

Design Guideline for Medical Consultation Website for the Elderly

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Abstract. With the development and improvement of computer networks, the online medical consultation is gradually becoming popular. More and more people choose to use online medical consultation to conduct early diagnosis or learn about disease related information and coping methods. The importance of online medical advice has become even greater as the elderly face many health threats and the current pandemic limits people's normal travel. Many elderly people have pain points with diseases but no place for consultation and purchasing medicine. However, due to the difficulty of using electronic products for the elderly and the lack of design of existing products for the elderly, most older people rarely use online medical services. Most of the existing medical consulting websites lack the elderly centred design, which is inconvenient for the elderly to use in many places. Based on the data statistics and analysis of the questionnaire, user journey chart, pain points and comparative analysis of existing related products, this paper summarizes some reference and guideline during designing website for the elderly in the future.

Keywords: Online Medical Consultation; Guideline for Medical Consultation Website; Elderly.

1. Introduction

With the development and wide popularization of computer networks based on nowadays modern information technology, the network has gradually become a necessary tool for people's daily life. The Internet plays an important role in many aspects, such as mobile payment, online shopping, video calling. And the internet also has a tremendous impact on online medical services, and it influences health care for the Elderly, especially in the midst of the COVID-19 pandemic. In some areas, under the premise of restricting people's freedom of travel, many needs of people can only be solved through the internet. As we all know, the Elderly universally faces physical problems, so that the elderly has the demand to access medical services online. Taking the form of online medical care will help old people to get to know their body situation better and go to a doctor in time. Any old people, at any time, could have access to the medical advice and medical services by this online medical care approach.

However, the good vantage point and features of online medical care for the elderly may not be able to automatically come to a better reality. As is known to all, many old people have plenty of difficulties to use the internet, such as visual difficulty [1], comprehension difficulty and hearing difficulty. Besides, many medical care website designers didn't pay enough attention to the website accessibility for the elderly. On the other hand, these medical care websites lack of Human-Centered design for the elderly. Due to this background, firstly, this study conducted some questionnaire studies and analyzed the data. Then through the statistical data, the difficulties encountered by the elderly in online medical care and the pain points that need to be solved are analyzed.

2. Advance Data Statistics

Before the generalization and summarization, this study carried out a questionnaire survey in the local community in Liaoning Shenyang to conduct preliminary data statistics.

2.1 Questionnaire

A questionnaire about whether the elderly choose to use the online medical consultation was designed, and corresponding surveys were conducted in several communities in Liaoning Shenyang. Next, based on the survey data, this paper analysed the difficulties and pain points faced by older people of all ages today.

Table 1. Statistics on the survey results of the questionnaire.

	<i>Total</i>	Willing to use	<i>Proportion (%)</i>
Age period			
50 ~ 59	90	71	78.9
60 ~ 69	62	41	66.1
70 ~ 79	31	11	35.4
>80	17	2	11.8
Education degree			
Primary	49	24	48.9
Middle	92	49	53.3
Graduated	59	52	88.1
Living situation			
Alone	21	8	38.1
With partner	82	42	51.2
With children	31	23	74.2
With children and partner	66	52	78.8
Vision			
Have presbyopia	132	62	46.9
Good eyesight	68	63	92.6
Experience in using electronic products			
Yes	136	96	70.6
No	64	29	45.3

Based on the inventory presented in this questionnaire, these factors, including age period, education degree, living situation, vision ability and the experience of using electronic products [2], seem to influence whether the elderly are willing to choose to use online medical consultation. However, what it is about these factors that discourages older people from using online medical counseling services is still unknown. Therefore, this study, in the next phase, conducted some interviews with some of the respondents to try to find out what behind these factors influencing the elderly.

2.2 Interview

2.2.1. Interview Questions

Ten participants in the advance questionnaire from different age period were interviewed through the phone calling way. According to the advanced questionnaire, this interview mainly focused on the reasons that truly influenced the elderly to choose to do not use the online medical consultation services. This interview included four parts, and each part was made up of open main question (MQ) and examples of follow-up question (FQ).

