



Introduction to Holistic Integrative Ophthalmology

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Abstract: The detailed classification of subspecialties of ophthalmology has helped to boost the development of ophthalmology in the past. However, while such detailed classification enables a clearer and more profound understanding of eye diseases, it has also brought about problems such as fragmentation of knowledge of ophthalmologists. On December 17, 2012, Academician Fan Daiming organized the first “Summit on Integrative Medicine” in Beijing and thus put the “Holistic Integrative Medicine (HIM)” in domestic medical development agenda. Inspired by HIM, the concept of Holistic Integrative Ophthalmology (HIO) was gradually accepted by most ophthalmologists. HIO systematically and integrally studies and analyzes the pathogenesis, treatment and specific issues of eye diseases and makes adjustment and improvement according to the social, environmental and psychological reality so as to produce a new system that can better meet and adapt to eye disease treatment. HIO is the innovation and revolution of the traditional concept of ophthalmology and signifies a new development stage of ophthalmology. This article identifies the challenges faced in the development of traditional ophthalmology, expounds on the concept of HIO, clarifies the necessity and urgency of the establishment of HIO, and proposes future direction of establishing the platform for the development of HIO.

Keywords: Holistic Integrative Medicine (HIM); Holistic Integrative Ophthalmology (HIO); classification; integration; innovation

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Introduction to Holistic Integrative Ophthalmology (HIO)

Ninety percent of man’s perception of the outside world comes from visual sense, and there is no doubt that almost everyone would agree that blindness is the worst kind of misfortune, second only to death. Therefore, the development of ophthalmology has its special significance. Since the 20th century, ophthalmological advancement has been made by leaps and bounds with the rapid development of natural science and industrial technology. As a result, ophthalmology has witnessed further improvement on the basis of the considerable achievements already made. Instrument manufacturing in the field of ophthalmology is

becoming increasingly sophisticated. The subspecialties of ophthalmology have been further subdivided. Ophthalmic surgical technologies are developing towards microsurgical technologies. The invention of new drugs and new surgical treatments has provided new options for the treatment of many diseases that were incurable in the past. However, new problems have also emerged in the meantime.

Challenges faced in the development of ophthalmology

The detailed classification of subspecialties of ophthalmology has helped to boost the development of ophthalmology. Deep exploitations into single areas have brought about a series of problems while enabling people to have a clearer and more

profound understanding of various kinds of eye diseases.

First, it limits the understanding of eye diseases. Eye is not an isolated structure. Instead, it's a sensory organ closely connected with the whole body. In this sense, the physiological state of the whole body affects the visual function and the development and progression of eye diseases have an important correlation with the physiological functions of the whole-body systems. The current model makes us concentrate too much on the eyeball and even on certain area or tissue. In fact, eyeball is connected to the brain via the optic nerves that are surrounded by cerebrospinal fluid (CSF) and covered by meninges. Eight out of the 12 pairs of cranial nerves are connected to the eyes. Blood circulation, environment, diet, internal secretion, immunity and digestion, etc. are all associated with eye diseases in one way or another. The initial symptoms of many systematic diseases are manifested in the eyes and the primary signs of many eye diseases are not shown up in the eyes, therefore, the treatment of many eye diseases requires cooperation between multiple departments.

Second, it fragments knowledge of ophthalmologists. Ophthalmology is a second-level discipline, but it's now being subdivided excessively. With ophthalmology being divided into over 10 third-level disciplines, including glaucoma, cataract, fundi disease and musculi ocularis, etc., ophthalmologists are further divided as different specialists. For instance, in the fundi diseases division, some ophthalmologists are specialized in the treatment of macular degeneration, while some others are specialized in diabetic retinopathy or retinitis pigmentosa. This has increasingly narrowed the knowledge of ophthalmologists. In this case, ophthalmologists only care for the part they are specialized in while ignoring the entirety in treatment, just like the case of three blind men and an elephant. When patients consult a doctor of a grade A tertiary hospital about the postsurgical precautions for glaucoma patients, the answer might be, "I'm a cataract surgeon, so please consult a specialist in glaucoma about this question." Many similar cases can be cited. We've gradually realized that this is a methodological flaw in disciplinary development. Just focusing on one part and ignoring the entirety goes against the disciplinary development of ophthalmology.

