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Online Doctor Forums from Doctors' Perspectives in China and a Comparative Study
about Online Doctor Forums in China and Finland

Master's thesis
Health and Business
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Abstract

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Abstract

    The purpose of this study is to explore how online doctor forums shape doctor-patient communication in Chinese doctors' perspectives. Online doctor forums are becoming more and more prevalent around the world. In addition, to the author's own interests, comparisons between China and Finland about this kind of new innovation which combined both health and business fields attracts me to have a further study. By comparing can help us to find out the advantages and disadvantages of Chinese and Finnish online doctor forums so that we can learn from each other.

    Based on the previous literature studies and theoretical framework analysis, the objectives of this research are to find out the benefits and problems that online doctor forums bring in physicians' point of views to gain a deeper understanding of online doctor forums that can improve doctor-patient communication and relationship. The study also focuses on comparing Chinese online doctor forums and Finnish online doctor forums that boost the integration of communication areas, media, health care issues and strategies have efficiently connected doctors with patients together.

    This study focuses on qualitative research methodology as my study aims at interpreting health care professionals' opinions and experiences and understanding the advantages of this kind of forums in the current and future health care activities. The qualitative in-depth interviews carried out face to face or via Chinese chatting tool- wechat to explore their perspectives. The author asked participants about their experiences and expectations on online doctor forums and online communication. The data collected by semi-structured interviews and analyzed with content analysis. In this study, the author found that the benefits of online doctor forums are timesaving and conveniences, which enhance doctor and patient communication. Chinese doctors are less likely to use online doctor forums especially in less developed cities. However, it depends on the departments and purposes of using forums. It is hard to say doctor-patient relationship improved by online communication.

Key words

Online doctor forums, doctors' perspectives, self-diagnosis interrogation platforms, e-health, internet+health care, doctor-patient communication

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1 INTRODUCTION

Online medical diagnosis and symptoms analysis are becoming more and more prevalent globally. This kind of health communication brings a new dimension to social media in the health care sector. Social media in general defined as "A group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content." (Kaplan & Haenlein 2010). Social media in the health care sector is a growing industry in the era of speed up transform and innovate.

The e-health and internet-based medical rebuilds social media in the health care sector as mobile health and internet-based medical meet patients' eagers of searching for medical information and growing knowledge on health related issues. In a recent study of patients and physicians view new mobile medical technologies, patients are more likely to use smartphone for diagnosis instead of an office visit (Boeldt et al. 2015). The definition of e-health well explained by Eisenach. G. that "e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology." In his definition, he clearly pointed out e-health encompasses not only technological development but also how it is used according to the dynamic environment. (Eisenach 2001)

However, there is no agreed definitions in scientific medical literature, one of the generally accepted definitions made by Oh, Hans et al. clarified that "E-health as a set of technological themes in health today, more specifically based on commerce, activities, stakeholders, outcomes, locations, or perspectives." (Oh et al. 2005). This definition

acknowledges that e-health encompasses more than just "Internet and Health care".

1.1 Research background

There are many categories of e-health related medical products in the market nowadays. For instance, doctors' tools typically include patient records management can help with the daily work life of doctors as well as self-diagnosis interrogation platform can help the ordinary people and patients (Figure 1).

Category 1: Doctors' tools
(Includes patient records management, drug information, clinical guidelines, cutting-edge medical information, etc.)

Category 2: Self-diagnosis interrogation platform
(Includes patient self-diagnosis or pre-diagnosis, doctor-patient communication platform, patient support network, contracted private doctors)

Category 3: a specific disease or area of a single subject like management of chronic diseases (i.e., PM, patient management)

Category 4: Mobile application with a combination of hardware
(To measure blood pressure, blood sugar, heart rate, body temperature, urine and other indicators of information)

Category 5: Medical Alliance platform
(Containing registration, appointment, viewing the information within the hospital, checking laboratory results)

Category 6: Pharmaceutical business platform
(To provide comprehensive drug information, drug manual, illness condition query and recommended

Category 7: Medical media
(To provide services for medical institutions and enterprises, but also deliver the medical information to patients i.e. PE, patient education)
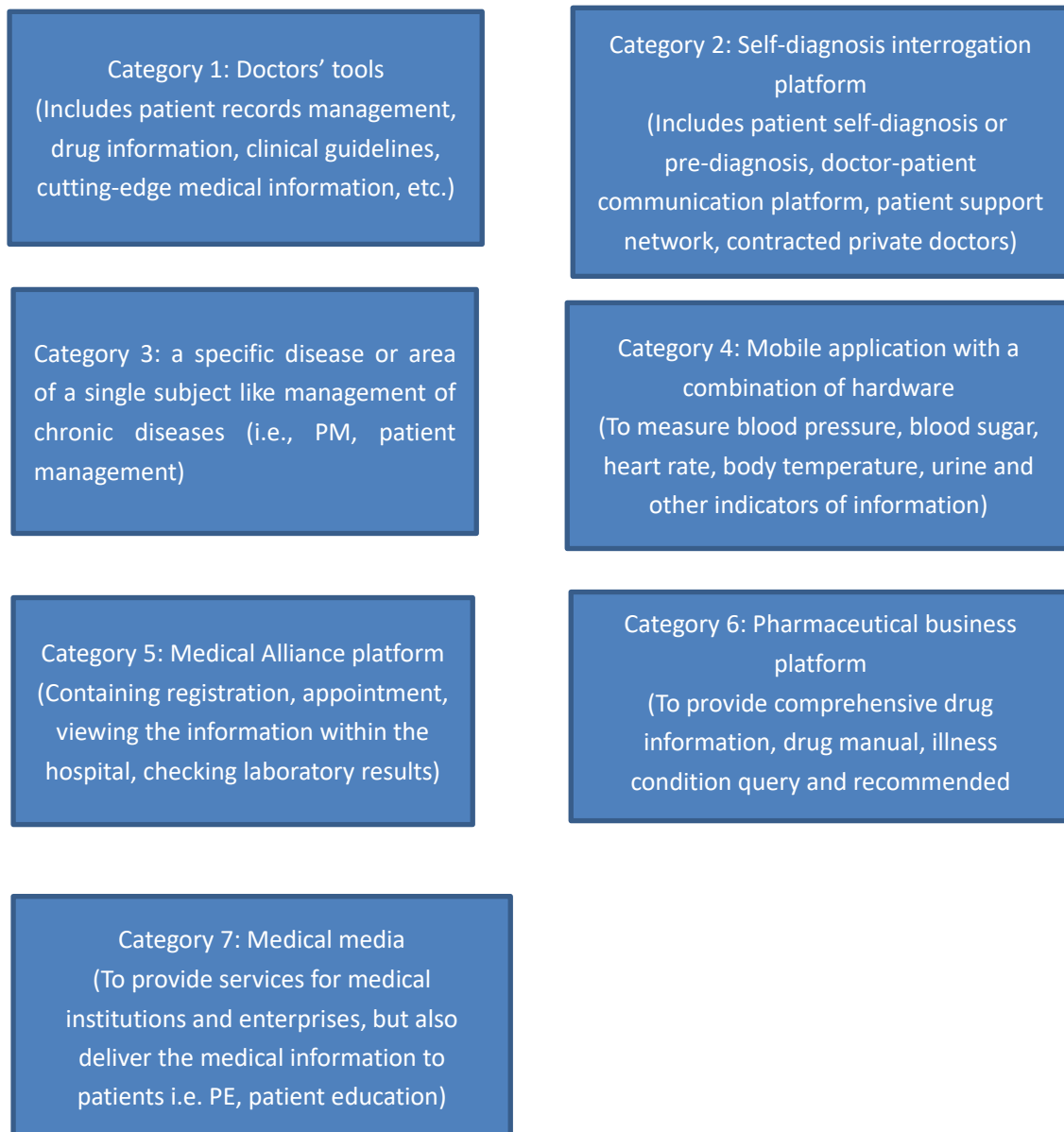
FIGURE 1. E-health related products in the following areas (adapted from Wen and Wei

2015)

In this thesis, to specify the mobile medical related products, the author will focus on self-diagnosis interrogation platforms (online doctor forums) especially on doctor-patient communication platforms. There are many reasons to focus on online doctor forums. Nowadays, online doctor forums are becoming prevalent for patients start a medical query. Online doctor forums can assist people to get medical information and peer support with fast responses. In the previous studies, many were identified the voice of patients from online doctor forums, few studies provided information from the physicians' perspectives. For instance, in the article "The development of online doctor reviews in China: an analysis of the largest online doctor review website in China" (Hao 2015) and "Online doctor reviews: do they track surgeon volume, a proxy for quality of care?"(Seqal 2012), both focus efforts on the issues of health consumers' online feedbacks, nothing concerns about online doctor forums from physicians' views.

Meanwhile the self-diagnosis interrogation platforms provide patient self-diagnosis, pre-diagnosis, remote data collection, diagnostic and therapeutic support and effective treatment suggestions services through doctor-patient online communication. Some comprehensively developed self-diagnosis interrogation platforms offer clinical information searching service that can guide patients to select proper treatment with right doctors and hospitals.

In worldwide platforms rapidly developed many self-diagnosis interrogations recently like HealthcareMagic's Ask a Doctor Service platform in America and UK and iClinic Healthcare in India. In Finland, Medics24.fi and Terve.fi also offer doctor-patient communication platforms where patients can ask doctors and medical specialists health problems with a certain payment. In China, there are much more doctor-patient communication platforms, among them the most famous ones are The Good Doctor and Spring Rain Doctor.

The reasons for fast growing self-diagnosis interrogation platforms, according to Silver, M. P., health care system around the world has shifted towards to the self-management models, internet has become a powerful tool to reconfigure the medical resources to achieve patient-centered model, to optimize the allocation of medical resources to use, and to improve the efficiency of health care. (Silver2015). This phenomenon has received many health care researchers' attention so that lots of studies about self-diagnosis interrogation platforms appeared since the time of Web 2.0, many are focus on patients' reviews study and doctor-patient communication methods study, few was specially focus on doctors' views on these self-diagnosis interrogation platforms as these platforms are designed for the purpose of patients' convenience.

1.2 Research objectives

Consultation to a doctor over the internet is not news to people nowadays. Based on Pew Research Center's health fact sheet, 72% internet users in U.S. searched health information during the past year in 2012 (Pew Research Center 2013). "The most commonly-researched topics are specific diseases or conditions; treatments or procedures; and doctors or other health professionals." However, because the ordinary people are lacking of health knowledge and literacy, they cannot find accurate health information what they just need, better health literacy education and good self-diagnosis interrogation platforms needed. The fast development of self-diagnosis interrogation platforms back up more frequently online doctor inquires. (Pew Research Center 2013.)

Nordic countries are at the forefront of the world in digitalization of health care, they have common interests to promote Nordic collaboration in eHealth sector (Nordic Health 2016). Finland, has a high-quality health care delivery system as value for patients is highlighted to make multidisciplinary provider teams "integrated" to do work together to minimize the time costs and maximize the coordination (Teperi et al. 2009). The health practitioner quantity in Finland is in a shortage especially in the rural areas. Nearly 9% physicians' positions not filled in the health centers in October 2006. It is

crucial for the development of Finnish health care because of shortages of professionals. Some physicians are interested in flexible contracts with other firms or organizations; therefore, the online platforms, which offer doctor-patient communication and patients' interrogation services, also urgently needed and have potential market in Finland. (Teperi et al. 2009)

China started to grow its online doctor services and business since the early 2000s as internet became prevalent across the country. According to China Capital Stocks in 2016, the minister of PRC, Keqiang Li pointed out "internet + health care" can satisfy more citizens' health care needs by solving the difficulties to visit doctors and conflicts between doctors and patients. The main reason to cause the conflicts among doctors and patients is usually doctors increase their revenues by over-treatment or increasing inspection fees and items. The internet-based health care can encourage competitions in the medical market and promote costs-saving effective treatments. (Sun 2016)

Online doctor is a great helpful tool to patients especially to those live in the areas where are lacking of health care resources. Many researchers have studied the self-diagnosis interrogation platforms from patients' perspectives as well; they found that most patients' reviews on the online doctors whom they communicated positively rated (Hao 2015) and how people evaluate online reviews of individual doctors that affect patients' behaviors when selecting online doctors (Grabner-Krauter & Waiguny 2015).

The purpose of this thesis is to offer the insights of online doctor forums from the healthcare practitioners' viewpoint in China to find out the impacts upon doctor-patient online communication via online doctor forums. Based on previous literatures, the aim of this thesis project is to draw impact elements between online doctor forums and online communication. Then empirical study on Chinese physicians' opinions to online doctor forums and online communication expressed in the studied context. This study will bring a deeper understanding about how online doctor forums work and influence

on doctor-patient online communication. Therefore, the thesis is seeking answers for the main research question:

"How do online doctor forums shape doctor-patient online communication?"

In order to answer this question, the author set three objectives to this thesis project: to find out what benefits and problems that people get from online doctor-patient communication forums; to get knowledge that can those online forums help to improve doctor-patient communication or not; to clarify the differences between Finnish and Chinese online doctor platforms through a comparative study. To be able to answer the main research question and obtain the objective of this study, the author addresses the following three sub questions:

RQ1. What are the benefits and problems of online doctor forums from Chinese doctors' perspectives?

RQ2. Can online doctor forums improve doctor-patient communication and relationship?

RQ3. What are the differences between Chinese and Finnish online doctor forums?

The answer of RQ3 explained in the chapter 2, which begins with literature review of online doctor forums. Qualitative methodology applied in this thesis research part to answer RQ1 and RQ2, interview questions designed by authors based on the previous literature and other sources and then print them out to dispatch to six physicians in China when having conservations. The secondary data searched and found via internet sources, journals, books and other channels. This thesis can be the first work, which concerns the physicians' opinions to online doctor forums and makes explicit comparisons under Finnish and Chinese cultural backgrounds.

For ensuring the credibility, written some notes by doctors have done and the results analyzed by logical inductive content analysis via conversations with six Chinese physicians. In addition, the author has own great interests to have a comparative study on the self-diagnosis interrogation platforms under two different cultural contexts.

1.3 Key concepts of the thesis

The key concepts of this thesis are online doctor forums, online communication and doctor-patient communication as the main purpose of this study is to understand the impacts upon doctor-patient online communication via online doctor forums.

The concept of online doctor forums is grounded in eHealth theories. Oh, Rizo, Enkin and Jadad (2005) defined eHealth as:

> …E-health as a set of technological themes in health today, more   specifically based on commerce, activities, stakeholders, outcomes, locations, or perspectives… (Oh, H. et al. 2005, 1).

This definition gives wide ranges of applications of eHealth from commercial events to clinical outcomes, so in the author's own understanding, online doctor forums belong to its subcategories.

The concepts of online communication and doctor-patient communication are grounded in doctor-patient interaction and relationship. Chipidza, Wallwork and Stern (2015) explained factors influence doctor-patient interaction and relationship in a very detailed way including systematic factors, provider factors and doctor-patient mismatches:

> …Factors affecting the doctor-patient relationship can be patient-dependent, provider-dependent, health system–dependent, or due to patient-provider mismatch (Chipidza et al. 2015).