- Main reason of not using the online medical consultation
 - MQ: Would you like to use today's online medical consultation sites?
 - FQ: What parts of the site are not designed to be convenient for you to use? Or, what parts of these sites do you hate?
- Living situation
 - MQ: If there is someone living with you, which could help you solve some problem, will you choose to use it?

- FQ: (If there are already some people living with the interviewee.) If your children or partner will help you using the online medical consultation, will you prefer to use the online medical services than go to the hospital in person?
- Vision
 - MQ: Do you have any difficulties with your vision?
 - FQ: If so, does this interfere with your choice that do not use the online medical services.
- Experience in using electronic products
 - MQ: Have you have the experience of using electronic products?
 - FQ: Do you think this experience influencing your choice of whether using the online medical service?

Each interview took about 10 minutes, for a total of 100 minutes of interviews. These 10 interviewees gave their different answers about their thoughts.

2.2.2. Results

After tallying up the information obtained in the interview, some key influencing factors are summarized. First, due to the age of the elderly, older people, with their cognitive abilities declining, may encounter resistance when using such difficult-to-navigate services. Therefore, if there are some relatives like partner and children, which could help them doing some high-tech operation, they won't mind using the online method, after all, it doesn't require a trip to the hospital in person, which is time-consuming and laborious.

Second, the living situation of the elderly affect their choice of medical consultation websites. In fact, it indicates that the cognitive ability of the elderly limits their ability to understand the professional terms of medical websites. However, many medical advice websites use professional medical terms to explain or introduce information related to diseases. This makes a lot of elderly people cannot understand the content of the website, so people need to help explain the content of the website.

Third, most of the elderly have vision problems, so it is difficult for them to use electronic products. However, nowadays, many apps rarely have functions specially designed for the elderly, because the fonts are small and the distance is close, which makes it very difficult for the elderly to use them [3].

Finally, the experience in using other electronic products has both advantages and disadvantages for the old people's choice of using online medical consultation. On the bright side, after using electronic products, some old people experience the new great experience brought by electronic products, so they have a good sense of the Internet. Experiencing the convenience brought by electronic technology, many older users are willing to try online medical consultation which they have never heard of before. On the other hand, some elderly people have heard or experienced online fraud after using other online products, and this kind of bad experience makes them very wary of the Internet [4]. Affected by such negative reports, many elderly people are afraid of being cheated, so they reject almost all online products. Thus, they won't be willing to use this online medical consultation.

2.2.3. Pain Point Analyze

Table 2. Pain point table

Problems	Pain point
● Because of the limitation of cognitive ability, the older people need to accompany to use the Internet more conveniently	Lack of detailed tutorials and guidance
● Because of vision problems, older people have difficulty identifying key information	There are problems with the design of the page
● Because some older people have doubts about the credibility of the page and refuse to use it	The design of the page is too fancy and lacks some high trust value platform assistance
● Because of the differences in age and education level, some elderly people will not choose to use it	Cognitive limitation

2.3 User Persona and User Journey Chart

After the previous data collection and analysis, a user persona is designed to stimulate the real using experience, then a related user journey chart is also created.

Susan has been retired from the normal work for 7 years and during all the long period lives by herself since her husband has died 6 years ago and her children went away to work. Like other normal old people, Susan is also suffering the consequences of gradual physical decline. She used to go to the hospital every year to check her body, because her husband died for cancer, so she was afraid. However, her travel has become difficult due to the COVID-19 pandemic. As a result, her annual physical examination had to be terminated, and she was anxious every day.

That's when her friend told her about an online medical consultation service where she could report her condition to an online doctor and get some advice on maintenance. By using this online service, she could get to know her body better, and release some extra unnecessary anxiety.

One day, Susan felt a sudden pain in her heart. She thought of the medical advice website that her friend had recommended and decided to go to the website to ask if there was any emergency with her heart.