***Opportunities in the development of ophthalmology—
raising of the concept of Holistic Integrative Medicine
(HIM)***

Physianthropy has been developing for more than 3,000

years. Medical development in the early stage was an "integration" process. During that stage, people lacked knowledge of their health and related phenomena and had little practical experience and knowledge accumulation. In the process of better understanding disease and health, scattered, fragmented and private experiences, methods and knowledge were gathered and compiled into books for inheritance. This stage can be actually called the stage of "primitive Holistic Integrative Medicine". Medical development began to see the process of "separation" as the experience became more and more precise, the knowledge became increasingly rich and the methodology for medical research and practice developed. With the deepening of disease research, medical science has been further subdivided, from the original classification into preclinical medicine, clinical medicine and preventive medicine, and later, into internal medicine, surgery, gynaecology and obstetrics and pediatrics, and today, into the so-called third-level disciplines, including digestion, pneumology, blood, cardiology, orthopaedics, general surgery and internal secretion, etc. The third-level disciplines are even subdivided now. This is the stage witnessing the booming development of physianthropy and the changing of disease cognition from macro-perspective to micro-perspective. Besides, the diagnostic and treatment level of all specialties has developed rapidly and new theoretical knowledge and diagnostic and treatment means of various kinds keep cropping up. It is an objective law that long periods of division precede unity and long periods of unity precede division. Human body is a complex whole and is composed of multiple systems and organs. These systems and organs have their respective functions, but they are actually inseparable and influence each other. The development and progression of many diseases involve multiple organs and systems and have complex clinical manifestations. The clinical manifestations of different diseases are sometimes overlapped. The subdivision of specialties has brought about medical progress and improved treatment efficiency and precision. In the meantime, the subdivision of specialties has also caused new and practical medical problems. The excessive subdivision of disciplines and specialties has resulted in the fragmentation of medical knowledge and greatly restrained clinical doctor from better diagnosing and treating patients. For instance, many doctors take one part for whole, and patients become organs and diseases become symptoms, which have separated psychology from the body. The ultimate result could be curing one disease while causing the development of another, keeping one

organ well while poisoning another. Consequently, patients would have to move from one medical specialty to another and even face death or the loss of sight after several years.

With the changes in life style and disease spectrum, “separation” has come to the end as the endless “separation” can no longer address the existing practical issues in medical practice. More and more health workers have realized that medical development needs to be reshuffled for “integration” once again. Philosophical development has laid the foundation for the establishment of HIM. In the 17th century, holism became the core issue in western philosophy and was demonstrated in form of multidisciplinary treatment in medicine. As of 1958, an epidemiological survey of Research Unit for Prospective Paediatrics drawn people’s attention to the medical model beyond traditional medicine and complementary and alternative medicine (CAM) has become prevalent (1). Especially in terms of psychological illness, psychologists have kept trying to integrate the traditional medicine with CAM to enable psychiatric patients to get the best treatment. During the same period, Prof. Norm Shealy and Prof. Gladys McGarey have energetically promoted the medical integration process in the United States (1). Under their organization and preparation, in 1976, American Institute of Biological Sciences (AIBS) started to pay attention to the integration of medicine and funded the establishment of an organization specialized in HIM. In 1978, American Holistic Integrative Medical Association was officially founded, which has driven HIM to develop at full speed. In 1996, American Board of Integrative Holistic Medicine (ABIHM) was founded. Currently, ABIHM has developed professional textbooks on HIM for the cultivation and certification of talents in HIM.

In China, the idea of HIM had already started to sprout in 1990s. Under the organization of Academician Fan Daiming, the first “Summit on Integrative Medicine” was held in Beijing on December 17, 2012 (2) and thus put HIM development in domestic medical development agenda. The conference was jointly undertaken by Chinese Academy of Medical Sciences (CAMS), Guangzhou State Key Laboratory of Respiratory Disease, Society of Cardiovascular Physiology/Society of Respiratory Physiology, Chinese Association for Physiological Sciences, Society of Cardiovascular Disease/Society of Respiratory Disease, Chinese Association of Pathophysiology, Chinese Association Of Rehabilitation Medicine, Chinese Society for Thoracic and Cardiovascular Surgery, Chinese Society of Cardiology, and a number of other societies under

