



Review article

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Present Situation and Future of Vocal Arts Medicine in China

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Abstract

Voice Medicine is a discipline that studies the anatomy, development, physiology and pathology related to voice, speech and language, and explores the etiology, mechanism, diagnosis, treatment and prevention of voice related diseases. This review provides a clear view on Present Situation of the Vocal Arts Medicine in China along with its future aspects, where we conclude that vocal arts medicine will have a better future with collaboration and the support from the city, province, and central governments.

Keywords

Voice medicine; Vocal arts; Voice health; Audiology

Introduction

Voice medicine is a discipline that studies the anatomy, development, physiology and pathology related to voice, speech and language which explores the etiology, mechanism, diagnosis, treatment and prevention of voice disorders [1]. As an important branch of otorhinolaryngology head and neck surgery, its diagnosis and treatment involve many areas such as normal voice, artistic voice, various speech disorders, swallowing disorders, throat reflux and non-throat speech rehabilitation, and is extensively associated with audiology, linguistics, neurology, psychology, rehabilitation medicine, and Musical Arts [2].

Vocal Arts Medicine is a significant branch of Arts Medicine and an independent branch subject formed by the intersection of vocal performance arts and voice medicine. Vocal Arts Medicine not only guides the scientific selection and training of singing talents, but also studies the physiological, pathological, acoustic, psychological features of singers and actors, while preventing and treating singers and actors' voice disorders [3]. It is based on the clinical medicine of otolaryngology and is closely related to the medical basis and other clinical subjects, which is also extensively associated with vocal music, Chinese traditional opera, drama, linguistics, phonetics, psychology, vocal pedagogy and computer science [4]. This paper elaborates the present situation and future of vocal arts medicine in China, especially in CCOM.

Present Situation of Vocal Arts Medicine in China

Since the 21st century, the improvement of China's economy and prosperity of the cultural market, popularized arts education and the pursuit of good voices by the general public, Vocal arts medical

professionals have done a great deal of work in many areas, such as: protecting the actors and singers' voice, preventing and treating their voice disorders; mining their vocal potential; and cultivating specialists in artistic voice and voice medicine. Due to the combination of artistic voice and voice medicine, there are new situations and new atmospheres which are embodied in the following aspects.

The new concept of vocal arts medicine with Chinese characteristics established

Taking the dominant ideas of the "Modern Medical Model" and the idea that "voice disorders caused by misuse must be corrected by proper usage" as the guide, we have established the comprehensive voice service system ---the combination of traditional Chinese medicine and western medicine, also the combination of Dr. Lin Junqing's (M.D. Baritone) "pharyngeal voice" training method and other voice rehabilitation or training exercises. This is the new concept of vocal arts medicine with Chinese characteristic and which was established by effort of several generations. The new concept of Chinese Vocal Arts Medicine has been adopted to solve the voice problems of many singers, actors and other professional voice users. For examples, under the guidance of the famous baritone Zhong Zhenfa, the young tenor Hao Xingwa achieved a higher singing vocal range and improved his singing capacity by the Dr. Lin "pharyngeal voice" training method and won the first prize in an international vocal competition in 2016. This is a successful case of scientific vocal training method that overcomes the drawback of the physical structure of voice (too flat epiglottis). In recent years, some Chinese and international singers from such countries as the United States, Germany, Italy, Russia and Romania, were recommended by National Centre for the Performing Arts (NCPA) to visit the Voice Research Centre (VRC) in the Central Conservatory of Music (CCOM). By the comprehensive voice service system, their voice problems were successfully treated and solved. Hunan Artistic Voice Clinic escorts the singers during the talent shows and competitions such as *Super Girl's Voice* or *Super Boy's Voice*, *I Am Singer*, etc. The voice rehabilitation clinic of Dalian Liberation Army Rehabilitation Medical Center conducts voice guidance for the commanders and soldiers of the "93" Military Parade in Tiananmen Square. All these reflected the new achievements and new value of China's vocal arts medicine professionals.

Under the guidance of the new concept of Chinese Vocal Arts Medicine, subjective and objective evaluation of the voice is used to provide a relatively objective and accurate assessment for vocal students' enrollment, singing voice training and voice classification. Moreover, it played an important role in reducing the training blindness, improving the rate of being a talented and preventing voice disorders. *Voice Type Identification and Scientific Training* by Prof. Guo Shuzhen, the famous vocal educator and soprano, won the first prize in teaching achievements of the national higher education. This shows the great power of the combination of Arts and Science.

