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Medical Visual Design in The Context of Aging

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Abstract: This paper is written on the subject of acute cerebrovascular disease, because acute cerebrovascular disease is a disease of the elderly. In this paper, through consulting materials, literature, understand the acute cerebrovascular disease related pathology, definition and other professional knowledge. Combined with the professional knowledge related to design, the medical visual design of acute cerebrovascular disease is introduced through the introduction of acute cerebrovascular disease and the relationship between disease and design.

Keywords: Acute cerebrovascular disease, medical informatics, health education materials, visual design.

1. Information Collation of Medical Visual Design in Aging Context

1.1. Research background

According to a paper published by the international authoritative medical journal The Lancet in June 2019, the biggest cause of death in China from 1990 to 2019 is stroke.

Stroke, also known as stroke, is caused by cerebrovascular embolism or cerebral thrombosis, cerebral hemorrhage, etc. The main symptoms are sudden coma, mouth and eye distortion, speech difficulties, partial paralysis, and severe immediate death.

A study in the Lancet Neurology also documented the high number of stroke patients in China. According to a study published in the journal, "Global, Regional and National Stroke Burden 1990-2016: A Systematic Analysis of the Global Burden of Disease Study 2016," in 2016, of the 13.7 million new stroke patients worldwide, 5.51 million were in China, accounting for up to 40 percent.

1.2. The purpose of the research

I think design serves the people. The purpose of design is to make people's life more convenient and easier. In today's increasingly advanced medical level, most young people may have a certain preliminary understanding of the treatment of various diseases and treatment methods. However, many elderly people are still not familiar with modern treatment methods and treatment procedures, and the speed and degree of acceptance of changing things are much slower than that of young people. Therefore, I think the purpose of this research is to better help elderly people understand the process of modern medical treatment.

In modern society, science and technology are constantly advancing. Nowadays, with the acceleration of urbanization, people's pace of life continues to accelerate. More young people are juggling all kinds of things. Therefore, if the elderly at home get sick, young people may not be able to accompany the elderly to the hospital for treatment at the first time. Older people are less familiar with treatment methods and hospital procedures. So as a designer. We should use a more concise and straightforward form, so that the elderly who are ill and their children cannot accompany the treatment can more clearly understand the hospital treatment process and pathology and treatment methods after illness.

1.3. Research method

The main research methods are academic research, thematic research and paper review, and strive to consult reliable first-hand data and foreign monographs, literature and other research results, through research and combing, to understand the symptoms of stroke, treatment techniques and other professional knowledge. In addition, by understanding the research status at home and abroad, we can understand what kind of disease stroke is now and how to deal with it. So it can be integrated into my design. I also need to know how to prevent the disease through data, so that my design can reach all aspects.

1.4. Subject research

1.4.1. Population profile of acute cerebrovascular diseases

1.1 Comprehensive information survey of acute cerebrovascular diseases

It is necessary to try to understand the history of stroke and stroke treatment. Today, stroke treatment has become an important area of biomedical activity. The researchers' approach to stroke treatment research is to examine the history and respond according to the situation to overcome the difficulties it has faced in the past few years.

Hundreds of years. We adopted Michel Foucault's method and tried to use it wherever it helped to illuminate practice and theory. Stroke medicine has not lived up to Foucault's expectations, and people have accepted the limitations of methods and integrated the differences into people's own interpretations. It wasn't until the mid-15th century that the disease was officially called "stroke." In the 20th century, the term originated from the ancient Greek word "stroke," which translates as "as if struck by lightning." The term "stroke" was originally used to explain some cases of loss of consciousness. The introduction of the annual report of the Registrar in the 19th century strengthened the classification of the disease by regulating the number of conditions that could be classified as stroke. In the 20th century, the World Health Organization defined stroke as a "clinical symptom of a rapidly developing focal (and sometimes systemic) disorder" lasting more than 24 hours or resulting in death without apparent cause. This definition is still used.

For example, in the recent UK National Stroke Guidelines (Royal College of Physicians (RCP), 2008). People think

these guidelines (the RCP was first published in 2002) make sense. The transformation of stroke medicine from a disease with a poor prognosis to a state holds greater promise for stroke medicine. But this optimism does not come from a new treatment. According to the meta-analysis, outcomes for stroke patients would be improved by better organization of services. The most striking feature is that the best outcomes for stroke patients come from the collaborative work of multidisciplinary teams (MDTS), in contrast to earlier models of care where the patient was an autonomous physician who practiced alone. Stroke medicine is now driven by policy, such as the National Services Framework for Older People (Department of Health)2001; Welsh Assembly Government (WAG), 2006) and the National Stoke Strategy (DH, 2007). It is in this context that we believe that current stroke medicine has become a specialty

