

Forecast the human resource for health requirement in China by the year 2015

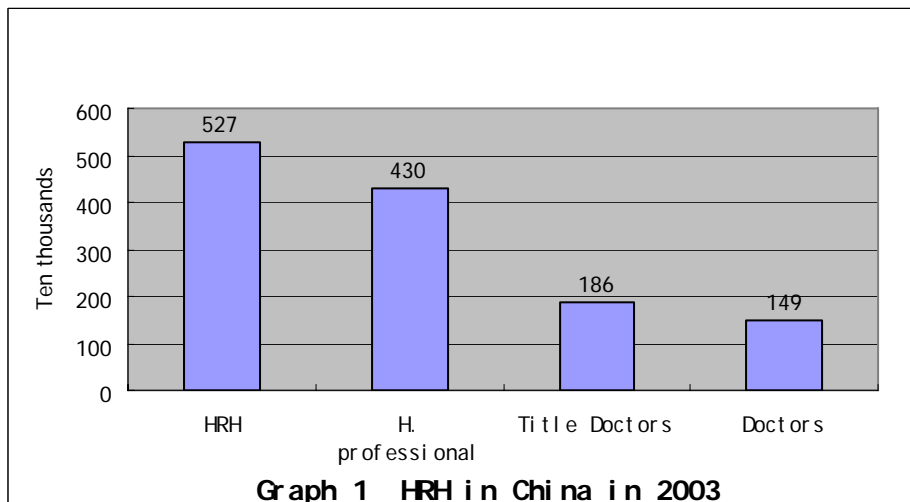
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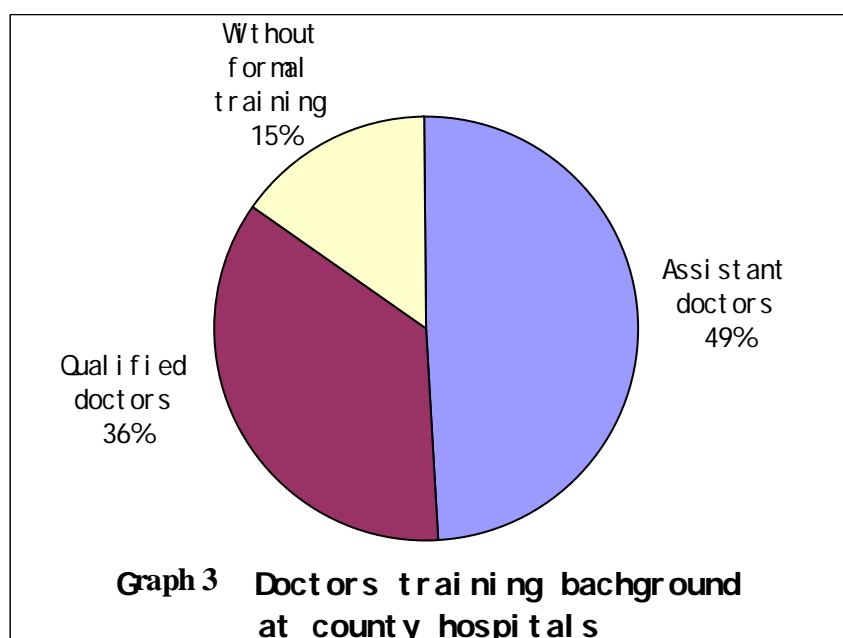
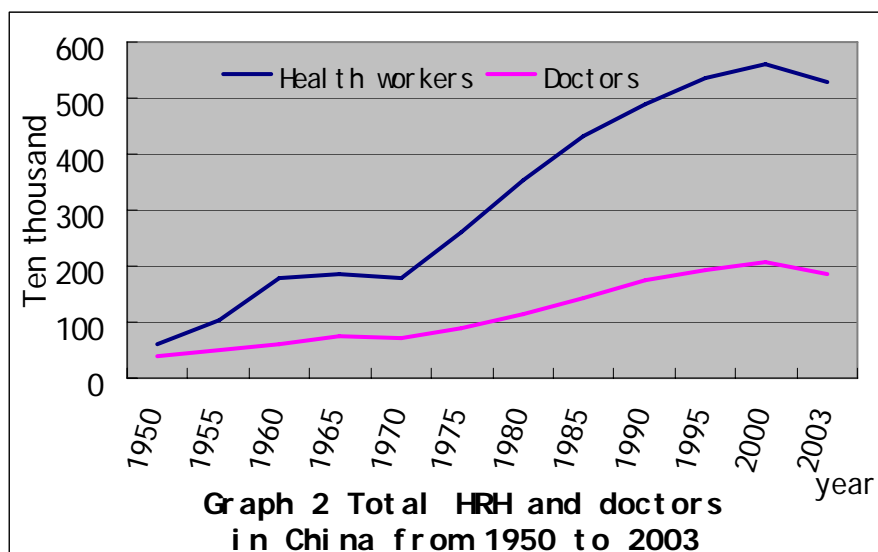
1. The priority critical health human resource problems in the country

