

# APPENDIX 1-QUESTIONNAIRE

## Study on Evaluation, Use and Application Result of Mobile Health Apps in Hospitals

**Respected patients:** Thank you for participating in this thesis survey. The data collected in this questionnaire is purely used for the purpose of the research. Our statistical analysis is based on the comprehensive results of all questionnaires, and no personal data will be analysed and stored. Therefore, please answer all your questions based on your own personal experience and real feelings. This questionnaire consists of five parts:

- Background information,
- patient opinions and usage of the mobile health Apps,
- patients' evaluation of the hospital's experience of seeing a doctor after using the mobile health Apps,
- patient satisfaction with the experience of seeing a doctor,
- Patients' expectations and actual feelings of the hospital's service quality. It takes about 20 minutes to complete the questionnaire.

Thank you very much for your support and help in this doctoral dissertation.

In this study, the functions of the mobile health Apps include making appointment, online consultation, and inquiring information through the mobile health Apps (for example, Wechat health client); payment for medical expenses through the mobile health Apps; doctors and patients communicate online through the mobile health Apps; inquiry and understanding of medical information and so on.

**Name of hospital:**

**Questionnaire Date:**

### Part I: Background Information

Please provide the following background information to help us better understand your medical needs and the specific situation of using Wechat health client:

- a. The types of ocular disease (please choose one): ametropia; visual fatigue; ocular surface diseases; cataract; glaucoma; fundus diseases; strabismus and amblyopia; trauma
- b. What is the purpose of coming to this hospital today? (Please choose one): \_\_Initial \_\_Re-visit
- c. Accompanied, Other (please note): \_\_\_\_\_
- d. Gender: \_\_\_\_male; \_\_female
- e. Age: \_\_\_\_\_
- f. Your occupation: \_\_\_\_Government \_\_\_\_Government-affiliated institutions \_\_State-owned Enterprises\_\_ Private-owned company\_\_\_\_Foreign Enterprises \_\_\_\_Private Enterprises \_\_\_\_Self-employed Households \_\_\_\_Farmers\_\_ Other (please specify): \_\_\_\_\_
- g. Highest Education: \_ Doctor \_ Master \_ Bachelor \_ Diploma \_ Vocational Technical School \_ High School \_\_Junior Middle School \_\_ Primary School
- h. What mobile software do you use to see a doctor: \_\_ Wechat Health Client; \_\_Health 160; \_Others (please specify): \_\_\_\_\_
- i. When do you first start using Wechat (e.g. 2015): \_\_\_\_\_
- j. The average time you use Wechat every day is about \_\_\_\_\_ mins
- k. Which year did you first use the Wechat Health Client: \_\_\_\_\_
- l. Which year was your first visit to this hospital: \_\_\_\_\_
- m. How many times have you visited this hospital in the last three years? \_\_\_\_\_ Times
- n. In the total number of visits you filled out in the previous question, how many times have you applied Wechat Health Client to do the following things?
  - Making appointment \_\_times
  - Payment \_\_times
  - Inquiry for laboratory reports and medical records \_\_times
  - Consulting doctors \_\_times
  - Inquiry and understanding of medical information (such as health education information, vaccine information, doctor's profile, etc.) \_\_times

**Note:** If no mobile health apps is used, stop answering questions. If you use the Wechat Apps, and answer all questions based on the Wechat Health Client. If you use Health 160 or other similar software, answer all questions based on Health 160 or other similar software.

## Part II: Patient's Views and Use of WeChat Health Client

Please circle "O" and choose a number to indicate your agreement with each of the following statements (1 for disagreement, 7 for agreement). There are no objective answers or criteria for scoring. Please judge and estimate according to your experience, feelings and observations. Please answer all the questions.

