

Consumer Satisfaction with Public Health Care in China

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Abstract: Problem statement: Consumer satisfaction is regarded as one of the ultimate goals that all health system should strive for (Hsiao, 2003), it reflects the effectiveness of the health system in consumers' prospect. Yet public health care services in developing countries including Greater Mekong Sub-region (GMS) have failed to achieve adequate level of services. China, for example, satisfaction of public health care is considerably low. To improve public participation and effectiveness of the undergoing health reform initiatives in China, one must understand the underlying factors that contribute to consumer satisfaction for public health services. **Approach:** Therefore, this study explored the factors associated with consumers' satisfaction with public health care delivery among residents in Kunming city, Yunnan Province of China. **Results:** Personal interviews with structured-questionnaires were used to collect the data via a convenience sampling of 569 Kunming adult residents who had consulted a doctor for outpatient services in the public health facilities within the past 12 months. The survey questions were designed to gauge the respondents' health care use preferences, satisfaction levels, perceived quality and efficiency of public healthcare including their socio-economic characteristics. Consumers' satisfaction in public health care delivery, factors such as interaction, qualification, financial affordability, environment, physical accessibility, adequate doctors, confidentiality, pricing, corruption and consumers' socio-demographic characteristics were examined using the logistic regression. **Conclusion/Recommendations:** The results revealed that corruption have a negative impact on consumer satisfaction and perceived as a threat to consumer satisfaction. On the other hand, qualified doctors, affordable costs, adequate doctors and reasonable pricing of public health services were important factors to increase the probability of consumer satisfaction with public health care delivery and should be managed in priority.

Key words: Public health care delivery, consumer satisfaction, affordability

INTRODUCTION

The rights to attainable standard health are regarded as a fundamental human right worldwide, in which everyone regardless of gender, age and income are entitled to. To fully realize this right, governments are obligated to create conducive conditions, which would assure people of universal access to health care in the event of sickness.

Effective progress in health depends vitally on well defined health systems. According to Hsiao (2003), all health systems are designed to achieve three ultimate goals, that is, improving citizen health, providing financial protection against health risks and improving overall consumer satisfaction with the health care system.

However, there are a number of similar challenges facing all the health systems worldwide, including

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ensuring equitable access to health care services, raising the quality of health care, sustainable financing, greater responsiveness to the citizens' demands, citizen involvement in decision making and reducing barriers between health and social care^[13].

Health care delivery in developing countries, including the Greater Mekong Subregion (GMS) countries, has a greater room for improvement, in terms of quality, responsiveness to patients, efficiency, cost escalation and equity. Public health care systems in the GMS countries have failed to deliver adequate level of services, especially to the disadvantaged groups, such as the poor^[38]. First, access to public health care is limited, due to financial barriers compounded by physical barriers such as availability and accessibility of health facilities. Secondly, public health worker morale is poor, as salaries in the public sector are very low in many countries. Public health workers are also involved in some form of private practices and unofficially charge for certain services in public health facilities. The profit-driven practices by public health facilities and workers significantly undermine the quality of health care and responsiveness to patients.

As a result of poor public health care delivery, the utilization of public health services is actually decreasing in some areas, particularly among some vulnerable social groups. Discontent with the current situation is continually increasing among the general population and significant improvement in the public health care delivery is eminent. For example, a poll of 733 respondents revealed that 90% of the people are not satisfied with the health care delivery reform in the past decade in China^[41]. The public appeal for an effective reform of the health system has reached to a peak in 2007 putting great pressure on the administration for significant changes^[34].

To meet such complex challenges, many countries are reforming their health sector and system. The different strategies for reform include decentralization and centralization, substitution policies, redefinition of the functions of hospitals and primary care, creation of new roles for professionals, improved management, cost-containment and market orientation. Regardless of the strategy adopted, the aims of reform are to provide health care accessible to all citizens focusing on the effective and efficient delivery mechanism to increase consumers' satisfaction^[45, 46].

According to the World Health Organization^[44], one of the fundamental goals of any health system is to respond to consumer expectations:

- In particular, people have a right to expect that the health system will treat them with individual

dignity... their needs should be promptly attended to, without long delays in waiting for diagnosis and treatment-not only for better health outcomes but also to respect the value of people's time and to reduce their anxiety. Patients also often expect confidentiality and to be involved in choices about their own health, including where and from whom they receive care (pp: 8)

The health care provision in China, particularly the hospital industry, is dominated by state ownership and government control while the services are primarily financed by out-of-pocket spending. Quite different from many other countries, China's public health care tends to exclude the low income groups due to the relative higher direct and indirect cost while the private sector tends to serve disproportionately the low-middle income groups^[27]. A survey of Chinese health patients showed widespread dissatisfaction with public providers, mainly high user fees and poor staff attitudes, is driving patients to seek cheaper but lower-quality care from poorly regulated private providers^[26].

Public complaints on China's health care system, particularly on the public hospitals, have been summarized as: "Kan Bing Gui and Kan Bing Nan", that is obtaining medical care is both expensive and difficult. The number of health care facilities and personnel in China has increased dramatically since 1980, but because of barriers to accessibility, the utilization and thus productivity of the health care sector have declined^[28]. Hospital visits dropped almost 5% between 2000 and 2003, while hospital profits increased 70% over the same period^[47]. A survey of 190,000 urban and rural residents conducted by China's Health Ministry in late 2003 showed that 36% of the patients in the cities and 39% in the countryside avoided seeing doctors because they could not afford medical treatment.

