

# Informatics to support patient choice between diverse medical systems

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**Abstract**—Culturally, philosophically and religiously diverse medical systems including Western medicine, Traditional Chinese Medicine, Ayurvedic Medicine and Homeopathic Medicine, once situated in places and times relatively unconnected from each other, currently co-exist to a point where patients must choose which system to consult. These decisions require comparative analyses, yet the divergence in key underpinning assumptions is so great that comparisons cannot easily be made. However, diverse medical systems can be meaningfully juxtaposed for the purpose of making practical decisions if relevant information is presented appropriately. Information regarding privacy provisions inherent in the typical practice of each medical system is an important element in this juxtaposition. In this paper the information needs of patients making decisions regarding the selection of a medical system, are examined.

**Keywords**— *component; Complementary and alternative medicine, holistic medicine, health informatics*

## I. INTRODUCTION

In many countries, Western Medicine (WM), Traditional Chinese Medicine (TCM), Ayurvedic Medicine (AM), Homeopathic Medicine (HM) and other medical systems are becoming increasingly accessible to patients [1]. Factors that explain this trend include global changes in values, higher education, poorer health, and greater levels of migration [2].

There is little indication that the emergence of a co-existence of medical systems is a passing trend. As such, an issue that emerges for patients involves how best to compare systems in order to select one (or more) for consultations. The central aim of the current study is to explore issues that arise when comparisons are attempted by patients, and to identify the role information has in underpinning these decisions.

Each medical system may be regarded as being so different that each is incommensurate, to use Kuhn's terminology [3], and largely incomparable. However consumers (patients) in most Western countries can readily access physicians from every system and are constantly making comparisons, and so technologies to organize and enable information to be readily

accessible will play an increasingly important role in supporting the emerging co-existence and assist patients to select a physician given the plethora of choices.

Complementary and alternative medicine is influenced by four separate domains which characterize the patient [4]; predisposing factors such as demographics, beliefs and resources; enabling resources such as income and health insurance; need, both evaluated and perceived; personal health practices and lifestyle.

Need is dependent on the type of condition the patient faces – emergency, acute, chronic or palliative – which in turn influences the factors patients look for in comparing medical systems. In a broad sense patients choose one medical system over another based on effectiveness, empathy, empowerment and accessibility [1]. Effectiveness refers to prospects for rehabilitation in the time frame appropriate for the type of condition; emergency conditions need to be resolved quickly. However, gathering evidence for comparative effectiveness across medical systems is challenging. Empathy refers to the notion that patients select a physician for reassurance, consolation and compassion within the context of an interpersonal relationship. Empowerment refers to the notion that patients select a physician who can help them understand their experience and initiate their own actions toward recovery. Other drivers for this selection process would be location and availability of practitioners/facilities as well as consultation and other costs, income and health insurance.

In this paper, issues that arise comparing medical systems are raised. An outline of information that can facilitate the comparison is provided, and an assessment of information availability is made.

## II. DIVERSE MEDICAL SYSTEMS

Medical systems can be compared based on their concepts of the body-person, view of illness/wellbeing and the practitioner-patient relationship [5]. The body-person encompasses four components that diverse systems emphasize to different extents; the physical, psychological, spiritual and energetic. In general, WM places emphasis on the physical and

psychological whereas TCM emphasizes the energetic, physical and psychological. AM and HM emphasise all four aspects of the body-person.

Systems also differ on the extent to which the concept of vitalism is accepted. Vitalism is a principle that references a life force that animates living beings that has been labeled vital force in HM [6], Qi in TCM [7] and Atma in AM [8]. An implicit premise is that life cannot be explained solely through principles of physics and chemistry, because the body-person is essentially animated by its connection to a universal power often identified as a spiritual connection. For vitalistic systems the healer's aim is to stimulate the life force toward healing. Within the vitalism tradition, health is viewed as balance, and disease as imbalance. For WM, with no concept of vitalism illness is conceived as a malfunction of a component or sub-system.