They also argue that doctor-patient relationship develops based on the interaction between the doctor and patient, so in the author's own understanding, effective doctor-patient online communication can help to build good relationship between doctor and patient.

1.4 The structure of the thesis

There are together five chapters in this thesis. Chapter 1 begins at introduction, it tells the research background and meanings as well as research objectives, methods and the creative points of the thesis.

Chapter 2 concentrates on previous theoretical literature. In this chapter, the definition of e-health and development of self-interrogation platforms introduced. In addition, the literacy studies on online doctor from physicians and patients viewpoints been searched. In this chapter, comparisons of Chinese online doctor forums and Finnish online doctor forums explored as well.

Chapter 3 focuses on research methodology that quantitative method will be applied and the main conservation texts will be analyzed by using content analysis as the research questions will be formulated, defined categories will be applied, coding process will be implemented, and trustworthiness and results of analysis will be studied.

Chapter 4 provides results of the interviews analysis to find are there any differences such as strategies and motivations to use from Chinese physicians' views on online doctor forums and the future potential trends of these platforms development.

Chapter 5 contains summaries of the whole thesis projects, recommendations of future self-diagnosis platforms development, reliability of this thesis and limitations from the authors' own views and opinions about the paper.

2 THEORETICAL BACKGROUNDS

2.1 E-health in Europe and China

A growing number of patients or their relatives search for medical information via internet, thus a frequently recent used term e-health appeared into people's eyes. E-health refers to health information and services delivered through internet or other related technologies. The term of "e-health" firstly mentioned in scientific literature can be dating back to the year 1999 (Lakovidis, Wilson & Healy 2004.), while at the beginning in 1970s, computer technology was developed for the purpose of health services delivery as health clerks and managers realized that a huge amount of health records needed to dealt with.

Even though the computer sciences applied to healthcare industry for couple of decades, there is no agreed definition on the term "e-health". One of the generally accepted definitions made by Oh, Hans et al. clarified that "E-health as a set of technological themes in health today, more specifically based on commerce, activities, stakeholders, outcomes, locations, or perspectives." (Oh et al. 2005, 33).

Silber who wrote the Case for eHealth, made a definition, as "e-Health is the means to deliver responsive healthcare tailored to the needs of citizens." The author of this thesis agrees with her definitions about e-health since nowadays health informatics, health telematics and telemedicine researched, processed and educated that the practitioners have better skills and knowledge on evidence gathering and medical procedures and serve for patients with better outcome. (Lakovidis, Wilson & Healy 2004)

Since 1990s' information technology revolution starts, with internet technology development, e-health became a possibility for both healthcare practitioners and normal citizens to use in Europe. The European Union carried out the RTD (Community

Research and Technological Development) budget in "healthcare computing" since the year 1989; firstly, the program has paid more attention on developing computer technology for medical practice in the program of the Advance Informatics in Medicine. Later, during 1991-1994, the program focused on developing network tools for satisfying the needs of healthcare practitioners. From 1994 to 1998, the new program "Telematics Applications for Health Program" under the budget project was emphasis on the patient users' needs. In 1998-2002, the E-health Program created to develop ambient intelligence for all of the parties of healthcare from healthcare professionals to patients and citizens. Since then the solution to personal health systems for assisting people to stay healthy has emphasized.

Recently the e-health tools have reached a mature stage in the healthcare market in EU, according to the 2002 Eurobarometer Survey, there are average 78% EU medical general practitioners online with 98% in Sweden. At same time, 48% of healthcare practitioners use electronic health records, 46% of healthcare practitioners use to transfer patients' data, only few uses for the purpose of online reservation and online consultation.

Nowadays, in EU, e-health tools not only designed for doctors but also for patients or citizens' self-management. The e-health tools for citizens to use divided with three categories: a.) for accessing health information and advice; b.) for dealing with health services administration such as online booking and prescriptions; c.) homecare devices for remote monitoring patients.

How about the e-health in China? China started to pay more attention to medical reform to establish e-health and regional collaborative medical service (RCMS) construction since SARS outbreak in 2003 (Zhao et al. 2009). Before, Chinese face the difficulty to access the basic medical and health services nationally. Even though the Chinese government improved and updated the facilities in big hospitals, still they found it is not helpful to meet all citizens' health care requirement unless developing e-health and

regional collaborative medical services (RCMS). China has more difficulties to develop e-health because of large population, huge space and uneven health care resources. Therefore, the goal of e-health is to "integrate regional resources, share and deliver medical information, establish collaborative health service, and support health information collection of relevant departments inside or outside the region." (Zhao et al 2009, 4888)

To enable an appropriate environment for e-health services growing, China government develops policy and strategic framework for IT training and e-health demonstrations that encourage people especially those living in rural areas to gain basic medical knowledge and supports the research and development of e-health related projects or products.

In general, the key drivers for e-health to develop in both EU and China are:
(Lakovidis, Wilson & Healy 2004, 164)

a.) Patients would like to have higher quality health care services and more choices
b.) Ageing population and chronic diseases population are growing
c.) Health care costs are growing
d.) Information and communication technologies have enabled the development of healthcare delivery networks
e.) The working ways and models of healthcare practitioners are changed

According to Wanless, a leading banker in UK, the self-care will be increased and promoted in the 21st Century. The e-health related projects and products thus getting more attention to and more investments. These projects and products are including data management (Electronic health record), clinical decision support (self-diagnosis interrogation platforms and ePrescribing) and remote facilitating care (telecare, telehealth and Smart Homes). Among them, the self-diagnosis interrogation platforms have earned great growth in the market recently as many patients and citizens would like to follow doctors online and the high acceptance rate of mobile devices and other

communication tools make ICT-assisted health care applications and services become reality.

2.2 Online doctor forums

Online doctor forums belong to the subcategory of self-diagnosis interrogation platforms. Over the past decades, health care practice has shifted from paper-based diagnosis to internet-based healthcare decision aids. The online doctor forums offer digital solutions for physicians and health care delivery organizations to interact with patients. There is predication that face to face patient/doctor communications will become less and less, instead of that there is increasing patients' inquiries through electronic devices. (Weiner 2012.)

Patients often have misdiagnosed or undiagnosed when they have complex and undistinguished symptoms cause them getting mistreatments with unnecessary health care costs.   Patients have to take own risks on high morbidity and mortality because of inaccurate diagnosis made by physicians. Many patients would like to visit multiple physicians to get diagnoses more accurately, but the limits of geography and health insurance network make their access to health care within limited ranges. (Juusola et al. 2016) Thus, the online and mobile app based online doctor forums between patients and physicians provide the availability for more efficient and accurate diagnosis.

In China, doctor and patient relationships are always with tensions. There are many cases are about conflicts between doctors and patients or patients' relatives which have already caused casualties. According to one report from The New Yorkers, after one killing in Harbin City, the victim was the doctor; however, there were many expressions of sympathy for the killer as the victim. One Chinese governmental media put online questionnaires for readers to choose their moods to this case, 65% readers chose smiley face. To the reporter, it is not surprising since almost everyone in China seems to have poorly treated by doctors or hospitals. (Beam 2014) One aspect is caused from the

socioeconomic condition that services qualities of hospitals and clinics cannot meet rapidly increasing medical needs, the second reason is the group of patients which always hold the weak position, when there come misunderstandings or mistreatments, patients and their relatives have no way to find out solutions immediately. The third reason is the over-commercialization of health care services offered by hospitals and clinics make more and more citizens and doctors standing on the opposite side. In my opinion, the main issue of the tense relationship caused by un-trust and lack of communication.

2.2.1 The objectives of online doctor forums

The aims of online doctor forum as a self-diagnosis interrogation tool are to help patients or the persons who take care of them have self-check and self-diagnosis especially for complex diagnosis medical cases through patients and doctor communications online to obtain more accurate diagnosis. Secondly, the waiting time for meeting physicians reduced. According to the research in Canada, the average waiting time for visiting a primary health care physician is 8.9 weeks in 2010, after that another 9.3 weeks for receiving treatment due to the complexity of health care system and many steps involved in the process of consulting a physician (Liddy et al. 2013). Same kind of situation occurs in Finland as well, within the municipal health care system, patients have very limited access to choose physicians and health care providers that they want.

In Finland, patients can choose health care from municipal, private or occupational health care institutions, however, for poor or unemployed people; municipal health care system is the only choice. In addition, patients have limited freedom to select physicians and health care providers within the municipal health care system.

Since SARS breakout a whole country in 2003, China Government realized it is time to have reforms on our health care system, especially health insurance system in rural

areas and urban areas. The rural areas are covered by the New Rural Cooperative Medical Scheme (NCMS), the urban areas are covered by the Urban Employee Basic Medical Insurance (UEBMI) and Urban Resident Basic Medical Insurance (URBMI, which covers the unemployed, children and elderly). However, the localized social welfare and healthcare benefits make residents and floating population inaccessible outside of the certain regions that they are living. Therefore, the online doctor forums urgently needed in Finland as well as in China. (Zhao et al. 2014)

2.2.2 The development of online doctor forums

At the present, there are many kinds of online doctor forums, some forums were built by hospitals and some built by commercial health care institutions.   There are also many health care consultation services offered by mobile equipment. It has reported that many mobile Apps released for patients to communicate with doctors with more convenient conditions since 2011 in China (Koo 2015).

The appearance of online doctor forums helps to reduce the waste of health care resources. Patients get health care knowledge from the answers of physicians that improve their education on health care awareness on time and reduce their possibilities to visit physicians. Same time the physicians will have less pressure and more time to make correct analyses and decisions to the patients' symptoms and illnesses.

There are many online doctor forums are established and developed in the world. Based on the estimation by American Health Information Management Association (AHIMA), there were about 0.9 million households have used remote online doctor forums; it will be 22.6 million households will use these forums by 2018 in USA. The market share of self-diagnosis interrogation platforms will increase rapidly from 100m US dollars in 2013 to 13.7 bn US dollars in 2016. (He 2015.)

The requests from physicians are fame, interests, patient resources and convenient

health care practices. Every decision made by physicians have to be considered the long-term effects of making ethical behavior based on the best empirical evidence available. (Helgesson & Lynöe 2008). The classifications of hospitals in China have caused shortages of patients in class I and II hospitals as they have lower clinical resources levels than class III hospitals (Sussmuth-Dyckerhoff & Wang 2010). The online doctor forums offer doctors good places to do self-promotion and comfortable environment for them to offer high quality health care services. Many forums have already provided comprehensive health information that easily for patients to seek for health information as well as health information consultation services with registered physicians national-wide. Even some forums can offer online booking and clinical visiting guide. More and more hospitals and physicians cooperate with these platforms to expand the service areas and market.

2.2.3 The challenges of online doctor forums

Because of communications via internet, lacking of trust between strange patients and doctors is one of the main barriers to prevent the development of online doctor forums. Some physicians and patients do not provide reliable information on the forums, which causes misdiagnosis and professional integrity. Besides, the personal information security is also becoming a problem to the development of these forums. It is hard for patients to protect their own rights if misdiagnosis occurs as the information offered by physicians and even patients themselves are difficult to prove the credence. In addition, if patients' personal information leaked out, difficult for them to appeal and win own rights back. (Fan2015) Besides, many forums do not offer landing interrogation service that no contacts between doctors and patients before, the platforms offer random matches for them. The benefits for this kind doctor-patient relationship are fast-building relationship and high efficiency, however, the doctor only have limited information on the patients, easily to make misdiagnosis and hard to track a chronic disease patient.

Some experts such as Sivaswamy, R. and Kumar, J. (2002) suggested that the government should firstly improve laws and regulations to offer a healthy environment for platforms and protect the rights of both sides. The health care institutions and platforms also should strengthen the supervision and management to ensure the qualifications of physicians. Secondly, the service items and functions on the platforms should offer more professional diagnosis services not only health care consultation. Thirdly, the service quality offered by forums should have improved with less relapse rate and more satisfied feedbacks from both physicians and patients. Lastly, the territoriality of online interrogation service should have enhanced that the forums match the physicians and patients based on their residential areas as well so that a patient can have more possibilities to visit the hospital and physician.

2.3 Comparisons of Chinese and Finnish online doctor forums

2.3.1 Online doctor forums in China

China has the largest population of internet user in the world. Because of immature primary care system, most Chinese patients have to select doctors by self-refer with little information about the doctors. Information technology brings new option and hope to them especially Web 2.0 Technology brings interactive form of information searching and sharing online (Hao 2015). This situation leads to the development of online doctor review platforms come across in the health care market. That is why online doctor review platforms are the predecessors and foundations of online doctor forums.

For instance, the Good Doctor initially founded in 2006 for helping Chinese patients to find out suitable and experienced doctors (that is good doctor as well). This is one innovative and important step as China has not built any effective referral system since 1980s (Hao & Zhang 2016). Nowadays, the Good Doctor is one of the three biggest online doctor forums in China, it not only provides online doctor reviews, but also

provides comprehensive online health-related services such as online appointment scheduling, teleconsultation, patient-doctor forums, and patient clubs for specific doctor.

When mentioned online doctor forums in China, most people will call to mind of the following most popular online doctor forums: The Good Doctor (hao dai fu), Spring Rain and Ping An Good Doctor (Ping An means safety in Chinese). The Good Doctor used 10 years to develop into a tycoon, Spring Rain used 5 years while Ping An used only 1 year.

The following figure is to compare the current statues of the three biggest online doctor forums in China.

TABLE 1. Current statues of the three biggest online doctor forums in China (Source: Teng 2016)

	The Good Doctor	Spring Rain	Ping An Good Doctor
Established year	2006	2011	2014
Value of Assessment/100 million RMB	45	60	180
Registered users/10,000	2200	7700	9200
Active users per month/10,000	70	125	170
Registered doctors/ 10,000	11	41	5
Full-time employed doctors	0	0	1000+
Consultations per day/10,000	3	33	25

From above, we can see the latest established Ping An Good Doctor develops fastest and owns largest registered users quantity. What reasons cause this phenomenon? We have to consider the commercial models and different positioning of the Good Doctor, Spring Rain and Ping An.

Both the Good Doctor and Spring Rain are open platforms for each doctor can register, especially the Spring Rain, they focus more on minor illnesses and health care consultations. Ping An is one of the leading Chinese insurance company, it has the powerful strength to collect funds and employ own teams with chief doctors and experienced doctors and 7*24 service time. So no matter from quality of doctors, speed of answering and reviews from patients, Ping An has the most advantages among those three.