2. I am going to the hospital to see a doctor now, basically using the Wechat Health Client

a	Make an appointment for doctor	1	2	3	4	5	6	7
b	Pay for medical related expenses	1	2	3	4	5	6	7
c	Check laboratory reports and medical records	1	2	3	4	5	6	7
d	Interact with the doctor you want to consult online at any time	1	2	3	4	5	6	7
e	Communicate with other patients	1	2	3	4	5	6	7
f	Ask medical staff questions via SMS	1	2	3	4	5	6	7
g	Learn about health education information and medical information pushed by hospitals	1	2	3	4	5	6	7

## Part III: Evaluation of Patients Experience of Seeing a Doctor after Using WeChat Health Client

3 Since the hospital started the Wechat Health Client, it has changed the experience of my experience compared with before.

a	Now I can make an appointment to the doctor who I want to see every time	1	2	3	4	5	6	7
b	When I choose a doctor, I can get information about the doctor's background and experience online	1	2	3	4	5	6	7
c	When I choose a doctor, I can see other patients' scores and assessments on the Internet	1	2	3	4	5	6	7
d	After seeing the doctors, I can rate the doctor online.	1	2	3	4	5	6	7
e	Now I can manage and treat my disease more effectively	1	2	3	4	5	6	7
f	Now I can keep in touch with other patients online	1	2	3	4	5	6	7
g	I can now ask the medical staff questions via SMS on the Internet	1	2	3	4	5	6	7
h	Every link in my medical treatment process is now more coherent	1	2	3	4	5	6	7
I	I am maintaining a continuous communication relationship with my doctor	1	2	3	4	5	6	7
J	Now the queue has been reduced in every link of my medical treatment	1	2	3	4	5	6	7
k	I took the initiative to participate in discussions with doctors about treatment options	1	2	3	4	5	6	7
l	I actively seek other information related to my health	1	2	3	4	5	6	7
m	I take the initiative to participate in learning preventive treatment information	1	2	3	4	5	6	7
n	After I see a doctor, I will take the initiative to follow up and complete all the required treatments	1	2	3	4	5	6	7
o	I took the initiative to help the doctor determine my health and problems	1	2	3	4	5	6	7
p	The medical staff in the hospital now know the records of every link of my visit very well	1	2	3	4	5	6	7
q	In every aspect of my medical treatment process, the data related to me can be checked in time	1	2	3	4	5	6	7
r	In every aspect of my medical treatment, medical staff are now in harmony with each other	1	2	3	4	5	6	7
s	It's easy for me and the medical staff to make a common agreement now	1	2	3	4	5	6	7
t	I can easily access and store my medical information now	1	2	3	4	5	6	7
u	I can now access and process my medical information anytime and anywhere	1	2	3	4	5	6	7
v	Now, when I am in the hospital, the medical staff in different departments are well coordinated with each other	1	2	3	4	5	6	7
w	Now even if I am looking for a different doctor in the hospital, the process of diagnosis and treatment is consistently standardized	1	2	3	4	5	6	7
x	I can now check the medical records of the past at each stage of the hospital	1	2	3	4	5	6	7
y	Now if the medical staff I'm looking for is not there, other medical staff can meet my needs	1	2	3	4	5	6	7
z	Now the doctor can give me the most suitable treatment according to my personal condition and complete historical information	1	2	3	4	5	6	7
aa	Now my doctor's treatment plan is consistent with my changing needs and conditions	1	2	3	4	5	6	7
bb	Now that I'm in the hospital, I know exactly who I'm looking for at every step	1	2	3	4	5	6	7
cc	The doctor encouraged me to ask questions	1	2	3	4	5	6	7
dd	The doctor will answer my questions adequately	1	2	3	4	5	6	7
ee	The doctor actively encouraged me to participate in discussions with the doctor about treatment options	1	2	3	4	5	6	7
ff	Doctors offer other information about my condition and treatment on their own initiative	1	2	3	4	5	6	7
gg	Doctors actively provide information on preventive treatment	1	2	3	4	5	6	7
hh	I can understand the explanation given by the doctor	1	2	3	4	5	6	7
ii	The doctor was very considerate of me	1	2	3	4	5	6	7
jj	The doctor made me feel at ease discussing my condition	1	2	3	4	5	6	7
kk	I feel that the doctor knows my medical history very well	1	2	3	4	5	6	7
ll	I feel that doctors know very well about my health care needs	1	2	3	4	5	6	7