Chinese Medical Association. Academicians Fan Daiming, Yu Mengsun, Zhu Xiaodong and Chen Keji attended and chaired the meeting and preliminarily planned and recapped the development of HIM. A special report session titled “*Combination and Integration—Requirement of the Times for Medical Development*” was organized on January 27, 2013 at the “Academic Annual Conference of Chinese Medical Association” held in China National Convention Center (2). At the meeting, Dr. Cecil B. Wilson, President of World Medical Association (WMA) analyzed the social security systems within the global reach and the work direction of WMA and presented that medical integration is the requirement for medical development. Academician Cao Xuetao, President of CAMS, expounded the status quo of and development suggestions for the integration of medical disciplines. Academician Fan Daiming, Vice President of Chinese Academy of Engineering, gave a lecture on “*Holistic Integrative Medicine—Negation of Negation of Medical Development*”. Combining the overseas situation and domestic medical development demand, the conference had a systematic elaboration of the necessity and urgency of developing HIM and pointed out the direction for the establishment of an HIM platform.

Academician Fan Daiming concisely summarized the concept of HIM, “*Holistic Integrative Medicine (HIM) is a new medical system of acting upon the people as a whole to organically integrate the most advanced knowledge theories of all medical fields with the most effective practical experiences of all clinical specialties and then adjust them in line with the social, environmental and physiological reality to make them more adaptable and applicable to the health and disease treatment of human body.*” (3). Integration contains the meaning of sorting out, which is a method, means and process, and also contains the meaning of combination, or adaptability, which is a requirement, standard and result. The aim of integration is to follow the historical trend and accord with the scientific law, the society and the public opinion. Integration has its historical and philosophical basis. Under the active leadership of Academician Fan Daiming, digestive, cardiovascular and respiratory departments and chest pain centers and other platforms have been established in China on the basis of the concept of HIM and have proved the important role of HIM in clinical disease diagnosis and treatment in clinical practice.

Necessity and urgency of the establishment of HIO

The raising of the concept of HIM and the establishment

of other domestic HIM platforms have given us a hint that establishing a platform for HIO will be an inevitable requirement for the sustainable development of ophthalmology.

Necessity of historical development—long periods of division precede unity and long periods of unity precede division

Ophthalmology is a medical science studying the occurrence, development and outcome, prevention, diagnosis and treatment of visual organ diseases. Ophthalmology has also gone through the development process similar to that of the entire medical science, namely the process from integration to separation. There were many descriptions of eye disease treatment that can be traced as far back as 3000 BC. Oculopathy guided people to pay attention to and study the ocular structure. With the accumulation of knowledge, people's cognition of the anatomic structure and physiological functions of eyes deepened with each passing day. Especially from the 14th century to the 18th century, eye disease diagnosis and treatment techniques, as part of the surgical system, made a great headway. In 1765, Dechais Gendron became the first full-time ophthalmology teacher at the Ecole de Chirurgie in Paris. In 1770, he summarized the knowledge about eye diseases back then and wrote the first ophthalmology textbook (1). After the 19th century, with the completion of the Industrial Revolution, the progress in science and technology accelerated the cognition of eye and eye diseases, and ophthalmology was divorced from surgery and gained its status as an independent subject. In 1818, Joseph Beer was awarded the title of principal professor by the Affiliated Hospital of Medical University of Vienna and became the first professor of ophthalmology in the world. In 1802, the world's first ophthalmology magazine *Ophthalmologische Bibliothek* was born. In 1805, Royal London Ophthalmic Hospital, the largest ophthalmic hospital back then was founded. The invention of ophthalmoscope in 1851 made ophthalmology develop more rapidly and usher in the historical stage of "separation". Various subspecialties gradually developed and people's cognitions of eye diseases also developed from macroscopic to microscopic perspectives and from organs to tissues and cells. Especially since the 20th century, due to the rapid development of natural science and industrial technology, ophthalmology has also advanced by leaps and bounds and the third-level disciplines of ophthalmology have possessed the most advanced theoretical systems and experiences in clinical

diagnosis and treatment, which have laid a foundation for the linear thinking in its development. Similar to the development law of the entire medical science, "linear thinking" has brought about malpractices in eye disease diagnosis and treatment while promoting the development of sub-disciplines. However, combining eye disease diagnosis and treatment with experiences in diagnosis and treatment of systematic diseases by conforming to the mainstream of medical development and viewing problems from the perspective of nonlinear thinking will improve the development of ophthalmology and even other related disciplines. This is the development pattern of HIO.