Besides, Ping An has the widest consumers' positioning from serious diseases to health care consultations (Figure 2).
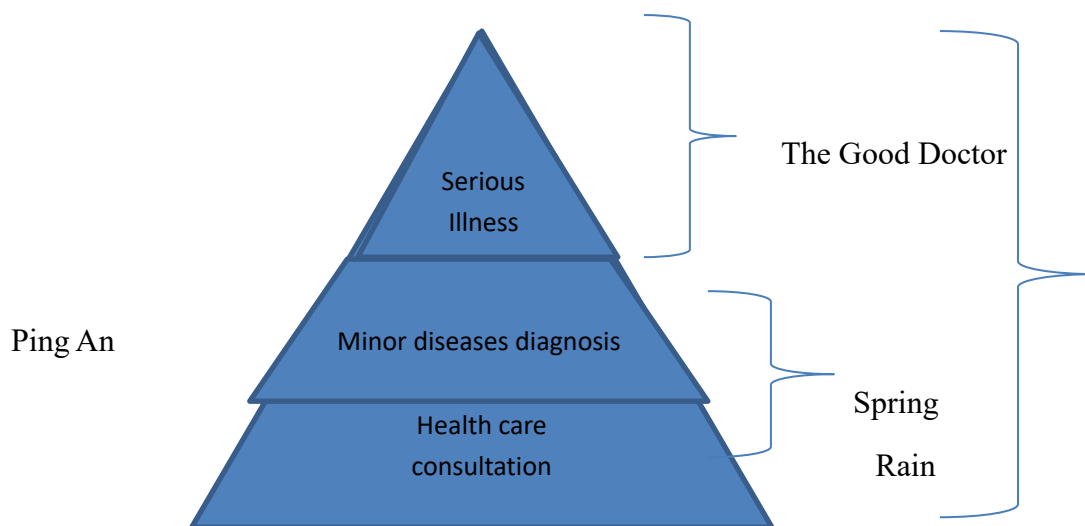
FIGURE 2. Positioning of the three online doctor forums (Source: Teng 2016)

However, it is still difficult to tell that who the winner is at this moment in China. The Good Doctor has accumulated its reputation for ten years, nearly every district level hospital found from their platform. Spring Rain offers free service to patients and subsidies to each doctor's answer and develops cooperation with some private clinics, by end of 2015, there were about 300 Spring Rain clinics around China. Ping An as one of the largest insurance companies in China, it has much funds to employ full-time physicians-in-charge (head doctors) to offer high quality interrogation services with a certain small amount of payment from health care consumers. At this moment, Ping An

has the most population but it costs more time to wait doctors' answers if too many active health care consumers inquiries also it needs enough financial capacities that can raise many high quality doctors.

Except for above three largest forums, there are still thousands online doctor forums in China. In the first half year in 2015, there was together 0.78 billion USD risk investments into online health care industry. It has estimated that by end of 2017, online health care industry in China total market value could reach 12.5 billion RMB while in 2015 was only 2.34 billion RMB. (Zhong 2015)

According to the functions and services classification provided by the applications, online medical can be divided into six areas: self-diagnosis interrogation, medical online supplier, physicians' assistant tools, hardware equipment (wearable equipment), and single subject field (such as diabetes management), in which self-diagnosis interrogation is the most important and popular online health care categories. While the self-diagnosis interrogation applications that also called online doctor forums can occupy the most online medical market in China, behind there is a deeper reason. For a long time, medical resources are extreme imbalance; "difficult to visit a doctor" has become the public problem. Qualified medical resources lean to large cities, especially to the provincial capital cities, the hierarchical classification of health care system is not perfect. So many patients do not need to go to the district level hospitals occupied the most advanced hospital resources, large hospitals are overcrowding, medical diagnosis and treatment processes are complicated, The efficiency of health care becomes extremely low. In addition to "difficult", "expensive" is also a major pain in the health care industry in China. Many patients have had "minor ailments over-treatment" problems, combined with the high cost of time spent on medical treatment, so that some people do not want to visit doctors and wait a minor illness changed into a serious illness. The emergence of mobile medical applications for the above issues provides an effective solution to the public health care through the online self-diagnosis interrogation ways to manage personal health problems in daily life. Thus, patients no

longer "with a minor illness need to go to the hospital" and no longer "wait a minor illness changed into a serious illness." Therefore, we can say that the online doctor forums can effectively compensate for the uneven distribution of qualified medical resources in China; people find the way and hope to solve the issue of ""difficult" and "expensive" (Zhong 2015).

2.3.2 Online doctor forums in Finland

The embryonic form of online doctor started from the year 1999 by Turku Technology Center. It has called electronic doctor service; it was also the first virtual hospital in Europe. There were 40 health care institutions and hospitals joined in this net. Patients can have consultations with doctors via internet. Doctors can control the follow-up health care around hospitals. Payments made through bank and credits services. (Turun Radio 1999)

Then in 2001, to release the problem of doctors' shortage, Medimanni Ltd in Oulu City developed an internet reservation system for medical services. The countrywide system can help hospitals and medical centers to book short-term contracts with doctors. This enhanced doctors' flows and released unbalanced resources issues. (Oulu-Radio 2001)

In 2002, online doctor services covered into deeper areas of Finland including Lapland regions. According to the head of Finnish Social and Health Care Services Development Center Pekka Ruotsalainen, visits to the doctor reduced up to 20-40 per cent of current levels because of the network connections usage. (Yle Uutiset 2002)

Since 2010, illness health care tends to own personal health care model, especially for chronic diseases, patients can take care of themselves via internet which can reduce their risks of treatment (Yle Uutiset 2010).

Nowadays, the high-resolution video technology allows online doctor forums with more possibilities to offer accurate diagnoses without googling. Patients and doctors can connect each other face to face via internet, but this moment, most cases are about general illness consultations skin and mental problems. (Yle Uutiset 2014)

In the report in 2016, more and more people would like to use online doctor forums because it can save time and energy to visit doctors. Even social and health care ministry has outlined that online doctors are part of general office doctors' interactions. Moreover, KELA (Finnish national welfare institution) are considering giving reimbursement for online doctor visiting, and they have started to pay rehabilitative psychotherapy costs for some patients. (Yle Uutiset 2016)

There are many online doctor services and forums in Finland. Generally, three different models of online doctor forums found as the followings:

Self-employed online doctor- www.nettilaakari.fi/

Contracted online doctor- https://fi.meedoc.com/

Online doctor forums with health information- www.tohtori.fi/

The author will analyze all the three types of online doctor forums one by one.

Among the self-employed online doctor forums, nettilaakari.fi is one example of this kind of online doctor forums. Nettilääkäri webpage run by one general practitioner and specialist in psychiatry- Juha Lehti. Depending on the needs of the customers, his service is either 1) personal medical care and treatment assessment, or 2) guidance to general health and well-being related issues. (Nettilääkäri.2016.) He also claimed that online doctor neither give certain addictive drugs such as Xanor, Alprox and Valium nor write sick leave certificate for clients. Video calls, telephone connections and e-mails have used in the services. Since none of the Finnish authority or an expert has yet been officially defined that are video call services are safe enough for the health care services. The service provider uses a secure video call service yardstick based on an expert

assessment to be safe evaluated and makes it possible to be complied with health security law of the United States (HIPAA compliance). Skype is not a sufficiently secure connection. Fixed telephone line, as well as mobile phone connection and sending SMS messages considered as a secure way to communicate between the client and the health care provider. E-mail communication is a prerequisite protected by SSL technology service provider that also recommended to the clients. In his forum, he also described and emphasized privacy policy, for example, the client should have the awareness to protect own privacy and in principle cannot disclose any information to anyone except the client himself. (Nettilääkäri 2016)

In his forum, clients can reserve time by choosing three different contact ways-telephone, video calls, chatting tools and e-mails. The time reserved from 30 to 60 minutes. The prices also found in the forum, generally, it is quite easy for clients to follow and use this online doctor forum.

The second type of online doctor forum is doctors who have contracts with the technique suppliers or health care institutions. Meedoc is this kind technical company, which "provide affordable, high quality healthcare for all". Patients can consult a healthcare professional almost instantly at anywhere they want with affordable prices. (Meedoc.com) Doctors selected fully licensed and contracted with only a small transaction fee with Meedoc services around Europe. MeeDoc provides a platform for e-consultations available between doctors and patients, as they believe "74% of medical consultations could be treated with telemedicine". (Meedoc.com.) Meedoc also offers CE certified medical app so that clients' data and privacy are always secure and encrypted. Doctors monitored by patients' feedbacks and monitor tools to ensure the quality of their services. The conditions most likely treated via Meedoc are:

Common sickness- constipation, common cold, cough, diarrhea, earache and so on

Chronic diseases- diabetes, asthma and so on

Skin conditions- Acne, shingles insect bites

Mental health- Stress, anxiety depression

Occasional pain- Back pain, sprains, superficial burns

Sexual health- Contraception, erectile dysfunction

In addition, they offer alcoholism, allergies, hair loss, prescription renewals and more. (Meedoc.com)

According to the founder of Meedoc Mikko Kiiskilä, the aim of Meedoc is to offer the easiest way to provide compliant telemedicine via video and messages like chatting via skype as usual. Many enterprises select it as one of their health care services for their employees since convenient video treatment can often reduce sick leave, and can improve the overall health of the staff. (O'Hear 2014)

The third type of online doctor forum is the forums which provides health care information and knowledge same time when clients try to search for online doctor services. The webpage of tohtori.fi is part of the webpage of terve.fi. This is a comprehensive online doctor webpage; there clients can find lääkärikirja (medical book) which tells knowledge and subcategories about different diseases. For example, for diabetes, the webpage also gives more details about different diabetes situations. Clients can search for medical information based on own conditions no matter they are with type-2 diabetes or pregnancy diabetes. Besides, clients also can find related studies on these diseases, for instance, what is chromium and omega-3 can reduce the risks of diabetes. There are also Wellbeing Clinics and Health Care Clinics in the front-page. Wellbeing Clinics tell something about how to keep fitness and health including some food supplements. Health Care Clinics provide guidance and instructions for the most common diseases especially for some chronic diseases such as asthma and depressions. Another function in this online doctor forum is the discussion area; people can leave messages about new technologies, disease treatments and even their worries concerned health. For some people who love smoking, this forum also offers instructions to join in their free virtual therapy- Smogo. In addition, medicine instructions offered in this forum as well, for example, instructions for using medicines at lactation and pregnancy period. Of course, in this online doctor forum provides online doctor services as well.

There are more than 40 cooperated doctors are all with many years' working experiences, but the only way to contact them online is via leaving messages about your own problems and illnesses, average answering time is within 5 days. However, you can book time with their doctors online and other health care institutions, which are their cooperated partners such as Terveystalo and Mehiläinen. According to their introduction of terve.fi, it is "the most extensive of the Nordic welfare Site", "popular and interactive, since 1996", "30 000 questions answered by the experts, more than one hundred experts online doctor service" and "300 000 weekly visitors". (Terveys.fi)

2.3.3 Comparisons in China and Finland

Online doctor forum is the emerging model of remote health care services, with real-time, convenient and cheap services, soon became popular among many patients and their families in China and Finland. However, the internet penetration must be a long-term process of health care industry. In the long run, the key to success in online health care is not who can attract more users faster, but to see who can provide better quality of online health care services. Behind this, there exist competitions of health care institutions, doctors and other resources, but also contests of business model. Therefore, there comes meanings of comparing Chinese and Finnish online doctor forums that we can know advantages and disadvantages from comparisons of each other that can help us develop and improve forums better.

In China, there are many problems exist in the traditional clinical services, so the advantages and benefits of online doctor forums would be more obvious. In the traditional clinical services, the distribution of medical resources is uneven among different regions and health care institutions. Three levels of hospital classification in China that recognizes a hospital's ability to provide medical care, education and research. Based on this, level-1, level-2 and level-3(Tertiary) have been classified. Under these three levels, a further subdivided into several grades (A, B, C) based on sizes, equipment and operation. (Management in Healthcare Report 2014)

No doubt, the hospitals with higher level and grades usually get more attention and subsidies from the lean of policy. In big cities, these large hospitals gathered the best health care resources. People tend to visit big hospitals, which cause crowds in those hospitals and few patients in lower level hospitals. This phenomenon made utilization rate of medical resources is extremely low in some areas especially in small cities and towns. This calls for the appearance of online doctor forums that helps to release the unbalanced resources allocation problem at a certain level.

While in Finland, because of the shortage of doctors, there came needs of doctors' online services and online doctor forums (Oulu-Radio 2001). Shortage of doctors has been a long-term issue to Finnish health care industry since the early year of 21st century. Even for the municipal public sector, health care center (terveyskeskus) also has to face this problem. According to Uusi Suomi, the shortage of doctors in many health care centers in Finland is becoming more and more serious. Regionally, the doctor gap was highest in Vaasa hospital district, where tasks were unfulfilled by 18.2 per cent. Besides, more than 10 percent of the shortfall in the hospital district of Satakunta and Åland. Outsourcing of doctors were in the peak years of 2009 - 2011, when the health care centers outsourced or purchased from some health care companies to complete almost 500 tasks. More than half of the health care centers have outsourced or purchased doctors from companies. (Uusi Suomi 2016)

According to the report of YLE, since 1999, Finnish company has started electronic doctor service that was also the first virtual hospital in Europe by Turku Technology Center (Turun Radio. 1999). In China, The Good Doctor is one of the Chinese earliest online doctor forum, its embryonic form is the yellow page for hospitals national wide since 2006, because at that moment, patients had troubles to find a suitable hospital and their doctors. The interrogation functions appeared around 2010, same time many other competitive online doctor forums came across, the era of "internet+health" started. (Teng 2016)

The Chinese online doctor forums have paid attention on exploiting values of data from users of online doctor forums. For example, some patients have put their feedbacks to doctors and their experiences on treatments methods and medicines, which can offer rich clinical information and research values. Besides, the Chinese online doctor forums have much larger active users than Finnish ones; this also offers more opportunities for digging big data from Chinese online doctor forums as the larger scale of big data, the higher values for doing researches.

However, on the issue of offline resources cooperation models, most Chinese online doctor forums do not employ doctors by themselves, for example, in The Good Doctor and Spring Rain, doctors are self-registered and get subsidies from forums or payments from patients by answering questions. While most Finnish online doctor forums employ or purchase doctors with contracts for the aims of improving service efficiency and controlling the costs, which also easily to manage the teams and risks control.

On the issue of scope of diagnoses and treatments, since Chinese online doctor forums contain large quantity of doctors from different fields with different levels, the range and scope of inquiries can be various and wide, no matter small illnesses or serious diseases. While many Finnish online doctor forums have listed the range of diagnoses and treatments on their webpage since they have clear positioning and want to keep high standard of service level. For example, in the one of Finnish most popular online doctor forum- tohtori.fi, there lists only 21 different disease species for remote health care (Tohtori.fi), thus their diagnoses will be more accurate.

At last, at this moment in Chinese market, the above mentioned three tycoons of e-health industry. Good Doctor, Spring Rain and Ping An have already accumulated of key core competencies that doctor's service boundaries from a single hospital began to move to the Internet so that the capacity of doctors can expand out. In Finnish market, as technique sources are balanced developed as well as health care resources,

government and shareholders encourage blossoming and contending of all, which makes "a hundred flowers bloom" at the same time.