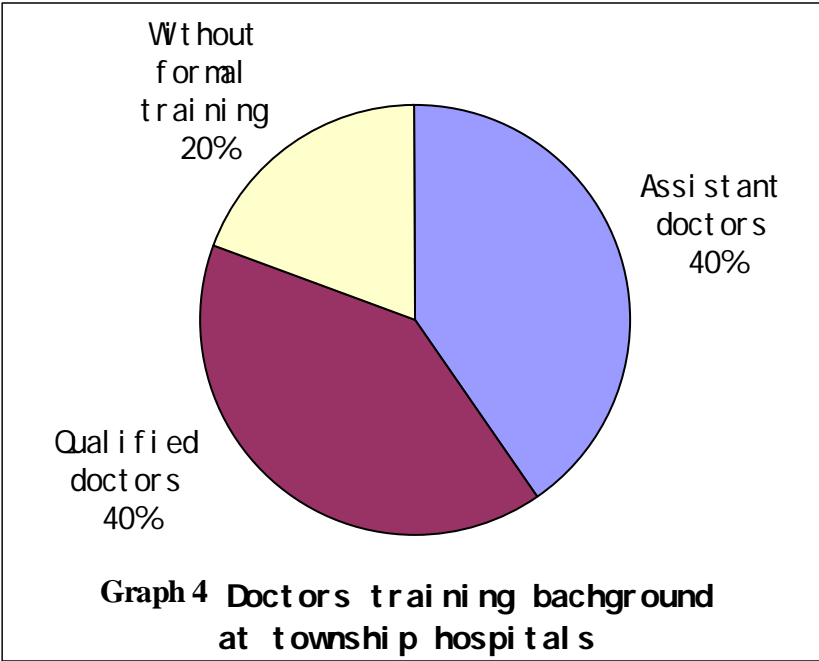
1.1 The gaps between quantitative and qualitative aspect

It has shows that the total amount of health personnel are 5.27 million in 2003, that is 4.4 health personnel per thousand population. Among these number there are 4.30 million are professional health personnel (3.64 per thousand), 1.86 million are title doctors (1.65 per thousand), 1.49 million are qualified doctors (1.25 per thousand) and 1.22 million are nurses (1.00 per thousand)(graph 1). It is true that the shortage of human resource for health (HRH) were existing from fifty to ninety in the last century, but later on the national HRH policy had transferred from “increase the quantitative of HRH” turned into “improve quality of HRH and control quantitative increase of HRH”.

The reasons for these kind of transition based on two major reasons: Firstly, during past fifty years the HRH annual average increase rate is 2.6 %, for the purpose of comparison the population annual increase rate is only 1.2 % during the same period. The rapidly increase rate of HRH near double than that of the population increase (graph 2). Secondly, Table 1 list the data shows that in most of the rural areas a large proportion of HRH do not have the requisite training for the title they held. Only one-third of personnel employed as doctors by county hospitals have had university or medical college training, half of them have had secondary medical school education, and one-sixth have had no pre-service medical training at all. In other words, that is near two-thirds of the personnel working as a doctors in county hospitals have not had the necessary training. There are very few university-trained doctors in township health centers and less than one-fifth of doctors of these facilities have had the requisite training. Two-fifths of doctors and assistant doctors in township health centers have had no pre-employment medical training background (graph 3-4).

