gramsci to describe the dominance of a way of thinking. Through analysis of selected articles, this paper intends to convey the dominance of scientific thinking in evaluating alternative medicine.
Method:

Keshet (2009) comments on the large number of research studies have been conducted in evaluating alternative medicine. This number is growing every year. In her article published in 2009, she states: “In the 1970s, an average of 46 articles per year was published. This rose to 74 in the 1980s and to 228 in the 1990s, and in the past seven years an average of 687 articles on clinical trials of CAM has been published annually” (141). The large amount of research published assessing the efficacy of alternative medicine made it impossible to analyze every single study. Those research studies have been published in various well-known medical journals and databases including Lancet and JAMA. There are also academic journals established solely to publish research about alternative medicine. For example, *Journal of Alternative and Complementary medicine* aims to publish “observational and analytical reports on treatments outside the realm of allopathic medicine which are gaining interest and warranting research to assess their therapeutic value. It includes current concepts in clinical care, including case reports that will be valuable for health care professionals and scientists who are seeking to evaluate and integrate these therapies into patient care protocols and research strategies” (Mary Ann Liebert, Inc.). I selected articles from this journal that were written by authors who are affiliated with western medical institutions and research centers. It is obvious that those authors would take a predominately biomedical position in viewing alternative medicine. However, the purpose of my study is to examine the discourse and attitudes within the biomedical field regarding the evaluation of alternative medicine. Those authors’ affiliation with western medical institutions and their faith in the scientific way of approaching medicine would provide a window to explore the hegemony of biomedical thinking in assessing alternative medicine.
Using the key words “efficacy” and “evaluation” to search within this journal, I randomly selected two articles that use random clinical trial (RCT) as the research methodology. RCTs represent the gold standard in scientific medical research. Many other clinical trial research articles have a similar layout to the two I chose. These two articles reflect the standards of the clinical trials. In addition, I also selected two articles that have to do with reforming of the methodology of medical research. One article argues for the inadequacy of the RCTs and advocates adding more qualitative data prior to conducting RCTs. The other article I found is extremely interesting. It is a transcript of the roundtable discussion of researchers and physicians who advocate the use of whole-systems research to assess the efficacy of alternative medicine. The purpose of whole-systems research is to address aspects of alternative medicinal healing which an RCT cannot sufficiently obtained, such as patient-practitioner interaction and diverse behavior-changing techniques. The participants claim that whole-systems research is able to evaluate alternative medicine holistically. Although they acknowledge the inadequacy of the conventional medical research methodology in evaluating alternative medicine and advocate thinking outside of conventional model, the participants in this roundtable discussion still feel the necessity to assess alternative medicine within a scientific context. The only credible way to establish alternative medicine’s efficacy is through systematic scientific testing.

Selected Articles:


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Analysis:

Biomedicine

Biomedicine is the mainstream medical practice in most western societies, including the United States. Its dominance and popularity in western society gives it the name “Western
medicine.” However, Kleinman (1995) reminds us that the practice of biomedicine no longer has its regional restriction to western societies. Biomedicine’s effort and commitment to introduce its practice to other parts of the world have achieved considerable success. Nowadays, one can find the practice of biomedicine in almost every corner of the world. When a system is brought to another culture or society, inevitably it cannot escape the influence of that particular indigenous culture and its belief system. There are research studies examining the processes of indigenization of biomedicine (Morsy, 1988; Finkler, 2004; Aakster, 1986). At the same time, the biomedical model of thinking has also created a prominent impact on the existing healing system in that particular culture or society (Morsy, 1988; Aakster, 1986; Naraindas, 2006; Barry, 2006). My research does not concern biomedical practice in non-western societies. It addresses the dominance of the biomedical model of thinking in western societies’ health care practice, in particular, its ideological dominance in assessing the efficacy of alternative medicine.

Kleinman (1995) also mentions other terms that have been used in place of biomedicine, such as “cosmopolitan medicine” and “allopathic medicine.” “Cosmopolitan medicine” had been used in some anthropological publications. However, the term implies that biomedical practice is restricted to cosmopolitan areas, which no longer holds true. Biomedicine has penetrated rural and other remote areas of the world as well. The term “allopathic medicine” has been largely used in regions of South Asia. Kleinman prefers to use the term “biomedicine” in his writing, for he seeks the “epistemological and ontological resonances” (25) within the term. Similar to his intention, I found the term “biomedicine” appropriately reflects biomedicine’s underlying concept: a biological view of reality. Biomedical practice is evidence based, and the evidence is articulated through strict scientific protocols. Due to its “scientific” nature, such terms as “scientific medicine” and “evidence based medicine” are also applied. The approach of
biomedicine aims at finding a universal treatment for a specific disease through valid scientific tests and data.