The comparisons of online doctor forums in China and Finland briefly made a conclusion as the following table shows：

TABLE 2. Comparisons of online doctor forums in China and Finland

Issues	China	Finland
Purpose of developing online doctor forums	To release the problem of unbalanced resources	To solve the shortage of doctors problem
Starting year and predecessor	2006, Yellow pages of hospitals	1999,Electronic doctor services
Scale	Huge amount of active users, have values of big data collection	A certain amount of users
Scope	Various species of illnesses and diseases	Limited illnesses and diseases
offline resources cooperation models	Self-registered doctors	Employed doctors
Clients' inquiries	Send to different doctors	Usually to one doctor
Competitiveness	Tycoon has already formed	"Hundreds of flowers bloom"

The comparisons of Finnish and Chinese online doctor forums reveal how Finnish and Chinese online doctor forums interact with including both physicians and patients. To shape and constrain interactions more effectively, it suggested improving the current functions and designs of forums. We can suggest online doctor forums in Finland can try to encourage doctors around Finland to make self-register into their networks so that patients can contact local doctors online and offline easily. We also suggest Chinese online doctor forum could focus on certain diseases species so that target customer

group is clear and clients can get better services with more accurate diagnoses and treatments. Besides, Chinese online doctor forums can offer a unified health documentation system that doctors can check patients' CT sheets and photos, which taken from other places easily. At last, two doctors mentioned VR technique added in the forums in future so that the range and scope of diseases that forums provide enlarged and really make doctors and patients stay at own homes come true.

2.4 Doctor-patient interaction

Positive doctor-patient interaction is the one of key elements to make doctor and patient to have good relationship and the essence to build successful doctor-patient communication with each other. In the book Medical Sociology, William explicates many theories about doctor-patient interactions and the process to build relationship between doctor and patient. According to William, medical sociology studies social consequences of health and illness including the social behavior of patients and health care providers, the social functions of health care organizations and institutions, the relationship of health care delivery systems to other social institutions and the social policies towards health (Cockerham 2015). Functional social systems rely on trust, the information asymmetry causes inherent power imbalance in the doctor-patient interaction that physicians are within the position of power because they ask questions, make decisions and expect patients tell the most intimate details of their physical problems. However, patients may feel uncomfortable and even distrust their physicians as they think physicians have abused their power.

In today's interaction between physicians and patients, the model of doctor-patient interaction has developed into three patterns: the active-passive pattern occurs when patients are urgently need health care treatments like serious injury or condition. Usually these patients are lacking of consciousness or need emergency rescue; the physicians are within the state of high tension to release the patients' serious conditions. Guidance-cooperation pattern applies to the state when the patients have acute diseases

such as influenza or measles; patients know the progress of treatment and disease development and cooperate with physicians by following physicians' instructions. Mutual participation pattern is as patients participate completely in the work of doctors' in the disease management especially in the chronic disease management. (Chipidza 2015.) Online self-diagnosis interrogation also follows the three patterns based on patients' diseases conditions especially the last two patterns as patients and their relatives would like to interact positively with physicians for advices that are more helpful and instructions.

There are many factors have made impacts on the interaction of doctors and patients. Social impacts, doctors' and patients' individual factors are in the role of influencing interaction. However, social impacts as environmental factors only can be as psychological background and basis, just can affect doctors and patients' mental expectations toward each other. Factors affect interaction between patients and doctors are multiple faceted as the following figure shows (Figure 3):
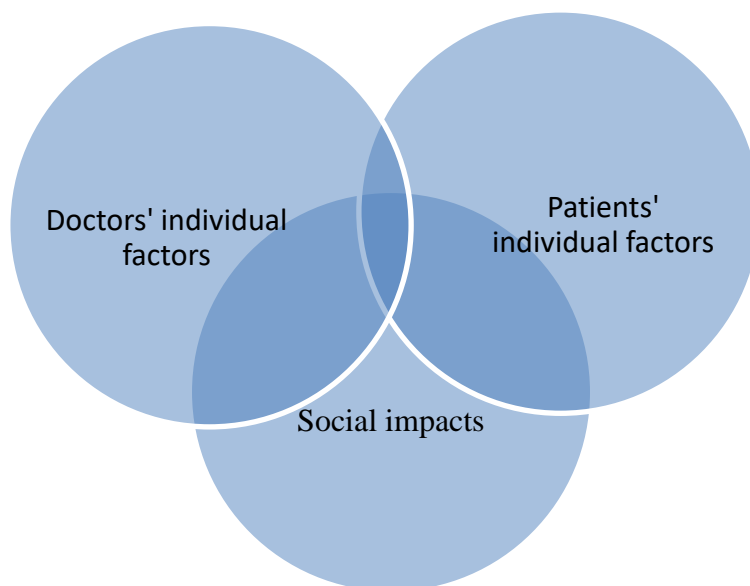
FIGURE 3.   Multiple factors influence doctor-patient interaction

Social impacts include governmental policies, reforms of health care systems, hospital facilities, reputation and environment and social media campaigns. Usually patients have higher expectations to doctors in the hospitals with high reputations. Doctors' individual factors contain doctors' words, behaviors such as expressions from eyes and action message, doctors' skills, moods and characteristics of doctors. Patients' individual factors like ages, illness conditions, social positions, education and knowledge play significant roles on interactions as well.

2.4.1 Factors influence doctor-patient interaction

Doctor-patient Relationship develops based on the interaction between the doctor and patient. It reported that trust, knowledge, regard and loyalty are the four elements to compose the doctor-patient relationship (Chipidza 2015). Especially the trust between doctors and patients is the most important. The imbalanced power between doctors and patients improved if there exists trust. Trustful relationship between doctors and patients enhanced through:

a.) Understanding. Patients and doctors understand each other. Patients have certain knowledge on their illness that can communicate with doctors well. Doctors understand what patients need.

b.) Patience. Doctors should avoid awful moods and try to help patients with patient attitudes.

c.) Ability. Doctors have enough education and skills to treat patients' illnesses.

d.) Respect. Doctors and patients respect each other even though they have different values, positions and educations.

For doctors, language (such as simple and declarative sentences), attire (such as appropriate wears) and positioning (such as eye contact) paid more attention to. For patients, according to the John Bowlby's and Mary Ainsworth's Attachment theory, an evidence-based psychobiological theory of human development and relationships, they claimed that "Individual differences in attachment patterns laid down in childhood

impact on the ways in which people react to those they perceive as current care-givers, for example, their GP...."   Relaxed attachment based on the presence of a sufficiently secure base that helps to make a democracy doctor-patient relationship. However, around 40% relationship between doctors and patients with insecure attachment will cause problem. There are three main patterns of insecure attachment: hyper-activating (patients think doctors are always untrustworthy as they exaggerate conditions), de-activating (patients like to deny and hide their feelings and even symptoms), and disorganized (patients with somatization disorders hard to express their feelings). Among these patterns, disorganized pattern is the most disturbed pattern. Attachment theory also explains the theory about psychological impact of loss since the secure base of relationship can be disappeared suddenly especially "when managing patients experiencing chronic illness, infertility, traumatic injury, terminal care, and children in hospital — all of which self-evidently entail loss" (Holmes & Elder 2016, 384).

In the secure attachment of doctor-patient relationship, patients' satisfaction affects it a lot. Patients' satisfaction has defined as the high degree of respects and regards to the manner, product or service in the health care delivered by the health care provider as patients think it as useful, effective and beneficial. Four elements- trust, knowledge, regard, loyalty affect patients' satisfaction in the doctor-patient relationship (Chipidza 2015). In addition to the insecure attachment, patterns laid down by childhood impact of patient factors will affect adversely the relationship between doctors and patients, the systemic factors, provider factors and patient/doctor mismatch should take into account.

TABLE 3. Systemic factors that affect the doctor-patient relationship (Chipidza 2015)

Systemic Factors	Strains on Relationship
Time Constrains	Trust: Time is limited for doctors to explain reasons to patients
	Knowledge: Less time for them get to know each other
	Regard: Less time to establish rapport
	Loyalty: Patients are less loyal if not be developed regard

Space/room	Knowledge: Doctors and patients are reluctant to each other if space is not private Regard: Connect between the doctor and patient may be difficult as the clinic is busy
High Patient-provider Ratio (such as a group of doctors visit a patient)	Knowledge: Patients may not like they were discussed as objectives Regard: Too many people to whom to establish rapport
Urgent care setting	Knowledge: The doctor and patient may not know each other Regard: The physician and patient may tend to less effort to establish rapport if they know they will not see in future again Loyalty: Clinics may not be set up for longitudinal care
Cost	Regard: The patient may harbor resentment to medical bills Loyalty: The patient may be denied to see a doctor due to financial issues
Documentation Burden	Knowledge: Physicians always check and make sure every computer document about the illness of the patient make patient feel uncomfortable and don't understand with doctors Regard: Physicians always look at computer screen make the patient think he/she is not being taken care of

The solutions to these strains emphasized developing workplace efficiencies, provide private room to patients, and embrace technology: personal mobile computers, which can improve doctors' efficiency and write visiting notes with patients together and so on.

TABLE 4. Provider factors that affect the doctor-patient relationship (Chipidza 2015)

Provider Factors	Strains on Relationship

Physician burnout: state of detachment, motional exhaustion and lack of fulfillment	Trust: lower patient satisfaction, longer recovery time, inefficiency communication, damage relationship Knowledge: burnout physicians are lacking of attentiveness cause they do not care about patients very much Regard: both patients and doctors are with no empathy Loyalty: Patients do not want to come back to the physician whom they think is not helpful and patient
Doctors in internship	Trust: patients are less likely to visit the young doctors in practice Loyalty: patients are reluctant to receive ongoing care from young physicians with less experiences
Conflict within one treatment team	Trust: patients may receive different messages and advices from one treatment team and cause confusion Knowledge: one physician may communicate with the patient ineffectively then shift to another physician Regard: conflicts may happen between doctors in one team, they may ignore patients' needs

The solutions to the strains on relationship of provider factors can be physicians improve their emotional wellness to enhance their relationship with patients, explain own competence to the patients and demonstrate caring to patients and so on.

TABLE 5. Patient/doctor mismatches that affect the doctor-patient relationship (Chipidza 2015)

Patient/Doctor Mismatches	Strains on Relationship

Language barriers	Trust: the patients who speak less get worse care than the ones who speak more
	Knowledge: hard to know each other
	Regard: Doctors are less likely to communicate more and establish rapport
Cultural barriers	Trust: patients may not trust western medicines or eastern methods of treatment
	Knowledge: doctors may not understand patients' needs and goals
	Regard: physicians may be judgmental to different patients
	Knowledge:
Locus of control (who is ultimately making decisions)	Knowledge: patients may know themselves better than physicians that they think they can decide treatment methods themselves
	Regard: power shift may damage rapport

According to Chipidza, F. E., solutions to patient/doctor mismatches can be printed educational paper to patients in patients' language, try to use interpreters to help and mutual participation on treatment decisions and so on.

Both sides can alter the doctor-patient communication as it plays an important role during patients' visiting time. The better doctor-patient communication allows the better health outcomes for patients to have. Physicians should pay notice to the fails of relationship and have the ability to figure out where the problems are, therefore make strategies and solutions to strengthen the relationship with patients.

2.4.2 Importance of doctor-patient communication

Good relationship between physicians and patients has significant powers to enhance health outcomes; the solutions mentioned above to hard relationship on different factors

are all concerned about one issue- doctor-patient communication.

Communication is an important element of patient care. Through communication, physicians can obtain and gather information from patients; patients can have clear clues on their next step of improving health situations. Physicians usually when they are in the medical schools, they are required to have the ability to collect information and hints from patients, to perform examinations and to communicate their thoughts and findings to patients. Communication problems can cause difficulties for health providers to deliver effective health care. Thus, patients are encouraged to communicate with physicians effectively. Nevertheless, how to have an effective communication for patients with doctors? According to Teutsch C., patients should be suggested to "educate themselves and ask questions" in the modern society, patients have certain knowledge on their illnesses can help to make treatment decisions and gain satisfaction during interactions with doctors (Teutsch 2003).

For physicians to have an effective communication with patients, firstly physicians should understand the patients' key concerns and health care goals that the key concerns directly solicited and dealt with. (Patients' key concerns are including fear of mutilation, disability and even death; loss of independence; denial of current medical problems etc.). Secondly, physicians to establish trust should explore the patients' values, culture backgrounds and favors.   Gender of patients is the third issue that has considered as male and female have different concerns and behaviors usually. Fourthly, physicians should ensure the key issues verbalized openly as it is the fundamental to effective doctor-patient communication. (Teutsch 2003)

Effective doctor-patient communication is a central part of clinical function in establishing a therapeutic doctor-patient relationship. We can say high-quality health care delivered by effective communication. The three main goals of doctor-patient communication are building a good interpersonal relationship, promoting exchange of health information and mutual participation of decision making with patients. It

reported that doctors have the power to influence patients' health (Kaplan, Greenfield & Ware 1989) that doctors with better communication and interpretation skills usually can detect problems earlier, prevent health risks, reduce medical expenses and improve patient satisfaction and confidence.

Many medical school students offered communication training, because doctors are not born with communication skills, they also recognize that how important effective communication with patients is. Therefore, they would like to have chances to learn and practice communication skills and modify their communication styles by self-awareness and self-practice. (Ha & Longnecker 2010)

Communication skills for physicians are including eye contact, listening to patients' inquires, and appropriate body contact and body language and so on. Empathy and listening can win patients' trust easily and they are the key points of arts of communication in the current world.

2.5 Doctor-patient communication

There are many barriers for developing an effective doctor-patient relationship in the clinical treatment process. Problems are including deterioration of doctors' communication skills, nondisclosure of information, doctors' avoidance behavior, discouragement of collaboration and resistance by patients (Table 6).

TABLE 6. Problems of doctor-patient communication in the clinical treatment process (Ha & Longnecker 2010)

Problems	Performances
Deterioration of doctors' communication skills	Doctors may lose or decline their communication skills when they put their focus on holistic patient care;
	The emotional and physical brutalities in the medical treatment process have made physicians suppress empathy

	and talk less.
Nondisclosure of information	Miscommunication makes patients misunderstanding and may have unsuitable choices, which influence their treatment and end-life care.
Doctors' avoidance behavior	Doctors try to avoid discuss social impacts of patients' diseases when they could not deal with.
Discourage of collaboration	Patients may do not understand health information because lack of sufficient doctors' explanations.
Resistance of patients	Today's patients are able to resist experts' power and authority as they can reconstruct expert information into their own perspectives based on their own experiences and bodies.

Today the way of doctor-patient communication has been subjected changes and trends due to changes on morbidity (such as more chronic diseases), the development of social and health care (such as emphasis on evidence-based health care), power balances (more egalitarian relationship) and accessibility of medical information (via the internet) (Butalid et al. 2012).

Especially the availability and accessibility of medical information via the internet help to promote the world shift towards health care models which emphasis self-management. Patients may have more possibilities to challenge or even resist physicians' health information based on their collected information via internet. We can say, "Initiatives to promote health and independence through self-care management are being developed around the world as a means of empowering patients"

(Silver 2015, 19). Using internet to assist health care at home, as patients communicate with doctors online is more and more popular in the world as it is convenient and without geography limits.