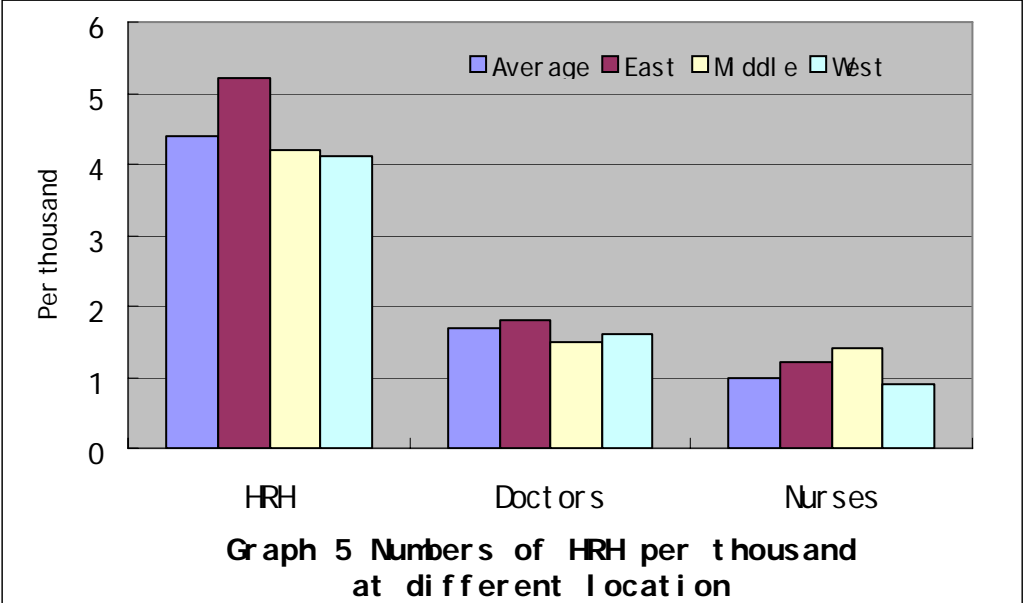






1.2 Geographical differences

Thirty provinces in the nation divided into three parts based on their economic level and geographic location: nine provinces located at east their economic level better than other part of the nation; ten provinces located at middle, their economic level at average, and additional eleven provinces located at west part of China, and their economic at under develop level. Graph 5 shows that the differences existing of HRH per thousand in these three regions. It shows that the shortage in the west regions and over supply in the east, particularly in most part of the eastern urban areas may be existing over supply. One of the extremely example is that there is lowest 2.31 HRH per thousand in Guizhou province, one of the poorest west province, and the highest 9.31 HRH per thousand in Beijing.



1.3 Differences between rural and urban

Near seventy percent of HRH located in urban they serve only thirty percent of population. For the contrast, there were thirty percent HRH located in rural areas they serve seventy percent rural population on whole. Table 1 shows that HRH distribution between rural and urban areas. The HRH per thousand population is 6.63 in urban in 2003, but the same number is 2.94 HRH per thousand population in rural areas.

Table 1 HRH per thousand compare with rural and urban areas in 2003

Location	HRH	H. professional	Title Drs.	Doctors	Nurses
Urban	6.63	5.30	2.34	1.92	1.64
Rural	2.94	2.35	1.11	0.72	0.51

1.4 Decrease the efficiency of HRH

Analyzed the workload of Doctors from 1992 to 2003 both in rural and urban areas. It found that the average outpatient visits per doctor per day, from 14.4 decrease to 9.3 in rural primary hospitals, from 8.9 visits to 6.4 per doctor per day in the rural secondary hospitals; The results were same at the urban hospitals, the outpatient visits per doctor per day from 14.6 decreased to 8.0 in the urban primary hospitals and from 8.2 reduced to 6.6 visits per doctor per day in the urban secondary hospitals. There had three reasons caused this kind of efficiency declining: Increased the amount of HRH rapidly during past twelve years, there had an annual HRH increase rate in the hospitals were 4%, and the total amount of outpatient visits were keep declined; cost inflation of health care services, and low coverage of health insurance system particularly in rural areas.