The user journey chart is as follow:

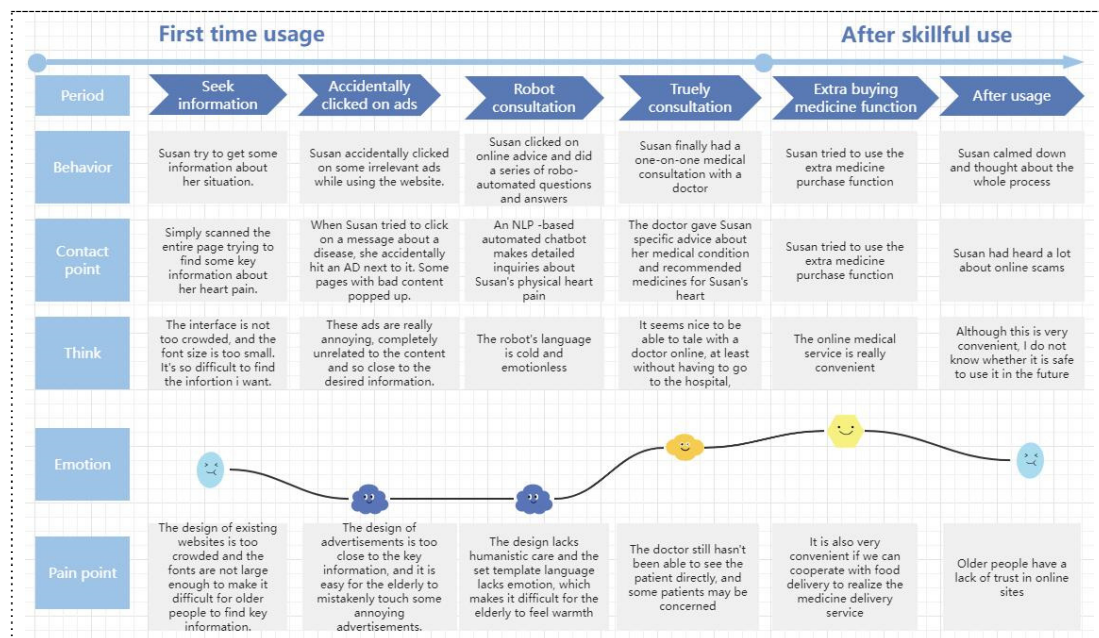


Figure 1. The User journey chart of Susan

According to the above user journey chart (see Figure 1), several pain points are shown during the whole period of using experience of character Susan.

When Susan first tried to get some information about her heart pain, opening the website, skimming for the information about heart diseases and looking at the basic functionality of the website. However, the whole website is designed so crowded, and the font size is so small for Susan to get the key information of her heart.

Then, when she found the information about her heart disease, there are so many advertisements around the key information, and when she tried to click, she hit the ad by mistake. This is a bad experience for any user, especially for the elderly, whose mouse manipulation is not so precise, so it is easy to touch by mistake.

After that, when Susan clicked the auto-reply robot to get more information about her heart pain, however, Susan felt uncomfortable from the robot's cold words [5]. Besides, the question-and-answer sessions were too complicated and lengthy. And because of the heart pain, Susan had a hard time staying focused on the complex and varied mount.

Then, during the real consultation with the doctor, Susan just sent her situation to the doctor. However, there was no way to send the picture and the doctor could not see the real situation about Susan. Since doctors cannot see the patient directly, they can only make a diagnosis based on the information provided by the patient, which makes it difficult to accurately determine the specific situation. There should be some extra online medical care services designed for the elderly [6].

Based on the next period, Susan asked some medicine information through the website, and the medicine was sent to her home next day. This delivery of medicine could be so convenient for the elderly like Susan because it saves the elderly the time to buy the belt in person and provides indispensable help for those who are unable to move.

In the last stage, a fact is revealed that many older people are afraid of being cheated by online websites. It must be admitted that the increasing news about online fraud has made many people afraid to use the internet. Therefore, designers need to make the website more official and show the website on some authoritative platforms, so as to make the elderly feel at ease to use it.