Consumer satisfaction with public health care delivery and its contributors has not been widely studied in China^[36]. Several surveys revealed that the overall public satisfaction with public health care in China is considerably low and some possible contributing factors include high cost of health services, poor provider attitude and conflict with the health providers^[12, 27].

To improve public participation and effectiveness of the undergoing health reform initiatives in China, this research assesses consumers' satisfaction with public health care delivery in Kunming City, Yunnan Province. The study identifies the factors associated with consumers' satisfaction with the public health care delivery.

The study is organized as follows: Introduction includes literature review on public health care, background of public health care in China and the methodology and data used. Results and discussion presents the results and the empirical findings and discussion. Lastly, Conclusion concludes the study.

Literature review: Consumer satisfaction assessment is widely used to evaluate the effectiveness of various health care services delivery, including mental health services^[3], nursing practice^[47], inpatient care^[18] and independent consumer assistance^[35].

Different methods and instruments are used to assess consumer satisfaction^[9,23]. For example, the Davis Consumer Emergency Care Satisfaction Scale (CECSS) assesses the emergency care to be reliable and valid and could be used confidently^[19]. The UKU-Consumer Satisfaction Rating Scale, which consists of six items related to the structure and process of treatment care and two items related to outcome and well-being, is widely used and proved to be suitable for use in ordinary clinical practice^[1,23]. In other studies, consumer satisfaction assessment is conducted by asking respondents to rate their satisfaction on five key aspects of local health services (availability, geographical accessibility, choice, continuity and economic accessibility as measured by affordability) using a 5 point Likert scale^[7,39]. An alternative method involves investigating consumers' experiences with actual and potential complaints in relation to health services^[39].

However, some comparative researches conclude that differences of results are found when using different methods in analyzing consumers' satisfaction in health care services and therefore interpretation of consumers' satisfaction with their health services must take into account of the measures and research methods used and minimize possible biases in satisfaction rating scales associated with the use of particular tools^[39].

Consumer satisfaction with health care services is associated with many contributing factors, among which are related to health providers and health care delivery process. Doyle and Ware^[11] examine major dimensions of consumer perceptions on accessibility, availability of family doctors, availability of hospitals/specialists, completeness of facilities, continuity of care and physician conduct (art and technical aspects of quality) and found that physician conduct was the most important factor in general satisfaction with health care. Staff teaching efforts regarding medication or education by providers was found to be significantly associated with greater levels of satisfaction in health care in some studies^[18,21]. In a

study by Marriage *et al.*^[31] for an adolescent inpatient psychiatric unit, they identified that consumer satisfaction ratings were correlated with improvement of self-identified problems and the perceived usefulness of discharge recommendations. Gamst *et al.*^[15] investigate the effects of consumer-provider racial match on consumer service satisfaction of 96 outpatient consumers and conclude that client satisfaction was higher for racially matched consumers.

A study on consumer's satisfaction on Health Maintenance Organization (HMO) found that methods of practitioner compensation also have an impact on consumer satisfaction, that is, consumer satisfaction with HMOs is negatively correlated with the percentage of practitioners who are compensated on a capitation-fee basis and positively correlated with the percentage of practitioners compensated with a fee-withholding incentive^[40].

Several factors related to operation and function of health facilities are found to link with consumer satisfaction in health care delivery. For example, time/availability of the services, or more flexible hours of operation, proved to be contributing factors to consumers' satisfaction^[7,37]. Provision of play facilities for children was also found to be beneficial in improving consumer's satisfaction in a study on satisfaction in child health services in the non-government sector of Hong Kong^[7]. Other studies on hospital-based social services^[4,29] reveal that consumer satisfaction with health care are positively and significantly associated with their overall rating of the social work service.

Consumer factors also have an impact on their satisfaction with the health care delivery. In a longitudinal study with 344 patients, Kumar *et al.*^[24] showed that consumer's experience with health care was strongly associated with satisfaction and their satisfaction was strongly associated with intent to continue using the new medication. In a study to explore the relationship between young persons' symptoms and satisfaction with child and adolescent mental health services, the researchers discovered that children and adolescents were less satisfied than their parents and those young people with self-reported conduct problems were least satisfied with the services^[3]. Another study by Rosenheck *et al.*^[36] revealed that consumers with better self-reported health status were more satisfied with mental health care services.

The relationship between consumers' socio-demographic characteristics and their satisfaction with medical care is widely examined, such as age, ethnicity, gender, socioeconomic status, marital status and family

size^[20,35]. For example, Rosenheck *et al.*^[36] identify older consumers report greater satisfaction with mental health care services. Hall and Dornan^[20] conduct a meta-analysis of 221 studies, which examines the relation of consumers' socio demographic characteristics to their satisfaction with medical care and conclude that greater satisfaction is significantly associated with greater age and less education and marginally significantly associated with being married and having higher social status. The average magnitudes of these relations are very small, with age being the strongest correlate of satisfaction. No overall relationship is found for ethnicity, gender, income, or family size.