*Biomedicine and Science*

Science has not always been part of western medical practice. Many have argued that scientizing the medical practice is part of the scientific movement, a belief that science is the only "true way" in dealing with reality (Reily, 1977). In the United States, Abraham Flexner had been credited for implementing science as the core of medical education. In his 1910 medical education report to Carnegie Foundation for the Advancement of Teaching, Flexner argued that medical education should be based on science and organized through legitimate medical schools. In other words, the only credible medical knowledge is that which is confirmed by science and obtained through legitimate medical schools or institutions. This Flexnerian reform of medical practice drove out other medical practices that were believed to be "unscientific." For example, homeopathy was stigmatized as a "sect" due to the Flexnerian reform (Reily, 1977:552). Since the reform, scientism, the belief that science is the best way to deal with reality, became the dominant and accepted way of thinking in western medical practice.

The scientific view of medical practice grounded its principles upon Cartesian thought and positivist view of disease. In 17th Century Europe, the Cartesian Revolution changed the way people viewed body and mind. It advocated the idea that the mind and body can be treated separately. Moreover, it gave a reductionist view of the body, in which the body as a complex whole can be broken down to simpler parts and each part can be treated separately. Positivists viewed disease as a deviation from the biochemical norm. The view gained much acceptance along with the 19th century advancements in surgical techniques, understanding of immunology,
and pathology. The development of germ theory also played an important role (Ahmed et al., 1979).

In describing a brief history of biomedicine, Ahmed et al. (1979) comment on the success of the biomedical approach in disease and health. With scientific and technological breakthroughs and advancements in biomedicine, many infectious diseases such as cholera were being understood and treated. In fact, those diseases were almost eliminated in many technological advanced western societies. Mortality rates in those societies were also significantly reduced. Such promising results made science and medicine inseparable. The medicine campaign of the early 20th century advocated that all medicine should be scientifically based. The campaign stressed that “all physicians needed to be of a scientific mind” (Martin, 1994:220).

Despite the fact that declines in mortality rates were credited to biomedicine’s scientific approach in dealing with various infectious diseases, Riley (1977) points out that the evidence from epidemiological studies did not support this claim. Rise of living standards and practice of basic hygiene were more likely to have caused the reduction in mortality rate. Whatever the case, the biomedical approach to health and disease had achieved the cultural legitimacy and authority which underlies its dominance in the health care field in western societies today.

**Complementary or Alternative Medicine (CAM)**

What is complementary or alternative medicine (CAM)? The World Health Organization explains that “the terms ‘complementary medicine’ or ‘alternative medicine’ are used interchangeably with traditional medicine in some countries. They refer to a broad set of health care practices that are not part of that country’s own tradition and are not integrated into the dominant
health care system" (WHO, 2010). It is important to note that complementary or alternative medicine is only “complementary” or “alternative” to the dominant medical practice in a specific culture context. For instance, in Mexico, people do not consider homeopathy as a type of alternative medical practice (Whiteford, 1999), but in the U.S., homeopathy is a type of alternative medical practice in contrast to the widely accepted biomedicine.

Many have argued that alternative medicine is considered “alternative” in western societies as a result of the effort of dominant biomedicine to drive out the competition of other medical practices which do not comply with a “scientific” definition of medicine. The Flexerian reform advocated for a “scientific medicine” which labeled other medical practices “the eclectics,” such as homeopathy and osteopathy. Critics have argued that making medicine “scientific” is a push to expand and popularize science as part of scientific movement rather than that science-based medicine is more effective in curing or preventing disease (Riley, 1977).

In Great Britain, VanMarie (2002) points out biomedical-based physicians were dissatisfied with the 1858 Medical Act, which regulated the qualification of different medical practitioners. At that time, there were different groups of medical practices. Biomedicine had not become the dominant group. Biomedical-based physicians, especially those from Royal College of Britain, held meetings to control the definition of medicine. Most importantly, the discussion of the definition of medicine did not include other medical practitioners. The outcome of the meeting was the establishment of a biomedical-based definition of medicine, which excluded other medical practices. This was the beginning of pushing other non-biomedical practices to the “alternative” side.

Aakster (1986) takes another approach on addressing the question of why alternative medicine is alternative. When a biomedical knowledge has been proven through rigorous
scientific testing, it is considered as the absolute knowledge. This assumption gives the biomedical knowledge its authoritative power; one who questions such knowledge is destined to be viewed with suspicion. Biomedical theory becomes a religion or ideology that people have strong faith in. Aakster summarizes Feyerabend on this issue, who claims that within scientific fields, there is “a natural tendency...to believe and support theories that have once proved to be successful. Each finding that supports the theory reinforces the strength of the belief and a disregard for alternatives” (270). If an alternative medical practice wants to be accepted within the scientific field, it must obtain better scientific proofs than the existing biomedical theories. When there is no better scientific evidence to support an alternative medical intervention, the practice is pushed to the alternative side.