3. The Analysis of Existing Medical Consultation Products

3.1 Family Doctor.com.cn

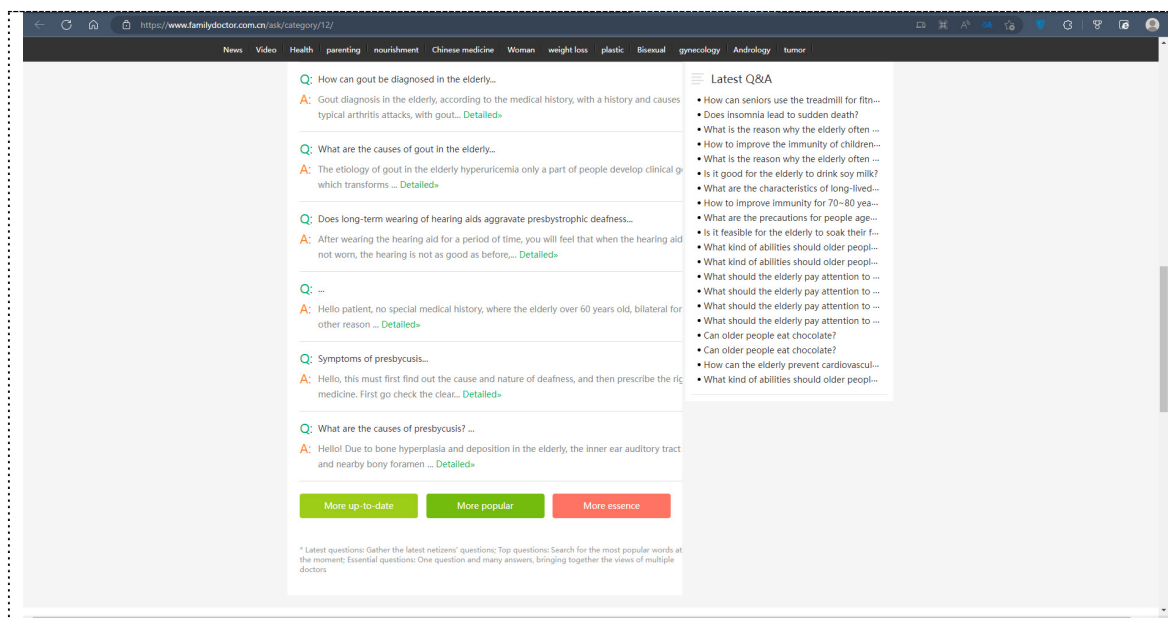


Figure 2. Webpage of family doctor website
[https://www.familydoctor.com.cn/ask/category/12/]

The family doctor website is a website of medical care services (see Figure 2); however, the site is full of irrelevant ads such as those for small games. These advertisements exist between the key information about the disease. Besides the font size is so small that the elderly could not find the key information which they want by simply skimming and seeking. Another important point is that the website uses too many medical terms. For example, if you want to see some medical problems of the heart, many of the results will include terms such as sinus bradycardia and pericardial effusion. So, it's hard for a lot of older people to understand.

3.2 39Health Website

The 39health website is another medical health care website (see Figure 3 and 4), and it also have plenty of advertisements which have nothing to do with the medical field. Some designs of this website are also worthy of reference. For example, it contains some medical videos, so that the elderly

can increase their understanding through the video content. And it could send the picture to the doctor to make the doctor could provide some more detailed medical advice.

However, the fonts are still small and difficult for older people to read. The second, the web design is very informal, so it is easy for the elderly to feel distrust.