Public health care delivery in China: After the establishment of the People's Republic of China in 1949, the Chinese government owned, funded and ran all health care facilities. Health care delivery was organized as a three-tier, bottom-up delivery system. The tiers consist of village stations, township health centers and county hospitals in the rural areas and street health stations, community health centers and district hospitals in the urban areas. At the lowest level, rural village or urban street health stations provided basic preventive and curative care and referred patients who needed additional treatment to township or community health centers. County or district hospitals provided specialized care to sick patients through an extensive network of hospitals in both urban and rural areas.

Over the past two decades China's total spending on health has grown rapidly. For example, in 1978, China's total health expenditure was RMB11 billion and increased to RMB984.3 billion (4.7% of GDP) by 2006. Parallel to the rising expenditures on health have been major improvements in health infrastructure. Compared to 1980, China has 67.1% more health workers and 65.3% more health institutions, including clinics in 2007^[8].

In 2007, there were 289,538 medical service institutions, with 3,701,076 beds; 135,105 non-profit medical institutions, constituting 46.7% of the total number of medical institutions, with 3,514,785 beds, which accounted for 95.0% of the total number of beds. Therefore, non-profit medical institutions are still the dominant providers in China. There are a total of 4,787,610 health professionals, among them 1,644,467 are practicing doctors, 368,447 are assistant doctors and 1,543,257 are registered nurses. The number of doctors per thousand citizens is 1.54^[8].

Given this rising level of investment, a major improvement in people's health status has taken place since 1980, but accessibility to health services has been

uneven. China's life expectancy has increased from 35 years before 1949 to 71.8 years in 2001, higher than the world's average (65 years) and for middle-income countries (69 years). At the same time, the infant mortality rate has decreased from about 200 deaths per thousand live births before 1949 to 32 deaths per thousand live births in 2004, which is lower than the world's average (44 deaths per thousand live births)^[43].

Health reform in China: Since the early 1980s, China has experienced fundamental economic reform and societal transformation. In this context, the health care system has undergone incremental changes in healthcare delivery, which was characterized by fiscal decentralization and market orientation^[6,36].

First, the central government in China dramatically reduced its investment in health care services and transferred much of the responsibility to provincial and local authorities^[6]. From 1978-2003, the central government's share of national health care expenditures fell from 32-15%^[6,32].

Second, the private medical practice was legalized and encouraged since the early 1980s^[26] and the government gradually reduced its subsidy to public hospitals, forcing them to rely more on the sale of services in the private markets to cover their expenses^[14].

Third, the Chinese government imposed strict price regulations on medicines and procedures to control health care costs for individuals and ensure accessibility to basic health care for everyone, which proved to be a failure due to overprovision of profitable high-tech services and overuse of prescriptive drugs^[36].

The coverage for medical insurance also fell sharply during the period. After the communes were abolished in 1982 in rural areas, Cooperative Medical Scheme (CMS), the only medical insurance program for farmers, collapsed rapidly. Unemployed people in the urban area also lost their employment-based medical insurance. Only 29% of Chinese people have health insurance and out-of-pocket expenses accounted for 58% of health care spending in China in 2002^[6].

The reform in health care delivery in China has failed to produce an equitable and efficient system. According to the Ministry of Health, the reform was unsuccessful^[16]. Some structural problems include reduction of accessibility to health care especially in the rural areas and reduction in insurance. This led to weaknesses in the health care delivery and health finance systems^[2,14,22,27]. There is a gap in the health outcome indicators between different regions and communities including rich and poor, urban and rural and migrant and resident communities within cities. According to the evaluation of the 2000 World Health

Report, China ranked number 144 for its health system's overall performance and 188 (the fourth from the bottom) in terms of financial contribution^[45] from a total of 191 countries. Despite the large-scale government infrastructure investment, the cost of health services remains a major barrier to accessing quality services, particularly for people in rural areas and low-income migrants. The third Ministry of Health report^[33] reveals that in general about 48.9% of the people avoid seeing a doctor when they are ill; the most often reported reason (38.2%) is that they could not afford the health care. In addition, 30-50% of poor people in China indicate health is the single biggest cause of their poverty due to reduced earning capacity and medical bills that can be financially ruinous^[45].

In 2007, China's health care system has 289,538 institutions including 19,852 hospitals, with 3.7 million beds. They are staffed by 4.79 million health workers, including 1.64 million doctors and 1.54 million nurses. The number of doctors per thousand citizens is 1.54, close to the world average^[8]. Similar to other urban cities in China, Kunming municipality has 2,777 health institutions, including 338 hospitals with 28,700 beds. These institutions are staffed by 33,600 health workers^[25]. Health care delivery in urban Kunming is organized as a three-tier system, which consists of street health stations, community health centers and district hospitals. In addition, there are municipal and provincial hospitals in the urban districts. In the 4 urban districts, there are approximately 200 hospitals (including provincial, municipal and district hospitals, both public and private hospitals), 41 community health centers and 83 street health stations. Most of the hospitals are public health care facilities.

However, the Chinese people see their health services far from adequate. "Expensive to receive" and "inconvenient to access" are the common complaints from the citizens. Currently, the health care delivery system in China is under enormous pressure to change in terms of demographic and epidemiological factors, rapid inflation increase in demand for services and the widening gap in health outcomes between different social groups. Recognizing these unsatisfied consequences and public discontent, China's leaders are considering another round of health care reform.