2.5.1 Doctor-patient communication online and its problems

It suggested that patients should "educate themselves and ask questions" that patients have certain health care literacy before they go to visit clinical doctors (Jiang & Street 2016). The benefits of patients educate themselves are for example, patients have an active position to improve their health as well as increasing the awareness of preventing high risks of diseases. The ways of patients educate themselves can be physicians' instructions (including nurses' demonstration), computer-aided teaching (including video education, online interrogation and online information searching) and patients' own experiences and perspectives.

In the computer-aided teaching, online self-diagnosis interrogation with physicians is becoming a trend as online physicians also can evaluate patients' health information and make advices to diagnose symptoms. Nowadays, the rising population with complex symptoms and health care needs are becoming larger and larger; however, the risk of misinterpreting diagnosis online may become higher as well, even though communicating with physicians is quite frequently (Jiang & Street 2016).

Because of the complexity of health and medicine related field, many patients and their families like to solve the situations by counseling physicians' online via some self-diagnosis interrogation platforms. Even though the legality and credence of these platforms disputed, the enthusiasm and motivation of pursuing health care information from physicians are rising. Many physicians and patients have not met before thus the interrogation platforms are as a kind of special communication channels to create challenges to both physicians and patients from that particular of communication.

The online self-diagnosis interrogation is such a text message-based communication between medical experts and laypeople; it is different with the real-life counseling which has strong audiovisual and social context clues. The trustful relationship cannot be fast built and hard to build. Besides, physicians have much stresses to communicate with different anonymous patients since there are many factors to influence online

consultation communications in the platforms.   (Bientze et al. 2015)

The problems above in online communication between doctors and patients have been paid attention by many researchers around the world. Many researchers like Sims, T. and Tsai, J. L. think the interaction of doctors and patients influenced by each other (Sims & Tsai 2015). For instance, the wording of patients' inquiries is one of the most important factors to affect communication processes. The response behavior of a medical expert in such platforms affected by patients' queries themselves; a medical expert may adapt their communication styles to that of a patient, as they know tailored messages can help patients to handle more conveniently and deeply.

People like to imitate the communication behaviors and styles of their partners in the interaction process. Unprofessional people always reply in the platforms based on their experiences rather than factor-oriented queries. Medical experts also will use emotional words following up with patients' emotional queries. Therefore, communication training for physicians should address to recognize patients' communication styles in order to teach how to communicate with different patients in adequate approaches (Bientze et al. 2015).

According to Haluza, D., online doctor-patient dialogue especially improved by three factors- doctor-patient relationship, patients' knowledge and quality of social health care. Doctor-patient relationship improved by understanding each other, patience, having ability to solve painful problems and respecting each other. Patients' knowledge mainly improved by physicians' education and patients' self-education. "However, lack of acceptance by doctors, data security, and monetary aspects were considered as the three most relevant barriers for ICT implementation." (Haluza & Jungwirth 2014, 298)

2.5.2 The positive roles of online communication

On the positive side of online communication via online doctor forums, people can get

to figure out their illnesses and problems before they are going to visit a local doctor especially it helps patients to describe their symptoms better and no need to feel embarrassed (Emerald 2013). Another good role of online communication via online doctor forums is that people with serious and incapacitating diseases can share their experiences and opinions on their treatment outcomes, which offer high values to other patients, doctors and researchers to have further studies. Online doctor forums also play as online communities those individuals can learn from their social interactions to develop e learning in the forums. Patients who rely on multiple online doctor forums to get health related knowledge also prefer to bring more information to the patient-doctor encounter (Savage, Kwan & Bergstrand 2014). Quality health care is depends on efficient communication between doctors and patients. Online communications offered by web-based online doctor forums make patients more empowered in the interactions with doctors. In one study of pediatric primary care, patients were likely to communicate with their child's physicians with the truth that "the ability to communicate online might be a reason to choose a particular pediatrician; even though the majority said they were unwilling to pay for such access" (Santana et al. 2010, 20). Therefore, online communication plays a significant role on selecting "suitable" and "right" doctors for patients as well.

2.6 The analytical framework

The analytical framework of present study (Figure 4) based on the literature discussed in the previous sections concerning doctor-patient relationship, doctor-patient communication and communication online via online doctor forums and improving quality of online communication in the interrogation process. The framework emphasizes doctor-patient communication online as the whole objectives of the present research to study how doctors perceive online communication via self-diagnosis platforms with patients and how doctors think about this kind of ICT supported platforms in the practice in China. In addition, the author would like to compare functions and designs of this kind platform in the two countries- Finland and China

according to two different cultural backgrounds.

Perceive online communication

Doctors' personal experiences and knowledge Doctors' own strategy Doctors' characteristics Surrounding environment

Views on online doctor forums

The forums designs and functions Benefits of online doctor forums Problems of online doctor forums Effects to doctor-patient communication The future trends

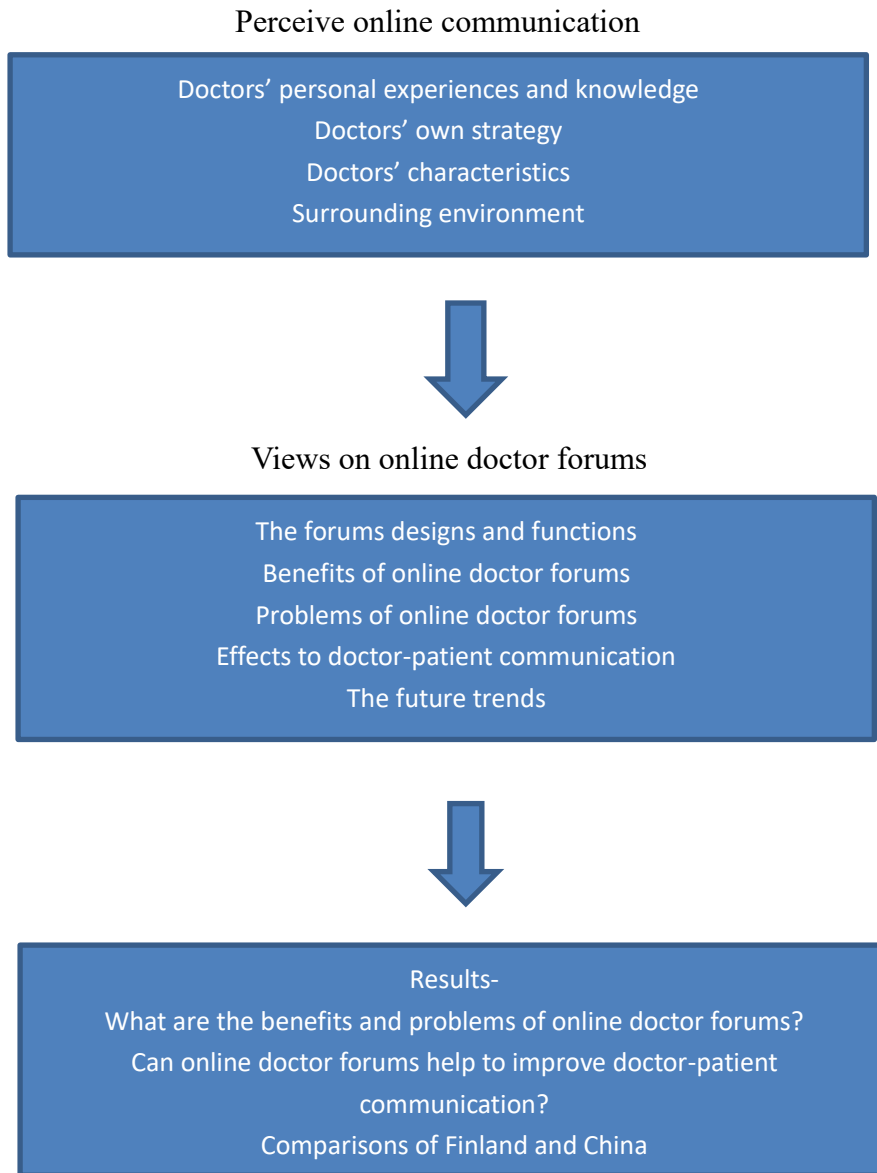| |
|---|
| Results-
What are the benefits and problems of online doctor forums?
Can online doctor forums help to improve doctor-patient communication?
Comparisons of Finland and China |

FIGURE 4. Analytical framework of how doctors perceive online doctor forums and their views on online communication and relationship between doctors and patients

As Figure 4 shows, doctors perceive online communication influenced by the following factors:

Doctors' personal experiences and knowledge- Doctors' using experiences like communicating and replying inquiries with patients online as well as their own

perspectives regard to the current situations of self- diagnosis interrogation platforms.

Doctors' own strategy- Some doctors have only accept the patients whom they have met and familiar with while some think it is the future trends that they should adapt to, therefore, they have different opinions on these platforms.

Doctors' characteristics- Doctors' personal and interpersonal characteristics like personalities and interaction behaviors with patients also play important roles on their views.

Surrounding environment- If one doctor's many colleagues around him/her are using interrogation platforms, this doctor can accept to use it with more possibilities.

From those influenced factors, doctors come to have their own opinions and actions to the self-diagnosis interrogation platforms, so in this thesis, the author would like to have discourse analyses on interviews with two groups of doctors, one group comes from China and the other comes from Finland. Views are discussing from the following aspects:

Meanings to patients and doctors- What do the platforms bring to doctors and patients, is that useful?

The forum designs and functions- What kind of designs and functions can be put on the interface of platforms webpages so that doctors and patients are easily to use and feel comfortable to use.

The misguidance problem- Will they think there is misguidance problem on diagnosis

The irreplaceable problem- Will they think platforms can replace the current interrogation process in clinics and hospitals.

Benefits – Will they think online doctor forums can improve doctor-patient communications and relationships?

The future trends- The future of platforms from doctors' eyes

At last, analyze the interview of doctors from China to find out doctors' opinions to this

kind of online doctor forums. Many researchers have studied online doctor forums based on patients' perspectives; few studies have focused on physicians' opinions. For example, in the article "Information from the Internet and the doctor-patient relationship: the patient perspective – a qualitative study", the author described the argument about advances in information technology can challenge the essence of doctor-patient consultation. "Substituting impersonal exchanges across luminescent LCD screens for the face-to-face encounters and hands-on care that produce much of the therapeutic benefit and professional satisfaction of primary care practice". This article gives conclusions about interviews among different groups of patients; nothing mentioned from the physicians' views. (Stevenson et al. 2007) Because of the complex Finnish and Chinese cultural backgrounds on medication, we will study the forums in two countries as it can help us understand the development of online doctor forums under different contexts and learn the strengths from both sides.

3 METHODOLOGY

This chapter presents and justifies the methodological uses and choices for the present study. There are four sections in this chapter. Section 3.1 is about the research design which tells the research method and research strategy in this thesis project. Section 3.2 discusses the data collection and design of the interview questions and the way to carry out in practice. Section 3.3 describes content analysis of the data

3.1 Research design

The objectives of research in social sciences are to gain familiarity with a phenomenon and take deep insights with it; to characterize a particular individual, a group or a situation; to study the frequency of this phenomenon occurs and related issues, sometimes to test a hypothesis of relations between variables. According to Kothari. C.R., there are two basic research approaches: quantitative and qualitative (Kothari 2014).

In the study we only focus on qualitative research as qualitative research is concerned with qualitative phenomenon like subjective assessment of opinions, attitudes and behaviors. Research reflects researchers' insights and opinions. In addition, qualitative research does not show results with quantitative form or rigorous quantitative analysis. In general, techniques of focus group interviews and depth interviews are used quite often, and many qualitative approaches are related with interpretation and understanding (Eriksson & Kovalainen 2008).

My study aims at interpreting health care professionals' feelings, opinions and experiences on self-diagnosis interrogation platforms and understanding the meanings of this kind of platforms in the current and future health care activities. Therefore, a qualitative research method applied to this study.

In addition, my study belongs to research design in case of descriptive and diagnostic

studies as I try to define clearly, what I want to measure along with a clear study objective- a particular population (either individual or a group).

However, since the aim is to gain complete and accurate data and information in the said studies, I must plan the procedure of research plan well with enough provision to against bias and minimize unreliability. Bias occurs as Rajendran, N. S. pointed out in his report when researchers try to interpret research data, the worry about subjectivity arises. Social sciences research is always dependent on various factors not only the object, subject and target, but also the interests of those who conducts the research. In a successful research, the researcher must confront own opinion and prejudice to the data. (Rajendran 2001)

In my study, as the researcher I will deal with interpretation of interviewed doctors' opinions and experiences on using online doctor forums, considering the nature of the study, I should hold a neutral position and attitudes towards the topics of online doctors, doctor-patient relationship via internet, Finnish online doctor forums and Chinese online doctor forums and so on. In addition, my personal interest to comparing Finnish online doctor forums and Chinese online doctor forums based on the existed webpages designs and their functions objectively and this may be the first study of this subject in Finland and China.

The qualitative method is applied and suitable on my study project, as I would like to know how doctors consciously experience or regard the self-diagnosis interrogation platforms through asking about their opinions. Then listen carefully and take notes about what they say and write. Thus, my research based on textual data rather than quantitative data, dialogues rather than numbers. In addition, my ontological stance on doctor-patient communication online is reality as individual doctors and patients interact through the forums is common.

I have my own pre-understanding of doctor-patient online communication as well. I view doctor-patient online communication as a trend and result of technique development and urgent needs of effective patient access engagement. According to Conifer Health Solutions surveys, nearly half healthcare/hospital CEO respondents reply that "patient experience and satisfaction" is among their top three priorities in next three years (HealthLeaders Media 2013).

I also understand doctor-patient online communication forums contribute to empowerment of patients since healthcare professionals offer technical expertise in this field via internet thus patients have opportunities and chances to obtain and absorb. In short, the forums are convenient to use and well accepted by patients and their families. However, with regards of the objectives of my study, my pre-understanding cannot support from the doctors' perspectives that whether doctors and hospitals can get benefits from it.

The present research project based on above-mentioned qualitative research method; to approach the aims of the study qualitative in-depth interviews with doctors in Finland and China are applied. According to Boyce, C., "In-depth interviewing is a qualitative research technique that involves conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program, or situation" (Boyce 2006, 3). We might ask participants, study objects, or any other related individuals/groups about their experiences and expectations on one program or thing. It is meaningful and useful when you want to know something or someone's behaviors and thoughts in details. The advantage of in-depth interviews compared with other data collection methods such as surveys is they always can offer more information that is detailed. Besides, in the in-depth interviews, interviewees can have possibilities to show their body language when interviewers make them in a comfortable and relax atmosphere. (Christmann 2013)

3.2 Data collection

According to Eriksson and Kovalainen, researchers can collect empirical data through interviewing or observing by asking participants to state, write, draw or present with other ways. I will collect this kind of empirical data regarded as primary data in my study. Interviews are conducted mostly face to face, sometimes can be taken through telephone or other online chatting techniques. In my present study, because I would like to obtain doctors' opinions and experiences on self-diagnosis interrogation platforms, and more specifically on impacts of the platforms including benefits, problems and future trends from doctors' perspectives. Therefore, interview is a suitable data collection method for this research project. (Eriksson & Kovalainen 2015)

For better understanding with health care professionals' opinions and experiences on self-diagnosis interrogation platforms, I conducted in-depth interviews with doctors from Finland and China face to face. The processes of conducting in-depth interviews are usually as the following steps:

a). Plan- Identify the participants, identify what information are needed and from whom, list interviewees what you want to interview, ensure ethical guidelines when doing researches.