## Part IV: Patient Satisfaction

a	I am satisfied with the medical services I received during my stay in this hospital	1	2	3	4	5	6	7
b	I'm very satisfied with the doctor's attitude	1	2	3	4	5	6	7
c	I am very satisfied with the quality of the doctor's treatment	1	2	3	4	5	6	7
d	My illness has been properly treated	1	2	3	4	5	6	7
e	After seeing the doctor, I have a better understanding of my condition	1	2	3	4	5	6	7
f	After talking with the doctor, I feel a lot better about my condition	1	2	3	4	5	6	7
g	The doctor's choice of treatment is the most appropriate for me	1	2	3	4	5	6	7

h	My condition will be completely improved	1	2	3	4	5	6	7
i	I'm satisfied with the doctor's consultation time	1	2	3	4	5	6	7
j	I am satisfied with the waiting time in the hospital	1	2	3	4	5	6	7
k	I'm satisfied with the total time spent on this visit	1	2	3	4	5	6	7
l	I'm very clear about how to recover when I get home	1	2	3	4	5	6	7
m	I am very clear about how to use the medicine	1	2	3	4	5	6	7
n	I know exactly when to see the doctor next time.	1	2	3	4	5	6	7

## Part V: Expectations and Actual Feelings of Patients on Hospital Service Quality

For each of the following statements, please circle "O" and make two choices: the first one represents your expectations before coming to the hospital, and the second one represents your actual experience after going to the hospital.

		Expectation	Performance
a	The hospital is clean	1 2 3 4 5 6 7	1 2 3 4 5 6 7
b	The hospital's medical equipment is very advanced	1 2 3 4 5 6 7	1 2 3 4 5 6 7
c	Doctors and nurses dress professionally and neatly	1 2 3 4 5 6 7	1 2 3 4 5 6 7
d	The signs of hospital facilities are very clear	1 2 3 4 5 6 7	1 2 3 4 5 6 7
e	The TV screen in the waiting area shows useful information for the patient	1 2 3 4 5 6 7	1 2 3 4 5 6 7
f	In many places in the hospital, you can see promotional materials that guide how to use the hospital WeChat application	1 2 3 4 5 6 7	1 2 3 4 5 6 7
g	My doctor is very concerned about my personal situation	1 2 3 4 5 6 7	1 2 3 4 5 6 7
h	My doctor is based on my special condition	1 2 3 4 5 6 7	1 2 3 4 5 6 7
i	My doctor understands my specific needs	1 2 3 4 5 6 7	1 2 3 4 5 6 7
j	My doctor is concerned about my unique needs	1 2 3 4 5 6 7	1 2 3 4 5 6 7
k	My doctor showed great sympathy for my condition	1 2 3 4 5 6 7	1 2 3 4 5 6 7
l	My doctor has the ability to treat me well	1 2 3 4 5 6 7	1 2 3 4 5 6 7
m	When the doctor came to see me, I felt safe	1 2 3 4 5 6 7	1 2 3 4 5 6 7
n	The way and behavior of my doctor give me great confidence	1 2 3 4 5 6 7	1 2 3 4 5 6 7
o	My doctor has good medical knowledge	1 2 3 4 5 6 7	1 2 3 4 5 6 7
p	My doctor is trustworthy	1 2 3 4 5 6 7	1 2 3 4 5 6 7
q	My doctor is very experienced	1 2 3 4 5 6 7	1 2 3 4 5 6 7
r	I can easily make an appointment with the doctor I want to see	1 2 3 4 5 6 7	1 2 3 4 5 6 7
s	I can easily make an appointment to the time I want to see a doctor	1 2 3 4 5 6 7	1 2 3 4 5 6 7
t	It's easy for me to find where I need to go in the hospital	1 2 3 4 5 6 7	1 2 3 4 5 6 7
u	I don't have to wait long in hospital	1 2 3 4 5 6 7	1 2 3 4 5 6 7
v	Every step of seeing a doctor in my hospital is very convenient and easy	1 2 3 4 5 6 7	1 2 3 4 5 6 7
w	The hospital staff will always help me whenever I need	1 2 3 4 5 6 7	1 2 3 4 5 6 7
x	My doctor seldom makes mistakes	1 2 3 4 5 6 7	1 2 3 4 5 6 7
y	My doctor always explains the diagnosis and treatment to me very clearly	1 2 3 4 5 6 7	1 2 3 4 5 6 7
z	My medical record in the hospital is always accurate	1 2 3 4 5 6 7	1 2 3 4 5 6 7
aa	There are few inconsistencies in my medical records	1 2 3 4 5 6 7	1 2 3 4 5 6 7
bb	The service of medical staff is always reliable	1 2 3 4 5 6 7	1 2 3 4 5 6 7
cc	My doctor can answer my question quickly	1 2 3 4 5 6 7	1 2 3 4 5 6 7
dd	I always get prompt answers when I contact the hospital	1 2 3 4 5 6 7	1 2 3 4 5 6 7
ee.	Doctors and nurses are not too busy to answer my questions in time	1 2 3 4 5 6 7	1 2 3 4 5 6 7
ff	My doctor will keep updated of my condition changes	1 2 3 4 5 6 7	1 2 3 4 5 6 7
gg	My doctor will make quick adjustments to my condition	1 2 3 4 5 6 7	1 2 3 4 5 6 7