Cultivating intersectant, innovative talents of vocal arts medicine

In the year of 1987, Prof. Shen Xiang the famous vocal educator, tenor, and Dr. Feng Baofu, the chief physician of Voice Medicine, enrolled postgraduate in CCOM who had graduated from medical

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college and had ENT clinical experience with the hobby of singing. The student (Dr. Han Liyan) would be specially trained to become successor in the field of Vocal Arts Medicine in China. Their thought was very good and also became reality.

Since the 21st century, with the popularization of arts education and the increasing quantity of college enrollment, there would be many people who choose to sing as a profession. It has become increasingly arduous for singing teacher to conduct the vocal students with inadequate vocal talents. Therefore, it is rather essential to cultivate vocologists (invented by American voice scientist, Ingo Titze) with the knowledge of both vocal science and physiological anatomy, or people who are specialized in solving singers' vocal problems [5,6]. To this end, CCOM not only continues to recruit professionals, who have graduated from medical college and voluntarily devote themselves to vocal research and voice treatment, but also enrolls professionals devoted to music education, vocal performance and are simultaneously keen on voice research or vocal training, in order to meet the demands of the times. These ideas have been put into practice, 9 postgraduates on artistic voice and voice medicine have been trained or training in CCOM.

Setting vocal arts medicine courses for diverse levels

To acquaint vocal students with voice significance in the human communication and artistic expression, and to comprehend voice production process and principle well to avoid and prevent vocal disorders, VRC of the CCOM has set up the course *Singing Mechanism and Voice Care* since 2002. The course has been well received by singing teachers coming from all over the country for further studies, and it has also become a required course for the Institute of Continuing Education, Remote Education, National Music Teacher Qualification Argument Courses and Vocal Master Class. Four of the lectures have been recorded in name of *The Mystery of Human Vocal Instruments*, and have been released on the video site and the Online APP of the CCOM for free learning.

Meanwhile, invited by PLA 301 Hospital, Shanghai ENT Hospital, Beijing Friendship Hospital, Beijing Chaoyang Hospital, Branch of Heilongjiang Otorhinology Head and Neck Surgery and other medical units, the director of VRC has given some lectures on such topics as, <*The Introduction of Vocal Arts Medicine in China*>, <*How to Examine and Identify the Human Voice Instrument*>, <*The Influence of Voice Therapy and Voice Training on the Rehabilitation of Voice Disorders*>, <*Diagnosis and Treatment of the Artistic Vocal Disorders*>, <*Caring and Training Of Artistic Voice*>, <*Identification and Training of Artistic Voice*>, <*How do the Laryngologists Diagnose and Treat Voice Disorders*>, and <*The Importance of Correct Vocal Attack for Voice Therapy and Training*>.

Furthermore, invited by the Shanghai Conservatory of Music, Yunnan Arts University, Guangxi Arts Institute, the Conservatory of Music of Sichuan Normal University, Conservatory of Music of Capital Normal University, Yantai Normal University, Beijing Institute of Modern Music, Beijing Master Class of International Singing and other arts institutes, She also gave several lectures, such as <*How to Use Your Voices Properly*>, <*Vocal Problems Related to Singing*>, <*Voice Mechanism and Singing*>, <*Caring And Training of Artistic Voice*>, <*Incorrect Reasons and Its Corrective Methods of Singing*>, <*The Importance of Breathing Support In Singing From the Point of Vocal physiology*>, <*How Should Singers Use Their Voice properly*>, and so on.

Carrying out interdisciplinary academic forum, academic research and international exchange

In 2008, "The Voice Branch of Otorhinolaryngology Head and Neck Surgery of Chinese Medical Association" was established. Since then, several symposiums on voice problems (eg. diagnosis and treatment of glottic insufficiency, diagnosis and treatment of white lesion of vocal folds, and consensus of Laryngopharyngeal reflux) have been held. <*Aids to Voice Diagnostics*> has been translated into Chinese and published. Since the founding of "Voice Specialized Committee of China Arts and Medicine Association" in 2015, three large-scale international exchanges on artistic voice and voice medicine have been also held in Beijing, Tianjin and Shanghai. Besides, the otolaryngology departments of some hospitals in Beijing, Shanghai, Tianjin, Guangzhou and Xiamen have organized several workshops on new voice medical technology, diagnosis and treatment of voice and throat diseases, voice therapy and vocal training. All these efforts have greatly pushed the voice medical technology and the level in China to develop towards a more specialized and systematic direction.

