

# Research on Solutions to the Problem of Seniors' Medical Treatment

## A Case of Product Design with Beijing as the Target Market

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### ABSTRACT

Along with the aging process of society, the proportion of seniors' population is increasing as well as seniors' demand for medical treatment. The problem of seniors' medical treatment has been a focus of attention in China today. Meanwhile, with the promotion of the electronic process of medical treatment, most seniors who are not proficient in electronic products are more difficult to complete medical treatment alone. Due to poor physical condition, most seniors need to be accompanied when seeking medical treatment. However, most seniors' children are in the working stage and always too busy to accompany. Based on this, the topic wants to develop an APP named YIBAN to provide medical treatment accompanying service. On YIBAN platform, the seniors or their children can choose a staff for medical treatment accompanying service and paying commission. Take Beijing as target market, the medical treatment accompanying service is still in blank. Therefore, the development of an APP with clearly customer demand, simple and safe process has broad market prospects. The conclusions of this study will provide a theoretical basis for implementation of the product and contribute to subsequent improvement.

**Keywords:** Population Aging; Medical Treatment; Product Design; Emerging Marketing

## 1. INTRODUCTION

The problem solved in this study is that seniors are difficult to seek medical treatment, and population aging has become a global problem. Most of seniors suffer from some chronic or acute inflammation. For this group, medical treatment has become an inevitable part of their life. However, there may be various problems in the whole medical treatment process and subsequent medication within decline of bio-functions. Therefore, the main purpose of the startup is to help the seniors solve the problem of medical treatment [1].

### 1.1 Phenomenon of population aging

According to the traditional standards of the United Nations, when a country or region's population over the age of 60 accounts for 10% of the total population, or the population over the age of 65 accounts for 7% of the total population, it means that the country or region's population is in an aging society. Since 2007, the proportion of the seniors' population has increased significantly in China. The government has put forward many effective measures and schemes to deal with the aging striving to build a comfortable and practical seniors' care social environment to guarantee that they receive the respect and care they deserve.

Thus, as the number of the seniors increasing, their

demand for medical accompanying services continues to rise [2,3]. The project can provide escort services for the seniors, which directly help them solve the inconvenience of movement and avoid the difficulty of complex medical treatment process. For caregivers, their children, it can help them save time and do other things. Since the children of the seniors, who take responsibilities to give a hand to their parents are mostly buried in working, are often facing work-family conflict. Finally, it can help hospitals improve medical efficiency and provide an intermediate hub for creating a better doctor-patient relationship.

**1.2 Target group**

In 2020, The total population aged 65 and above increased from 2,526,000 to 2,912,000, an increase of 386,000; the proportion of the population aged 65 and above in the total population of seniors increased from 11.51% to 13.30% in Beijing. The seniors’ average pension is about 4,400 Yuan per month in Beijing. The reimbursement rate of retirees in Beijing is more than 85%. The average annual salary of staff in Beijing is 112,886 in 2020[4].

For accurately defining service objects and service contents, the project selected the seniors over 70 years old. On one hand, most of the seniors aged 60 to 65 can take care of themselves so they have less demand for care. On the other hand, the seniors over the age of 75 have high demand for care as it is the beginning of the high incidence of various chronic and acute diseases, and they

go to the hospital relatively frequently [5]. Therefore, the target group of the current study is determined as the seniors over 70 years old in Beijing.

**1.3 The present research**

The project plan to launch a company specially focusing on providing medical accompany service for the seniors who are under 70 years old [5]. As the demand is increasing, but this kind of company is severe in China. Currently, the project imitates the running process of the company which is also called startup. In addition, the project displays the matching application including how it look like and how to use. This paper made descriptions detailly for customer proposition, solution, value proposition, key metrics, channel hypothesis, cost and revenue structure and unfair advantage hypothesis.

**2. CUSTOMER PROPOSITION**

**2.1 Customer hypothesis**

In terms of customer analysis, the project serves the seniors who need medical companionship, and the consumers and payers are their children or caregivers.