MATERIALS AND METHODS

For many commodities and services, the individual's choice is discrete and the traditional demand theory has to be modified to analyze such a choice^[5]. Let $U_i(y_i, w_i, z_i)$ be the utility function of consumer i , where y_i is a dichotomous variable

indicating whether the individual is satisfied with the public health care service, w_i is the wealth of the consumer and z_i is a vector of the consumer's characteristics. Also, let c be the average cost of health care, then economic theory posits that the consumer is satisfied with public health care service if:

$$U_i(y_i = 1, w_i - c, z_i) \geq U_i(y_i = 0, w_i, z_i) \quad (1)$$

Even though the consumer's decision is straightforward, the analyst does not have sufficient information to determine whether the individual is satisfy with public health care services. Instead, the analyst is able to observe the consumer's characteristics and choice and using them to estimate the relationship between them. Let x_i be a vector is of the consumer's characteristics and wealth, $x_i = (w_i, z_i)$ and then Eq. 1 can be formulated as an ex-post model given by:

$$y_i = f(x_i) + \varepsilon_i \quad (2)$$

where ε_i is the random term. If the random term is assumed to have a logistic distribution, then the above represents the standard binary logit model. However, if we assume that the random term is normally distributed, then the model becomes the binary probit model^[5,17,30].

Consumers' satisfaction with public health care delivery is hypothesized to be a function of 10 variables (measured on a 5 point Likert-type scale) and demographic characteristics. The variables include interaction with providers, qualified health provider, affordable cost of public health care, comfortable public health care environment, easy physical accessibility, adequate doctors available in the public health care facilities, consumers' confidentiality respected, reasonable pricing of public health care and perception of corruption in the public health care delivery system. The demographic variables include health status, income, place of origin, age, marital status, gender, ethnic background, type of organization which the respondent works and medical insurance. The logit model will be used in this analysis because of convenience^[30]. The model will be estimated using the Forced entry method in SPSS. The proposed empirical model can be written under the general form:

$$\text{Consumer satisfaction} = f(\text{Interaction, qualification, affordability, environment, accessibility, doctors, confidentiality, pricing, corruption, health, income, origin, age, single, male, ethnic, Org, insurance, } \varepsilon) \quad (3)$$

Where:

- Consumer satisfaction = 1 if respondent is satisfied with public healthcare delivery, 0 otherwise
- Interaction (+) = Good interaction with providers
- Qualification (+) = Qualified health provider
- Affordability (+) = Affordable cost of public health care
- Environment (+) = Comfortable public health care environment
- Accessibility (+) = Easy physical accessibility
- Doctor (+) = Adequate doctors available in the public health care facilities
- Confidentiality (+) = Consumers' confidentiality/privacy respected
- Pricing (+) = Reasonable pricing of public health care
- Corruption (-) = Perception of corruption in the public health care delivery
- Health (-) = Health status; 1 if respondent reported his health status as poor; 0 otherwise
- Single (+/-) = Marital status; 1 if respondent is single/never married; 0 otherwise
- Income (+/-) = Income level; 1 if respondent income level is less than \$1400; 0 otherwise
- Origin (+/-) = Origin area; 1 if respondent is from urban area; 0 otherwise
- Age (+/-) = Age level; 1 if respondent age is between 36 to 55 years old; 0 otherwise
- Male (+/-) = Gender; 1 if respondent is a male; 0 otherwise
- Ethnic (+/-) = Ethnic background; 1 if respondent belongs to Han ethnic group; 0 otherwise
- Insurance (+/-) = Medical insurance; 1 if respondent have a medical insurance; 0 otherwise
- Org (+/-) = Type of organization which the respondent works for; 1 if respondent works for government or government-owned enterprises/institutions; 0 otherwise
- ε = Error terms

The discrete dependent variable, consumer satisfaction, measures the satisfaction of the respondent with public health care delivery. This is based on the question asked in the survey, "Are you satisfied with your current public health care delivery service?"

The independent variables include interaction with providers, qualified health provider, financial affordability, public health care environment, physical accessibility, confidentiality/privacy, pricing of public health care services, adequate doctors, perceived corruption in health care system, medical insurance and socio-demographic characteristics, such as age, gender, education, income, occupation, ethnic background, place of origin and place of work.

A structured-questionnaire was used to gather the information on consumers' satisfaction on public health care delivery services in four urban districts of Kunming city (including Xishan, Wuhua, Panlong and Guandu District). For each district, three survey sites including one residence community and two public places (such as public parks, shopping malls, squares) are selected purposively for its representativeness of different social groups and considerable size of target population.

The questionnaire was translated locally in contextualized Chinese to ease understanding for the local respondents. Focus group discussion for modification of questions and pre-test were conducted before surveying the respondents to ensure appropriate questions were asked in the questionnaire. The questionnaire was designed and implemented according to the Dillman Total Design Method^[10], which has proven to result in improved response rates and data quality. The questions were phrased in the form of statements scored on a 5-point Likert-type scale, where 1 = "strongly disagree," 3 = "neither disagree nor agree," and 5 = "strongly agree."

