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Professional analysis of medical staff in public hospitals in China

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To analyze the efficiency of public hospitals in Guangdong Province, China, and to compare the differences by region and levels of care. To carry out a survey of selected hospitals in different cities by the method of cluster sampling and to analyze the efficiency of these hospitals using data envelopment analysis (DEA). 254 public hospitals were surveyed with a 100% response rate. About 184 (72.4%) completed the survey and gave realistic responses. 22 (11.96%) of the hospitals and facilities were totally efficient. The average total efficiency value was 0.727 (range 0.251 to 1), which indicated that the total efficiency of most of these hospitals were below average. There were also differences between hospitals in different regions. Comparatively, the proportion of efficient hospitals between regions and the levels of care were not significantly different. The average efficiency values in the Pearl River Delta (PRD) area hospitals were significantly higher than those in the non PRD area. This suggested that the prevalence of low efficiency and the wastage of resources were more serious in the non PRD area. Most of the hospitals in the non PRD area had increasing level efficiency and thus their level could be increased without loss of efficiency. More than half of the hospitals in PRD area had declining level efficiency suggesting they need downsizing to achieve better efficiency. There were no significant differences in the level of care in the different hospitals (tertiary, city secondary and county secondary hospitals). The lack of case-mix data for these hospitals could have been a major difficulty in the analysis. Waste of useful Resources was prevalent in public hospitals in Guangdong Province. The efficiency of hospitals in the PRD area was better than that in the non-PRD area. The management level and the efficient utilization of the current facilities and resources require further improvement.

Key words: Public hospital efficiency, resources, DEA analysis, Guangdong, Pearl River Delta, China.

INTRODUCTION

The economic development and opening up of China has seen changes in every sector of the society. The health sector is been coming under increasing pressure to provide much needed health care services for the majority of the rural poor and the minority urban dwellers. The joint provisions of these medical services by the government and the private sectors have increased the cost of medical burden on the ordinary Chinese people mostly in rural areas and urban slums which have resulted into an unhealthy relationship between the medical staff’ and the patients. This paper examines the factors that underpins the views of improving the hospital services, the medical profession and the relationship between the doctors/nurses and the patients. An adage says, “Health related; life entrusted”, the medical profession is special and closely related with the human rights of health and life. Chen et al. (2007) with some scholars believe that medicine belongs to anthropology and contain humanism at all times, therefore, medical staff have been talented with a sacred mission to cure the wound and salvage the dying, cure the sickness to save the patient which led us to conclude that medical staff’ must be self-giving as there is supreme dignity on the
heads of medical staff’ and unique burden and pressure on their shoulders. In recognition of their work environment, medical staff have an important role in promoting the strong development of the medical profession. In China, the focus has been on medical scholars at home and abroad. Smith (2001) in The British Medical Journal (BMJ) review, entitled - why are doctors so unhappy? Asserts that there are probably many causes, some of which could be serious and that doctors’ positive attitude in Britain was lower. He described a bogus contrast between the doctors and the patients and believes the most obvious causes of doctors' unhappiness were work overload and lack of support. The British Medical Journal (BMJ), (2001) survey on “Why are doctors so unhappy?” showed that, of the 1540 doctors from different countries who responded, 57% were unhappy. The main reasons were overworking, underpayment, not enough supports and several other related factors. The survey result aroused very strong responses which revealed that conditions of service for medical staff were distressing, and this was a very general situation around the world. However, there have been remarkable achievements in the health care sectors over the last decade in China.

Liu et al. (2007) conducted a research in 419 public hospitals in Guangdong province. The results showed that 193 hospitals (46.1%) had serious medical complaints, of which 45.2% (132 out of 292) happened in Pearl River Delta (PRD) areas and 48.0% (61 out of 127) happened in Non-Pearl River Delta (NPRD) areas. Liu et al. (2006) in association with the Right Safeguarding Department of Chinese Hospitals Association surveyed 270 hospitals and the results showed that, the frequency of medical disputes in the three primary hospitals was about 30% per year. Li (2003) with the Division of Hospital Administration of Shanghai Medical College of Fudan University surveyed seven hospitals countrywide in 2003. The results show that 24.23% of the 582 respondents revealed that the relationship between medical staff and patients were either amicable or relatively amicable, and 29.72% revealed that the relationship was either distrustful or relatively distrustful.