Based on the aims of my study, the participants of my interviews identified as health care professionals especially those are familiar with online doctor forums or have experiences on using them (see Figure 9. Interviewee profiles). My interviews are also a semi-structured interview that I know the areas that I want to cover with the interviewees and allow them to have different feelings, thoughts and ways to explore the results. The author chooses health care professionals from different department and specialty fields in different hospitals and cities. About ethical rules, the study should follow Ethical guidelines of UEF (Ethical Guidelines of UEF 2010).

The criteria of selecting doctors are:

a.) Should have at least one year working experiences with patients no matter by physically touching or meeting via internet

b.) Should have a certain knowledge of online doctor forums

c.) Should have enough free time (at least 20minutes) working with my study interviews.

d.) They should come from different departments even hospitals, so that my interviews data are more meaningful and persuadable.

I selected 6 physicians from different departments and hospitals in both large and small cities. Interviewee 1 (I1), I2, I3 and I4 were from Lu'an Hospital of Traditional Chinese Medicine, I had individual face to face interviews with them in the hospital. To guarantee credibility and validity, each doctor's notes kept. I5 was from Yueyang Hospital Shanghai University of Traditional Chinese and Western Medicine and I6 was from Longhua Hospital Shanghai University of Traditional Chinese Medicine. I conducted individual interviews with I5 and I6 via wechat- one of the Chinese most popular social media chatting tools. Their voice recorded and saved in the wechat platform. Table 7 is explicit describe the interviewees' profiles.

TABLE 7. Interviewee Profiles

Title	Age	Department	Experiences of forums	Knowledge of forums	Abbreviation
Attending doctor	36	Neurology	No	Yes	I1
Attending doctor	58	Orthopaedics	No	Yes	I2
Attending doctor	29	Rehabilitation	No	Yes	I3
Attending doctor	36	Cardiology	No	Yes	I4
Attending doctor	24	Dermatological	No	Yes	I5

Attending doctor	25	Endocrinology	Yes	Yes	I6

b). Develop instruments- Develop a protocol for interviews that ensure consistency between interviews. The main purpose of this protocol is help to increase reliability of the findings. Besides list questions or issues which are to be explored in the interviews according to the interview protocol. The questions should be no more than 15pcs in one interview. (Boyce & Neale 2006)

In the protocol of the interview, I firstly have to clarify what to say in the beginning of interviews, including confidentiality in the interviews, and what to say and to do during the interviews, like taking notes or voice recording or both and so on. Moreover, what to do after interviews such as filling in notes, summarize the key information got from interviews. The interviews will not exceed 20 minutes.

When design the interview questions, I followed some question tips mentioned by C. Boyce, questions always are open-ended and try to make interviewees speak more about their opinions. For example, after the question "Will you think there is misguidance problem on online diagnosis?" but add probes if needed such as "Could you explain it further?"
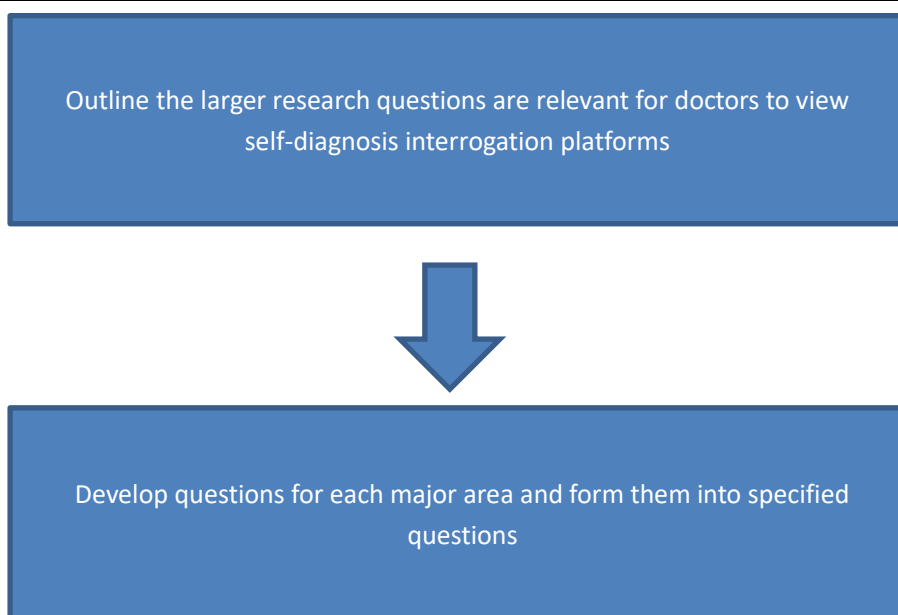
Literature Reviews

FIGURE 5. Process of planning and setting up interview questions

I derived analytical framework of how doctors perceive online communication via online doctor forums and their views on forums based on reviewed literature (see Figure 4). Then I outlined the larger questions, which are relevant for doctors to view self-diagnosis interrogation platforms. Because I would like to know how doctors perceive online doctor forums and online communication, so the questions related to many aspects on this issue:

Q1: Benefits of platforms to users- so the question outlined as "meanings to patients and doctors" then specified into a particular question, "What kind of benefits do the platforms bring to doctors and patients?"

Q2: The designs and functions of platforms- The question was outlined as "the platform designs and functions" then the particular question is "What kind of designs and functions can be developed on the interface o platforms webpages for people easily to use and feel comfortable to use?"

Q3: Disadvantages of remote diagnosis- The question outlined as "the misguidance problem" and the particular question is "How do you think there is misguidance problem on online diagnosis?"

Q4: Can online interrogation be instead of interrogation face to face- The question outlined as "The irreplaceable problem" and the particular question is "How do you

think the platform can replace the current interrogation process in clinics and hospitals?"

Q5: Benefits to doctor-patient communication- The question outlined as "Benefits" and the particular question is "How do you think online doctor forums can improve doctor-patient communications and relationships, especially for strained doctor-patient relationships in China?

Q6: Future development of platforms- The question outlined as "the future trends" and the particular question is "How do you think the future of platforms?"

I tried to ask "how" rather than "why" questions to get stories or experiences of process rather than acceptable accounts of behavior. In addition, these questions can help to figure out doctors' opinions and experiences from different aspects, which related to impacts of self-diagnosis interrogation platforms. Both positive and negative impacts should be taken into consideration in this study as there is no denying that the impacts of technology is huge and can be categorized into how it affects our society and organizations today and how it works in the political or business activities and operations and how it influences individuals in the virtual world.

c). Collect data- When conducting interviews with chosen interviewees, I told and explained to them the purpose of my interviews, why them and the duration of interviews firstly. Interviewees completed their interviews by oral presentation of their ideas and writing some important points on one printed-paper with the above six questions. Same time I took notes as some points interviewees may not write down. At last, I summarized the key data immediately after each interview.

3.3 Data analysis

Once I have collected data, the first thing to do is transcription and review of data. "Qualitative data analysis (QDA) is the process of turning written data such as interview and field notes into findings" (Betterevaluation.org). There is no defined formulas or

rules for this process, what we need are skills, knowledge, insights and own experience and keeping learning attitudes to obtain findings. The aims of using qualitative data analysis methods in this thesis are to understand the cultural and social factors to influence functions and designs of online doctor forums, to understand how Chinese physicians make sense of their knowledge and experiences of using online doctor forums and to understand various factors influence doctor-patient communication and relationship.

Then the following things to do are reading all my field notes and looking for themes among these data. To reduce the amount of unnecessary data, qualitative content analysis applied, as qualitative content analysis requires researchers to focus on specified aspects of meaningful and related data to answer research questions (Schreier 2014). Qualitative content analysis has one characteristic, which is highly systematic. It requires every selected data is relevant with research questions. Qualitative content analysis is also with flexible feature that means concept-driven and data-driven categories combined within any coding frame as far as the coding frame matched to the material. In this thesis, coding is based on inductive content analysis as the author needs to read the texts several times and "higher level themes" will be derived based on these higher themes and quotes from interviews, for instance, "higher level themes" can be "benefits and problems". Then the author groups them into more specific categories and sub-categories. Inductive content analysis involves all themes emerged from the data; it is a theory generating which enables to create theories and draw conclusions based on the data (Eriksson & Kovalainen 2015).

Because the research purpose of my study is to find out the benefits of online doctor forums from Chinese doctors' reviews on online doctor forums, therefore, the author can give suggestions that what kind of online doctor forums developed so that physicians have more interests to use it. Moreover, based on transcribed interviews data and emerged with previous literature review, the main theme of this study should be "Developing online doctor forums".

According to Eriksson, P. and Kovalainen, A., categorization and interpretation are two general types of qualitative content analysis in detail (Eriksson & Kovalainen 2015). Here in my study I will use categorization to analyze the explicit of content of data. The method also focuses on the implicit meanings emerging from data. Categorization is the process of analyzing key words, sentences, phrases and themes based on the certain content in the data. Coding scheme is the most important step in categorization as it uses data-driven codes to define good coding categories.

Next, I identified benefits and problems from data and systematically divided them into categories. The theme serves as a headline in the first stage, then categorizes of effectiveness and negativeness serve as a wider categorization in the second stage. After this, a more detailed categorization based on previous literature took place that some clearly grouped quotes divided into sub-categories under each wider category. At this moment, one proposition or one phrase may contain different meaning levels in one sub-category, thus further coding on relevant phrases need to be carried out. In Eriksson and Kovalainen's book, they explained steps of developing a coding scheme:

1. Define labels for the codes

2. Write down relevant concerns of each code

3. Write down instructions for identifying content

4. Write down criteria of how to determine exclusive data

5. Write down examples of excluded data

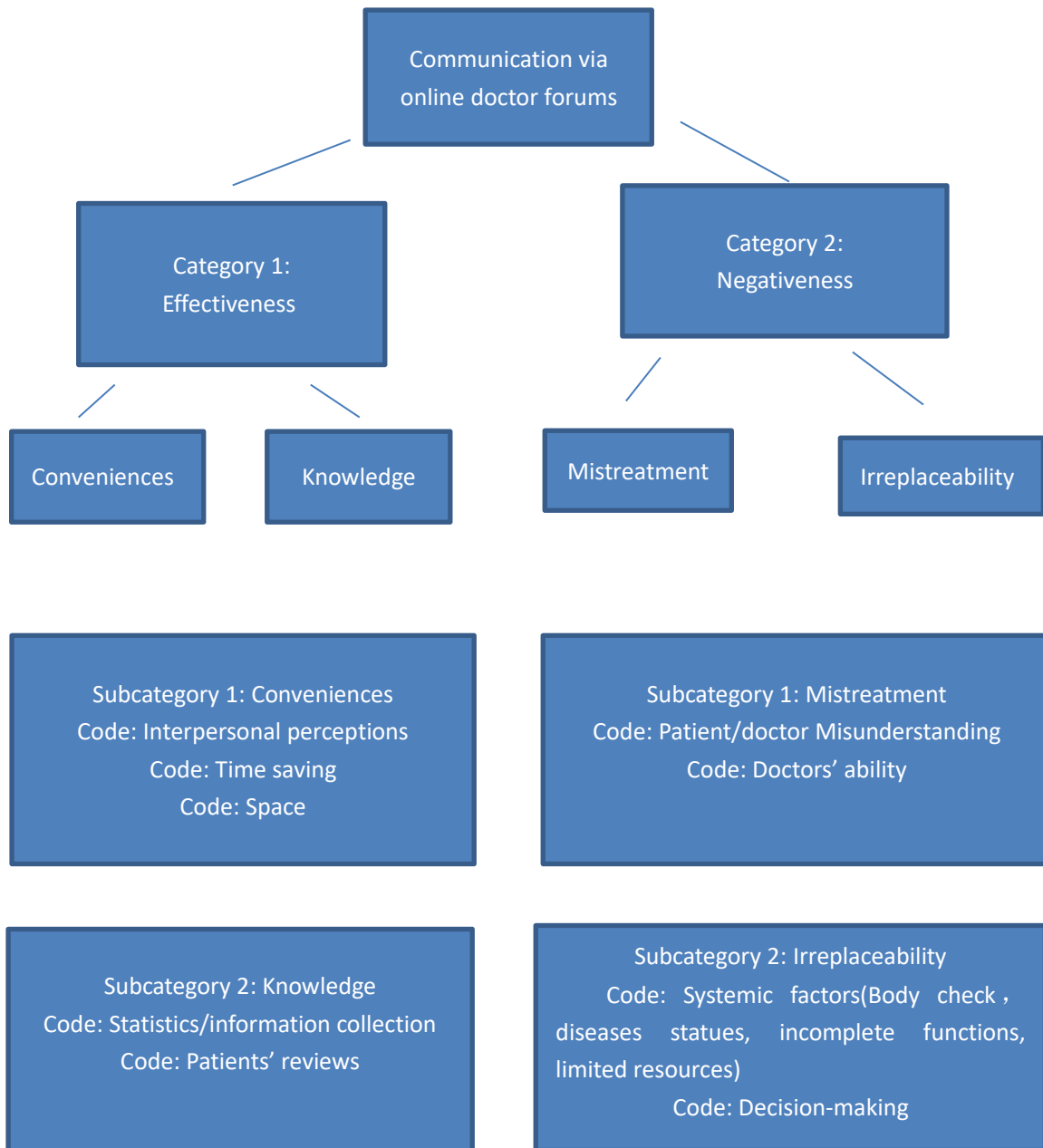The following figure is to show how categories and subcategories explained:

FIGURE 6. Coding Schemes

Finally, data categorization finalized by reflecting data through the analytical framework. The whole process of coding scheme is easily to follow as the author can create clear rules by herself. The author also checked if any codes are overlapping when categorized the data into codes.

4 MAIN FINDINGS AND SUMMARIES

The aim of the present study was to shed light on how online doctor forums shape doctor-patient online communication. Based on this main issue, the objectives of the study is to find out online doctor forums improve doctor-patient communication and relationship or not and benefits and problems brought by online doctor forums. In the empirical practice, interviewees need not to have experiences on using online doctor forums, but they should know how online doctor forums work. Because experienced doctors understand what needed to improve when they have long time working with patients by physically meeting and they know what will happen if they use online doctor forums compared with their current daily working environment.

The findings presented in the order of my sub research questions:

RQ1: What are the benefits and problems of online doctor-patient communication forums from doctors' perspectives?

RQ2: Can online doctor forums improve doctor-patient communication?

Based on the above-mentioned questions order, section 4.1 addressed on the question of factors influence online doctor-patient communication. Before understanding, online doctor forums improve doctor-patient communication or not, it is important to understand what factors influence communication at online doctor forums from doctors' perspectives. It also might help to understand how they understand and process doctor-patient communication. Section 4.2 will focus on analyzing the doctors' perceptions of doctor-patient communication via online doctor forums and communication with patients. In the data analysis section of chapter 3, the coding scheme made according to research purposes and key words from interviewing notes, comments and analyses of section 4.1 and section 4.2 triggered based on the coding scheme to answer each research question.