1.5 Attrition of skilled HRH in poor rural areas

Part of the explanation of this mal-distribution of personnel lies in recent development of a labor market for health personnel. Since the early eighty of last century, the policy of allocating jobs by the state has been relaxed. Staff remuneration is composed of a basic salary as well as a bonus related to an institution's self-generated revenues. Higher level facilities are better able to generate income from the provision of specialized services. More experienced and better trained staff therefore prefer to seek better paid position in the higher level hospitals.

From the literatures review it had found that near eighty percent qualified doctors loss from the poor rural counties during past twenty years. The general direction of this type of attrition were: from poor move to rich areas; from rural move to urban areas; from west part of China move to east part; and from primary level facilities move to the secondary and tertiary health care system.

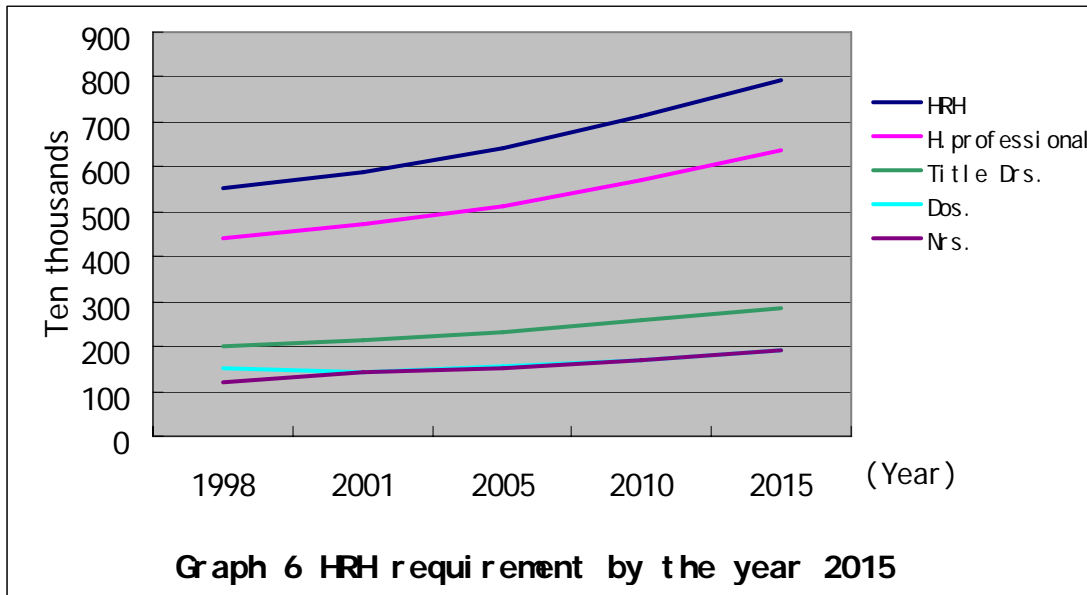
2. Forecast the HRH requirement by the year 2015 based on historical trends

2.1 Forecast the total amount of HRH from 2001 to the years of 2015 according to the natural increase rate trends from 1982 to the years of 1998

The total amount of HRH will be increased to 7.95 million, 6.36 million health professional personnel, 2,86 title doctors, 1.90 qualified doctors and 1.90 million nurses, The number of HRH in 2015 compared with 1998 it will increase 40.14% during next eighteen years. Forecast the total number of HRH at 2001, 2005, 2010 and 2015 were list on table 2 and graph 6.

Table 2 Forecast the number of HRH at different years according to the annual increase rate from 1982-1998 (Ten thousand)