By mentoring multidisciplinary teams (MDT), a primary role is opened up for physicians. From Michel Foucault's perspective, the practice of medical management of stroke will now represent the current paradigm, or "epistemology", which has replaced the earlier normative and discursive practice. The epistemological shift in medicine has shaped the history of medicine and medicine over the past 300 years. The researchers aim to understand how stroke medicine has emerged in its current form as a distinct branch of biomedical science. Their approach is inspired by Foucault's concept of biomedical discourse construction and its variations on disease spatialization. Although adopting this approach helps explain how medical practice is shaped. The explanations for strokes and their causes have changed over the centuries, and we also found that this approach has certain limitations. One of the first problems that is generally overlooked in the development of biomedicine is that Foucault largely ignored age in his work, so that diseases of the elderly, such as stroke, were greatly affected. In particular, the lack of discussion of age makes it difficult to distinguish. Between the "diseased" brain and the "aging" brain. Confusion between "normal" and "abnormal", and "pathological" reflects similar difficulties in biogerontology, so the classification of the disease is not simple, and post-Foucault thinkers, such as Armstrong (1986), had little difficulty in this case, we find that a shift in cognition suggests the emergence of a condition. For stroke or stroke, these shifts are not as pronounced. The difficulty of showing how to do this from clinicians operating in the region has elicited mixed reactions. The second factor has to do with the limitations of Foucault's approach to interpretation, that stroke medicine evolved from different epistemologies derived from more than 300 years of practice that overlapped and interlinked with each other, rather than simply replacing them in a series of historical sequences. In the illustration below, which describes how medical practice aligns with Foucault's theory to alter the spatialization of disease, the researchers give examples describing a series of ideas that are clearly related to competing patterns in medicine. The researchers further suggest that with recent advances in medical technology, more productive approaches to analyzing the development of medical practice may involve multiple competing narratives, but overall, the researchers hope to show a way to examine the impact of Foucault, the history of stroke medicine can provide a useful lens through which to understand its current state. And reveals the flaws in the Foucault method itself.

Cerebral stroke (fragmentation or dissolution) caused. The treatment of transient ischemic attack with anticoagulant or appropriate arterial reconstructive surgery is discussed. When cerebral infarction is caused by arterial occlusion, there is vasomotor paralysis (loss of self-regulation and ability to respond to carbon dioxide). Some hypercapnia causes only dilation of blood vessels in the unaffected brain, which increases blood flow to these sites. Blood pressure drops in the meridians, resulting in reduced lesion and blood flow to the infarct (stealing syndrome). If blood flow is reduced to unaffected by vasoconstriction due to hyperventilation, blood in the brain tissue may be shunted to the infarct area (reverse pilferage), where automatic regulation is lost. Vasoconstriction may be beneficial as a treatment. However, many medical scientists have noted no convincing good effects in patients with severe cerebral infarction. The potential therapeutic effect of hyperventilation in patients with mild respiratory failure, while cerebral infarction has not been shown to have a role. Extensive changes in cerebral blood flow in cerebral infarction, intracranial hemorrhage, certain aspects of hypertension and cerebrovascular disease are also associated. The following is a typical case of a stroke patient for reference:

Typical cases of cerebral stroke: Zhang, male, 68 years old, acute stage of stroke. On December 20, the patient had no obvious incentive to feel unfavorable right limb movement, accompanied by dizziness, slurred speech, and no nausea and vomiting, and was sent to a local hospital for treatment. Dizziness and headache began 5 years ago. BP180/90mmhg was measured. Intermittent treatment with reserpine, Niforda and other drugs resulted in poor blood pressure control. 2 years ago, the blood lipid was high in the physical examination, plus singopastatin. For about a week, I took nirendipine. Blood pressure is still not controlled, the highest blood pressure is 180/80mmhg, accompanied by dizziness symptoms, dizziness aggravated in the early morning.

(Image from: Internet)

1.4.2. Research review

(1) Research review

With the development of society, medical science advances. The paradigm of medicine has shifted. Healthy life, also can be said to be the quality of life more popular, more modern attention and discussion. In the last ten to twenty years. Research on health-related quality of life is increasingly extensive. Many developed countries, such as Europe and the United States, have begun to apply it in clinical trials, health policy formulation, and health resource benefit evaluation.