*On Efficacy*

Efficacy has to do with the effectiveness of a particular act. The term has been applied to both religious practices and medical practices. It implies that a particular practice is able to make an effective change (Barnes, 2005). Judging efficacy depends on the approach one is taking. Young (1979) brings up three approaches in evaluating efficacy: empirical, scientific, and symbolic. Empirical evaluation of efficacy is obtained through observable events in the material world; an explanation for these events is provided by a set of ideas. For empirical efficacy, the change must be observable. The scientific approach relies on scientific standards and proofs. The change must be able to be measured. Symbolic efficacy is proved through re-ordering of objects and events in a meaningful way. As long as the change serves a meaningful purpose to the individual, the intervention is considered successful. Young concludes that all three kinds of
efficacy contain a symbolic component; they all have to do with creating orders and meanings out of randomness according to the perspective one has taken.

In addition to Young, Barnes’ (2005) study of American acupuncture also points out the different points of view a patient, a doctor, and a researcher take on approaching efficacy. A researcher could approach efficacy using scientific standards. A patient might approach efficacy in a symbolic way, such as change of perception of health, or change in lifestyle, as his or her evidence that the treatment is effective. A biomedical doctor might only look at lab test results, such as lowering of blood pressure as an indication of an intervention’s effectiveness. An alternative medicine practitioner might also take a more symbolic perspective on efficacy. For instance, an acupuncturist from Barnes’ study states: “The symptoms [referring to his patients] are still there, but they don’t feel so bad about them. They are not so hopeless” (255).

Naraindas (2006), in her study of Ayurvedic medicine, illustrates a case of a pilot who holds a different perspective on efficacy from his doctor. The pilot has been treated by ayurvedic medicine for his high blood pressure. Many of his symptoms have been relieved through the course of the treatment. However, his biomedical physician does not accept his condition as “cured” because the lab test has revealed that his blood pressure is still considered “high.” To the physician, the effectiveness of an intervention can only be demonstrated by the lab tests. The assessment of the efficacy needs to be confirmed through scientifically acceptable examinations.

No doubt, biomedicine has taken a scientific approach to efficacy. Assessment of efficacy requires careful systematic examination of evidence. What exactly is biomedicine’s scientific approach to assessing efficacy? Before I start with my analysis, I must outline the conceptual differences between biomedicine and alternative medicine. Their underlying differences have
greatly contributed to the inappropriateness of evaluating alternative medicine under the biomedical model.

The core conceptual differences outlined in this study are generalizations of a wide range of alternative medical practices. I should acknowledge the diversity of alternative health care practices. As medical practice spread, different styles evolved. For example, the practice of acupuncture exists in different styles, such as the Korean, Japanese, and Vietnamese (Barnes, 2003). The level of diversity in alternative medicine is not limited to this. Once an alternative medicine is introduced at the local level, it changes its form to fit the needs of the people in that particular area. Of significance here is the susceptibility of alternative medicine to modification in response to the hegemony of the biomedical model of thinking.

*Hegemony: Dominance of Biomedical Reality*

The concept of hegemony was first developed by the Italian Marxist Antonio Gramsci. It is very helpful in explaining the domination of a certain ideology, in this case the biomedical model of thinking. Filc (2004) suggests that hegemony can be defined “as both the process by means of which, and the state in which, a way of life and ways of thinking and understanding become dominant in a social formation” (1276). A definition provided by Gwyn Williams (quoted in Sassoon, 1982:94) also points out that hegemony is “an order in which a certain way of life and thought is dominant, in which one concept of reality is diffused throughout society…” In other words, it is the dominant way people have accepted in understanding reality. This concept of hegemony also echoes Clifford Geertz’s notion of a cultural system. Rhodes (1996: 166) argues that the biomedical health care model could also be viewed as a cultural system. A cultural system illustrates by its “capacity to express the nature of the world and to shape that world to their dimensions.” The biomedical model of thinking is characterized by its evidence-
based and emphasis on “facts.” Those characteristics have allowed the biomedical model of thinking to establish a sense of “realness” and “factuality.”

There are huge differences between the underlying concepts of biomedicine and alternative medicine. Those concepts have contributed in building two different realities. In comparing alternative medicine and biomedicine, Aakster comments: “concepts are more than just words or building blocks of theories; they represent the observer’s image of reality” (1986: 266-267). The medical system reflects the philosophical ideologies and perceptions of reality of the society in which it develops. However, in western societies, the biomedical reality has taken a strong hold and influenced the evaluation of alternative medicine’s efficacy. Biomedical thinking has disregarded some fundamental conceptual differences in alternative medicine when testing its efficacy.

Scientific-based biomedicine places great emphasis on “evidence”—tangible, materialist proof. This emphasis on “evidence” is largely related to one of its core concepts—materialism. It is the belief that “physical matter is the only or fundamental reality, and that all beings and processes and phenomena are manifestations or results of matter” (Eskinazi, 1998:1621). This materialist-based ideology reinforces the belief that medicine should be evidence-based.