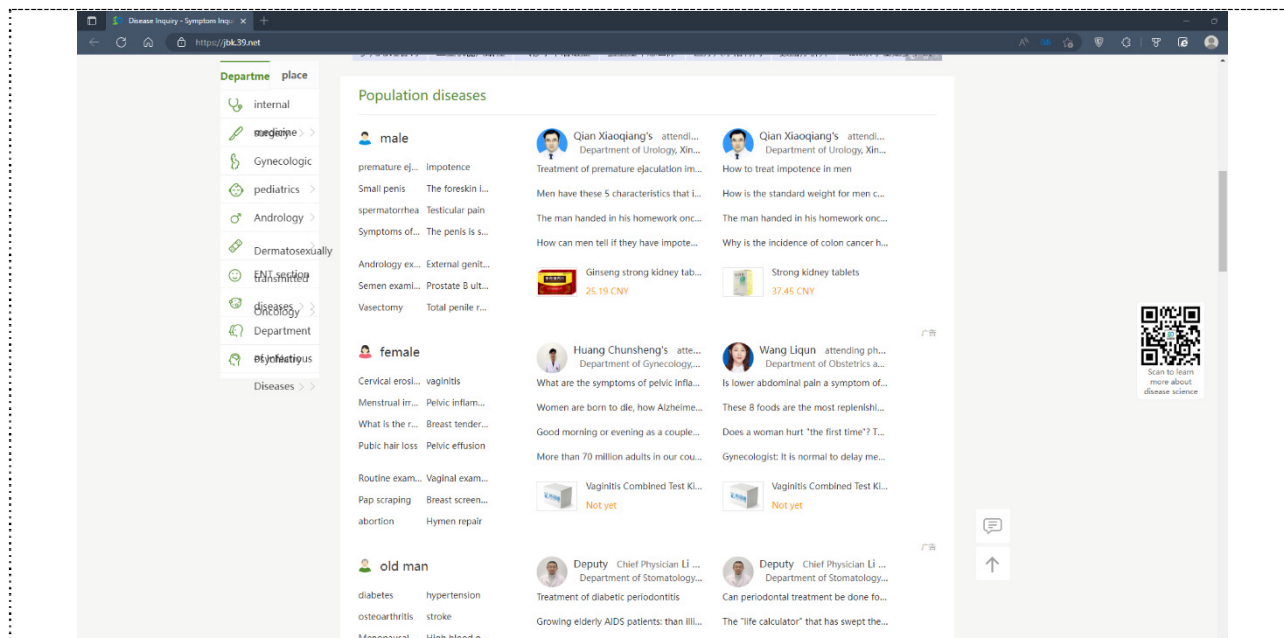


Figure 3. Webpage of 39health website [https://jbk.39.net]