The research concluded based on the results that, the poor working conditions were the cause of depression experienced by medical staff, which has the potential to obstruct the strong development of Chinese health services, and in extreme cases cause social instability in certain regions.

In recognition of the views of medical staff’ on hospital development, the medical profession, and the doctor-patient relationship, it is noteworthy to perceive the causes of their unhappiness as revealed in this study.

Guangdong province has strong economic and social rating in China’s compared to other similar provinces. Despite the economic and social development of the province, there is disparity and inequality within the province in terms of accessibility and affordability to the social services available like health care services.

The province divided into Pearl River Delta (PRD) areas are made of cities with high economic and social development and contribute more to the GDP of the province. They include Guangzhou, Foshan, Zhuhai, Zhongshan, Jiangmen, Dongguang and Shenzhen. They also lie along the Pearl River which flow from the north to the most part of the province. The Non-Pearl River Delta (NPRD) areas are cities with less economic and social development and contribute less to the GDP of the province and the vast majority of the rural areas are closer to these cities. They include Zhengjiang, Maoming, Yangjiang, Zhaoqing, Shaoquan, Yungfu, Qingyuan, Heyuan, Meizhou, Huizhou, Shantou, Zhaozhou, Shanweii and Jieyang. Guangdong province is selected to serve as a model for this research and a representative of the whole country because the economic and social development is good and the inequalities in this province is similar to those in other provinces even though there maybe regions whose rural populations may be relatively poorer than those in Guangdong. However, the present working conditions of medical staff in public hospitals in Guangdong is relatively similar to other regions across China.

MATERIAL AND METHODS

Based on the socio-economic status of Guangdong province we divided it into Pearl River Delta (PRD) areas and Non-Pearl River Delta (NPRD) areas. Because of the differences in social amenities in the two regions within the province, we randomly selected two cities from within the PRD with good hospitals, medical staff and better services and three from NPRD with less of these facilities. Using random sampling method, we selected Guangzhou and Foshan cities from PRD taking into consideration the size and population and Shaoguan, Yangjiang, Zhaoqing, Shantou cities from NPRD respectively. A minimum of 3 to 4 public hospitals were selected from each city which we categorized as primary hospitals with 1 to 99 beds, secondary hospitals with between 100 to 399 beds and tertiary hospitals with 400 beds and above and 30 to 40 medical staff selected from each hospital. The selected medical staff was asked to fill in the specially designed questionnaires. Using SPSS 11.0 software we established a database which we used to do the statistical analysis.

RESULTS AND DISCUSSION

We collected 642 effective questionnaires from those who responded to the questions and the result of the analysis is shown below.

Socio-demographic characteristics of respondents

Sex distribution

Among 629 respondents, 59% were females, 41% were males (Figure 1).
Medical staff' proud level of their jobs

The medical staff revealed mixed opinions about the jobs. While 5.7 and 4.8% of doctors and nurses respectively said they are very proud of their jobs, 8.4, 9.6 and 1.8% of other staff said they are not very proud of their jobs. 28.9, 33.2 and 39.3% of doctors, nurses and other staff declined to give their views on the jobs and 32.2, 33.2 and 39.3% respectively said they are proud to be in the medical profession and 24.7, 19.2 and 19.6% respectively said they are not proud of their jobs to the public (Figure 4). A comparative look at the doctors group with that of the nurses shows there was no statistical difference in their opinion ($\chi^2 = 3.268, P = 0.514$).

Medical staff' views on medical profession

Recognition level is a person's appraisal and psychological tendency to a certain objective. Chen et al. (2006), Zhang et al. (2006) and Bi et al. (2005) studies on the recognition of the medical profession is affected by several factors. This affects the person making the consecutive selections of things and kinds of activities. Du (2005) and Wu et al. (2002) studies revealed that medical staff' level of recognition of their jobs has an impact on their working conduct and performance.