On "World Voice Day", VRC of the CCOM has held activities for three successive years, such as "Forum for Voice, Medicine, Speech and Singing" and "Youth Forum for Voice, Medicine, Speech and Singing", which have strengthened the connection and communication among subjects and promoted the construction and development of each subject. The following Consensus was reached through discussion: As an inter-sectional but independent subject, Vocal Arts Medicine plays an important role in maintaining the voice health of some professional voice users such as actors, singers and so on. So, the government, society and institutes should continue to care for it and support its development. The voice examination report provided by doctors is important evidence for the selection of singing talent, voice training, and voice type identification, which deserves teachers' attention. As the user and trainer of human voice musical instrument, vocal student and singing teacher must understand the components of human voice musical instrument, and combine the objective and the subjective, sensibility and rationality, and art and science together. If a singer wants to continue his artistic life, he must respect his own objective physiological conditions and voice health and master the scientific method of voice production. As a singing teacher, in addition to having a good command over the vocal principle of human voice musical instrument, he also needs to provide practical and feasible training methods based on both the objective examination report offered by doctor and different physiological conditions of students. He also needs to respect science, respect arts and respect life, and combine the theory with concrete reality together." [7].

In order to provide the young with opportunities to study and practice and help them grow up as soon as possible, VRC of CCOM has set up <*The Youth Forum for Voice, Medicine, Speech and Singing*>. Some lectures were also given "The Importance of Individualized Teaching---the Case Analysis on Voice Training According to Clinical Voice Examination Report" (Song Jialin), "The Influence of Unhealthy Performance of Vocal folds and Surrounding Tissues on Voice Production and Voice Health"(Jiang Zhen), "The Important Role of Voice Therapy in Vocal Teaching and Voice Rehabilitation" (Niu Wan), "The Thinking and Solution of Voice Problems in Children's Singing" (Gao Shengnan), "The Application of Voice Training in Voice Disorders' Treatment" (Zheng Shaofeng), "The Influence of Laryngopharyngeal Reflux on Voice"(Zhong Jingting), "The Value and Application of Dogs' Breathing in Voice Training"(Huang Wei), which have been strongly

supported and encouraged by some vocal music educationists, such as Guo Shuzhen, Zhong Zhenfa, Zhao Dengying, Jiang Feng and some otorhinolaryngologists, such as Yu Ping and Li Jinrang. They consistently believe the research topics and content are of great value and significance, and the training methods they have introduced are also very practical.

In addition, according to their interests and characteristics, different units and individuals have carried out different research work on artistic voice and have published a lot of basic research and the introduction of detection method in domestic and foreign journals. Several experts of the China Arts and Medicine Association (CAMA) have conducted research on "The Application of Multi-channel Voice Analysis System" (Huang Yongwang), "The Physiological Basis of Hoomei Singing" (Li Gelin), "Primary Exploration of Peking Opera Hualian's Resonance Energy Distribution" (Jiang Yongmei), "Prevention and Treatment of Artistic Voice Disorders in Sichuan Area" (Guo Li), and some singing teachers (Yu Shanying et al) and phoneticians (Kong Jiangping et al) have also joined the artistic voice research team (see Chinese CNKI, VIP journals etc.).

Here we would like to thank Dr. Yu Ping from PLA301 Hospital, Professor Jiang Jack from Shanghai ENT Hospital, and Dr. Gu Lide who had been working in Shanghai Literature and Arts Hospital in his early years. They have strengthened the exchanges and cooperation between China and other foreign countries about voice diagnosis and treatment technology by inviting famous voice scientists, otolaryngologists, speech-language pathologists, artistic voice experts in Europe and the United States to China.

Director of VRC of the CCOM and her graduate students have attended the "Pan European Voice Conference" for four consecutive years since 2009. When participating in the European phoniatic training courses, she introduced *Vocal Arts Medicine in China* and *The Role of Clinical Voice Examination in Vocal Music Teaching* and became a member of the Union of the European Phoniatic.