Thank you very much for your support and help in our research project!

## APPENDIX 2

### Interpretation of Each Variable and Measure Items

The operational definitions of four variables in this research are confirmed with reference of the constructs and measures in the previous literature. The interpretation of each four variables and its items is as follows:

**Mobile Health Apps Use (MHAU):** refers to how well patients use the functions of mobile health Apps in clinical process, including making appointment, online consultation, and inquiring information through the mobile health Apps (for example, Wechat health client); payment for medical expenses through the mobile health Apps; doctors and patients communicate online through the mobile health Apps; inquiry and acquiring of medical information. This variable mainly refers to the System Usage in the theory of Technology Acceptance Model (TAM). The literature source of variables and measure items are shown in **Tables 1,2**.

**Clinical Process Change (CPC)** refers to the change in the experience of the patient in clinical process after the hospital has adopted the mobile health Apps. The experience includes two aspects: the patient's enthusiasm for interaction with medical staff and the change of patients feel about obtaining relevant information in each link of clinical process. They correspond to two dimensions: Physician-patient Interaction and Information Acquisition. Therefore, this study refers to the relevant variables or dimensions and measure items employed by other researchers, as shown in **Tables 3,4**.

**Service Quality (SQ)** is based on the SERVQUAL theory, so the service quality refers to the patient's perception of the gap between the expected and actual performance of the hospital service, including six dimensions. The five measurement dimensions refer mainly to the SERVQUAL model proposed by Parasuraman et al., namely Tangibility, Reliability, Responsiveness, Assurance and Empathy [31]. The items refer mainly to the improved SERVQUAL scale of Babakus and Mangold [32]; the other dimension, Convenience, refers to the relevant measurement variables or dimensions. The literature source of variables and measure items are shown in **Tables 5,6**.

**Patient satisfaction** refers to the overall feeling of the difference between the actual performance and expectation of the whole medical service provided by the hospital after using mobile health Apps. There are many researchers who ever have used patient satisfaction as variables in literature. However, in this study, the concept of patient satisfaction is different from those in literature as result of patients are most concerned about the results of medical treatment and the waiting time under the environment of Chinese hospitals. Therefore, this study introduces two dimensions in the variable of patient satisfaction, namely Treatment Outcome and Visit Time. The literature source of variables and measure items are shown in **Tables 7,8**.

**Table 1:** The literature source of MHAU

Variable	Operational definition	Referred variable and literature	Referred definition of variables
Mobile Health Apps Use (MHAU)	Measure the extent of patients using mobile health Apps	System Usage [15]	Depth of system function usage
		System Usage [32]	Personal attention to the use of some information technology systems

**Table 2:** Items design of MHAU

Variable	Number	Items	Source
Mobile Health Apps Use (MHAU)	a	Make an appointment for doctor	[28]
	b	Pay for medical related expenses	[20] [24] [26] [33]
	c	Check laboratory reports and medical records	
	d	Interact with the doctor you want to consult online at any time	
	e	Communicate with other patients	[24][33]
	f	Ask medical staff questions via SMS	
	g	Learn about health education information and medical information pushed by hospitals	

**Table 3:** The literature source of CPC

Variable	Dimension	Operational definition	Referred variable and literature	Referred definition of variables
Clinical Process Change (CPC)	Physician-patient Interaction	Measure changes in the interaction between patients and physicians after using mobile health Apps	Doctors [27]	The attention and willingness shown by a doctor, such as the ability to listen to your voice and understand the message you want to convey to him
			Communication [17]	Doctors offer patients answers and help on their own initiative
			Patient Communication [34]	Medical staff provide patients with sufficient and clear information
	Information Accessibility	Measure the patient's perception of change in access to information during each link of clinical process after using mobile health Apps.	Administrative Processes [28]	Major different activities of patients before treatment
			Administrative Procedures [24][33]	Admission procedure and hospitalization and discharge of patients
			Administrative Services [34]	
			Process of Clinical Care [24][33]	Core or main service or technical quality of hospital services