**2.2 Description of the number of seniors**

The data comes from Municipal Bureau of Statistics, Municipal Bureau of Civil Affairs is showed as Table 1 and Figure 1:

**Table 1.** Composition of the seniors in Beijing in 2020 [4]

Age group	Number of people	Proportion in total	Proportion in 60 and over	Male		Female	
				Number of people	Proportion in the same age	Number of people	Proportion in the same age
60~69	216.6	15.5	57.2	105.4	48.7	111.2	51.3
70~79	98.7	7.1	26.1	45.9	46.5	52.8	53.5
80~89	54.6	3.9	14.4	24.2	44.3	30.4	55.7
90~over	8.7	0.6	2.3	3.8	43.7	4.9	56.3
Total	378.6	27.0	100.0	179.3	47.4	199.3	52.6

Notes: unit: Number of people (10000), Proportion (%). From the growth rate of the seniors’ population, the seniors who cannot take care of themselves now account for 14% of the seniors’ population.

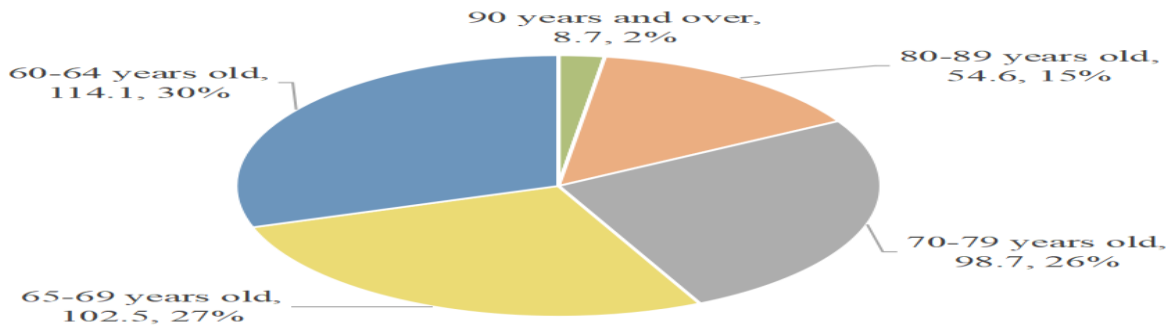


Figure 1 Age composition of seniors in Beijing in 2020 [4]

Therefore, many seniors have limited mobility and

### 2.3 Consumption and expenditure capacity of caregivers

Because the payers of medical services are mainly the

need professional seniors care and medical services.

children of the seniors, the project needs to consider their income and expenditure. As the Figure 2 showed, in 2020, 58.832 billion yuan of Beijing's public financial expenditure was medical and health expenditure, an increase of 10% compared with 2019[5].

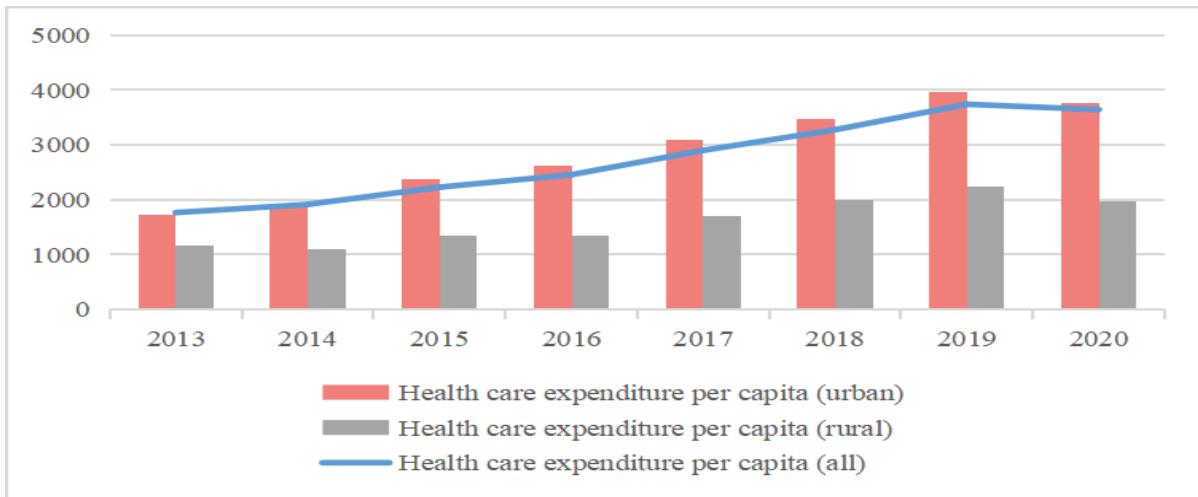


Figure 2 Per capita health care expenditure in Beijing [4]

### 2.4 Market size and scope

Based on the above basic situation, the project analyzed the market capacity, as Table 2 shows, mainly PAM, TAM, SAM and SOM. This is a method of analyzing and measuring the size of the market composed of four indicators.