Staff' approval of their children to join the medical profession in the future

When asked whether staff approved of their children to join the medical profession, 68.8% of doctors, 73.8% of nurses and 51.8% of other staff said they will not approve of their children joining the profession. 19.1% of doctors, 13.1% of nurses and 33.9% of other staff declined to give their views saying they have no idea while 11.8% of doctors, 13.1% of nurses and 14.3% of other staff will approve and support their children to join the medical profession (Figure 5). There was no statistical difference between the doctors group and the nurses in their opinions ($\chi^2 = 4.097, P = 0.129$). Based on the data and the Chi-square test results, we concluded that few doctors and nurses will approve of their children engaging in the medical profession in the future.

Medical staff' perceptions on the development of public hospitals

Medical staff' from secondary and tertiary hospitals views on the continued development of the hospitals

The results from the survey showed that 28.6 and 21.9% of staff in tertiary and secondary hospitals are highly optimistic of their hospital development. 47.4 and 40.3%
Figure 3. Professional post title.

Figure 4. Staff’s perception of their jobs.

Figure 5. Staff’s approval of their children to join the medical profession.
agree that there was high demand on them both from the government and the general public to improve on their current performance and do more. The staff acknowledges the need to perform better than expected but revealed that they are given less support in terms of resources from the government or the hospital management teams. They request for an improvement in the level of support from the government to improve on and put into use new technology, improve the working environment and the terms and conditions of service for personnel.

**Current salary of medical staff’ in different regions and grade hospitals**

Through computation of the various regions and hospitals, the current monthly salary of doctors (59.7%), nurses (41.2%) and others (28.6%) in PRD were found to be lower than the expected salary. The monthly salaries were 4500 Yuan ($661.76), 3000 Yuan ($441.18) and 4000 Yuan ($588.24), respectively. In NPRD, the current monthly salary of doctors (66.3%), nurses (63.3%) and others (48.1%) were also lower than the expected salaries. The current monthly salaries were 2250 Yuan ($330.88), 1500 Yuan ($220.59) and 2500 Yuan ($367.65), respectively.

In secondary hospitals, the current monthly salary levels of doctors (70.3%), nurses (70.8%) and other staff (47.6%) were lower as they are presently receiving 2000 Yuan ($294.12), 1500 Yuan ($220.59) and 2500 Yuan ($367.65), respectively. In tertiary hospitals, the current monthly salary levels of doctors (57.1%), nurses (32.5%) and others 32.4% lower and are currently receiving 4000 Yuan ($588.24), 3000 Yuan ($441.18) and 3725 Yuan ($547.79) respectively (Figure 7).

**Medical staff’ expected salaries in different regions and grade hospitals**

In PRD areas, the doctors are expecting an average monthly salary of 10016 Yuan ($1472.94), and a median of 9000 Yuan ($1323.53); the nurses are expecting an average salary of 6245 Yuan ($918.38), the median was 6000 Yuan ($882.35); the other medical staff are expecting an average salary of 7827 Yuan ($1151.03), and a median of 8000 Yuan ($1176.47) (Figure 8).

In non-PRD areas, the doctors are expecting an average monthly salary of 5429 Yuan ($798.38), and a median of 4500 Yuan ($661.76); the nurses are expecting an average salary of 3960 Yuan ($582.35), median of 3000 Yuan ($441.18); while other members of the medical staff are expecting an average salary of 4715 Yuan ($693.38), and a median of 5000 Yuan ($765.29) (Figure 9).

In secondary hospitals, the average expected monthly
salary by doctors’ is 5213 Yuan ($766.62), and a median of 4000 Yuan ($588.24); the nurses are expecting an average salary of 3938 Yuan ($579.12), and a median of 3000 Yuan ($441.18); while other members of staff are expecting an average salary of 4443 Yuan ($653.38), and a median of 5000 Yuan ($735.29) (Figure 10).