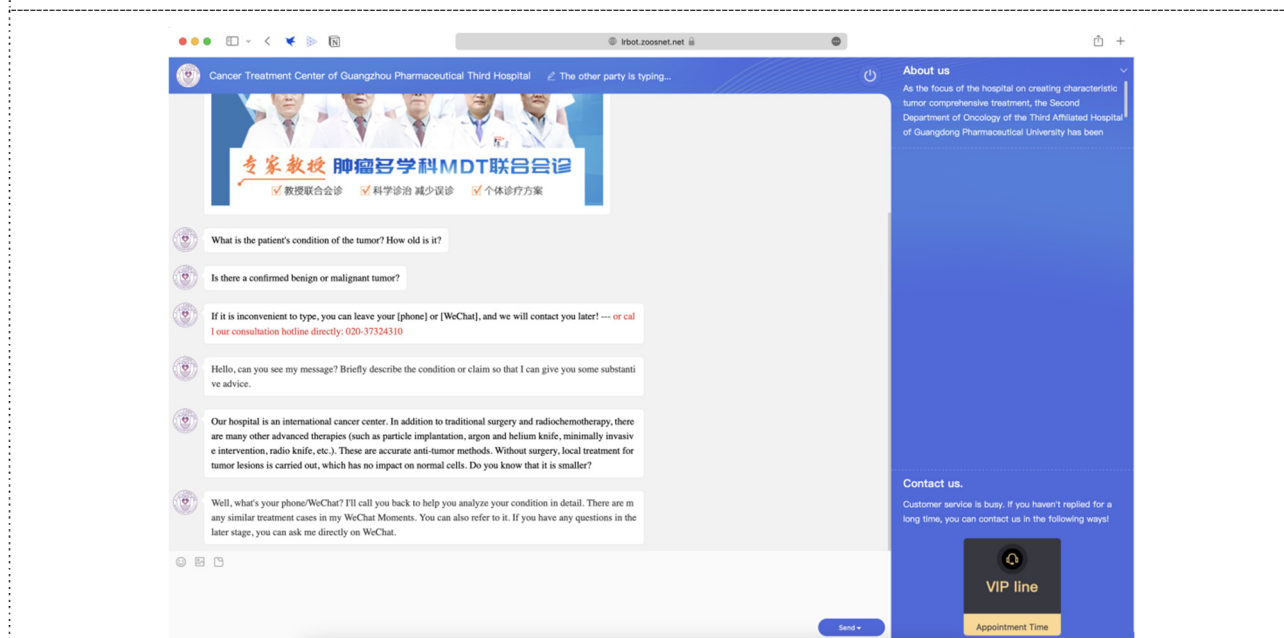


Figure 4. Webpage of 39health website consultation

[https://lrbot.zoosnet.net/page/pc/default/home.html?source=lr&siteid=PKT73998351&sid=0a79d01adf5143afb6af4cbbd48b2155&cid=89e448881ea448ae916a6f3ca0ac728a&keyword=&lng=c&n&p=mh-39jbk&r=mh-39jbk&p1=mh-39jbk&p2=&e=mh-39jbk&tstyle=0]

4. Results

4.1 Visual UI Design

Based on the above analysis of the situation of the elderly, most of the elderly have visual impairment. In addition, when older people try to use online medical consulting websites, they usually are in a tense and anxious mood. According to these conclusions, some guidelines about visual are summarized.

- The font size should be large enough for the elderly to see the font more easily.
- The space between two paragraphs should be greater than one line of font to facilitate the elderly to distinguish different paragraph.
- The advertising area of the page should be far away from the key information area to prevent the elderly from accidentally touching.
- The warm color [7] should be used to make the elderly feel ease and comfortable when using the medical care website.
- Due to the decline of the cognitive abilities and short- term memory of the elderly, some pictures should be set beside the text.

4.2 Interactive Design

Based on the above analysis of the situation of the elderly, since the perception of the elderly is slower than that of the young, the feedback after interaction should be more obvious. Besides, the jump animation of the page needs to be simple. Too much flicker may cause the elderly to feel dizzy and uncomfortable during use [8]. Most important of all, supporting guidance is needed to prevent the elderly from encountering difficulties due to cognitive barriers in the use process.

4.3 Functional Design

Because the concept of the medical consultation website for the elderly is making older people have an online approach to know the information and suggestion of their diseases. Therefore, some guidelines about function are summarized.

- The website should include one emergency calling button for the emergent situation of the elderly.
- The medical consultation should include some approaches for displaying the picture of the patients or the video of the patients.
- The wording of the website needs to be careful, because most of the elderly people are in anxious mood when they visit the medical consultation website, so the language should show caring mood and try to reduce the extra anxiety of the elderly [9].
- In order for the elderly to understand the medical content of the website correctly, the use of advanced medical terms should be minimized, or hints should be given next to difficult medical terms.

5. Conclusion

The Health Care for Seniors website can not only help seniors with physical ailments, but also give seniors the opportunity to increase their basic medical knowledge. This educational significance will reduce the reliance of older people on traditional self-treatment and disseminate basic medical knowledge. In turn, this will help older adults understand their bodies and risks and reduce unnecessary psychological anxiety, and it will improve their quality of life. Therefore, this is a very meaningful topic. However, in the actual survey, this study found that many designs still lack care for the elderly, adding some small modifications to the works, and even adding a small mode specially designed for the elderly, which can effectively improve the quality of life of the elderly. The sample size of this survey is still not enough, so the suggestions from the survey are not very comprehensive. Hoping that more comprehensive statistics can be carried out in the future, and that there will be design rules and ideas specially designed for the elderly in the future.

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