			Procedure of Care [20]	The process of queuing, registering, making an appointment, examination, and paying for patients
			Patient Flow [28]	Activities and waiting times before or during communication with medical staff, in the waiting room or in the examination room
			Service Procedures [26]	Appointment, registration, waiting time for treatment, payment, information interaction, etc.
			Quality of Administration Process [35]	Performance in terms of speed and ease of management

**Table 4:** Items design of CPC

Variable	Dimension	Number	Items	Source
Clinical Process Change (CPC)	Physician-patient Interaction	a	Now I can make an appointment to the doctor who I want to see every time	[26]
		b	When I choose a doctor, I can get information about the doctor's background and experience online	
		c	When I choose a doctor, I can see other patients' scores and assessments on the Internet	
		d	After seeing the doctors, I can rate the doctor online.	
		k	Now I can manage and treat my disease more effectively	[24][33]
		l	Now I can keep in touch with other patients online	
		m	I can now ask the medical staff questions via SMS on the Internet	
		n	Every link in my medical treatment process is now more coherent	
		o	I am maintaining a continuous communication relationship with my doctor	
		cc	Now the queue has been reduced in every link of my medical treatment	[28]
		dd	I took the initiative to participate in discussions with doctors about treatment options	[26][27]
		ee	I actively seek other information related to my health	
		ff	I take the initiative to participate in learning preventive treatment information	
		gg	After I see a doctor, I will take the initiative to follow up and complete all the required treatments	
		hh	I took the initiative to help the doctor determine my health and problems	
		Information Accessibility	Information Accessibility	ii
jj	In every aspect of my medical treatment process, the data related to me can be checked in time			[24][33]
kk	In every aspect of my medical treatment, medical staff are now in harmony with each other			
ll	It's easy for me and the medical staff to make a common agreement now			
e	I can easily access and store my medical information now			
f	I can now access and process my medical information anytime and anywhere			
g	Now, when I am in the hospital, the medical staff in different departments are well coordinated with each other			
h	Now even if I am looking for a different doctor in the hospital, the process of diagnosis and treatment is consistently standardized			
i	I can now check the medical records of the past at each stage of the hospital			[16]
j	Now if the medical staff I'm looking for is not there, other medical staff can meet my needs			[21]
p	Now the doctor can give me the most suitable treatment according to my personal condition and complete historical information			[16]
q	Now my doctor's treatment plan is consistent with my changing needs and conditions			[27]
r	Now that I'm in the hospital, I know exactly who I'm looking for at every step			[27]
s	The doctor encouraged me to ask questions	[24][33]		
t	The doctor will answer my questions adequately			
u	The doctor actively encouraged me to participate in discussions with the doctor about treatment options			

		v	Doctors offer other information about my condition and treatment on their own initiative	[21]
		w	Doctors actively provide information on preventive treatment	[24][33]
		x	I can understand the explanation given by the doctor	[24][26][33]
		y	The doctor was very considerate of me	
		z	The doctor made me feel at ease discussing my condition	[36]
		aa	I feel that the doctor knows my medical history very well	
		bb	I feel that doctors know very well about my health care needs	