Table 2. Market size and scope

Scale	Definition	Number
TAM	total addressable market	1,620,000 over 70 seniors, in Beijing;
SAM	serviceable available market	No professional accompanying service
SOM	serviceable &	1,620,000 *10%=162,000

### 2.5 Scalability

Regional expansion: medical services can be extended to other regions and cities in China.

Expansion of population: the expansion of medical companionship service is reflected in the number of

people; it is predicted that there will be 2,707,956 seniors over 65 years old in 2021[6].

## 3. SOLUTION

YIBAN offers the accompany service for seniors accomplish medical treatment. The main contents include

pick up seniors from home to the hospital, help seniors to make hospital registration through internet or scene, accompany seniors for medical treatment, payment and

medicine, take seniors to home, etc. The procedure of YIBAN service is as showed by Figure 3:

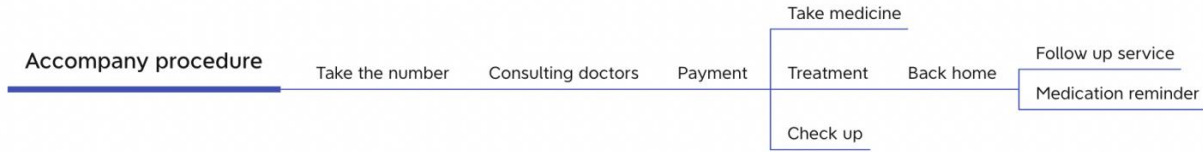


Figure 3 The procedure of YIBAN service

The main service modes are showed by Figure 4:

1. Door to door service.
2. Only in hospital service.
3. Door to hospital service.
4. Hospital to door service.
5. Medical reminder.
6. Medical consultation.
7. Follow up service.

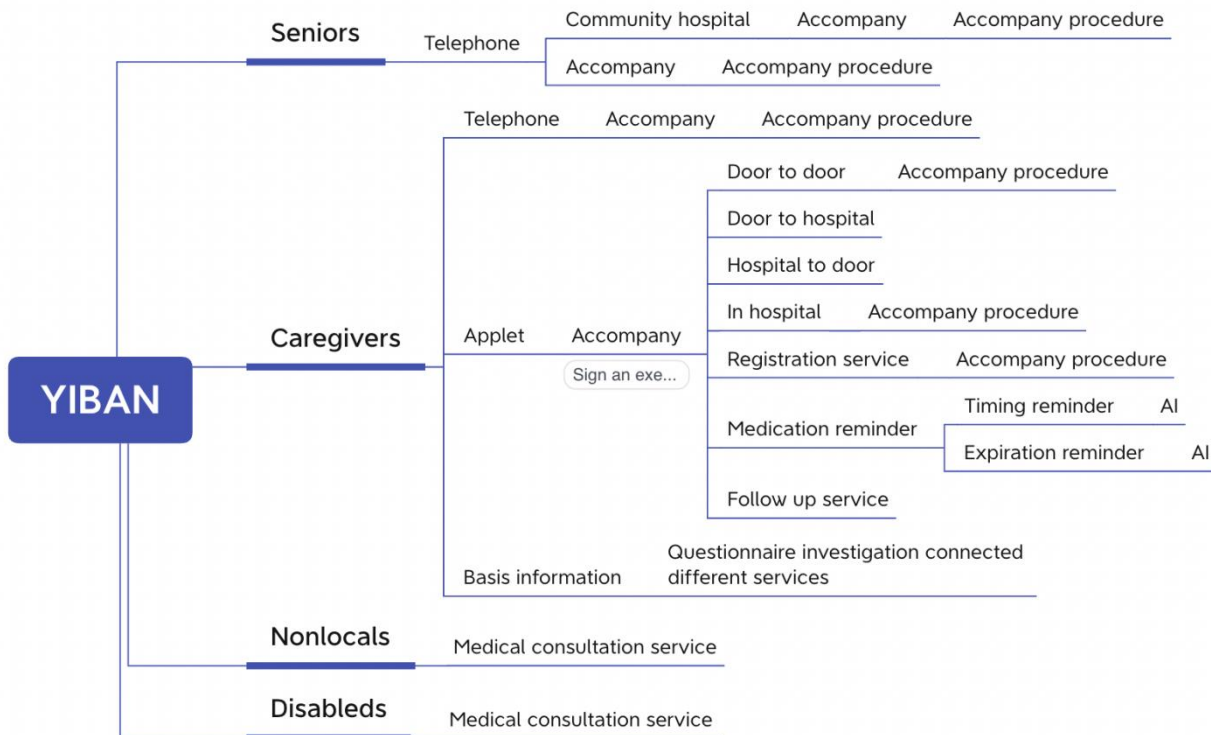


Figure 4 The service of YIBAN

The prototype of YIBAN service is showed by Figure 5: Step 1: Login or registration.