Need for comprehensive understanding of eye diseases—the true face of Lushan is lost to one's sight, for it is right this mountain that one resides

When subspecialties of eye diseases are subdivided to the very point, the cognition of a single eye disease has reached the level of cell, molecule and gene. However, as mentioned above, eye is not an isolated structure but a sensory organ closely connected with the whole body. A variety of eye diseases involve multiple systems and organs rather than just eyes. Therefore, the diagnosis and treatment of eye diseases require the association of multiple departments and the combination of multiple means. Taking glaucoma, the most common eye disease, as an example, intraocular pressure has been taken as the pathogenesis of glaucoma and the only effective therapeutic target for years. However, according to epidemiologic studies, the intraocular pressure of 83.5% of Chinese patients with primary open-angle glaucoma is not high. In Japan, this proportion is even more than 90%. Patients with intraocular hypertension have a high intraocular pressure, but a 5-year follow-up showed that only 9.5% of them developed glaucoma. For many patients with glaucoma, the intraocular pressure controls the continued progression of the disease. If focusing on only the eye, we would never find the right answer to this phenomenon. Thinking out of the box of ophthalmology, we found that blood circulation is related to intraocular pressure; intracranial pressure is related to intraocular pressure; diurnal rhythm is related to intraocular pressure; and *Helicobacter Pylori* is related to the occurrence of glaucoma. In particular, the retrospective and prospective clinical studies and animal experimental studies done in recent years have proved that intracranial pressure is closely related to the occurrence of glaucoma. The occurrence of glaucoma is closely associated with trans-

lamina cribrosa pressure difference (difference between intraocular pressure and intracranial pressure) but not the intraocular pressure itself. This discovery has enabled us to have a more comprehensive understanding of glaucoma. Building on that, if we focus on systems and sort out and analyze all related factors, it might be possible to have a new therapeutic target and to establish a more comprehensive and standard treatment.

Requirement for standard treatment of eye diseases—stones from other hills can be used to make improvement for oneself

The positive role of the subdivision of the entire medical science to medicine is that it leads to the rapid development of all specialties, the cropping up of various kinds of new diagnosis and treatment tactics and ultimately the emerging of unique diagnosis and treatment tactics and technologies. Moreover, to meet the demands of various specialties, there may be more sophisticated and more unique techniques, technologies and equipment in certain special field. Medicine is a common science. Some cutting-edge technologies and tactics may exert similar effects in different medical departments. The conventional or general technologies widely applied in some specialties may have unexpected effects in another subspecialty. For example, orbicularis oculi muscle spasm, a disease commonly seen in ophthalmology outpatient department, isn't new to most ophthalmologists. Ophthalmologists generally suggest the patients to take a good rest, avoid tiredness, cut out wine and something like tiger balm, or accept symptomatic treatment like partial hot compress, acupuncture/massage and even botulinum toxin injection, only resulting into poor effect and the relapse of disease. Some patients even have got peripheral facial paralysis due to the chronic illness or botulinum toxin injection. Actually, there is a specific surgical treatment in neurosurgery for orbicularis oculi muscle spasm. Demyelinating neuropathy occurs to the root exit zone (REZ) due to the compression of corresponding vessels, which is believed to be the pathogenesis of hemifacial spasm (HFS). After probing into the cerebellopontine angle via the retrosigmoid approach, microvascular decompression (MVD) of the facial nerve root is proved to be the only effective treatment of HFS and the cure rate may reach above 95%. There are many similar cases suggesting that multidisciplinary integration is bound to resolve the ophthalmic diseases that are thought to be incurable in single ophthalmic specialties and make the diagnosis and treatment of eye diseases more comprehensive

and systematic.

Construction of an HIO platform

Inspired by the raising of the concept of HIM and the establishment of other domestic HIM platforms, most ophthalmologists have accepted the concept of HIO and actively taken part in the construction of an HIO platform after theoretical studies and practical explorations. HIO is to, systematically and integrally, study and analyze the pathogenesis, treatment and specific issues of eye diseases and make adjustment and improvement according to the social, environmental and psychological reality so as to produce a new system that can better meet and adapt to eye disease treatment. The difference between HIO and general ophthalmology is that general ophthalmology requires only a rough grasp of all ophthalmic knowledge without enough depth. The difference between HIO and comprehensive ophthalmology lies in the fact that comprehensive ophthalmology refers to a specialty that covers the ability and knowledge system of all ophthalmic subspecialties and requires systematical utilization of subspecialties in solving complex ophthalmological problems. Thus it can be seen that HIO has essential differences with general ophthalmology and comprehensive ophthalmology.