**Table 5:** The literature source of SQ

Variable	Dimension	Operational definition	Referred variable and literature	Referred definition of variables
Service Quality (SQ)	Tangibility (Ta)	Measures how well the hardware of hospitals is, such as physical facilities, equipment, and appearance of personnel	Tangibility [32][34]	physical facilities, equipment, and appearance of personnel
	Reliability (Rel)	Measures the ability of hospitals to perform the promised service dependably and accurately	Tangibility [32][34]	ability to perform the promised service dependably and accurately
	Responsiveness (Res)	Measures the willingness of hospitals to help customers and provide prompt service	Responsiveness [32][34]	willingness to help customers and provide prompt service
	Assurance (As)	Measures the knowledge and courtesy of medical staff and their ability to inspire trust and confidence	Assurance [[32][34]	knowledge and courtesy of employees and their ability to inspire trust and confidence
	Empathy (Em)	Measures the caring and individualized attention hospitals provide their patients	Empathy [32][34]	caring, the individualized attention the firm provides its customers
	Convenience (Co)	Measures how well the service is supported by MHT that can facilitate the patients meeting their demands	Convenience [23][24]	The degree to which the mHealth service platform is available 'anytime' and 'anywhere' basis.
			Convenience [11]	Hospital waiting time
			Patient Flow [30]	Activities and waiting times before or during communication with medical staff, in the waiting room or in the examination room
			Waiting Time [18]	The perceptions of the timeliness of the various services and processes the patient must experience
			Service Procedures [28]	Appointment, registration, waiting time for treatment, payment, information interaction, etc.

**Table 6:** Items design of SQ

Variable	Dimension	Number	Items	Source
Service Quality (SQ)	Tangibility	a	The hospital is clean	
		b	The hospital's medical equipment is very advanced	[31]
		c	Doctors and nurses dress professionally and neatly	
		d	The signs of hospital facilities are very clear	
		e	The TV screen in the waiting area shows useful information for the patient	[36]
	f	In many places in the hospital, you can see promotional materials that guide how to use the hospital WeChat application		
	Reliability	g	My doctor is very concerned about my personal situation	[31]
		h	My doctor is based on my special condition	[37]
		i	My doctor understands my specific needs	[36]
		j	My doctor is concerned about my unique needs	[31]
		k	My doctor showed great sympathy for my condition	[37]
	Assurance	l	My doctor has the ability to treat me well	
		m	When the doctor came to see me, I felt safe	[31]
		n	The way and behavior of my doctor give me great confidence	
		o	My doctor has good medical knowledge	

		p	My doctor is trustworthy	[36]
		q	My doctor is very experienced	[17]
	Convenience	r	I can easily make an appointment with the doctor I want to see	[26]
		s	I can easily make an appointment to the time I want to see a doctor	
		t	It's easy for me to find where I need to go in the hospital	
		u	I don't have to wait long in hospital	[28]
		v	Every step of seeing a doctor in my hospital is very convenient and easy	[26]
		w	The hospital staff will always help me whenever I need	[31]
	Reliability	x	My doctor seldom makes mistakes	
		y	My doctor always explains the diagnosis and treatment to me very clearly	
		z	My medical record in the hospital is always accurate	[36]
		aa	There are few inconsistencies in my medical records	[31]
		bb	The service of medical staff is always reliable	
	Responsiveness	cc	My doctor can answer my question quickly	
		dd	I always get prompt answers when I contact the hospital	
		ee	Doctors and nurses are not too busy to answer my questions in time	[35]
		ff	My doctor will keep updated of my condition changes	
		gg	My doctor will make quick adjustments to my condition	

**Table 7:** The literature source of PS

Variable	Dimension	Operational definition	Referred variable and literature	Referred definition of variables
Patient Satisfaction (PS)	Visit Time	Measure patients' overall perception of the difference between actual performance and expectation of hospital service time after using mobile health Apps	Waiting Time [16]	The perceptions of the timeliness of the various services and processes the patient must experience
			Waiting Time [27]	Time between patient appointment and completion of treatment
			Service Procedures [26]	Appointment, registration, waiting time for treatment, payment, information interaction, etc.
	Treatment Outcome	Measure patients' overall perception of the difference between actual performance and expectation of medical outcomes after using mobile health Apps	Satisfaction [16][18][19][21][26][27][36]	an affective response to the cognitive service quality approach
			Patient Satisfaction [9]	an evaluation of emotional commitment; the interpersonal interaction between a customer and service providers in retrospect.
			Overall Satisfaction [13][17][24][28]	the level of quality healthcare provided
			Patient Satisfaction [23][25]	consumer's response to the evaluation of the perceived discrepancy between prior expectations and the actual performance of the product or service after consumption.