Medical systems differ in how they evaluate the accuracy of diagnoses and efficacy of treatments. The highest level of evidence in recent decades in WM is the randomized clinical trial (RCT), though an pre-occupation with RCTs has attracted criticism [9]. The purpose implicit in RCT's is to determine if the treatment being studied produces a significantly different change in a targeted symptom (the specific effect) than either placebo or an alternative treatment. RCT's are particularly well suited to WM but have some shortcomings from the perspective of a holistic view of wellbeing. For instance, the *efficacy paradox* [10] refers to the phenomena that a therapy which produces a significant general improvement in a patient's wellbeing could be rejected by a RCT in favour of a therapy which produced poor overall patient wellbeing but caused a greater change in the one specific factor the RCT was studying. That author has suggested that evidence evaluation involving a combination of research methods produces the most practically reliable and useful result.

Differences in the view of illness lead to challenges in evaluating and comparing diverse treatment regimes. For example, studies that attempt to measure the degree of consistency between TCM practitioners typically follow a conventional RCT design where the same group of patients is seen by many practitioners whose assessments and treatments are compared [11]. This design is consistent with the scientific tradition but seemingly sidesteps the TCM principle that an internal imbalance manifests in many ways. Physicians identify zheng or patterns that do not signify diseases in the same way that symptoms characterize conditions in Western medicine. Consequently, different practitioners are not expected to notice the same sets of signs and may not diagnose the same underlying imbalances.

HM focuses on a rich specification of signs/symptoms to help identify and therefore treat underlying causes [12]. The concept of disease in HM assumes energetic disorders which lead to physical changes. WM tightly links signs/symptoms, underlying causes and treatments to a disease, though as Norman observes the concept of disease is far from clear [13].

The three dhosa's, pita, vatta and kapha used in AM represent fundamental kinds of dispositions unique to each individual. A dhosa assessment is conducted prior to diagnosis as the patient's dhosa profile impacts on the diagnosis and

prescription of remedies. An RCT conducted within the Ayurvedic paradigm must take a patient's dhosa profile into account in establishing control and experimental groups, though this is typically not done in RCT studies because the dhosa concept is foreign to allopathic medicine [14].

Other aspects of CAM lead to conflict with WM. For example, in HM a minute concentration (20-50 parts per million) of the appropriate remedy is seen as sufficient to trigger internal processes that result in a cure [15]. This remains controversial as according to WM such a small dose cannot have a significant impact, and so any change detected must be attributed to the placebo effect [16].

### III. INFORMATION NEEDS

Factors that lead to a patient's choice of a medical system/practitioner depend on the type of health condition and the type of need. The types of health condition relevant for this purpose are:

- **Emergency:** Is the condition immediately life-threatening?
- **Palliative:** Is the medical attention required palliative?
- **Acute:** Is the condition self-limiting?
- **Chronic:** Is the condition long-term and not self-limiting?

Criteria deemed here to underpin the choice of medical system are:

- **Effectiveness:** Which medical system(s) are known to be safe and effective? Includes evidence and past +ve and -ve experiences of self and trusted others
- **Empathy:** Trust/rapport/ empathy with a clinician
- **Empowerment:** Engagement results in patient empowerment
- **Accessibility:** Affordability, Availability, Visibility
- **Philosophical:** Acceptance of world view and assumptions underpinning a medical system
- **Privacy:** Extent to which the medical practice guarantees the level of privacy expected

Information related to the medical condition and criteria considered when choosing medical systems are summarised below in Tables 1 to 5 respectively. Privacy is a criteria that is assumed to span the four health condition contexts because it is closely linked to cultural factors. Western traditions place great value on each human life whereas Eastern cultures value life of the community, the corporation and the family more [17]. This differences leads to a reduced sense of importance on individual privacy in Eastern cultures though this can be diminished with exposure to information ethics training,

more so for women than men [18]. Cultural differences in regard for privacy translate to medical practice; in many TCM clinics in China patients are co-located and interact with physicians within earshot of many others.