Another concept of biomedicine is reductionism. Reductionism is the concept that involves the breaking down of a complex whole into specific, simpler parts in order to understand the underlying mechanism of an act or object. This concept can be traced back to Cartesian thought. When the concept is applied to deal with health and disease, the cause of disease is due to specific agents such as a virus or bacteria. Health is the absence of the disease. Curing involves getting rid of a specific disease or targeting at malfunction of a specific organ.
When applying the concept in evaluations of efficacy, the reductionist approach focuses on examining one single variable separating it from others.

Unlike science-based biomedicine, religion and traditional philosophy are inseparable from the practice of traditional alternative medicine, which centers around a culture’s traditional world view. For example, embedded in traditional Chinese medicine is the philosophical thinking of Taoism. The ideology of Hinduism is reflected in India’s Ayurvedic medicine. Likewise, Buddhist meditation is crucial to the Tibetan physicians. Scientific methodologies are limited in examining the healing potentials contributed from mythological or ritual aspects of an alternative medicine practice (Barry, 2006).

One of the core concepts that various types of alternative medicine are based on is the notion of vitalism. This includes the Qi in Traditional Chinese medicine, the prana in Indian Ayurvedic medicine, and vital force in many western herbal practices, such as homeopathy. Vitalism is the belief that life is regulated by a vital force or energy. This vital force regulates one’s health. Eskinazi (1998) cautions us to avoid the misleading translation of “force” and “energy.” From a scientific and materialistic point of view, vitalism is incomprehensible. This “force” and “energy” is unrelated to what we commonly know from the field of physics. In fact, one of the suggested underlying meanings of vitalism is that “life cannot be understood just through principles of physics and chemistry” (Evans, 2008: 2101). The concept of vitalism plays a crucial role in shaping the perception of health and disease in alternative medicine. Health is viewed as the balancing of opposing forces. On the contrary, disease is the dis-balancing of body’s vital force. Because of the belief that there is a vital self-regulating force in the body, many alternative clinical interventions aim at strengthening the force to promote self-healing. The intervention does not aim at eliminating a specific disease or counteracting a pathological
process. From biomedicine’s materialistic perspective, the intervention would be considered as a
failure when the disease agents are still present. Vital energy cannot be measured
materialistically. The balancing of vital force cannot be a credible explanation of a medical
intervention’s effectiveness.

Another concept is closely connected to vitalism: holism. In contrast to biomedicine’s
reductionism, holism takes the totality of a patient into consideration when treating the person.
Alternative medicine seeks not to break down a patient’s health problem into one specific
biological entity. It requires practitioners to look at the totality of a patient during a treatment,
including a patient’s interaction with the surrounding environment and people.

Biomedicine requires doctors to identify the disease a patient has in order to give the
treatment; this requirement does not apply to some alternative medical practices. A patient has a
very active role during the course of an alternative treatment, such as changing of lifestyle and
dietary habits. An alternative practitioner takes on a role much closer to an advisor. Patients in
biomedical care are more passive. Doctors give an order, patients follow through. Similarly,
when evaluating a medical intervention, investigators may not take a patient’s account as
credible evidence of efficacy.

The reductionist aspect of biomedical model is in direct contradiction to alternative
medicine’s holism. The intangible “vital force” cannot be measured under the materialistic
standard of science. Similarly, the science-based secular biomedical model would not take the
religious aspects of alternative medicine into consideration. The spiritual aspects of alternative
medicine cannot be measured statistically. Patients have no active role in evaluations of efficacy.
The subjective account of a patient’s experience might be labeled as biased in a well-controlled
clinical trial. Despite the underlying contradictory aspects of the biomedical model of thinking
and the core concepts of alternative medicine, understanding of the alternative medicine’s
efficacy has taken a very materialistic and reductionist perspective.

Materialistic and reductionist aspects of biomedical thinking are especially well
illustrated by the use of random controlled trials (RCTs) in evaluations of the efficacy of
alternative medicine. RCT is considered as the “gold standard” in the evidence hierarchies.
Biomedicine’s evidence-based approach advocates that all medicine needs to be “evidence-
based,” hence the name “evidence based medicine.”

_Evidence Hierarchies and Random Controlled Trials_

Evidence based medicine is an approach that makes a medical decision based on
evidence that has been collected in a systematic way (Qzilibash, et al., 2002). There are various
ways of obtaining and assessing evidence. Not all evidence holds the same value; some types of
evidence are considered superior to others. This is known as the “hierarchies of evidence”
(Galvão, 2006). In 1979, the notion of hierarchies of evidence was first recommended by the
Canadian Task Force on the Periodic Health Examination (Evans, 2002; Upshur, 2003). Since
the first popularization of evidence hierarchies, many disputes have occurred among scientists
and physicians. These disputes center around the lack of a universal evidence hierarchy system.
Different systems value evidence differently. To add to the complexity of the matter, different
institutions would have different guidelines and requirements for verification of the evidence
(Upshur, 2003).