**Table 8:** Items design of PS

Variable	Dimension	Number	Items	Source
Patient Satisfaction (PS)	Treatment Outcome	a	I am satisfied with the medical services I received during my stay in this hospital	[23][25]
		b	I'm very satisfied with the doctor's attitude	
		c	I am very satisfied with the quality of the doctor's treatment	
		d	My illness has been properly treated	
		e	After seeing the doctor, I have a better understanding of my condition	

		f	After talking with the doctor, I feel a lot better about my condition	
		g	The doctor's choice of treatment is the most appropriate for me	
		h	My condition will be completely improved	[24][33]
		l	I'm satisfied with the doctor's consultation time	
		m	I am satisfied with the waiting time in the hospital	
		n	I'm satisfied with the total time spent on this visit	
	Visit Time	i	I'm very clear about how to recover when I get home	
		j	I am very clear about how to use the medicine	[27][28]
		k	I know exactly when to see the doctor next time.	

## APPENDIX 3

**Table 1:** Reliability analysis of variables and dimensions

Variables	Dimensions	No.	Items	Corrected Item-Total Correlation (CITC)	Cronbach's Alpha if item Deleted	Cronbach's Alpha
MHAU		2a	Make an appointment for doctor	0.5	0.835	0.839
		2b	Pay for medical related expenses	0.571	0.821	
		2c	Check laboratory reports and medical records	0.679	0.799	
		2d	Interact with the doctor you want to consult online at any time	0.719	0.79	
		2e	Communicate with other patients	0.649	0.806	
		2g	Learn about health education information and medical information pushed by hospitals	0.587	0.818	
CPC	Information Accessibility	3f	Now I can keep in touch with other patients online	0.652	0.825	0.848
		3g	I can now ask the medical staff questions via SMS on the Internet	0.727	0.79	
		3t	I can easily access and store my medical information now	0.703	0.804	
		3u	I can now access and process my medical information anytime and anywhere	0.688	0.808	
	Physician-patient Interaction	3a	Now I can make an appointment to the doctor who I want to see every time	0.404	0.71	0.713
		3l	I actively seek other information related to my health	0.436	0.692	
		3dd	The doctor will answer my questions adequately	0.59	0.601	
		3ff	Doctors offer other information about my condition and treatment on their own initiative	0.594	0.595	
PS	Treatment Outcome	4b	I'm very satisfied with the doctor's attitude	0.736	0.811	0.861
		4c	I am very satisfied with the quality of the doctor's treatment	0.722	0.817	
		4d	My illness has been properly treated	0.718	0.818	
		4f	After talking with the doctor, I feel a lot better about my condition	0.654	0.845	
	Visit Time	4j	I am satisfied with the waiting time in the hospital	0.869		0.93
		4k	I'm satisfied with the total time spent on this visit	0.869		
SQ	Tangibility	5a2	The hospital is clean	0.713	0.843	0.872
		5b2	The hospital's medical equipment is very advanced	0.779	0.816	
		5c2	Doctors and nurses dress professionally and neatly	0.756	0.826	
		5d2	The signs of hospital facilities are very clear	0.664	0.862	
	Empathy	5g2	My doctor is very concerned about my personal situation	0.75	0.855	0.886
		5h2	My doctor is based on my special condition	0.766	0.849	



		5i2	My doctor understands my specific needs	0.751	0.854	
		5j2	My doctor is concerned about my unique needs	0.739	0.859	
	Assurance	5o2	My doctor has good medical knowledge	0.691	0.835	0.857
		5p2	My doctor is trustworthy	0.777	0.755	
		5q2	My doctor is very experienced	0.723	0.806	
	Convenience	5r2	I can easily make an appointment with the doctor I want to see	0.693	0.719	0.815
		5s2	I can easily make an appointment to the time I want to see a doctor	0.751	0.659	
		5u2	I don't have to wait long in hospital	0.565	0.85	
	Reliability	5z2	My medical record in the hospital is always accurate	0.71	0.795	0.848
		5aa2	There are few inconsistencies in my medical records	0.755	0.751	
		5bb2	The service of medical staff is always reliable	0.687	0.816	
	Responsiveness	5dd2	I always get prompt answers when I contact the hospital	0.546	0.776	0.796
		5ee2	Doctors and nurses are not too busy to answer my questions in time	0.616	0.743	
		5ff2	My doctor will keep updated of my condition changes	0.653	0.722	
		5gg2	My doctor will make quick adjustments to my condition	0.62	0.739	