TABLE I. KEY SUB-CRITERIA OF EFFECTIVENESS

<i>Emergency</i>	Diagnostic Accuracy, Intervention success, Practitioner Credentials
<i>Palliative</i>	Intervention success. Effect on quality of life.
<i>Acute</i>	Safety, Diagnostic Accuracy, Practitioner Credentials
<i>Chronic</i>	Safety, Diagnostic Accuracy, Practitioner Credentials

TABLE II. KEY SUB-CRITERIA OF EMPATHY

<i>Emergency</i>	Not particularly relevant
<i>Palliative</i>	Depth of care the practitioner has for the patient
<i>Acute</i>	Somewhat relevant, but less than effectiveness
<i>Chronic</i>	Personal rapport. Depth of care the practitioner has for the patient

TABLE III. KEY SUB-CRITERIA OF EMPOWERMENT

<i>Emergency</i>	Not particularly relevant
<i>Palliative</i>	Intervention success. Does the patient feel in control of their health journey?
<i>Acute</i>	Not particularly relevant (unless there are a series of recurring similar acutes)
<i>Chronic</i>	Extent to which the interventions enhances confidence in the patients' ability to care for themselves, Depth of care the practitioner has for the patient

TABLE IV. KEY SUB-CRITERIA OF ACCESSIBILITY

<i>Emergency</i>	Proximity, and accessibility of services and interventions
<i>Palliative</i>	Proximity, affordability and accessibility of services and interventions
<i>Acute</i>	Proximity, affordability and accessibility of services and interventions
<i>Chronic</i>	Proximity, affordability and accessibility of services and interventions

TABLE V. KEY SUB-CRITERIA OF PHILOSOPHICAL

<i>Emergency</i>	Not particularly relevant
<i>Palliative</i>	Match between personal beliefs and philosophies underpinning the medical system
<i>Acute</i>	Match between personal beliefs and philosophies underpinning the medical system is of some relevance, especially if recurring similar acutes
<i>Chronic</i>	Match between personal beliefs and philosophies underpinning the medical system

Many if not most of the criteria for selecting a medical practitioner/system elucidated above require information not readily available for any medical system. For example, information regarding the accuracy of WM diagnoses is limited. Recent evidence suggests that many studies on diagnostic accuracies do not reflect clinical realities and are often an over-simplification of reality. A study of the diagnostic accuracy of a patient's constitution type in Korean Sasang Constitutional medicine (SCM) revealed accuracy of 64% [19].

Information on the success of interventions is more readily available in all medical systems. However, as illustrated above with RCT's performed with Ayurvedic treatments without a Dhosa assessment, great care must be taken in interpreting results. Practitioner credentials are governed in most medical systems by relevant professional associations and backed up in some cases by legislation. Many association web sites have search facilities to enable patients to find accredited health care professionals (e.g. <http://www.homeopathyoz.org/>).

Information on the safety of interventions is difficult to access for many medical systems. Although information on the safety of single pharmaceutical treatments in WM is readily available from adverse drug reaction repositories, often medications are prescribed for conditions they were not initially tested for. In addition, medications are often taken in combination with other medications or substances for which information on possible interactions is difficult to find in WM. There has been no evidence to suggest Homeopathic remedies are unsafe whereas some SCM remedies are known to be unsafe if administered to patients with a contra-indicated constitutional type.

The depth of care a practitioner has for a patient is a subjective judgment likely to be influenced by word of mouth and personal rapport. Physician rating sites have emerged for WM and typically include criteria related to rapport. A survey of almost 5000 ratings from 10 popular sites has revealed physicians generally receive quite high ratings [20]. For other medical systems, word of mouth continues to be the common source of information regarding physicians' rapport.

The extent to which interventions enhance patients' ability to care for themselves relates to patient empowerment. Studies in the WM tradition that relate to patient empowerment typically focus on a single intervention and test whether the intervention leads to greater self-efficacy, (optimistic self-beliefs to cope with a variety of difficult demands in life) measured with specific diseases [21]. Disease specific measures of patient empowerment apply to WM to a greater extent than they do to medical systems that do not have a strong disease model. However, the measurement of patient empowerment for general health and well being is more challenging. The more holistic systems of medicine have been found to tend toward enhancing patient empowerment [22].

Information regarding the proximity, affordability and accessibility of physicians and treatments across medical systems vary. Information regarding the location of physicians

and indicative costs of treatments is generally available from association or government sources however information regarding access is less straight forward. Information on waiting times, particularly for specialists in the Western tradition can be difficult to ascertain.