Among the procedures of collecting evidence, a randomized controlled trial (RCT) is
generally agreed to be at the top of the evidence hierarchy pyramid. In the event of testing a new
drug, an RCT trial is carried out by randomly assigned a group of patients to a drug, either A or
B. Drug A will be the new drug that is to be tested while drug B will be a placebo. Most RCTs are double-blind, which means that neither the researchers nor the patients know who is receiving the drug being tested. Under such circumstances, the bias will be minimized. The trial is carried out in a well-controlled manner. The evidence will be collected in a systematic way.

I analyzed two clinical studies. Both studies carry out clinical trials in a randomized and strictly controlled manner. The trial carried out by Busse et al. (2009) was testing the efficacy of an antiasthma herbal formula, the other RCT study was conducted by Chen et al. (2009) to test the effectiveness of acupuncture in treating chronic shoulder pain. These two articles are typical examples of studies conducted using the RCT. The processes were carefully recorded and results were meticulously measured. The results are described using statistics and recorded with high precision. Both studies clearly illustrate the essential aspects of collecting evidence in a systematic way to test the efficacy of an intervention scientifically. In addition, both RCT studies are also carried out under strict study protocols to ensure the safety of participants in the experiment.

The reductionist nature of the RCT requires that everything to be separated and isolated. In the RCT study of the antiasthma herbal formula, three main active ingredients of the antiasthma herbal formula are separated. Each ingredient's property is described and recorded. Individual patient's symptoms, as a result of taking the herbal formula, are also recorded. In the study of acupuncture, only one variable is being measured, the shoulder pain level.

The materialistic aspect of the RCT demands "visibility." The change must be "visible" (i.e., change in symptoms) in order to be collected as "evidence" to verify the efficacy. For example, in the study of antiasthma herbal formula, the effects of the herbal formula are measured through occurrences of various symptoms among study participants, such as diarrhea,
vomiting, and change of levels of different substances in the blood sample. The appearance of symptoms is fundamental in biomedical approach in defining health and disease. Patients have no role in deciding their own well-being or the effectiveness of herbal formula. “What counts as cure or wellness is dictated by tests that are embodied in a techno-legal apparatus and situated entirely outside the felt awareness of the sufferer” (Naraindas, 2006:2662). The two RCT studies I analyzed show that only outcomes that are “visible” by means of technological devices and lab tests are to be considered as legitimate “scientific evidence” of a treatment’s effectiveness.

Limitations of RCT

A number of scholars have pointed out the limitations of RCT studies in evaluating alternative medicine (Borgerson, 2009: Evans, 2002; Naraindas, 2006; Barry, 2006). First of all, an RCT must isolate the individual variable for testing. The intervention is often de-contextualized to fit the model of the RCT. The assessment needs to be carried out under a well-controlled condition in order to eliminate possible inconsistencies. Often times, when an alternative medicine intervention has been taken out of its original context, it loses many of its essential characteristics that are crucial to the effectiveness of its treatment.

My analysis of an acupuncture study conducted by Chen et al. (2009) reveals the de-contextualized nature of RCT studies. In this particular study, the experimenters try to compare the acupuncture practice of Traditional Chinese Medicine (TCM) and the standardized acupuncture points in treating chronic shoulder pain. There is a difference between TCM acupuncture and standardized acupuncture. Established by World Health Organization (see Lim, 2010) after a series of scientific studies, standardized acupuncture was intended to codify numerous previously debatable acupuncture insertion points, thereby limiting the variability of
the acupuncture practice. On the other hand, TCM acupuncture varies from practitioner to practitioner. It is up to individual practitioner to decide where the insertion should be placed in individual patients. TCM acupuncture is tightly linked to traditional Chinese belief, such as the notion of Qi. Chinese traditional belief played no role in this particular study. The acupuncture intervention has been taken out of traditional context. Evaluations are of the “visible” insertion points, the depth of the needle going into a patient’s skin, and the precise pain value according to the SPADI (Shoulder Pain and Disability Index). The larger context of intervention, such as its philosophy, process, and the interaction between patients and acupuncturists are not included in the picture. Moreover, the acupuncturist’s skill and experience are not among the factors evaluated in making the conclusion regarding the efficacy of the intervention.

Similarly in the herbal formula clinical trial I analyzed, a single herbal formula was tested in isolation. As I mention earlier, alternative medicine such as traditional Chinese medicine requires patients to be an active part of treatment process, and pays attention to diets and lifestyles. Testing the herbal formula alone might obscure the effects of other behavioral changes the patients have been engaged in. It might be the totality of the treatment that contributes to a patient’s well being: the herbal formula combined with behavioral changes on the patient’s part.