Convenient sampling method is employed due to the practical difficulties in obtaining the mailing list and information of the target population including, those who have used public health care service in the last 12 months. The interview process includes: (1) The respondents must be adults of age above 18 years old and (2) The respondents must have consulted a doctor for outpatient services in the public health facilities in the past twelve months. A total of 580 Kunming local residents (both permanent resident and migrants) were interviewed generating 569 useable questionnaires (98.1%).

RESULTS AND DISCUSSION

Descriptive statistics of respondents: The data in Table 1 presents a profile of the respondents. The composition of the respondents shows a balance in

Table 1: Profile of respondents

Characteristics	Frequency	Percent (n = 569)
Gender:		
Male	271	47.6
Female	298	52.4
Total	569	100.0
Age:		
18-25 years old	182	32.0
26-35 years old	97	17.0
36-45 years old	75	13.2
46-55 years old	61	10.7
56-65 years old	73	12.8
Over 66 years old	81	14.2
Total	569	100.0
Ethnicity:		
Han	478	84.0
Non-han minority	91	16.0
Total	569	100.0
Origination:		
Urban area	452	79.4
Rural area	117	20.6
Total	569	100.0
Marital status:		
Single/never married	213	37.4
Married	316	55.5
Divorced/separated	17	3.0
Widowed	23	4.0
Total	569	100.0
Education:		
Illiterate	26	4.6
Primary School	59	10.4
Secondary School	90	15.8
High school/Vocational	142	25.0
Bachelor degree	215	37.8
Postgraduate degree	37	6.5
Total	569	100.0
Occupation:		
Managers/owner	57	10.0
Office staff	68	12.0
Professional	49	8.6
Businessman	18	3.2
Service staff	57	10.0
Laborer	18	3.2
Policeman/soldier	6	1.1
Unemployed	44	7.7
Retired	79	13.9
Student	112	19.7
House person	15	2.6
Others	46	8.1
Total	569	100.0
Income		
US\$ 350 or less	43	7.6
US\$ 350-US\$ 1,400	109	19.2
US\$ 1,401-US\$ 2,800	135	23.7
US\$ 2,801-US\$ 4,200	87	15.3
US\$ 4,201-US\$ 7,000	29	5.1
US\$ 7,001-US\$ 14,000	19	3.3
More than US\$ 14,000	5	0.9
No income	142	25.0
Total	569	100.0
Family members living in Kunming:		
1 person	133	0.9
2-3 persons	242	23.4
4-5 persons	149	42.5
More than 5 persons	40	26.2
(Missing variables)	5	7.0
Total	569	100.0
Duration living in Kunming:		
Less than 1 year	16	2.8
1-5 years	203	35.7
More than 5 years	350	61.5
Total	569	100.0

gender with 47.6% male and 52.4% female and covers various types of occupations including 19.7% students, 13.9% retired people, 12.0% office staff, 10.0% managers/owners, 10.0% service staff and others (professionals, businessman, labor, unemployed). Approximately 55.5% of the respondents are married and 37.4% never married. Majority of the respondents are of Han nationality (84.0%), living in Kunming over 5 years (61.5%), in a family with 2-5 people (65.9%), with origin of urban area (79.4%) and received secondary school or higher education (85.1%). One-fourth of the respondents, who are mainly students, have no income, but most of the respondents (58.2%) have an annual income of US\$350-4,200, 23.7% with an income of US\$1,401-2,800, 19.2% with an income of US\$350-1,400 and 15.3% with an income of US\$2,801-4,200 (Table 1).

From the 569 respondents, 82.5% of the respondents reported their health status as good or fair and 85.6% of them have been involved in one health care insurance or medical aid scheme. In addition, 61.5% of the respondents were satisfied with the public health care services in Kunming, while 38.5% were dissatisfied.

Our results reveal that 56.2% of the respondents have visited the public health care facilities at least twice in the past 12 months. Over half of the respondents (52.4%) reported that provincial and municipal hospitals were the most often used public health care facility for common diseases, while less than one-fourth (24.9%) reported community health centers and stations as most often used public health care facilities (Table 2).

The availability of specific health care (22.5%), the convenience of accessibility (22.1%) and good quality care (20.2%) were the most often mentioned reasons for using public health care (Table 2). Quality of care and affordability were ranked by the respondents as the most important factors influencing their satisfaction with health care (Table 3), while over half of the respondents (58.0%) reported they were dissatisfied or very dissatisfied with the affordability of current public health care delivery and only 12.6% respondents were satisfied (Table 4).

Empirical analysis: The items used to measure each construct were tested for reliability by using a Cronbach's Alpha value of 0.60 as the cut-off point (Table 5). A value of 0.60 or more indicates satisfactory internal consistency reliability in exploratory studies. The scores of the items (questions) representing each construct are totaled and a mean score was calculated for each construct. Using these means, together with the demographic characteristics the logit equation was estimated.