4.1 Perceptions on benefits and problems of online doctor forums

To answer "the benefits and problems of online doctor forums?" this kind of factors related questions, the "effectiveness" and "negativeness" are, as the category analyzed. Nearly all the doctors that I interviewed with replies of "convenience", as the following quotes show:

"It is convenient to collect statistics like doctors' profiles, patients and hospitals information and services qualities. Usually you can find doctors' skilled fields and patients' feedbacks to their doctors from forums; these help you to choose a suitable doctor." – I1 .

"Patients and their relatives can find information about their diseases thus they get certain knowledge about them before visiting doctors. It is very easy for us doctors to communicate with patients who have certain knowledge about their diseases. The online doctor forums also offer patients platforms to have interrogations with doctors without visiting clinics." – I2

"Patients can give feedbacks about their diseases development almost in real time, thus doctors know more about patients and their situations easily, very convenient for both doctors and patients communicating with each other." – I3

"It is very convenient for patients to use forums to contact doctors. They need not to come to clinics and hospitals by physically touching. They save lots of time, imagine that they need to waiting for doctors in a long queue before…"– I4

"The forums can simplify the processes of visiting doctors. From our Chinese medical doctors' views, observation, listening, interrogation and pulse taking are the four ways of diagnosis, now in the forums observation, listening and interrogation realized. In my opinion, the forums can bring convinces to both sides, patients can stay at home and

meet doctors." – I5

"This kind of forums creates us a platform to communicate with patients. We get enough information based on patients' CT scanning films, photos and descriptions of their problems and treatment suggestions and even prescriptions." – I6

From above quotes, my codes to their replies were based on the subcategory of "conveniences", for example, "convenient to collect statistics" was coded as "statistics/information collection", "doctors know more about patients and their situations easily" was codes as "interpersonal perceptions", "the forums can simplify the processes of visiting doctors" was coded as "time saving". I found that every interviewees were agree on forums are convenient to patients. It means Chinese doctors believe online doctor forums are useful on time saving, having interpersonal perceptions with each other and information collecting.

However, under the subcategory of "mismatch" and "irreplaceability", Chinese doctors think online doctor forums still have some disadvantages that need to be paid attention. We can see through the following quotes:

"The forums can try to offer suggestions to patients the international or national standard treatment methods according to patients' diseases."
"There could be misguidance situations from the remote interrogation platforms. Patients may have problems to tell their conditions clearly or the ability of doctors is limited." – I1

"As self-checking is one of the most effective ways for diseases prevention and awareness, the forums should offer enough information and suggestions on guiding people to have self-checking. If patients are not sure, better to go to hospital to have a body check."
"The inquiries from patients may not be explained well or online doctors are too busy to

read in details, mistreatments will happen." – I2

"The functions of forums should be stronger, for example, patients and doctors are available to communicate via video calls. It is more clearly to see patients' statues and symptoms somehow."

"Mistreatment can be possible via online doctor forums. Some patients cannot explain their conditions clearly or accurately, it always can cause mistakes for doctors. While in the face to face interrogation processes, doctors always can have accurate information from observing and more detailed documents." – I3

"The forums should be standardized that authoritative experts and doctors have to be screened and identified to guarantee the trustiness from patients and their relatives. The pages of forums should not offer any advertisement and complicated designs; a certain amount of health care tips can be introduced."

"There are possibilities for misguidance caused by doctors' abilities, doctor-patient information asymmetries and doctor-patient interactions. Before, doctors are always with stronger power in the relationship, now the power leaned to patients." – I4

"Currently online doctor forums have the following functions like searching for doctors and hospitals information, if one patient is going to one hospital but does not know whom to see, the introduction part of doctors and other patients' feedbacks can give some helps. Another function is patients can reserve time online without waiting for a long time in the clinic visiting. However, if the forums can be as the third party to help collect payments from patients is a better function as in most hospitals patients also have to wait for paying in a long queue."

"For the third question, there could be mistakes in the online interrogations because of the limited information and resources offered by patients. In our hospital, for example, when we give prescriptions to patients, they need to come back to us for two or more times that we can adapt the prescriptions based on their feedbacks. This cannot done via online doctor forums. The goal of online doctor forums always tends to interrogation

but not diagnosis." – I5

"At this moment, online doctor forums can help patients to book time with doctors by messages and callings. There are many hospitals and doctors have registered as users. However, can this kind of forums offer medical alliance services that we doctors can see body-check and laboratory test reports from another different hospitals and departments; it can help us to communicate with patients more easily."

"Online doctor forums are only platforms for patients to have a preliminary interrogation with doctors but cannot offer more detailed information such as prescriptions, if need accurate results and prescriptions, patients still have to visit hospitals and doctors by face to face meetings." – I6

Therefore, a brief codes and quotes related with RQ1 listed as the following table shows:

TABLE 8. Codes matched with quotes related with RQ1

Codes	Quotes
Interpersonal perceptions	"…these help you to choose a suitable doctor"-I1 "…thus doctors know more about patients and their situations easily"-I3
Time saving	"…they get certain knowledge about them before visiting doctors" –I2 "They save lots of time, imagine that they need to waiting for doctors in a long queue before…"– I4 "…can simplify the processes of visiting doctors" –I5
Space	"…to have interrogations with doctors without visiting clinics." – I2 " …They needn't to come to clinics and hospitals by physically touching…" -I4 "…patients can stay at home and meet doctors." – I5

Statistics/information collection	"It is convenient to collect statistics like doctors' profiles, patients and hospitals information and services qualities…"– I1
	"Patients and their relatives can find information about their diseases…"– I2
	"…We get enough information based on patients' CT scanning films, photos and descriptions of their problems and treatment suggestions and even prescriptions." – I6
Patients reviews	"…Usually you can find doctors' skilled fields and patients' feedbacks to their doctors from forums…" – I1
	"Patients can give feedbacks about their diseases development almost in real time…"– I3
Patients/doctors misunderstanding	"There could be misguidance situations from the remote interrogation platforms. Patients may have problems to tell their conditions clearly …"– I1
	"The inquiries from patients may not be explained well or online doctors are too busy to read in details, mistreatments will happen." – I2
	"Mistreatment can be possible via online doctor forums…"– I3
	"There are possibilities for misguidance caused by…doctor-patient interactions…"– I4
Doctors' abilities	"…or the ability of doctors is limited." – I1
	"There are possibilities for misguidance caused by doctors' abilities, doctor-patient information asymmetries…"– I4
Systemic factors	"The forums can try to offer suggestions to patients…"– I1
	"…the forums should offer enough information and suggestions on guiding people to have self-checking…"
	"…If patients are not sure, better to go to hospital to have a

	body check."– I2
	"The functions of forums should be stronger…"– I3
	"The forums should be standardized that authoritative experts and doctors have to be screened…"– I5
	"However, can this kind of forums offer medical alliance services that we doctors can see body-check and laboratory test reports from another different hospitals and departments…"– I6
Decision-making	"…when we give prescriptions to patients, they need to come back to us for two or more times that we can adapt the prescriptions based on their feedbacks. This cannot done via online doctor forums. The goal of online doctor forums always tends to interrogation but not diagnosis." – I5
	"Online doctor forums are only platforms for patients to have a preliminary interrogation with doctors but cannot offer more detailed information such as prescriptions…"– I6

In the subcategory of "knowledge", for example, "try to offer suggestions to patients" and "should offer enough information and suggestions" coded as "systemic factors", "the introduction part of doctors and other patients' feedbacks" was coded as "patients' reviews", "can be as the third party to help collect payments" and "offers medical alliance services" were coded as "Systemic factors" as well. We can see every doctor has pointed their dissatisfactions to the forums and offered their suggestions. Mainly were about functions should be improved such as offering video calling and medical alliance services.

In the subcategory of "mistreatment", "patients may have problems to tell their conditions clearly", "the inquiries from patients may not be explained well", "some patients cannot explain their conditions clearly or accurately" and "doctor-patient interactions" coded as "misunderstanding". "The ability of doctors is limited", "online

doctors are too busy to read", and "misguidance caused by doctors' abilities" were coded as "doctors' ability". "Because of the limited information and resources" and "but cannot offer more detailed information" were related with the code "limited resources". Four out of six doctors mentioned "misunderstanding" between doctors and patients may cause mistreatments, while 3 mentioned "doctors' ability" and 2 mentioned "limited resources". Because these different thoughts about the issue of mistreatment, doctors give different answers that, their opinions on using online doctor forums.

Interviewees except I6 are all never used online doctor forums before and among them, I5 is the only one who said she would use online doctor forums in future. I1, I2, I3 and I4 are not going to use to use forums as they all thought mistreatments were caused by "misunderstanding" or "doctors' ability", it means online doctor forums cannot be instead of face to face interrogations as big risks cannot be avoid during online interrogations from their opinions. Therefore, they answered that they will not use online doctor forums in future even though they know many benefits from forums.

I5 mentioned she was in the dermatological department in one hospital in Shanghai, and their usually made decisions and prescriptions based on observing patients' statues, online interrogations can allow patients to send photos, so online doctor forums accepted to use in her department.

I6 mentioned she only used forums as preliminary interrogation platforms, for diagnoses, she still suggested patients come to visit hospitals.

Therefore, about the results of the benefits and problems of online doctor forums from Chinese doctors' perspectives, we can say Chinese doctors are less likely to use online doctor forums especially in less developed cities as there could be possibilities of mistreatment because of misunderstanding and doctors' abilities. However, it depends on the departments and purposes of using forums. For some departments such as dermatological department, physicians can easily make diagnoses based on photos and

descriptions. If the purpose to use online doctor forums with patients is only for offering suggestions but not treatments, there could be more doctors to use this kind of forums. In my interviews, most doctors are not going to use online doctor forums as they thought misunderstandings sometimes could not be avoid. Besides, the systemic factors including unwell- designed forums such as no video calls and limited resources like there is not enough information or suggestions for treatment or medical alliance services are also big problems for those forums to use.

Of course, each new technology has double-sided effects nowadays. Chinese doctors also appreciated the forums bring people conveniences such as time saving and easily gathering information from both sides. In addition, as many other researchers such as Hao, H. studied before, patients' reviews told consumers' preferences and dissatisfactions play significant roles on finding suitable doctors (Hao 2015).

4.2 Online doctor forums improve doctor-patient communication or not

To get the results of this issue, the questions "How do you think the platforms can replace current interrogation processes in clinics and hospitals?" "How do you think the platform can improve doctor-patient communication and relationship?" and "How do you think the future of platforms?" were asked to doctors as from these questions, we can easily find from doctors' perspectives, how they value platforms compared with current physical interrogation process especially on the issue of doctor-patient communication and relationship.

"Online doctor platforms cannot replace physical face to face interrogation processes in most hospitals at least in some stubborn diseases. While for some minor illnesses such as influenza and skin allergy in a small area, online doctors can help to give prescriptions and make other treatment decisions. For serious sicknesses, I never

recommend going online doctor platforms to get some treatments but consulting to online doctors can be fine."

"I agree with that platforms can improve communication between doctors and patients. However, for doctor-patient relationship, it is very difficult to say. Just because of many consultations, patients get more information and knowledge easily than before, the power leaned to patients current days. Some patients even hope their physician-in-charge can follow treatment suggestions and methods as their online doctors say even though online doctors have never seen them. This kind of phenomenon cannot help to improve doctor-patient relationship practically. However, platforms can connect doctors and patients more closely than before."

"I think platforms can have good future. If there is automatic replies function is greater, we doctors are too busy to answer some simple and repeated questions from patients." – I1

"Platforms cannot replace physical interrogation processes in hospitals. Like body check, patients cannot know their body conditions only by consulting online doctors."

"I think platforms can improve both communication and relationship between doctors and patients. Doctors and patients have better communication through platforms and know more about each other, the relationship improved as well. But there are more risks that patients and doctors can increase misunderstandings."

"It has a good future. Nowadays, everyone uses computer and telephone; online doctor forums will have large quantity of users. I hope someday, forums can offer VR function that we really needn't to work in hospitals" – I2

"Platforms cannot replace clinic visiting. In our Chinese medicine, there are four ways of diagnosis-observation, listening, asking and pulse taking. Listening and pulse taking are very important steps to make treatment decisions. So they are quite helpful to minor diseases only."

"Patients can get knowledge about doctors and hospitals through platforms, so

communication can be improved by platforms. However, I don't think platforms can improve doctor-patient relationship in today' China. Misunderstandings can easily happen online. In addition, patients can collect different treatment methods from different online doctors, and then they will have more confusion about treatments. The relationship between doctors and patients are more tended."

"Platforms have certain benefits but also problems. If there are problems, platforms should update on time. My colleagues around me are all busy usually; we all don't have time to visit online platforms as doctors." – I3

"Platforms only can replace interrogation processes in hospitals partially as they have own limits, doctors cannot make fast and correct decisions just based on patients' few words except some minor illnesses."

"Platforms can improve patients' communication with online doctors by online consultation and searching. Nevertheless, it is very difficult to improve relationship of doctors and patients. I have mentioned that patients now hold a powerful position with doctors as they collect much information from online doctor platforms, it is increasing conflicts between patients and their physician-in-charge if they are confusing why their physician-in-charge offer different treatment methods than online doctors."

"I don't recommend this kind of platforms. They make us doctors cannot focus on our work, operations, physical contacting with patients." – I4

"The functions in online doctor platforms are defective, not all the patients can have satisfied experiences in the platforms, so they cannot replace traditional physical clinic visiting."

"For the fifth question, I am sure that platforms can help improve communication but for relationship, it is hard to say improve or not. We have to see from two sides-doctors and patients. For doctors' side, any doctors can register as online doctor in the platforms like the Good Doctor, so their answers can be different as they have different levels. In addition, for some illnesses and diseases, there are many different treatment methods; different doctors can select different methods. For patients, if patients ask different

doctors online, they will be confused, this may cause misunderstands between doctors and patients. So I think we cannot say directly platforms can improve relationships, it depends on doctors abilities, doctor-patient communications and even diseases it selves."

"Personally, I think platforms should be paid more attention and developed further. As I work in the dermatology department, the skin statues can be observed easily from pictures and descriptions, so our department is going to use this kind of platforms in future." – I5

"Platforms cannot replace clinic interrogations because some communications with patients have to be done by face to face to get more precious diagnoses. For example, some patients may have medication compliance problems, some patients may have mental defects such as depression and anxiety that we have to notice and communicate face to face, and then we can get comprehensive information from patients."

"In a long term development, I think platforms are quite useful and meaningful for enhancing doctor-patient communication, but only effective communication can reduce misunderstandings and conflicts. If functions of platforms are incomplete, patients and doctors can easily misunderstand each other and cause strained relationship."