Another issue concerns the degree to which an RCT is representative of an average patient’s experience. Many scientists are aware that an RCT study carried out in a strictly controlled environment cannot be applied to other patient populations. The authors of the acupuncture study I analyzed also caution readers that their study cannot be a representation of general patient population. It is only representative of patient population similar to the participants in the study— male veterans. The picture gets more complicated when dealing with alternative medicine. In alternative medicine, even two patients with the same diagnosis might be treated
differently by the same practitioner. In Ayurvedic medicine, the practitioner will look at a patient’s symptoms holistically and then assign a treatment accordingly (Naraindas, 2006). This very individualized aspect of alternative medicine cannot be evaluated under biomedical universalism, with its belief that the same disease can have a universal treatment. Interestingly, Chen et al.’s acupuncture study does mention the individualized treatment patients received under the Traditional Chinese acupuncturists. However, this individualized aspect has not been taken to be a factor that could influence a patient’s treatment experience and the treatment’s effectiveness.

In addition, evidence collected from one RCT is not enough to prove a treatment’s effectiveness. Often times, investigators would look at multiple RCTs, known as meta-analysis of RCTs, to make conclusions. When summarizing multiple cases of RCTs, it is difficult to reach a simple, concise conclusion. Qzilibash et al. (2002) point out that as the number of the trials increase, it becomes more difficult to analyze the large number of data and summarize them in a standardized way. Keshet (2009) summarizes Collins’ and Yonay’s work reveals two different “cultures” within the scientific community in dealing with evidence: “open culture” and “closed culture.” The “closed culture” science aims at ruling out the inconsistencies, by only using evidence that can lead to a clear and concise statement. On the other hand, “open culture” considers a wider range of evidence that is relevant to the investigated problem. Reductionist science seeks a simple solution. It is considered “unscientific” to rule out other inconsistencies by selecting evidence in favor of a conclusion. This leads to the skepticism regarding the objectivity of the RCT. Critics argue that “even using multiple observers, results are still subject to the bias of the reviewers…different groups can give rise to substantially different conclusions and guidelines” (Qzilibash et al, 2002).
The antiasthma herbal formula study I analyzed is based on the Food and Drug Administration’s study protocol and the WHO’s recommendations. Although it is important to follow certain guidelines to ensure the safety of research participants, different guidelines might impact the decision regarding what type of evidence should be included in formulating the conclusion.

RCT is also limited in evaluating the symbolic effects on the patient of alternative medicine. As Hahan and Kleinman (1983) point out: belief kills, belief heals. A patient’s faith in alternative medicine will affect the outcome of a treatment. From a patient’s perspective, despite persistence of symptoms, his/her changing of conception about health and disease is considered positive of the treatment outcome. In both RCT studies I analyzed, all participants are passive, experimental subjects. The patient’s beliefs about this particular intervention or medicine have no relevancy to the studies. The patient’s conception of efficacy of the intervention is not recorded. In fact, “faith” is a factor an RCT study cannot measure. It cannot be taken as valid scientific evidence. Chen et al.’s (2009) acupuncture study has intentionally recruited research participants who are “naïve to acupuncture.” The experimenters’ intention is to eliminate any bias as a result of previous experience of using the acupuncture. Nonetheless, this so called “bias” could be a powerful factor in the practice of acupuncture, which could potentially influence the efficacy of an intervention.

Lastly, there is the problem with using a placebo. Barry (2006) suggests that despite patients not knowing they are on a placebo, the fact that they are aware of that they might be assigned to a placebo has a profound impact on the result of the trial. Both RCT studies I examined included a placebo group. The methodology of the RCT study does not allow the measurement of placebo effects. For many alternative medicine practices, having faith in the
intervention is crucial to the healing process. If a patient is aware the existence of a placebo, then
how does RCT assess such influence with respect to efficacy? None of the RCT studies I
analyzed attempted to address this question.

Comparing RCT

Understanding the limitations of RCTs, scholars and researchers advocate approaching
the efficacy of alternative medicine in different ways (Aickin, 2010; Shea, 2006; Barry, 2006;
and Walach, 2009). I have examined two studies that aim at reforming the methodologies used in
testing alternative medicine. In one, Casebeer et al. (2002) advocate adding qualitative research
prior to conducting an RCT study. The other (Aickin et al., 2010) presents the results of a
roundtable discussion of researchers and physicians on the issue surrounding the implementation
of whole-systems research, a holistic approach to evaluating alternative medicine. Despite
acknowledging the complexity of alternative medicine and the limits of scientific methodology,
the authors and participants still aim at obtaining information in a systematic and measurable
way. In other words, they believe in the efficacy of scientific methodologies. No matter how
much the research method needs to be revised, scientific evidence is critical to verification of
efficacy of medical interventions, both alternative and conventional.

Casebeer et al. (2002) advocate adding a qualitative component to complement the
RCT’s insufficiency in evaluating alternative medicine. They list few challenges an RCT study
faced when used to address the efficacy of alternative medicine. There are some essential
characteristics of alternative medicine that a well-controlled RCT fails to recognize, such as its
individualized and flexible treatment. They also acknowledged the importance of a patient’s
beliefs and the patient-provider interaction. Interestingly, the authors note the challenges faced in
the evaluation of alternative medicine and equate them to the assessment of efficacy in
physiotherapy, psychotherapy, and nursing care, etc. Similar examples also occur in the RCT
study of the herbal formula; the study is explained in highly sophisticated biochemical terms. It
is a step taken to scientize the knowledge. Scientizing alternative medical knowledge gives it
more credibility. In addition, it reinforces the belief that science is important to verification of
the efficacy of alternative medicine. Only scientific evidence can generate a credible measure of
efficacy.