Table 2: General health information of the respondents

Health information	Frequency	Percent (n = 569)
Satisfaction with PHC:		
Satisfied	350	61.5
Not satisfied	219	38.5
Total	569	100.0
Health status:		
Excellent	68	12.0
Good	195	34.3
Fair	206	36.2
Poor	93	16.3
Very poor	7	1.2
Total	569	100.0
Deal with sickness:		
Do nothing	28	4.9
Self-care/family-care	201	35.3
Seek help in a drug store	234	41.1
See a doctor at a public health	77	13.5
See a doctor at a private health	26	4.6
Other	3	0.5
Total	569	100.0
Visits to PHC:		
1 time	249	43.8
2 times	139	24.4
3 times	70	12.3
4 times	39	6.9
5 times	25	4.4
6 times or more	47	8.3
Total	569	100.0
Most often used PHC:		
Provincial hospitals	150	26.4
Municipal hospitals	148	26.0
District hospitals	127	22.3
Community health centers	78	13.7
Community health stations	64	11.2
Missing	2	0.4
Total	569	100.0
Reasons for using PHC:		
The health care I want available	126	22.1
It is convenient to visit the PHC	128	22.5
The cost is affordable	27	4.7
I have insurance to pay for services	73	12.8
My health insurance contract with PHC	54	9.5
Good quality of care	115	20.2
Other	45	7.9
Missing	1	0.2
Total	569	100.0
Percentage of cost covered by insurance:		
All the cost	18	3.2
75-100%	68	12.0
50-75%	66	11.6
25-50%	56	9.8
<25%	50	8.8
Not at all	213	37.4
Can not remember	97	17.0
Missing	1	0.2
Total	569	100.0
Medical insurance:		
Government medical insurance	63	11.5
Labor medical insurance	54	9.8
Urban employee basic medical insurance	110	20.0
Urban resident basic medical insurance	69	12.6
Rural cooperative medical scheme	81	14.8
Business medical insurance	83	15.1
Urban or rural medical aid	22	4.0

Table 2: Continued

Other medical insurance	20	3.6
No medical insurance	82	14.9
Total	584	106.4*
Non-public alternatives:		
Private hospital	28	4.9
Private clinic	61	10.7
Drugstore	268	47.1
Self-care/family-care	147	25.8
Do nothing'	16	2.8
Not applicable	42	7.4
Other	7	1.2
Total	569	100.0
Reasons for using non-public alternatives:		
The health care I want not available	14	2.5
It is not convenient to visit PHC	75	13.2
It was too expensive to visit PHC	249	43.8
Poor quality of care	37	6.5
Poor doctor attitude	47	8.3
Others	42	7.4
Not applicable	104	18.3
Missing	1	0.2
Total	569	100.0
Likelihood of using PHC in the future:		
Very likely	146	25.7
Somewhat likely	214	37.6
Neither	162	28.5
Somewhat unlikely	34	6.0
Very unlikely	13	2.3
Total	569	100.0

*: This is a multiple-choice question

Table 3: Public perception on importance of five aspects of public health care

Five aspects	N	Min	Max	Mean	Std. deviation	Rank
Availability	566	1	5	3.43	1.271	3
Convenience	565	1	5	3.66	1.256	5
Affordability	566	1	5	2.39	1.344	2
Environment	567	1	5	3.63	1.067	4
Quality of care	567	1	5	1.90	1.135	1

The estimated logit results are presented in Table 6. In general, the model fitted the data quite well. The likelihood ratio chi-square of 120.862 with a p-value of 0.0001 shows the model fitted the data quite well. The chi-square test strongly rejected the hypothesis of no explanatory power. The Force Entry Method shows the estimated logit model can correctly predict 64.4% of dissatisfied customers and 85.1% of satisfied customers. The overall proportion of correct classification is 77.1%.

The estimated coefficients indicate that five out of the nine factors are statistically significant at the 5% level of significance in influencing consumer satisfaction with public health care delivery, that is, qualified doctors, financial affordability, adequate doctor, pricing and corruption while the other four factors, interaction with providers, environment, physical accessibility and confidentiality did not show statistically significant relationship with consumer satisfaction.

Table 4: Consumer satisfaction with five aspects of public health care

Five aspects (n = 569)		Very unsatisfied	Unsatisfied	Neither	Satisfied	Very satisfied	Missing	Total
Availability	N	23.0	79.0	228.0	234.0	5.0	0.0	569.0
	%	4.0	13.9	40.1	41.1	0.9	0.0	100.0
Convenience	N	13.0	81.0	192.0	259.0	21.0	3.0	569.0
	%	2.3	14.2	33.7	45.5	3.7	0.5	100.0
Affordability	N	89.0	241.0	168.0	68.0	2.0	1.0	569.0
	%	15.6	42.4	29.5	12.0	0.4	0.2	100.0
Environment	N	21.0	118.0	230.0	194.0	5.0	1.0	569.0
	%	3.7	20.7	40.4	34.1	0.9	0.2	100.0
Quality	N	24.0	80.0	228.0	227.0	10.0	0.0	569.0
	%	4.2	14.1	40.1	39.9	1.8	0.0	100.0