Step 2: Making an order. By filling in basis information, choosing the service, payment, etc.

Step 3: Coupons designs and order details. Consumers can make connection with service expert through order details.

Step 4: Service expert introduction. By point service expert head portrait or service expert introduction page,

customers can acknowledge more details about service expert. They can choose whom they like, or the service expert served them before.

Step 5: Medical knowledge video designs. You can learn medical knowledge through app, live broadcast, playback and make an appointment for the course.

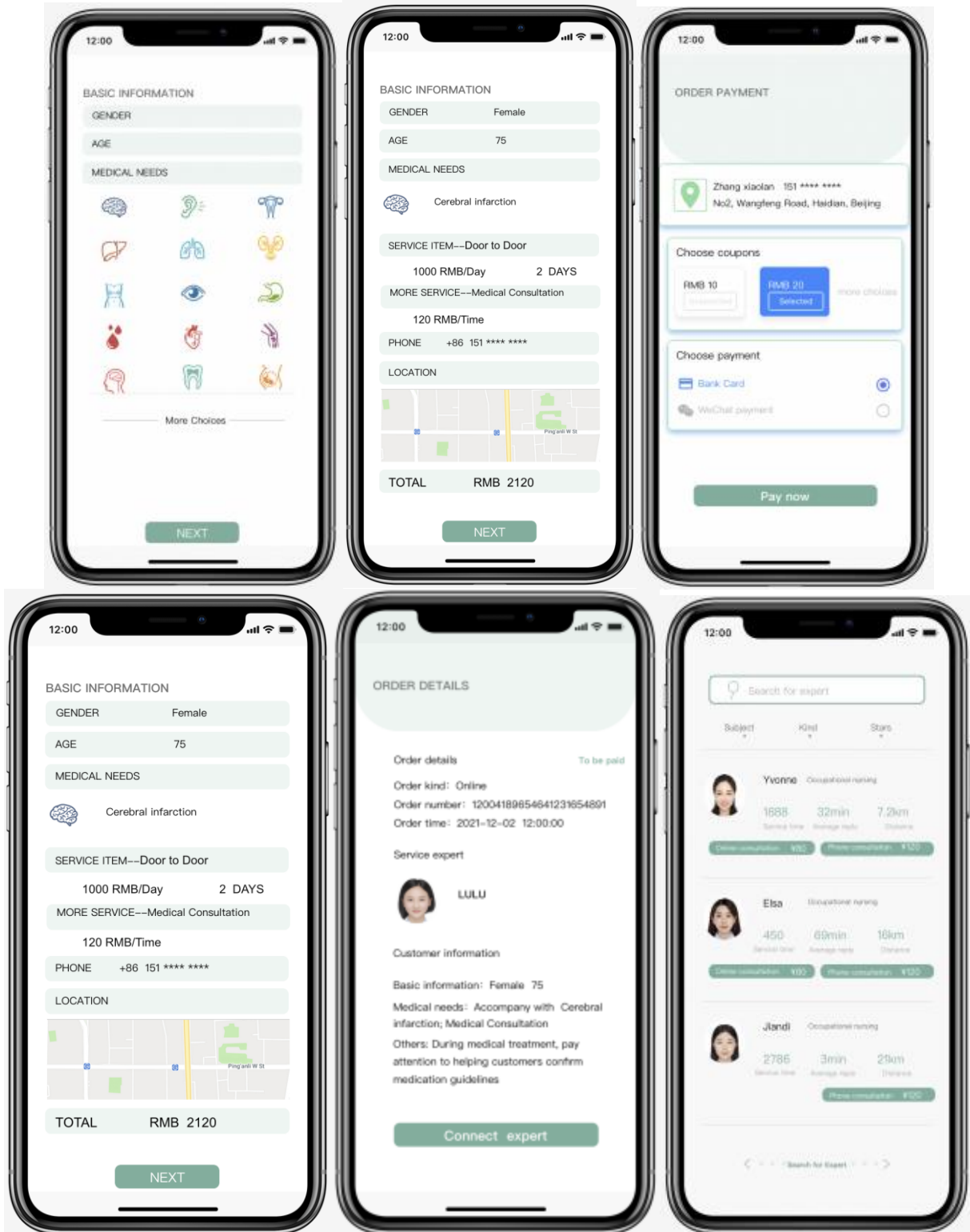


Figure 5 The prototype of YIBAN

#### 4. VALUE PROPOSITION

YIBAN can ensure the medical safety and improve the medical efficiency of seniors. In addition, it can save

caregivers' time. YIBAN's professional services can make caregivers feel more at ease.

Specific value proposition is as follow:

Pick up service will relate to a corporation of DIDI.

Hire nursing students, ensure professional service of medical accompany, medical reminder, medical consultation, and medical follow up services.

Medical insurance services were purchased for the seniors. It can make seniors and caregivers feel more reassured.

YIBAN provides college students with opportunities for internship and employment.

YIBAN improves the medical efficiency of seniors, alleviates the medical crowding in the hospital, and improves the medical efficiency of the whole medical system.

YIBAN meets the diversified and multi-level senior care service needs of cities, and solve the medical problems faced by the seniors, empty nesters and seniors living alone, so that seniors can truly realize "a place for seniors and a place for the sick". YIBAN solves caregivers' worries for the seniors in cities and relieve inadequate time of caregivers at the same time.

**5. KEY METRICS HYPOTHESIS**

Key metrics reflect the quality control of service model and service process. The project will set from following aspects showed by Table 3:

**Table 3.** Description of Key Metrics

Description of Key Metrics	Objective
Order complaint rate	Within 5%
Order conversion rate of consulting	70%-90%
Service satisfaction of APP evaluation	Over 90%
Valid orders	Over 90%
Qualification verification of accompanying staff	100%

In addition to above items, the project also pay attention to other metrics, such as the number of APP registered users and proportion of every kind of order, which can improve marketing strategy and persona. Order complaint rate and service satisfaction contribute to service improvement. Valid orders will help in expense control. Qualification verification is the premise of professional service.