Naraindas (2006) points out that biomedical thinking believes that “true theories can
replace false theories of correct practice” (2660). In the roundtable discussion I analyzed, Dr.
Opher Caspi states that “whole-systems research requires a priori that you have a good theory on
which to base the design of a study and to decide what variables to measure and at what level of
precision.” For biomedical investigators, it is not acceptable to use alternative medicine’s
philosophical framework to explain why an intervention works. They believe that the underlying
philosophical theory of practice is wrong, but the practice itself is correct. Naraindas
(2006:2660) gives a great example regarding acupuncture. From the biomedical perspective, it is
not the balance of vital energy or Qi that acupuncture induces help to reduce the pain, but the
endorphins that mute the pain. In that sense, the theory of Qi is incorrect; however, acupuncture
does mute the pain. In other words, the efficacy of an intervention needs to be explained in
western biological terms or within the framework of the scientific theory in order to gain
acceptance. In addition, the materialistic approach of scientific thinking requires making the
invisible vital energy “visible.” Only the endorphin levels could be recorded and presented as
reliable indicator of an intervention’s effectiveness. Dr. Caspi’s opinion reveals the importance
of materialistic evidence in the biomedical model when approaching efficacy. The authoritative
language of science also contributed to buttress the credibility of a medical practice.

Furthermore, the reasons underlying the effectiveness of an intervention must rest upon an acceptable scientific theory. Traditional philosophical theories should be discarded.

It is worth pointing out that despite the inadequacy of RCT in alternative medicine assessment, scientific researchers, such as those who contributed to the articles I examined, still value RCT greatly. In my selected articles, none of the researchers suggests completely doing away the RCT in evaluations of alternative medicine. They feel that the randomized, controlled aspects of RCT are necessary in assessing alternative medicine. Dr. Ryan Bradley in the roundtable discussion states that “there is still value in the RCT, even as applied to questions in whole-system research…the important matters are trial design and the appropriate selection of controls, and using conceptual frameworks…” (135). Casebeer et al, in their article argue that “although RCTs have an important place in the assessment of the efficacy of CAM, the addition of qualitative research methods to RCTs can greatly enhance the understanding of CAM.” To these authors, evidence generated from qualitative research is only a complement to the RCT. The important role of the RCT in verifying efficacy of alternative medicine cannot be denied.

**Conclusion:**

It is clear that the dominant view among scientists and physicians is that the efficacy of alternative medicine needs to be confirmed through the scientific biomedical approach. The reductionism and materialism of biomedical approach are greatly valued. Testing of an intervention must be isolated and separated in a well-controlled environment. All evidence must be tangible, and only “visible” evidence is taking into account. “Invisible” evidence, such as a patient’s faith and belief in the alternative medicine, are not included in biomedical testing.
According to strict scientific protocols, the evaluation of alternative medicine needs to go through the process of scientization in order to establish its credibility. A valid study must be measured in scientific terms with identifiable variables. The effectiveness of an alternative medical intervention must be explained using scientific theory. Alternative medicine's philosophical framework is not acceptable within the scientific field to explain the underlying mechanism of an intervention. In many ways, the original characteristics of alternative medicine must be transformed to fit the scheme of biomedical model of thinking in order to be evaluated for the kind of scientific efficacy the investigators are looking for.

However, scholars and scientists do recognize the inadequacy of scientific methodologies, such as the RCT in evaluation of alternative medicine. An RCT study often leaves out some crucial factors that contributed to the efficacy of an alternative medical intervention, such as a patient's faith and belief in the intervention. My analysis of two articles advocating qualitative methods and the whole-systems research for evaluation of alternative medicine also reveals the intention of numerous biomedical scientists to address the subjectivity of alternative medicine intervention. They understand the inadequacy of RCT studies and hope that the qualitative research will address the subjective nature of alternative medical interventions. However, their intention is not to totally discard the use of RCT studies, but to make improvements and to complement the RCT with qualitative data. It is dominant in the field of biomedicine that scientifically measured efficacy is the only credible efficacy. If biomedical researchers intend to evaluate the efficacy of alternative medicine under scientific methodology, they must be aware of the underlying contradictions between biomedicine and alternative medicine.
Qualitative research studies and whole-system studies might be the first step for biologists to address regarding the issue of alternative medicine evaluation; however, there are also challenges confronting these reforms. Keshet (2009) argues that the descriptive data obtained through qualitative studies are similar to those obtained in a medical case study. Moreover, according the Evidence Hierarchy compiled by the Canadian Task Force (Evans, 2002; Upshur, 2003), case study is considered as the lowest form of evidence. Aickin et al. (2010) mentions about the difficulties of funding and publishing whole-systems research: “Many people do not think that whole-systems research or even whole-system medicine makes any sense, and I think we will have a real challenge in working with them” (132). The data obtained from whole-system research cannot be regarded as hard evidence, which runs contradictory to objective science. Some critics totally opposed the use of scientific tools to test alternative medicine. For example, Sampson argues that that science cannot test the “irrational and illogical” principles of alternative medicine. He labeled the concepts of alternative medicine as “pseudoscientific” (Keshet, 2009).