Table 5: Cronbach's alpha and reliability test

Constructs	Items	Rotated loading	Alpha
Interaction	e02-The health care providers spend enough time with me in the examination room	0.745	0.833
	d03-I have enough time to interact with my doctor in the examination room	0.723	
	e08-I am well involved in the decisions made about my care	0.649	
	e01-The health care providers listen carefully to my problems	0.604	
	e06-The health care providers are friendly to me	0.454	
	e12-In general, I feel comfortable with my health provider	0.427	
	e03-The health care providers clearly speak to me in a way that I can understand	0.364	
Qualification	d04-The treatment provided by my doctor adequately addressed my health concerns	0.722	0.817
	e04-The health care providers address my health concerns	0.694	
	e05-I trust the advice my doctor gives me	0.629	
	d10-In general, the public health care facilities in my city meet my expectations	0.514	
Affordability	d09-The service providers are well qualified	0.498	0.743
	c09-I have had to give up my treatment plan because I could not afford it	0.752	
	c08-I need to borrow money to pay for health care	0.735	
	c07-I have to use my family savings to pay for health care	0.680	
	c10-In general, the public health care facilities in my city are affordable	0.653	
Environment	e05-Indirect costs prevent me from visiting the health facility	0.507	0.706
	e09-I am likely to receive a miss-diagnosis or wrong treatment during my visit to PHC	0.377	
	d06-The facilities in the center are well equipped	0.732	
	d07-The overall environment in the center is comfortable	0.694	
Accessibility	d08-The health center is safe and clean	0.656	0.711
	d05-The process involved in receiving medical treatment is easy for me to follow	0.352	
	b01-The health care centre is located close to my home	0.795	
	b02-Transportation is easily accessible to take me to and from the health care centre	0.738	
	b03-It takes me a long time to get to the health care center	0.691	
Doctors	b08-The location of the public health care facilities in my city are accessible to me	0.517	0.715
	a04-There are sufficient doctors in the public health facilities	0.738	
	e11-The number of health care workers is sufficient to meet the demands	0.631	
Confidentiality	a05-In general, the existing public health services meet my needs	0.547	0.724
	a03-All of my health care needs can be met by the public health facilities and services	0.505	
	e07-The health care providers keep my personal information private	0.768	
Pricing	e10-The doctor respects my privacy	0.718	0.816
	c02-The price of examination in public health facilities is reasonable	0.812	
Corruption	c01-The drug cost charged by the health facilities is reasonable	0.801	0.640
	b04-Having an acquaintance will better facilitate my visit to PHC	0.798	
	c04-Offering bribes to health care providers will better facilitate my visit to PHC	0.733	

Among the nine demographic variables examined in this study, age (36-55 years), marital status (single), nationality (Han), insurance and organization were found to be statistically significant in influencing consumer satisfaction with public health care delivery at the 5% level of significance (Table 6).

Our result shows corruption, as hypothesized, has a negative impact on the likelihood that the consumer is satisfied with public health care delivery. The exponentiated coefficient equals 0.676, indicating if

consumers' perceived corruption level increases by 1 unit, the odds value decreases from 1 to 0.676, hence decreases the probability of being satisfied with the public health care delivery. In other words, if the consumer perceived corruption exists in public health care delivery, for example, offering bribes to health care providers will better facilitate health care seeking process in public health care facilities, he/she is less likely to be satisfied with the public health care delivery.

Table 6: Logistic regression results

	B	SE	Wald	df	Sig.	Exp (B)
Interaction	0.550	0.371	2.194	1	0.139	1.733
Qualification	0.987	0.361	7.470	1	0.006*	2.684
Affordability	0.978	0.245	15.884	1	0.000*	2.658
Environment	-0.308	0.291	1.120	1	0.290	0.735
Accessibility	-0.375	0.241	2.431	1	0.119	0.687
Doctors	0.541	0.272	3.954	1	0.047*	1.717
Confidentiality	-0.225	0.268	0.706	1	0.401	0.799
Pricing	0.426	0.191	4.989	1	0.026*	1.532
Corruption	-0.392	0.170	5.297	1	0.021*	0.676
Health	0.198	0.409	0.235	1	0.628	1.219
Income	0.060	0.353	0.029	1	0.865	1.062
Origin	-0.176	0.382	0.214	1	0.644	0.838
Age	0.883	0.385	5.247	1	0.022*	2.417
Single	0.948	0.378	6.291	1	0.012*	2.579
Male	-0.014	0.314	0.002	1	0.963	0.986
Ethnic group (Han)	0.920	0.426	4.663	1	0.031*	2.510
Medical insurance	0.853	0.416	4.205	1	0.040*	2.346
Organization	0.770	0.356	4.685	1	0.030*	2.161
Constant	-8.078	1.643	24.163	1	0.000	0.000

*: Significant at 5% level. Number of Observations: 569; -2 Log-Likelihood: 287.188; Chi-squared Statistics: 120.862; Degrees of Freedom: 18; Significance Level: 0.000; % Predicted Right: 77.1%

Consistent with the prior hypotheses^[7,11], qualified doctors, financial affordability, adequate doctor and reasonable pricing positively affect the probability of the consumers' satisfaction with the public health care delivery. Qualification has the largest exponentiated coefficient, 2.684, implying doctor's qualification is the most indicative predictor of increasing consumers' level of satisfaction toward healthy care delivery. When consumer's perceived doctor qualification increase by one unit, its odds values increases by 168.4%. The second most indicative predictor is financial affordability, with the exponentiated coefficient equals 2.658 (or odds value increase by 165.8%), followed by adequate doctors, exponentiated coefficient equals 1.717 (or odds value increase by 71.7%) and pricing, exponentiated coefficient equals 1.532 (or odds value increase by 53.2%).