To bring attention to medical design in your life, the Wellcome Collection museum in London has curated an exhibition called Can design save your life? Through medical visual works, to show the public how graphic design promotes the development of the medical industry; Professor Xin Xiangyang, dean of the School of Design of Jiangnan University, said in his article "Paying Attention to Medical and Health Design" that designers should fully absorb medical knowledge and use design to help solve increasingly complex medical problems from the perspective of service design and humanistic care. In his other article "Inquiry into the Influence of Information Visualization and Knowledge Visualization on Medical Decision Making", he studied the influence of visualization methods on medical decision making from the perspective of medical service design, hoping to alleviate the doctor-patient relationship through visual design methods. In "Research on the Design of Visual

Infographic for Medical Science Popularization" by Chu Qiang, complex medical knowledge is combined with visual art, abstract words and pictures are transformed into visual infographics that are easy to be accepted by the public, and interesting design techniques and examples are used to design and produce, the purpose is to visualize medical information and build a harmonious doctor-patient relationship. Tian Yuan's Research on the Application of Information Visualization Design in the Medical Field analyzed the great communication value of information design in the medical field, took "colon cancer" as the object of medical information visualization, and used the power of design to alert people to pay more attention to intestinal health. In the article "Visual Design of dietary health Information based on Sub-health population" by Jiao Tianye, based on this group in the sub-health state, the visual design of modern and traditional dietary health information combined with screening and integration is carried out. Song Xing's "Health Care Multimedia Interface Design from the perspective of health Communication" broadens ideas for the dissemination of health care information through the interactive design of multimedia interface from the perspective of health communication. The above research proves that domestic and foreign scholars pay attention to the important value of medical visual design, which also triggers my research on the whole subject

1.4.3. Research status at home and abroad

(1) Domestic research status of stroke

Stroke, or stroke, is one of the most serious cerebrovascular diseases affecting Chinese residents. According to the latest report on the prevalence of stroke in China released by the Chinese Stroke Society, on average, one person has a stroke every 12 seconds in China, and one person dies every 21 seconds. Stroke has become the number one cause of death in China.

In an interview with Oriental Outlook Weekly, Zhao Xingquan, executive deputy director of the Department of Neurology, Party branch secretary of Beijing Tiantan Hospital affiliated to Capital Medical University, and chairman of the Medical Quality Management and Promotion Branch of the Chinese Stroke Society, pointed out that the incidence of stroke in China is much higher than the world level, and stroke is currently characterized by its high incidence, high recurrence rate, high disability rate and high fatality rate. It has become a major disease that seriously endangers the health of Chinese residents.

"The incidence of stroke increases with age, but lifestyle changes in recent years are also making the onset of stroke younger." Zhao Xingquan told this reporter that reduced exercise, high-heat and high-fat diet, smoking, drinking, irregular life, etc., are currently known and stroke incidence has a certain correlation risk factors. In addition, the incidence of stroke is significantly higher in men than in women, but the incidence of stroke will also increase in women because of changes in hormone levels after menopause. Zhao Xingquan said that the reason why the incidence of stroke in China is at a high level in the world is mainly because China has the largest number of hypertensive patients in the world. "Hypertension, hyperlipidemia, carotid stenosis and atrial fibrillation are the four currently known independent risk factors for stroke. The study found that if you can get these four problems under control, stroke rates can go down significantly." Zhao Xingquan pointed out that hypertension is the most important risk factor leading to stroke, and the risk of stroke in patients with hypertension is 4 to 6 times that of ordinary people.

According to data released by the Chinese Center for Disease Control and Prevention in 2013, the number of hypertension patients in China has exceeded 260 million. Although one out of every five adults in China suffers from hypertension, the awareness rate of hypertensive patients is less than 40%, and the management rate of patients is only 25%.

(2) Research status of stroke abroad

The long-standing concept of "stroke" can be inherited from ancient times, through the Middle Ages and Renaissance, reaching modern times and today, with the new name "stroke". Definition of

According to the history of autopsy, "apoplectic" can be divided into a period that predates this definition, from ancient times until the Renaissance, when there was a relatively stable clinically based umbrella concept and the modern autopsy period. When the condition is subdivided into several subtypes. It took about 2,500 years to assemble the numerous pieces of information to achieve a fairly definitive picture. The concept of "stroke" inherits the development of information as "stroke", incorporating all history to form this knowledge of the present state

Cerebrovascular disease refers to a group of disorders of the brain's vascular system that may affect the blood supply to underlying tissues. This condition should be analyzed in conjunction with the pathology of cerebral vessels (intracranial and extracranial) and the effects on the brain parenchyma and related structures. Diseases of the vascular system include diseases of the large arteries (e.g., arteriosclerosis of the cerebral arteries), small arteries and venous vessels, as well as cardiovascular diseases (e.g., embolopathy) and systemic diseases. Parenchymal lesions are diverse and include ischemic changes such as infarcts (large, small, lacunar, microinfarcts, watershed) and white matter ischemia (demyelinating and axonal loss [sparse white matter], leukoencephalopathy) and bleeding (lobar, basal ganglia, microhemorrhage, etc.). Cerebrovascular disease can be asymptomatic or subclinical (silent or hidden), or it can be a publicly expressed clinical manifestation in the form of a "stroke" (cerebrovascular accident). The term "stroke", which represents an acute event resulting in clinical symptoms of neurological dysfunction, is thought to have originated from ancient times in cognitive and behavioral neuroscience research units and behavioral neurological units.