Publishing books related to Vocal Arts Medicine

Since 2000, A large number of books related to voice and voice training and voice medicine have been published. Professor Li Weibo from the Voice and Opera Department of the CCOM has translated seven books regarding singing and singing voice training. Han Liyan and Jiang Shixiong have jointly translated <*Dynamics of the Singing Voice*> into Chinese, which is the best book that combines physiology and anatomy with singing and welcomed by the vast vocal music teachers and students. Feng Baofu's <*Protection of Artistic Voice*> has been published and issued by China Radio and Television Publishing House. In 2007, China Arts Medicine Association compiled and printed the <*Collected Papers of Chinese Arts Medical Research -- Artistic Voice Volume*>, under the general editorship of Han Liyan and Zhang Daoxing. Wang Zhenya has compiled and printed <*Wang Zhenya's collected papers of Vocal Arts Medicine*>. Liu Yunchi has compiled and printed <*A Preliminary Study of Chinese Vocal Arts Medicine*>.

Popularization of Vocal Arts Medicine

Professor Peng Lijia graduated from Chinese Literature department of the South China Normal University and works for the College Journal in Xinghai Conservatory of Music. She studied singing, recitation, pharyngeal voice, Peking Opera with several instructors. Her books <*Vocal Common Sense and Voice Care*> and <*Scientific Voice Training and Voice Care*> have been used by many teachers and students in Speech Pathology.

Wang Xi, the voice doctor of Shandong Arts College, one of the famous Voice Medical experts, founder of first private clinic especially for school teachers, recently published *Teacher Golden Voice Handbook* (Jinan Press, 2016). The book is the result of nearly 40 years of research on teacher's voice problems and her compassion for teachers. She received praise from famous figures in the field of arts and education.

As the Chairman of Voice Specialized Committee of China Arts and Medicine Association, Huang Yongwang and his group (Second Affiliated Hospital of Tianjin Medical University) collected voice data from 47,823 teachers from elementary schools and middle schools in Tianjin and its nearby area. The data were analyzed using statistics with single factors and multivariate factors. Professionals who use their voice a lot can learn voice health care by using this survey. Moreover, it provides a scientific basis for government to make corresponding care measures.

Director of VRC of the CCOM was invited to give speeches about <A Discussion of How to Use Voice properly>, <How Teacher Use Voice Correctly?>, <Three Principles of Voice Use>, <How to Get a Good Voice> by many teaching units and departments such as solfeggio teaching and research office of the Composition Department of the CCOM, Teacher Development Center of China Renmin University, Beijing Foreign Studies University, Graduate School of Academy of Agricultural Sciences, Labour Union Organization of Peking Union Hospital, Beijing Xicheng District Education Institute and so on.

Dr. Huang Dongyan from the PLA 301 hospital, opened a special column for Music Weekly, Approximately 20,000 readers have read her 20 popular science articles. Dr. Han Liyan at the invitation of Opera magazine sponsored by Shanghai Opera House, answered almost 24 Q&A and a total of 30 thousand words in special column of consulting room of vocal music.

As the summary in an unpublished article *The History of Chinese Voice Medical Development* by Dr. Zhou Yuexian, the Standing Director of China Arts Medicine Association, one of the most famous voice medical experts, *the voice health service system with Chinese Characteristics was established, with the effort of several generations of voice medical experts. It can be concluded as below:*

1. It is a combination of traditional Chinese medicine theory and Western medicine theory.
2. It is a combination of voice internal medicine and voice surgery.
3. It is a combination of national singing and bel canto.
4. It is a combination of vocal organs, vocal function and psychology.

With the combinations of above advantages, Chinese Voice Arts Medicine must be standing in the forest of voice medicine in the world and has stepped ahead in some fields.

Future of Vocal Arts Medicine in China

From history, we know that the key, how a scientific major is built and developed is based upon whether China government pays attention to it; Needs of voice health from singers, actors and other professional voice users are the power pushing vocal arts medicine to develop; Our old generation of experts has laid the foundation and set good examples with their efforts and achievements and gives us a direction to follow.

Now we are living in a world with all kinds of science and technologies along with abundant information. People will have all sorts of needs. How we meet those needs with modern technology and to have a better voice is a mission for this generation of vocal medicine and vocal arts medical experts. We need to fulfill the mission with deliberating consideration.

The author puts on some immature thought and practices on several main topics and issues as below for you to think and discuss:

Further strengthen the talents construction of Vocal Arts Medicine

At present, only the Central Conservatory of Music offers the program of Master of Vocal Arts and Voice Medicine. We hope the other arts colleges can also open this program to meet demands of an increasing number of professional voice users and the general public who are pursuing a better voice.