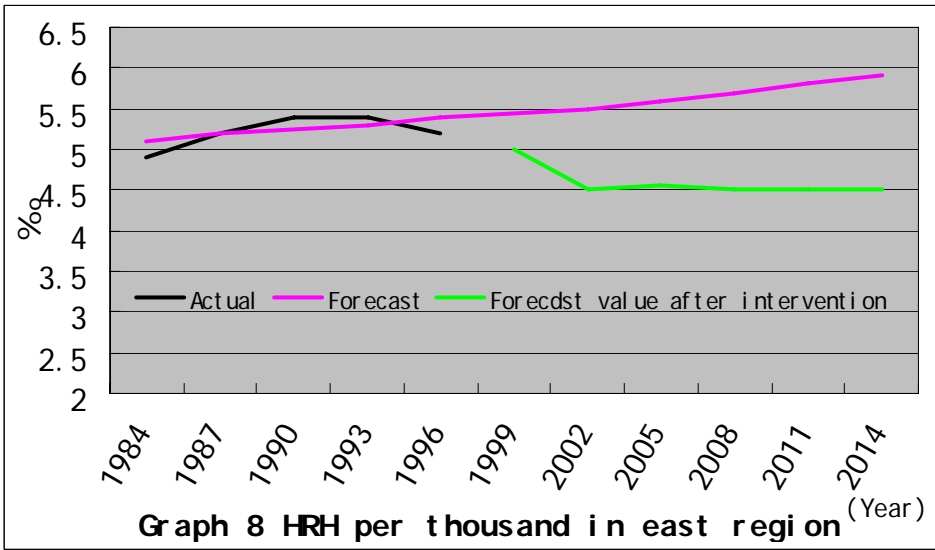
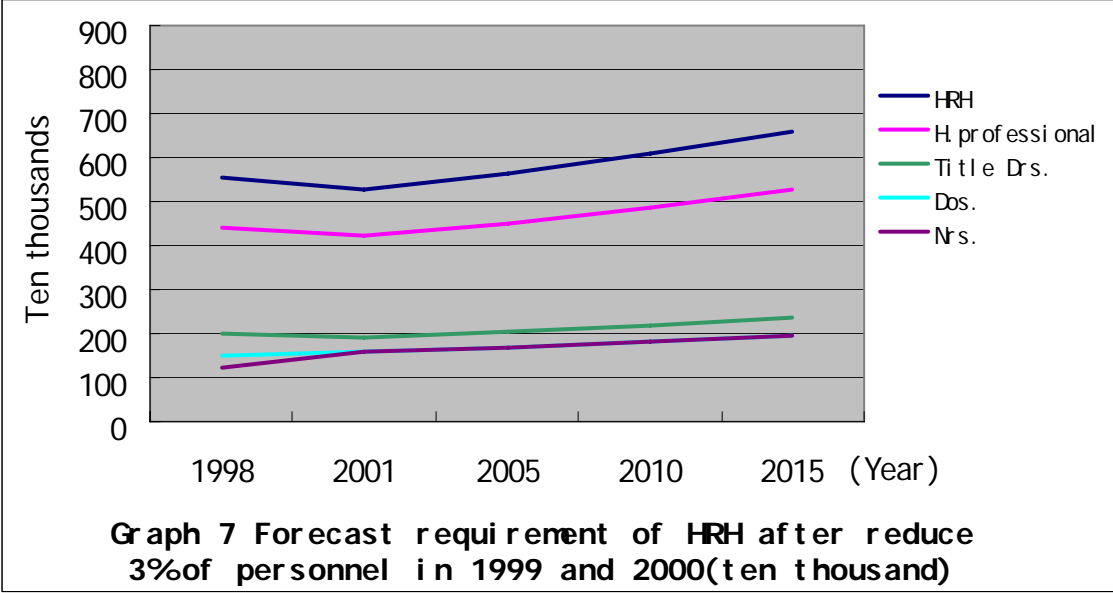
Categories	1998	2001	2005	2010	2015
HRH	553.57	589.56	642.16	714.55	795.11
Health professional	442.37	471.65	513.73	571.64	636.09
Title doctors	199.95	212.24	231.18	257.24	286.24
Qualified doctors	151.40	141.50	154.12	171.49	190.83
Nurses	121.88	141.50	150.12	171.49	190.83