Developing a systematic therapeutic schedule by incorporating the concept of HIM into ophthalmology and integrating eye diseases with the systematic functions of the whole body for logical thinking comes as a significant exploration in HIM. HIO focuses on the recognition and re-understanding of eye diseases from the whole-body system or overall perspective, thus promoting studies on the diagnosis, treatment, prevention and pathogenesis of eye diseases and realizing the unification of eyes with the whole body and part of the body in concept, and the principle of putting patients at the core in strategy and the integration of all kinds of preventive and treatment approaches in practice. HIO is the innovation and revolution of the traditional concept of ophthalmology and the new stage of ophthalmologic development from specialization to integration. For the cognition of diseases, HIO requires mastering adequate information about diseases, including the whole body, lifestyle, treatment and prognosis, etc. and grasping the best clinical evidences. For the treatment of diseases, it emphasizes the presentation of a schedule but not a method to the patient. This schedule includes not only the optimal treatment of diseases but also the whole-process guidance, from secondary prevention of diseases,

lifestyle to psychological adjustment, etc. For the research of diseases, it's no longer such a linear thinking as gene-cell-organ-disease. Instead, it emphasizes the influence of the whole body, environment and genetic background on disease outcome.

Practice is the sole criterion for testing truth. The development of HIO requires continuous accumulation, improvement and practical examination. It's a never-ending process from theory to practice, and back to theory and then to practice. As required by Academician Fan Daiming, we currently need to accomplish the following tasks one by one to boost the construction of an HIO platform.

- (I) Organization of academic conferences on HIO. In October 2013, Beijing Tongren Hospital and the School of Optometry, Capital Medical University (CMU) organized the first conference on HIO. The HIM team headed by Academician Fan Daiming and representatives of ophthalmology and eye disease related departments attended the meeting. The concept of HIO was introduced to ophthalmologists and related departments for the first time. The conference also deployed the task of actively preparing for the construction of an HIO platform. The first conference on holistic integrative glaucoma co-organized by Chinese Ophthalmological Society, Chinese Medical Association and Beijing Ophthalmological Society, CMA held in June 2014 gave a detailed elaboration and demonstration of the holistic integrative glaucoma diagnosis and treatment tactics established by adopting HIM thinking. Similar conferences will be continuously organized and convened;
- (II) Active preparation and participation of academic organizations. Beijing Ophthalmological Society, CMA and Chinese Ophthalmological Society, CMA organized their members to study HIO concept. An HIO group is expected to be set up in the near future;
- (III) Compilation of a HIO specialized magazine. A special HIO column has been created in the Chinese *Journal of Ophthalmologic Medicine*;
- (IV) Summarizing of the discussion results of the two conferences of Chinese Ophthalmological Society and gathering of forces of all clinical specialties aiming at compiling a book as the first monograph on HIO. The next step is to make continuous

improvement and expansion on this basis and produce a professional reference book on HIO as soon as possible;

- (V) Establishment of the first domestic "HIO" teaching and research office at Beijing Institute of Ophthalmology to gradually carry out HIO related work;
- (VI) Establishment of an HIO consultation center at the Optometric Center, Beijing Tongren Hospital for systematic and comprehensive treatment of specific eye diseases and preliminary establishment of an eye disease diagnosis and treatment path under the guidance of HIO thinking during the practice.

Summary

HIO is the innovation and revolution of the traditional concept of ophthalmology and a new development stage of ophthalmology specialization to integration. The change of this concept cannot be simply taken as a regression or reintegration. Instead, it signifies development and progress. It's not only an act of innovation but also a form of innovative thinking as well as the revolution of medical methodology. HIO is a new idea and new concept for future development and has an extremely high realistic value. Promoting the concept of "holistic integration" in ophthalmology and establishing an HIO platform will facilitate a multi-level and deep integration of ophthalmology, expand the train of thought, broaden the vision and finally form an ophthalmic diagnosis and treatment model featuring "integrated diagnosis and individualized treatment" and drive the development of ophthalmology towards a higher level.

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