2. Apoplex

2.1. Medical visual design

Medical visual design visualizes a specific case through text, symbols, pictures and other elements, and concretized the abstract concept of disease, so as to enable non-professionals to have a preliminary cognition and understanding of the disease, and a preliminary understanding of where the disease starts, where problems occur, and how to initially respond and treat it. And for people who do not have the disease can also play a publicity, promotion. Let more people play the role of understanding and prevention, let fewer people get sick, and let people who suddenly fall ill know how to deal with their own illness.

2.1.1. Medical informatics

Medical informatics is the combination of information technology and medical science. Today, with the increasing

attention paid to information technology, information is more widely used. Medical informatics is an emerging discipline combining computer technology, biophysics, statistics, etc., with modern medical treatment. It uses the technology of systematic analysis tools to study medical control, process management, final decision making and analysis of medical professional knowledge. It's a cross between computer science, information technology and Westgarden. Through the continuous exploration and long-term development of modern society, medical technology has penetrated into various medical fields and been widely invested in the use of time, such as: electronic medical record, biological signal analysis, medical image processing, clinical support system, medical decision system, hospital information management system, health information resources, etc. As an independent discipline, medical informatics plays an increasingly important role in medical education, medical practice and medical research, such as electronic medical records, imaging medicine and so on.

2.2. Characteristics and functions of health education materials

Health education material is one of the media to spread health education, it plays an important position and role. For example, health education brochures, publicity leaflets, posters, publicity bars, publicity versions, health education prescriptions, broadcasts, videos and health education CDS, emails, web pages, websites, etc., they all have rich content, easy to popularize, low production cost, viewing is quite convenient and so on. He is able to deliver a wide variety of health related knowledge in a convenient way, such as health care, disease prevention, mental health, balanced diet, environmental protection, emergency self-help, and living health. It can also quickly spread to various areas, such as campuses, communities, hospitals, businesses and public places. Enable people to learn, work, play and learn about health at the same time. It plays an important role in the field of health communication. For example, the combination of text and images of health education materials in the following figure is designed to be simple and easy to read, so that the audience can easily understand and achieve the role of promoting health knowledge.

2.3. Basis for the design and production of health education materials

Based on the public health needs, health education services should be provided to the public, and the service content should be guided by the public, and information should be collected according to the public's demand for health knowledge. The purpose of health education materials is to popularize health knowledge to the public, so it is necessary to produce the knowledge needed by the corresponding groups. According to different situations, different environments and different survey objects, the health problems in different situations can be adjusted and mapped to produce the corresponding health materials.

2.4. Current situation of design and study of acute cerebrovascular diseases

The following is a group of typical posters on the Internet to understand stroke. The picture uses cartoon characters as the main body to vividly show various situations of stroke. The design of this cartoon character is similar to a symbol of the virus, personifying the virus, making the whole poster more friendly, making people feel that the virus is not so terrible, looking very friendly and interesting. The droplet shape of the head is very interesting, making this cartoon character lively and funny. The whole poster looks very comfortable and pleasant.

The following is another set of network pictures, which use a more realistic method to show some symptoms of stroke, and use English to reflect each situation, forming a "fast". It is pointed out that the disease should seek medical attention as soon as possible.

To sum up, it can be concluded that acute cerebrovascular diseases should start from words and images. Because it is designed under the background of aging, the design should be more straightforward and easier to understand. Therefore, efforts should be made in the main body of the image and the typesetting of the text to design a visual design that is simple and easy to understand and can attract the elderly to watch.

3. The Design Thinking and Production Process of Medical Visualization Under the Background of Aging

3.1. Design Ideas

Since it is a visual design of disease knowledge, it is necessary to refer to medical related expertise. And it is for the elderly, so my design idea is to express my design through the visualization of medical information. Use a set of visual design to show the cause of stroke, the onset of precursors, the typical list of stroke cases, relevant professional knowledge and how to treat and care for prevention and other related information. It is expressed in a combination of pictures and words.