## APPENDIX 4

**Table 1:** Summary of construct validity analysis of MHAU<sup>a</sup>

No.	Items	Factor
		1
2a	Make an appointment for doctor	0.638
2b	Pay for medical related expenses	0.72
2c	Check laboratory reports and medical records	0.796
2d	Interact with the doctor you want to consult online at any time	0.822
2e	Communicate with other patients	0.767
2g	Learn about health education information and medical information pushed by hospitals	0.715
Eigenvalue		3.335
Cumulative Variance Interpretation Rate		55.584
KMO		0.793
Bartlett's Test of Sphericity		1658.439
Sig		0

Extraction Method: Principal Component Analysis, a:1 component extracted.

**Table 2:** Summary of construct validity analysis of CPC<sup>a</sup>

No.	Items	Factor	
		1	2
3f	Now I can keep in touch with other patients online	0.817	
3g	I can now ask the medical staff questions via SMS on the Internet	0.844	
3t	I can easily access and store my medical information now	0.807	
3u	I can now access and process my medical information anytime and anywhere	0.8	
3a	Now I can make an appointment to the doctor who I want to see every time		0.635
3l	I actively seek other information related to my health		0.647
3dd	The doctor will answer my questions adequately		0.817
3ff	Doctors offer other information about my condition and treatment on their own initiative		0.783
Rotated Eigenvalue		2.76	2.25
Rotated Variance Interpretation Rate		34.501	34.501
Cumulative Variance Interpretation Rate		28.123	62.623

KMO		0.731	
Bartlett's Test of Sphericity		2224.485	
Sig		0	
Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization a. Rotation converged in 3 iterations.			

**Table 3:** Summary of construct validity analysis of PS<sup>a</sup>

No.	Items	Factor	
		1	2
4b	I'm very satisfied with the doctor's attitude	0.837	
4c	I am very satisfied with the quality of the doctor's treatment	0.815	
4d	My illness has been properly treated	0.842	
4f	After talking with the doctor, I feel a lot better about my condition	0.807	
4j	I am satisfied with the waiting time in the hospital		0.95
4k	I'm satisfied with the total time spent on this visit		0.95
Rotated Eigenvalue		2.785	1.92
Rotated Variance Interpretation Rate		46.409	32.008
Cumulative Variance Interpretation Rate		46.409	78.417
KMO		0.739	
Bartlett's Test of Sphericity		2128.748	
Sig		0	
Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization a. Rotation converged in 3 iterations.			

**Table 4:** Summary of construct validity analysis of SQ<sup>a</sup>

No.	Items	Factor					
		1	2	3	4	5	6
5a2	The hospital is clean	0.784					
5b2	The hospital's medical equipment is very advanced	0.814					
5c2	Doctors and nurses dress professionally and neatly	0.799					
5d2	The signs of hospital facilities are very clear	0.755					
5g2	My doctor is very concerned about my personal situation		0.755				
5h2	My doctor is based on my special condition		0.73				
5i2	My doctor understands my specific needs		0.723				
5j2	My doctor is concerned about my unique needs		0.765				
5o2	My doctor has good medical knowledge				0.665		
5p2	My doctor is trustworthy				0.73		
5q2	My doctor is very experienced				0.768		
5r2	I can easily make an appointment with the doctor I want to see					0.812	
5s2	I can easily make an appointment to the time I want to see a doctor					0.834	
5u2	I don't have to wait long in hospital					0.602	
5z2	My medical record in the hospital is always accurate						0.709
5aa2	There are few inconsistencies in my medical records						0.754
5bb2	The service of medical staff is always reliable						0.618
5dd2	I always get prompt answers when I contact the hospital			0.6			
5ee2	Doctors and nurses are not too busy to answer my questions in time			0.787			

5ff2	My doctor will keep updated of my condition changes			0.773			
5gg2	My doctor will make quick adjustments to my condition			0.651			
Rotated Eigenvalue		3.187	3.011	2.623	2.292	2.256	2.125
Rotated Variance Interpretation Rate		15.177	14.34	12.491	10.912	10.744	10.121
Cumulative Variance Interpretation Rate		15.177	29.517	42.008	52.92	63.665	73.785
KMO		0.943					
Bartlett's Test of Sphericity		7726.062					
Sig		0					
Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization a. Rotation converged in 6 iterations.							