All in all, the data collection and analysis play a pivotal role in making operation strategy and the premise of product and service improvement, as well as operation cost control.

**6. CHANNEL HYPOTHESIS**

The channel hypothesis is designed in terms of both online promotion and offline promotion. The form of online promotion is like that of general APP, mainly

including application market promotion, network platform promotion and advertising promotion. However, since the main customer group is the seniors who are not good at applying network tools, more attention should be paid to offline promotion. Offline product promotion includes advertisement placement and recommendation by others. Entrusting cooperative enterprises to advertise in their public places is a win-win promotion channel. The partners and old customers are encouraged by commissions or discounts to recommend products to others. In addition, Product discounts will be added to the membership card rights of partner companies.

**7. COST AND REVENUE STRUCTURE HYPOTHESIS**

The cost structure of the product is analyzed from two perspectives: fixed costs as well as variable costs, and the cost classification and data size are shown in Table 4.

**Table 4.** Cost Structure

Fixed costs				
Startup costs (3 months)	WeChat business registration expenses		¥ 75	
	Development design and production costs		¥ 200,000	
	Web server and other miscellaneous fees	Website domain name cost		¥ 25
		The cost of back-end administration of web servers		¥ 300
		The cost of communication		¥ 2,607
	Computer and other hardware facilities expenses		¥ 24,294	
	Personnel training expenses		¥ 12,000	
Labor costs-- The compensation of the management of the enterprise		¥ 666,996		

Selling expenses-- Advertising costs		¥ 30,000/year
Depreciation and maintenance	Depreciation of hardware such as computers	
	Maintenance costs	Wechat enterprise registration costs
		Web server and other miscellaneous fees
		Office space rental costs
Legal advice fees		¥ 10,000/year
Total fixed costs (First year)		¥ 843,819/year
Total fixed costs (Second year and after)		¥ 806,024/year
Variable costs		
Piece-rate wages for personnel-- It's 15 yuan per hour, but each unit includes two hours		¥ 30/unit
Channel cooperation sharing costs--The principle of proximity to the service and the principle of proximity to the hospital		¥ 60/unit
Travel expenses-- Dining allowance and travel allowance for employees		¥ 15/unit
Risk and liability costs-- Employees and customers insurance		¥ 0.5/unit
Other costs-- Communication costs, etc.		¥ 1/unit
Total variable costs		¥ 106.5/unit
Note: the cost data in this table are based on the per capita salary of the corresponding job in Beijing and the average market price of the product.		