Starting in May 2017, Beijing Tsinghua Changgeng Hospital has invited Dr. Han to work one or two days a month in the Vocal Medicine Center. Meanwhile, ENT doctor from Tianjin First Center Hospital studied the course of <Singing Mechanism and Voice Care> in the Central Conservatory of Music. The cooperation between arts and medicine is a good way to cultivate compound talents is worthy to be promoted.

We also need to encourage young people to actively participate in the study and research of vocal arts. Research work is the power to push discipline improvement. Because young generation is a group of added creativity and energy, they would be the future hope for discipline development.

Build a Vocal Arts medical curriculum with Chinese characteristics

We use several famous textbooks from foreign countries for our master program because of the highly interdisciplinary nature of vocal arts medicine. The books are as follows, but not limited to <The Science of The Singing Voice> by Johan Sundberg, <Clinical Examination of Voice> by M. Hirano, <Vocology: The Science and Practice of Voice Habilitation> by Ingo R Titze, <The Singer's Voice> by Michael S. Benninger & Thomas Murry and <Threatment of Voice Disorders> by R.T. Sataloff. Some of the books have been translated and published into Chinese, but most of them still do not have Chinese version. In future, it will be necessary to organize the manpower to translate foreign monographs and materials in this field. More importantly, we need to speed up the pace to write a curriculum integrated Chinese and Western medicine, voice training, vocal arts examination, voice disorders prevention with Chinese characteristics, to fulfill the demands of different levels of voice. It is our responsibility.

Voice experts committee and voice group actively play a leading role

Voice experts committee and voice groups unite different groups of experts from different areas such as voice, medicine and arts. Every arts school, normal school and associations, which group members need to be invited as committee and groups members to give speeches and training programme about vocal and vocal arts. Their guiding role in professional institutions for vocal training, voice type identification, voice protection can be properly used by the events and further improve the discipline construction of China's art education and voice medical education.

Promote the establishment, improvement and standardize management of the voice laboratories in arts school.

As previously described, it is necessary to document voice changes for each vocal student, due to the increasing enrollment in college and popularization of arts education. This action can guide arts education to a more scientific, individualized and efficient direction. It is the key to make sure arts talents grow healthily. It should arouse the attention of arts, medicine, education and other functional departments. At the same time, we need to help music colleges set up, voice laboratories and train professionals and standardize the voice examination process and methods. It will make implementation of monitoring training and treatment planning more objective and effective.

Using the internet, multimedia technology to achieve national coverage of distance education

In order to meet multifaceted needs from society, it is necessary to use online multimedia education for those who do not have time or opportunity to participate in short-term courses of Vocal Arts Medicine. Let these professionals (singing teacher and laryngologist) be able to comprehend the new concepts and new ideas of vocal arts medicine correctly and better grasp the advanced voice examination and treatment means and more effective vocal therapy and training methods, which promote arts education, vocal pedagogy, voice disorders diagnosis and treatment and voice health level.

Jointly applying research projects across arts, science, and medicine

Arts schools need to apply and work on research projects jointly with hospitals and research institutes which have advanced technology devices. It is meaningful to do such research. The projects included would be: how to use fibrolaryngoscope, strobolaryngoscope, high speed laryngeal photography, voice acoustic analysis, CT, MRI, 3-D Virtualization and Data Virtualization [8] to serve vocal arts medicine, as well as to improve cure rates of voice disorders; how to continue research and conclude differences of voice use and voice disorders between different singing style (national singing, bel canto, traditional singing, pop singing etc), vocal characters, vocal use characters (breath pattern, vocal attack pattern, resonate use pattern, articulation pattern) and voice disorder characters; how to use vocal art training methods to solve pathological voice etc. .

Set up voice health management center or voice medical center at hospitals, communities and schools with ability

Prime missions of the voice health management center and voice medical center are to examine, identify, consult, and correct bad voice behaviors. The centers serve mainly professional voice users and use integrated treatment of the Chinese and Western medicine. If the patients need surgery, centers will contact local first-class grade 3 hospitals. Hence, it would solve the pressures on the local grade 3 hospitals and treat patients with specific treatment plans. There are some investors who notice this highly potential market and are ready to put money in it. Nevertheless, the markets would create many jobs position for many young graduates who have ambitions in voice research and treatment. This need the approval from related government departments.

In conclusion, this paper talked about the present situation and future of Vocal Arts Medicine in China from two aspects. We believe that Vocal Arts Medicine will have a better future with the

collaboration of far-sighted personnel and the support from all levels of the government.

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