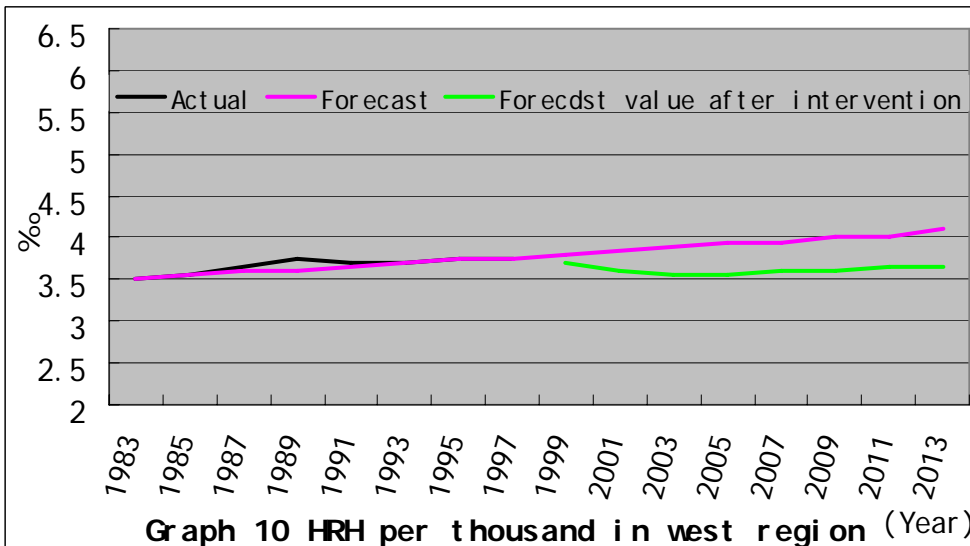
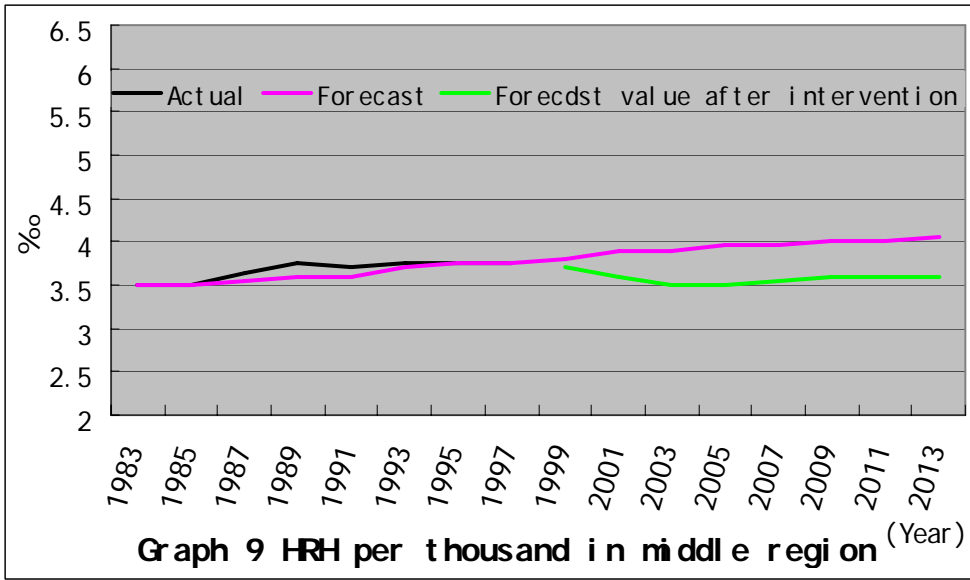


According to these research findings, a national workshop which was convened by the Ministry of Health (MOH) and Ministry of Education (MOE). After their discussion they rejected the next 18 years forecast objectives which set up the HRH expected goal was the increasing rate reach 44.1% from 1998 to 2015. It is unrealistic and the health care system can not afford such a large amount of HRH escalating. A new national policy of HRH was developed at the workshop, that is “control the amount of HRH in an adequate increasing rate and improve the quality of HRH”. They suggested that the research project need develop an adjust forecast proposal of HRH in the future in order to submit to the national decision making level.

2.2 Forecast the HRH requirement by the year 2015 based on an adjusting proposal

The research project was conducted in 1998. Supposed if reduce 3% of total HRH in the 1999 and 2000, then forecast the HRH from 2001 to 2015 based on the reduced number initiate from 2000. Graph 7 list the number of HRH from 2001 to 2015 which was after reduce 3% of health personnel in 1999 and 2000. The total number of HRH by the year 2015 it is 6.57 Million, The MOH and MOE considered that it is reasonable and acceptable if increase 1.04 million HRH during next fifteen years compare with 2001.