Lastly, although the underlying concepts of biomedicine are “scientific-based,” that does not mean that the practice is purely “scientific.” There are biomedical physicians who have carried out the practice with a humanistic influence, using their own intuition more than statistics or hard scientific data. Barry (2006: 2649) reminds us that only 15% to 66% of physicians are aware of those strict clinical guidelines. After all, biomedicine is a practice of both art and science. It is up to the individual physician to find a balance between the two. Perhaps the evaluation of the efficacy of alternative medicine needs to incorporate some humanistic aspects as well.
Limitations and Further Investigations:

Addressing the limitations of the biomedical approach in assessing the efficacy of alternative medicine is not an easy task. It is worthwhile to investigate other approaches used by various scholars from other fields of study. Barry (2006) advocates anthropological evidence to speak to the efficacy of alternative medicine. He argues that the nature of anthropological evidence, obtained through ethnographic studies, could peer into the essentials of the alternative medicine practice. The holistic approach of anthropological study takes all aspects of alternative medicine into consideration, including its symbolic efficacy. The primary methodology of participant-observation used in ethnographic studies captures the practice of alternative medicine in its own context without altering it to fit the standards of a scientific study. The emic (insiders') perspective of an ethnographic study captures the assessment of efficacy from an alternative practitioner's and a patient's point of view.

Furthermore, science is not alone in influencing the practice of biomedicine. My research has omitted other factors that have contributed to shape the practice of biomedicine. For example, biomedical practice cannot escape the impact of medical industries and government agencies. Its standardization is also a result of the industrial managerial culture, which intends to turn medical practice into a profitable business. Commercial concern with profit has demanded that biomedical practice be cost-effective. The standardization and systematization of efficacy evaluation processes are intended to ease the decision-making on behalf of industrial managers or government officers in term of resource allocation and monetary expenditure.

My research is limited to analysis of the dominance of biomedical thinking in alternative medicine, in particular the evaluation of efficacy. The influence of capitalist business culture on biomedical practice has been nicely described by Kleinman: "The rule of efficiency governs the
lived time of the patient-practitioner encounter. Regulations control practice, transforming the doctor into the ‘provider’ of a ‘product’ that is advertised, marketed, and sold. Care is commoditized” (1995:37). This is a topic worth investigating in future studies.

It is not just the assessment of alternative medicine’s efficacy that is dominated by the biomedical model of thinking. Eager to gain acceptance by mainstream society, alternative medicine practitioners also embrace the biomedical model by trying to standardize and institutionalize their practices. Making the alternative medicine practice more “scientific” becomes a way to establish cultural legitimacy in a society dominated by scientific-based biomedicine. In other words, the ideology of being “scientific” becomes the dominant thinking among many alternative care practitioners. This type of thinking motivates alternative medicine practitioners to represent their practices as “science-proven.”

It should be made clear that such ideological control is not imposed by force, but through the consent of people, in this case those alternative medicine practitioners. The dominant control of the biomedical model of thinking has led to the realization by alternative medicine practitioners that they need to standardize their practices according to scientific guidelines. To many alternative medicine practitioners, it is necessary to legitimize the practice and gain recognition by trying to professionalize and “biomedicalize” the practice. In England, alternative medicine practitioners set up minimum training standards and a professional code of conduct. The Council for Complementary and Alternative Medicine was established in 1985 to unify diverse alternative medicine practitioners (Sharma, 1993).

Biomedicalization of alternative medicine practices can best be seen in their incorporation of biomedical concepts. Various research projects have been carried out to investigate the impact of biomedicine in the practice of alternative medicine. In the case of
American acupuncture (Barnes, 2005), the acupuncturists interviewed by Barnes are also trained in biomedical disease concepts to make their practices appear more "scientific." Degele's research (2005) reveals the process of scientization among homeopathy practitioners through their standardized training sessions and highly professionalized everyday work. A research study examining the literature published by herbalists in the *Australian Journal of Medical Herbalism* (AJMH) found that most of them described their understanding of illness with extensive using the language and concepts of biomedicine. The editor of this journal has stated that future articles regarding any herbal practice are expected to be more [scientific] research-based (Evans, 2008:2104). The biomedical hegemony not only figures strongly in evaluating the efficacy of alternative medicine, but also in the practice of alternative medicine itself.

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