"The functions of platforms should be improved so that more convenient for both doctors and patients to use. I also believe that VR (virtual reality) technology and software can be applied into functions or interfaces of platforms in future so that we can experience better services." – I6

Therefore, a brief codes and quotes related with RQ2 listed as the following table shows:

TABLE 9. Codes matched with quotes related with RQ2

Codes	Quotes
Interpersonal perceptions	"…I agree with that platforms can improve communication between doctors

	and patients…platforms can connect doctors and patients more closely than before…"– I1
	"…Doctors and patients have better communication through platforms and know more about each other, the relationship can be improved as well…"– I2
	"…communication can be improved by platforms…"– I3
	"Platforms can improve patients' communication with online doctors…"– I4
	"…I am sure that platforms can help improve communication…As I work in the dermatology department, the skin statues can be observed easily from pictures and descriptions, so our department is going to use this kind of platforms in future." – I5
	"…platforms are quite useful and meaningful for enhancing doctor-patient communication…"– I6
Statistics/information collection	"…Just because of many consultations, patients get more information and knowledge easily than before…"– I1
	"Patients can get knowledge about doctors and hospitals through platforms…"– I3
Systemic factors	"Online doctor platforms cannot replace physical face to face interrogation

	processes in most hospitals at least in some stubborn diseases…I agree with that platforms can improve communications between doctors and patients. However, for doctor-patient relationship, it is very difficult to say…"– I1
	"Platforms cannot replace physical interrogation processes in hospitals. Like body check…"– I2
	"Platforms cannot replace clinic visiting…"– I3
	"Platforms only can replace interrogation processes in hospitals partially…it is very difficult to improve relationship of doctors and patients…"– I4
	"The functions in online doctor platforms are defective…"– I5
	"Platforms cannot replace clinic interrogations…If functions of platforms are incomplete, patients and doctors can easily misunderstand each other and cause strained relationship…"– I6
Decision-making	"…"for some minor illnesses such as influenza and skin allergy in a small area, online doctors can help to give prescriptions…"– I1
	"…Also patients can collect different treatment methods from different online doctors, and then they will have more

confusion about treatments. The relationship between doctors and patients are more tended…"– I3

"…doctors cannot make fast and correct decisions just based on patients' few words except some minor illnesses…it is increasing conflicts between patients and their physician-in-charge if they are confusing why their physician-in-charge offer different treatment methods than online doctors…"– I4

"…their answers can be different as they have different levels. Also for some illnesses and diseases, there are many different treatment methods, different doctors can select different methods…"– I5

From the table, we can clearly see that all six doctors whom I have interviewed had common opinions. Online doctor forums can improve communication between doctors and patients as two of them thought, "because of many consultations, patients get more information and knowledge easily than before". Two thought, "For some minor illnesses such as influenza and skin allergy in a small area, online doctors can help to give prescriptions". One thought "platforms can improve patients' communication with online doctors by online consultation and searching" and one thought it should be dependent on the needs of departments, for example, "in the dermatology department, the skin statues can be observed easily from pictures and descriptions", so some departments are prefer to use this kind communication ways.

However, nearly all doctors thought online doctor forums cannot improve doctor-patient

relationship except I2 who is also the oldest among those interviewees as he thought relationship can be improved at same time when doctor-patient communication get improved, but he also mentioned the risks of misunderstanding will be increased as well. Others thought "online doctor platforms cannot replace physical face to face interrogation processes in most hospitals", "functions of platforms are incomplete", "patients can collect different treatment methods from different online doctors, and then they will have more confusion about treatments" and "the relationship between doctors and patients are more tended". They thought doctor and patient relationship would get even worse just because of the conveniences of online consultations. Besides, the online doctor forums do not have comprehensive censorship and remedial actions, there are many doctors are with different skills and experiences, which also can lead mistreatments and misunderstandings, therefore make the relationship between doctor and patients more nervous.

4.3 Summaries of findings

Online doctor forum is a product from internet + e-health; it is a new model of remote health care industry, the real-time, convenient and economic services made it becomes more and more popular in China.

Because of unbalanced health care resource allocation and long-term accumulated problems of traditional off-line clinical services, the advantages of online doctor forums would be more obviously. From the interviews with 6 physicians from different areas and hospitals, benefits of online doctor forums can be found at "personal perceptions" that patients and doctors can have availabilities to know each other better as patients can find suitable doctor for his/her diseases and doctors can know patients' situations very fast and easily. Benefits on "time saving" mean that patients can found some information before they visiting doctors to save time of both sides and patients are saving time without waiting in the long queue like before. "Space" tells remote interrogations realized without space constraints. "Statistics/information collection"

gives us clues that online doctor forums can offer huge quantity of health data; these health data can be patients' own experiences on treatments and doctors' backgrounds that create meaningful values to users. "Patients reviews" tells that patients can give their feedbacks to doctors' services and skills that make more easily for people to find right doctors. Generally, we can say from Chinese doctors' perspectives, online doctor forums offer conveniences and knowledge to both doctors and patients. From above, cost-effectiveness of online doctor forums which includes both the efficacy and cost-saving services can be considered as a good practice of technology-supported consulting solution to the complex challenges for solving shortages of health care practitioners, increasing patients' resources and data, rising rates of self-management and delivering more effective healthcare services.

Sub research question 1 and question 2 answered by my analysis from interviews and previous literature reviews. The benefits of online doctor forums from physicians' opinions are bringing conveniences, collecting patients' information and data and gathering patients' resources. These have further implications that e-health supported online doctor forums is viewed by many as certain solutions to deliver healthcare efficiently, increase rates of self-management, gather patients' resources and data and improve diverse population. We need a different kind of health service, which based on e-health to improve the healthcare system and acceptable self-management of chronic and minor diseases.

Everything has two sides, disadvantages of online doctor forums also exist such as patients/doctors misunderstanding and doctors' abilities. "Patients/doctors misunderstanding" and "doctors' abilities" explain that patients may have problems to tell their conditions clearly and doctors may have own limited abilities to give correct diagnoses. In addition, the uncompleted functions and designs of online doctor forums, which belong to "systemic factors", are also problems for developing online doctor forums, for example, "the forums should standardize that authoritative experts and doctors have to screen" and limit resources as body-check cannot do via online

interrogations. At last, "decision-making" seems to be hard if patients need tailored prescriptions and accurate treatment methods.

The problems of online doctor forums are mistreatment and limited services suggest that the clinical visiting and hospital practices cannot replace by online doctor forums. Furthermore, these also suggest a better remote consultation platform should offer potential advantages of both patients and physicians and the healthcare system. To develop more satisfied platforms, online doctor forums should only allow authoritative experts be online and doctors have to be screened, add VR or video functions and offer medical alliance services that healthcare providers can see body-check and laboratory test reports without asking patients to do new ones to avoid mistreatment, misunderstanding and time and cost-wasting.

Nearly all the Chinese interviewees agree with that online doctor forums can improve doctor-patient communication but not relationship. It is because that well-collected statistics/information gives both doctors and patients more possibilities to know each other thus interpersonal perceptions improved in the doctor-patient interaction and communication. However, most doctors still think online doctor forums cannot replace face-to-face clinical visits as body-check and accurate diagnoses cannot do via internet, otherwise, there will be more possibilities of mistreatments, which lead more tended doctor-patient relationship.

My findings also suggest that part of Chinese doctors are quite interested in online doctor forums and they all believe online doctor forums related e-health products will have great future if some functions and designs can be improved such as supporting VR techniques and a unified health documentation system. Although some Chinese doctors appreciate online doctor forums that can bring many benefits to clients, they do still not prefer to use them as their working schedules and diagnosis and treatment schemes are not available for them to apply. According to my interviews, online doctor forums can help to improve doctor-patient communication as all of them have highlighted examples

of good communicative practice but cannot say online doctor forums improve doctor-patient relationship since there are possibilities of mistreatment and misunderstanding. Based on my findings of limits of online doctor forums, online doctor forums cannot be replaced by clinical visiting by face to face which is agreed with to some other reports like "Technology will replace many doctors, lawyers and other professionals" that tells not all professionals will be dismantled (Susskind & Susskind 2016). Besides, through my study, we can see what kind of online doctor forums that doctors need and how they think about them. The observation shows that online doctor forums have values to deserve to develop especially for chronic diseases and some minor illnesses.

Based on the findings of sub research questions 1 and 2, we can see clear implications about how online doctor forums shape doctor-patient communication. From Chinese physicians' opinions, online doctor forums make communication between doctors and patients more convenient and easily. Statistics and information on doctors such as doctors' profiles and patients' feedbacks can reduce doctor-patient mismatch problems, while statistics and data on patients such as patients' diseases, ages and treatment outcomes provide massive evidence-based treatment cases for doctors that improve communication in a more efficient way. For some minor illnesses, online doctor forums can help doctors to make decisions very fast with cost saving. From my studies, online doctor forums have more and more positive impacts on doctor-patient communication.

5 CONCLUSIONS AND DISCUSSION

The literature of health communication made me noticed that the integration of communication areas, media, health care issues and strategies have efficiently connected doctors with patients together, online doctor forum is one of the most popular innovations since 21st century. The importance of studying the benefits and problems of online doctor forums helps us to get familiar with the competency in the doctor-patient online communication and improving efficiency of patient outcomes and promoting applications of best clinical practices. In order to understand the values of online doctor forums to doctor-patient communication, the content analysis also involved in the research process. By comparing online doctor forums in China and Finland, it makes sense on facilitating health care technology companies and health care institutions to develop more effective forums and manners to serve for large population worldwide.

5.1 Key results of the study

Online doctor forums help to improve doctor-patient communication by reducing waiting time, saving costs and non-distance restricts. Besides, my studies also implicate that online doctor forums play significant roles on doctor-patient communication since Chinese physicians think more and more people get health care information online, which can help them to have knowledge about their diseases in advance before they consulting an online doctor. This kind of phenomenon also suggest online doctor forum plays a more and more significant role in assisting doctor-patient communication.

My studies on benefits and problems that online doctor forum brings conveniences to large population and may cause mismatch/misguidance problems which confirm that factors influence doctor and patient relationship (Chipidza 2015). My research results show that in some departments, Chinese doctors are less likely to use online doctor forums, as there could be possibilities of mistreatment because of misunderstanding and

doctors' abilities. However, in other departments such as dermatological department, doctors can easily tell what is the problem based on photos and descriptions only. In addition, the purpose to use forums can decide doctors' willingness to use or not. If the purpose to use online doctor forums with patients is only for offering suggestions but not treatments, there could be more doctors to use this kind of forums. Among my interviewees, most doctors are not going to use online doctor forums as they thought the forums are not with mature technique that misunderstandings sometimes cannot avoid. Besides, the systemic factors including unwell- designed forums such as no video calls and limited resources like there is not enough information or suggestions for treatment or medical alliance services are also big problems. Still in my findings, we can find all interviewees regard online doctor forums as timesaving and convenient health care services with internet. One of the most important functions offered by forums is statistics/information collection such as doctors' profiles, patients and hospitals information and services qualities and so on.

Based on the physicians' opinions on problems of online doctor forums, I found evidence that online doctor forums cannot replace traditional clinical visiting ways that mistreatment and misunderstanding via internet play important roles on the outpatient results and doctor-patient relationship. The forums offer conveniences on doctor-patient communication but we cannot say forums improve doctor-patient relationship certainly. Computers and internet can help to build social nets with patients easily; however, there is no emotional connection between doctors and patients if only staying in front of computers. These also suggest that we need to improve current online doctor forums functions.

As stated earlier, Chinese doctors believe online doctor forums will have a great future if the following functions and designs improved:

a) Supporting VR techniques

b) Adding video function

c) Developing a unified health documentation system

d) Developing a unified payment approach like PayPal

Therefore, for some departments such as dermatological department and many other chronic diseases departments, interviewees suggested these functions added into current online doctor forums. It is possible to improve usability of online doctor forums in the clinical workflow; making use of "big data" is available in the united health documentation system to create a more efficient healthcare system and the most important is mistreatment and misunderstanding reduced.

Online doctor forums related informatics more are likely to support clinical decision-making and doctor-patient communication rather than replace clinical visiting nor doctor-patient relationship improvement.

In my study, I also found that online doctor forums help to improve doctor-patient communication as the previous literature told, the HIT-mediated process will change communication between patients and providers (Weiner 2012). Meanwhile, quality health care relied on successful communication between health professionals and patients (Santana et al. 2010). However, it seems that online doctor forums cannot improve doctor-patient relationship as there are too many factors to influence relationship between doctors and patients not only communication. (Chipidza 2015). It is hard to say doctor-patient relationship improved by online communication as most interviewees thought if there are problems of misunderstanding, doctor-patient relationship could be even worse.

5.2 Evaluation of the study

The research scope and goals of this study is quite appropriate that it yields research questions:

"What are the benefits and problems of online doctor forums from Chinese doctors' opinion?", "Can online doctor forums improve doctor-patient communication and relationship?", and "What are the differences between Chinese and Finnish online doctor forums?" Comparisons of Chinese and Finnish online doctor forums carried out

based on literature reviews about e-health and remote healthcare services in China and Finland. It explains the differences from multiple aspects such as culture and technology development backgrounds, which influence the functions and designs of online doctor forums in two countries. Findings of sub questions 1 and 2 based on content analysis of interviews with several Chinese physicians who had experiences or knowledge on using online doctor forums.

This paper has given a literature of review of the choice of what is analysis approach and how the data analyzed. In the qualitative business research, one of the most challenges confronting the researcher is how to assure the readers about your trustworthiness, which contains the asects of reliability and validity (Eriksson & Kovalainen 2015). The data collected and saved by the author with notes and interviewees' writings or voice records via Wechat. Inductive content analysis leads the coding process so that it helps readers to gain the understanding of various kinds of experiences and opinions to online doctor forums. There are strong logical links between data and my categories and my interpretations of the materials well translated in the paper. This means the interpretations to the data are not just imagination.

This paper is presenting a general level view of doctors from different departments in China. It gives insights of how they think about online doctor forums and can doctor-patients relationship and communication improved via these forums. There seems to be no conflict between their opinions on online doctor forums and doctor-patient relationship cannot improve while communication improved by forums. Besides, there have further parts of developing online doctor forums in future.

5.3 Limitations of the study

A few limitations in this study have to emphasize. Firstly, in the doctor selecting criteria,

it could be better if all doctors have experiences on using online doctor forums so that the data and results may be more cogency, however, doctor online forums to all our interviewees are familiar as it is a prevalent e-health method so that there is not deviation from the results which can be acceptable. Secondly, there were only six interviewees in this study as China has big quantities of doctors, although there is no certain formula to find the right number of interviewees. However, for the open-ended interviews, the most important thing is creating something that we can have a pleasant conversation; the quality of data enhanced since more production of the talk. Thirdly, this study is only from doctors' point of views, the results are based on doctors' own opinions or experiences, for example, when asked the future of online doctor forums, doctors gave their suggestions from their intent and purpose, patients may have different requirements and suggestions. Therefore, I always keep in mind that there is an opportunity to make the suggestion for further research from clients' point of views. In addition, there is lack of prior research studies on this topic. Citing prior research studies forms the basis of my previous literature review and helps to understand the research problems that I was going to study, but just because of few relevant studies about online doctor forums from doctors' perspectives, the study of mine can be the first work to analyze online doctor forums with doctors' opinions.

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