3. Supply of the HRH

3.1 Enrollment

According to the natural trends of new enrollments of medical training from 1982 to 1998, several adjust parameters had been proposed for the new enrollments of medical training program from 1999 to 2015, that is reduce 10% of secondary medical school enrollments four years; increase medical university or college enrollments 15%, master students enrollments 10% and PHD students 10% enrollments separately. Forecast the new enrollments from 1999 to 2015 were listed on table 3.

Table 3 Planning new enrollments on different categories of training from 1999 to 2015

Years	Secondary medical school	%	Medical university or college	%	Master	%	PHD	%	Total	%
1999	150551	61.8	86466	35.5	5053	2.1	1648	0.7	243718	100
2001	121946	49.9	114352	46.8	6115	2.5	1994	0.8	244407	100
2005	106459	44.1	125544	52.2	7135	3.0	2426	1.1	244725	100
2010	106459	41.4	139535	54.2	8410	3.3	2966	1.2	257369	100
2015	106459	39.0	153524	56.2	9685	3.5	3506	1.3	273174	100

3.2 loss rate

1989 to 1998 the average annual loss rate of HRH on post were 2.90%. Suppose the same loss rate occur by the year from 1999 to 2015. then it can be calculated the supply of HRH each years.

3.3 Match of requirement and supply

Table 4 shows the requirement and supply from 2001 to 2015. If the loss rate set up at 2.9% and the new enrollment follow up the number list on table 4. The results denote the extent of matching of supply and requirement of HRH in the country by next fifteen years.

Table 4 Matching requirement and supply on HRH in China by the year 2015(ten thousand)

Years	Requirement	Supply
2001	422.77	422.77
2005	450.01	460.58
2010	486.53	504.52
2015	526.01	549.11

4. Discussion and recommendations**4.1 The dilemma of requirement and supply on Health human resource**

Chapter 1-3 discussed the trends of HRH during past fifty years and forecast additional fifteen years from 2000 to 2015 based on theoretical analysis. The practical changes from 1999 to 2003 had been changed significantly. One is the increase on number of total HRH had been controlled from 1998 to 2003, The number of HRH keep steady during this duration, it is 5.27 million in 2003 and 5.53 million in 1998 (table 5). From the supply side, there is a big change happened during the same period, the new enrollment annual increased 25% to 30% from 1999 to 2003, in the university or college, more than ten percent increased in the secondary medical school during 1998 to 2003. Large amount of graduates both on medical university and secondary medical school increased in 2003 and later years. Since the total amount had been controlled and new graduate students to the labor market it become a great pressure to the health labor market. The positive effect it is beneficial for improving quality of health care services most of the unqualified health workers can not looking for a job in the labor market, and the negative effect is that it become a pressure large amount of new graduate in-possible easy to find their job in the labor market.

Table 5 The number of HRH and enrollments from 1998 to 2003

years	HRH (million)	New enrollments (ten thousand)		Graduates (ten thousand)	
		University or College	Secondary Med. School	University or College	Secondary Med. School
1998	5.54	7.52	16.87	6.14	12.76
1999	5.57	10.84	17.59	6.15	13.72
2000	5.59	15.00	17.92	5.99	12.99
2001	5.58	17.42	19.76	6.26	14.20
2002	5.24	20.79	23.25	7.95	14.46
2003	5.28	25.77	27.85	11.14	19.93

4.2 Develop national HRH working planning

The policy of HRH is “control the total number of HRH increased quickly, raise the quality of HRH and improve the structure of HRH” had been reached agreement. It is beneficial for the future human resource development planning process. It is necessary to establish a national HRH planning for the purposes solve following issues: What is the requirement amount of health human resource in recently and future? What is the appropriate supply norms needed currently and future? How to deals with gaps between the capacity limitation with the new enrollment students explosion? How many years increase enrollment students in the medical university or school? How to reduce the gaps of HRH between rural and urban, eastern and western part of the country? What is the need in order to improve unqualified doctors in most of the rural areas? How to stimulate the urban health personnel support to the rural areas?