The main part has led to the whole design in the form of a poster, and the poster is similar to an introduction to the following information. Let the audience understand what the series is promoting.

3.2. Visual representation techniques

In general, visual representation in information design can be divided into three and two dimensional representation techniques. General two-dimensional plane expression techniques are more common, and can be expressed in a variety of techniques. The three-dimensional expression technique is more vivid and intuitive. In my opinion, the expression information design needs to be more specialized and objectified, and two-dimensional plane method can be used to convey it, which can make an abstract concept more concrete, and the elderly people in the aging background are more likely to accept more concise and scientific two-dimensional visual expression techniques.

(This figure is a relatively simple graphic design to express cerebral stroke)

4. The Fourth Chapter Is the Design of Medical Vision Under the Background of Aging

4.1. Information integration

In the application part of design, my design will use the professional knowledge I have learned, such as poster design, information design, vi design, plane composition and graphic creative design, to present my final design scheme. I need to

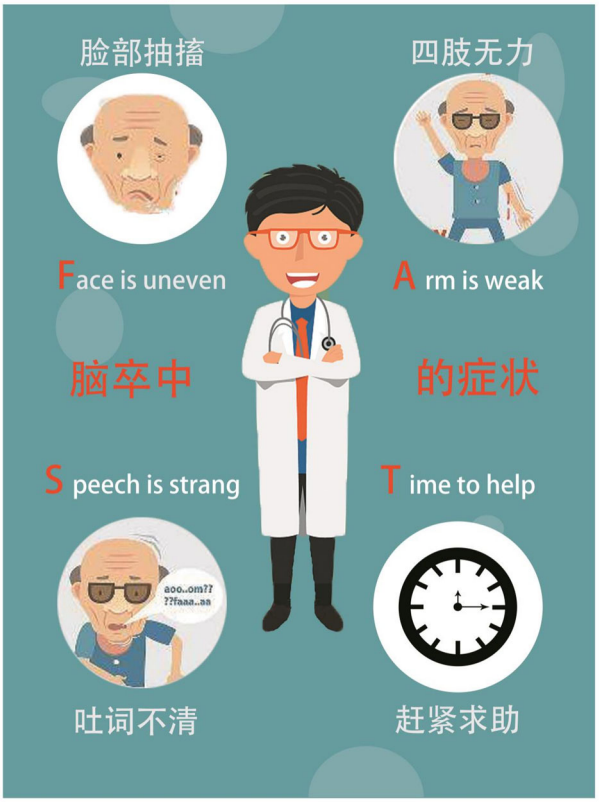
integrate, screen, classify and summarize the information of all mobile phones. In a more vivid and straightforward way, the information of these professional knowledge is converted into words, symbols, graphics and other elements, and it is made into a series of posters. The aim is to make the elderly more concise and clear to understand the professional knowledge of stroke and popularize it.

4.2. Visual expression

4.2.1. Text design

In order to make it easier for the elderly to accept, and let the text part will not be ignored. The font I chose to use is typeface typeface. The focus on visual beauty is combined with the rigor of the solemn field of medicine. And the font is more intuitive, high recognition. Not easy to ignore

4.2.2. Poster design



In poster design, I will apply the direct display method, the prominent feature method and the reasonable exaggeration method. The main reason for choosing these three methods is the aging background of the subject. Then the design is aimed at the elderly people. For the elderly, too fancy and novel expression techniques are not easy to be well accepted. More intuitive, highlight the key points of the method is more urgent and easy to accept and grasp.

4.2.3. Form of work expression

Considering the amount of information. I choose to use a form similar to vi brochure to present my work. A set of vi brochures can integrate more content. Vi is an important part of corporate image. In my opinion, vi is not only to express corporate image. The role of the vi manual is propaganda. Then not only the corporate image, professional knowledge can also be made into vi manuals for publicity and promotion.

(Image from: self-made)

Sum up

In my opinion, the theme of medical visual design in the context of aging appeals to the society that we should pay more attention to the elderly. In today's society, which is developing so fast. A lot of things are moving and changing very quickly. For example, today's hospital registration is slowly changing from queueing to online registration. In many hospitals, orders and medical records are slowly shifting from paper to electronic records. These belong to the trend of young people, aging background. Most older people cannot accept these times of change. They are often unfamiliar with new things and do not understand them. And it is these older people who are often the most likely to get sick and go to hospital.

I think the significance of this subject is that when The Times develop. How to design ways to make more elderly people not confused about the current medical treatment methods and hospital treatment procedures? And let the society pay more attention to the difficulties of the elderly, and provide more convenient and more suitable medical treatment for more elderly people.

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