The match between a patient's personal beliefs or preferences and philosophies underpinning each medical system requires knowledge about each system. Information regarding each system is difficult to acquire because formal education systems typically focus on one system and often relegate other systems to inferior statuses [20].

Information that is related to privacy in a healthcare practice involves a description of legal provisions that apply in addition to information about how a physician and others are likely to interpret legal provision. Typically, the provision of information about legal requirements is commonplace however, information about how legal provisions are required is typically not easily available. This makes choosing between medical systems on the basis of the privacy criteria more difficult.

#### IV. ANALYSIS BETWEEN HEALTH CONDITIONS AND CHOICES

Understanding the relationship between types of health condition and choices of medical systems is challenging. A correlation between the criteria underpinning the choices of medical systems and types of health conditions are performed. In order to quantify the influences on making those choices influence factors were generated by expert opinion and available clinical evidence. While Table 6 represents these quantifications, Figure 1 depicts the distribution and interactions of each category based on the influence factors. The hypothesis is that the medical condition and choices of medical systems are highly correlated thus factorial analysis was performed.

TABLE VI. INTERACTION ANALYSIS OF FACTORS AND CHOICES

	Emergency	Palliative	Acute	Chronic
<i>Effectiveness</i>	10	5	8	7
<i>Empathy</i>	1	7	3	10
<i>Empowerment</i>	1	7	4	10
<i>Accessibility</i>	5	3	6	4
<i>Philosophical</i>	1	6	4	8

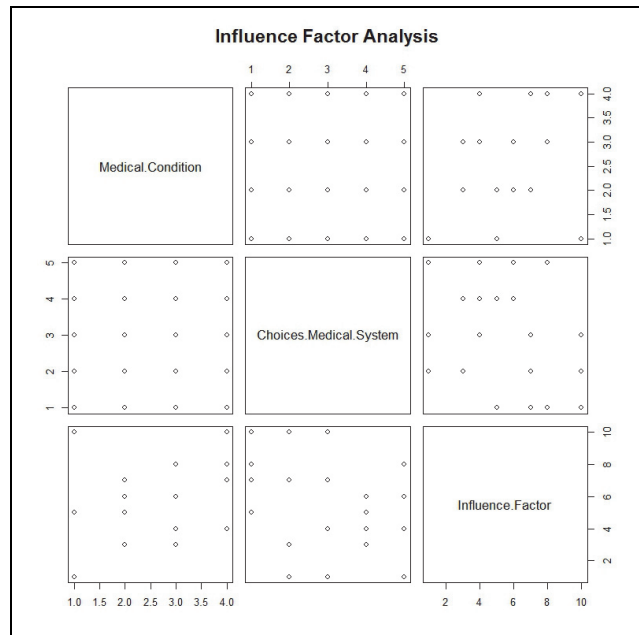


Fig. 1. Distribution and interactions of the influence factors

The results indicate that while medical conditions are highly significant ( $P < 0.033$ ) when selecting a medical system it is not clear whether interactions between medical conditions and choices of medical system are highly correlated ( $P < 0.468$ ). These results suggest and warrant further research on choice of medical systems in order to establish the correlation as expected is required.

#### V. CONCLUSION

Culturally, philosophically and religiously diverse medical systems once situated in places and times relatively independent from each other are now co-existing to a point where many patients must actively choose which system to consult, physicians must decide how to relate to systems other than their own and funding agencies must determine commitment levels. Comparative analyses across systems including Western Medicine, Traditional Chinese Medicine, Ayurvedic Medicine and Homeopathic Medicine for the purpose of deciding actions, are challenging because systems diverge dramatically on their view of the body-person, fundamental concepts such as vitalism, and the relationship between patient and practitioner. One viewpoint contends that the divergence between systems is so great that comparisons are futile. A competing view asserts that diverse systems can be juxtaposed for the purpose of practical decision making if knowledge is represented appropriately. The commonality that is sufficient for practical decisions involves identifying the information needs of patients faced with the choice. This article provides a preliminary analysis of the information patients need to make these choices effectively and concludes that a great deal of the information needed is not readily available to patients.

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