If a consumer considers his/her health care providers as qualified or his/her health concern/problems are well addressed by public health care providers, he/she is more likely to be satisfied with the public health care delivery. Similarly, if there are sufficient doctors in the public health care facilities and they do not need to wait for a long time before seeing a doctor, their possibility of being satisfied increases. Our result is consistent with findings in previous studies^[11,18,21].

Financial affordability and reasonable pricing of public health care services were found to have strong positive correlations with consumers' satisfaction with public health care delivery. If the public health services are affordable to the consumer or he/she perceived the pricing of public health care services as reasonable,

he/she is more likely to feel satisfied. In other words, if people consider public health care services as too expensive, they are less likely to be satisfied. This result confirms our findings from the survey that Chinese people complain most about the expensive public health care services. The financial burden caused by the health care and discontentment of corruption in the public health care delivery lessen the consumers' likelihood to be satisfied.

The socio-demographic variables, including gender, income, education, occupation, origin and health status, are insignificant in explaining the respondents' probability in being satisfied with public health care delivery except for: Marital1 (single), Age2 (age 36-55), Ethnicity (Han), Insurance and Organization (public).

Age2 (age 36-55) positively affects the probability of the consumer being satisfied with public health care delivery, which means if the consumer is in the age group of 36-55 years, he/she is more likely to be satisfied with the public health care delivery (Table 6). This is consistent with^[35] findings, where older consumers report greater satisfaction with mental health care services.

Our result also reveals that if the consumer is single, the likelihood of he/she being satisfied with the public health care delivery increases (exponential coefficient = 2.417). This is probably because majority of unmarried people interviewed in the survey are students and office clerk, who have high coverage of medical insurance with good reimbursement scheme. Furthermore, students have access to public health centers on university campuses.

Our result also show consumers who belong to the Han group (majority ethnic group in China), have medical insurance, or work for the government or government-owned enterprises/institutions are more likely to be satisfied with the public health care delivery. Government or government-owned enterprises/institutions in China provide a better benefit package, including higher percentage of cost covered by public funding for public health care services, which may explain why people working in these sectors are more likely to be satisfied with public health care delivery.

In contrast with the literatures, four variables are found to be insignificant to explain consumers' satisfaction toward public health care delivery, interaction (with health care providers), environment^[11], confidentiality and accessibility^[11]. The possible explanation for interaction, environment and confidentiality is that these variables are perceived more as extended service level rather than minimum service level.

Health care system in Kunming is still in the developing stage and hence consumers would be more sensitive to the minimum service level factors (qualification, adequate doctors, affordability and pricing). Therefore, when 9 variables are considered, only the minimum service level factors reflect to be significant in explaining consumers' satisfaction. In terms of accessibility, it is probably attributed that health care facilities are generally conveniently located in the urban area of Kunming. Moreover, because this study focused on consumers who have been to public health care services and they have given relatively high ratings (convenience have highest mean of 3.66 among 5 variables asked). The access level of public health care services are generally well accepted, therefore, it may not be an important factor to determine the probability of being satisfied.

CONCLUSION

Previous researchers have examined the relationship between peoples' satisfaction with health care and effectiveness of the health care delivery. Many factors have been identified as having influences on consumer satisfaction with health care, including provider conduct, health education by providers, availability of the services, consumers' perceived improvement of self-reported problems and socio-demographic factors, such as age and marital status. However, the findings in most studies have been ambiguous in linking affordability and accessibility of health care delivery with consumer satisfaction, which is a concern for most people in urban China.

Our finding shows 61.5% of the respondents were satisfied with the health care delivery. Quality of care and affordability are ranked by the respondents as the most important factors influencing their satisfaction with the health care. The logit regression also have similar findings, qualified doctors and adequate doctors and affordable costs and reasonable pricing of public health services significantly increase the likelihood of the consumer's satisfaction with the public health care delivery. Qualification has the most chance to increase the probability of having satisfied consumers on public health care delivery and followed by affordability, doctors and pricing. In addition, our logistic regression results also reveal that corruption has a negative impact on consumer satisfaction of public health care delivery.

Most socio-demographic variables, including gender, income, education, occupation, residency and health status are insignificant in explaining the respondents' probability of being satisfied with public health care delivery. However, specific groups of

marital status, age, ethnicity, medical insurance and working organizations have significant relationships with satisfaction with public health care delivery. Consumers who are single/never married, in the middle age group (36-55 years old), belong to Han ethnicity group, have medical insurance, or works for government/government-funded institutions are more likely to be satisfied with the public health care delivery.

Our finding reveals that satisfaction level with public health care delivery in China is relatively low, particularly in terms of affordability of public health care (mean = 2.39). The result clearly shows that the current public health care delivery system fails to achieve one of the three fundamental goals of health systems, responsiveness to consumers. For the undergoing health reform in China, it is suggested that consumer perspectives on health care delivery system should be further studied and public involvement in decision-making process should be strengthened, so as to ensure the system would better respond to public expectations. Furthermore, health managers or policy makers should make efforts to improve the current health care delivery system by promoting a client-oriented health care system. This study shows that consumers' satisfaction level in Kunming city is still based on the minimum service level factors, strengthening the qualification of providers and adequate doctors, as well as developing more affordable health care services are the first priorities for enhancing consumers' satisfaction. Moreover, corruption should be avoided in the delivery of health care, as consumers perceived it as a threat to increase their likelihood of being satisfied.

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