Considering the traffic conditions in Beijing and the number of hospital visits, the unit price is set at ¥ 120 per hour showed by Table 5, and the basic duration of each order is set at 2 hours. Since it takes time to develop software and open the market, the number of orders in the first year is conservatively estimated to be around 50,000. After deducting the cost of the first year, the operating

income is ¥ 3,168,681. The breakeven is expected on the 292nd day of operation. It is estimated that 100,000 orders can be achieved in the second year and the operating income is ¥ 12,543,976. the project estimates that it can get about 100,000 orders in the second year, and the operating income is ¥ 12,543,976.

**Table 5.** Cost-revenue structure

	2022	2023
Price per order	¥120*2 hours	¥120*2 hours
Est. production run (# of units)	50,000	100,000
Total revenue per year	¥ 12,000,000	¥ 24,000,000
Total cost per year	¥ 8,831,319	¥ 11,456,024
Operating income	¥ 3,168,681	¥ 12,543,976

**8. UNFAIR ADVANTAGE HYPOTHESIS**

Filling the market gap by providing professional and systematic service is the greatest advantage and details are as follow:

1.1 Precise market positioning. the project is not only aim at meeting the needs of seniors who have difficulty in medical treatment, but also can help people who live alone or who have difficulty in medical treatment.

1.2 Multiple choices of service. the project divides the whole service into small independent service products so that customers can choose suitable service product according to their needs.

1.3 Professional services. Regular staff must have

Practicing Nurse Certificate or Practicing certificate of physician, which ensures high quality service and

professional recommendation.

1.4 Hiring college students as part-time staff. College students are educated and quick learner, who can provide high quality service after training. the project will organize systematic training for non-nursing professionals before starting work, such as first aid training. The cost of part-time employee is lower than regular staff, which can reduce operating cost. Meanwhile, hiring part-time college students can also provide them with working experience and additional income. Considering the cost of the company and social benefits.

1.5 Online consultation services. The project set up an expert team of doctors to provide online consultation services, which help patients take fewer detours and learn about their illness as early as possible.

1.6 Other diversified services. The project can also

provide follow-up medication reminder service, follow-up consultation service.

1.7 Periodical training. According to customers' complaints and feedback, the project will organize training to solve problems and make improvement of service.

**9. SMALL SCALE**

To better understand customers' needs, the project

conducted an online small-scale survey (see Table 6) before formally designing the service project, including three sections: Opinion about project model, willingness towards accompanies medical service, terms of payment. The aims of the pre-test can help us clarify four aspects of attitudes including attitude towards this medical service project, willingness towards the service, payment preferences and proportion of medical expenses in total expenditure. The result is shown below (Figure 6, 7, Table 6).

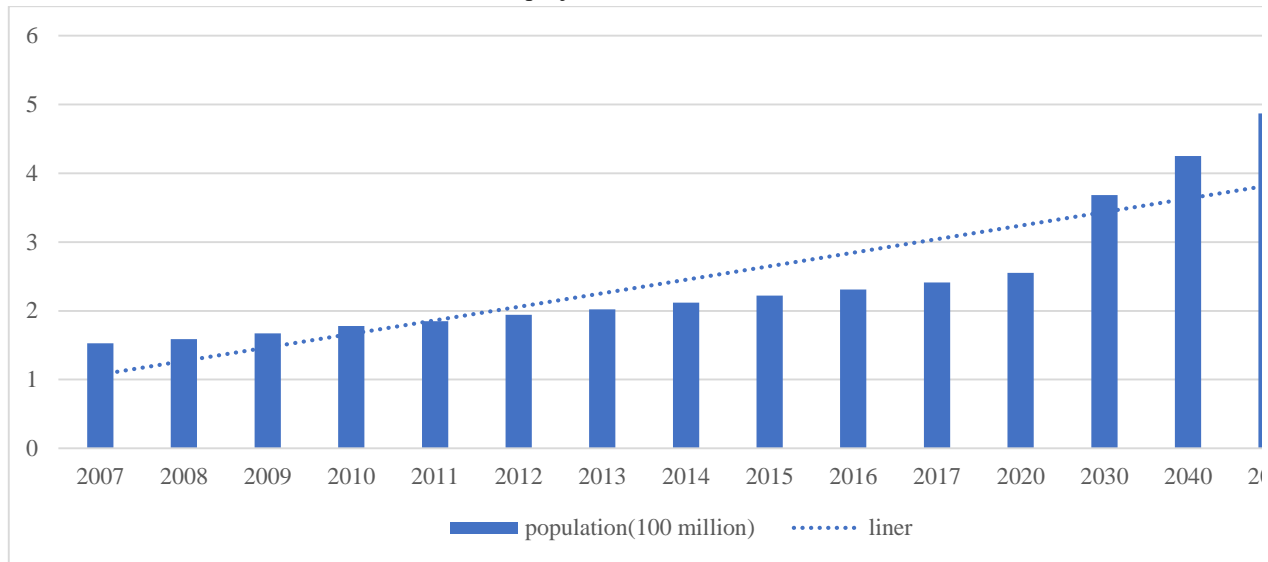


Figure 6 Aging trend in China

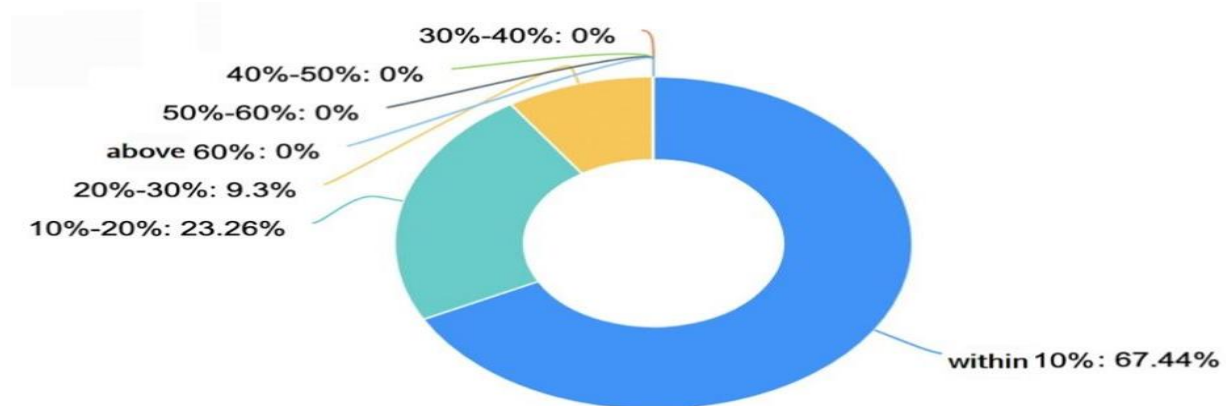


Figure 7 The proportion of medical expenses in total expenditure

Table 6. Details about small scale

m	Target Groups	Samples	Objective	Result
TEST 1	Professors	Over 10	Opinion about project model	100% support
TEST 2	Caregivers	Over 300	Willingness towards accompany medical service	10% unwilling
				90% willing
TEST 3	Caregivers	Over 300	Terms of payment	24% prefer charged by service hours
				76% prefer charged by service type



## 10. CONCLUSIONS

"Providing medical services to accompany the sick seniors to warm medical treatment" has been the pursuit goal. In order to better realize the design concept, this work uses literature research, investigation, experimental research and other methods to divide the problem from the origin of consumer demand solutions, value positioning, differentiation and advantage channels cost and income structure as well as key indicators and other aspects of the in-depth investigation of the feasibility of the designed products into the market operation. The results show that, in the target market of Beijing, medical services for the seniors are still in the blank stage firstly, but the number of seniors over 70 in need of such services can reach 1,620,000 the products have a broad market prospect. Secondly, the results of the questionnaire showed that 100% of the experts support us in providing medical care accompanying services for the seniors, 89% of caregivers are willing to be staff of the App, and 76.19% caregivers can receive the salary level provided by us, which means that the products are highly acceptable. Thirdly, in the cost-benefit analysis, the calculated results show that the product will reach the break-even point on the 202nd day after it is put into the market, which means that the product has a relatively fast cost recovery speed. The conclusions of the study provide theoretical basis for the implementation of the product and contributes to the subsequent improvement of the product.

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