In tertiary hospitals, the average expected monthly salary by doctors’ is 9441 Yuan ($1388.38), and a median of 8000 Yuan ($1176.47); the average expected salary by nurses is 6229 Yuan ($916.03), and a median of 6000 Yuan ($882.35); while the other members of staff are expecting an average salary of 7422 Yuan ($1091.47), and a median of 7750 Yuan ($1139.71) (Figure 11).

The percentage gap in the current and expected salaries of medical staff’ in different regions and grade hospitals

With the salary gap problem between current and expected salary, in PRD, 49% revealed a big gap of about 50%, while in NPRD, 63.7% also had similar views. Comparing the PRD and the NPRD staff, the difference was statistically significant ($\chi^2 = 37.427$, $P = 0.000$). Hence in NPRD, most of the medical staff’ think that the gap between current and expected salaries was too big.

In secondary hospitals, 68.9% of medical staff’ think the gap between current and expected salary was also very big while tertiary hospitals with similar views had 45.5% (Figure 12). Comparing the secondary hospital group to the tertiary hospital group, the difference was statistically significant ($\chi^2 = 39.028$, $P = 0.000$). This implies medical staff’ in secondary hospitals thinks that the gap between current and expected salaries was too big.

Current salary = Expected salary × %gap

We used the median of the expected salary instead of expected salary to make the calculation easier. As mentioned above, most medical staff’ thinks the gap between current salaries and expected salaries was too big (gap percentage of 50%). In order to illustrate the income level of most medical staff’, the gap percentage was fixed evenly at 50%.

Medical staff’ views on the current doctor/nurse-patient relationship

Chen (2006) and Chen et al. (2007) states the doctor-patient relation as a kind of relationship established during the process of medical treatment between the doctor and the patient. But in a wider sense, it includes the relationship between nurses and patients. Doctors and nurses are the main body of medical staff’, and are the people in direct contact with the patients. The doctor/nurse-patient relationship is one most important
part of their jobs, and has direct, enormous and fundamental influence on their jobs.

We questioned 333 doctors and 253 nurses in this study in order to evaluate the current doctor/nurse-patient relationship. The results showed that 67.6% of doctors revealed that there was no cordial relationship between them and the patient, while 40% of nurses revealed no cordial relationship. Both doctors and nurses described the situation as serious and needs some action to address the problems. The nurses indicated 60% of them have a cordial relationship with the patients, while 32.4% of doctors have cordial relationship (Figure 13). Comparing the doctors and nurses groups, the difference was statistically significant ($\chi^2 = 55.939$, $P = 0.000$). Therefore, we concluded that most doctors revealed the current relationship between them and the patients was not cordial.

The prospects of improving relationship with patients

When asked whether they are confident of improving the relationship between them and patients, 73% of the doctors said they were confident while 79% of nurses also had confidence they will improve their relationship with the patients. 27% of doctors and 21% of nurses are less optimistic about improving their relationship with patients (Figure 14). Comparing the doctors and nurses groups, the difference was statistically significant ($\chi^2 = 19.962$, $P = 0.001$). We can conclude that nurses are much more confident in improving their relationship with the patients than doctors.

Medical staff’ views on medical disputes

Liu et al. (2006) state that one notable characteristic of strained doctor/nurse-patient relationship is the high frequency of medical dispute. Therefore, we designed some questions about medical disputes over the past year. The results show that 42.9% of doctors were
staff views on relationship with patients.

Figure 15. Staff views on relationship with patients.

sometimes puzzled by medical disputes, 17.9% of doctors revealed they were frequently puzzled by medical disputes while 39.2% revealed they were not puzzled by medical disputes; the nurses on the other hand said 41.3% of them were sometimes puzzled by medical dispute, while 9.5% were frequently puzzled by medical disputes (Figure 15). Comparing the doctors group and the nurses, the difference was statistically significant ($\chi^2 = 10.424, P = 0.005$), which we can conclude from this research result that in the year prior to the research more doctors were puzzled by medical disputes.

Measures to avoid disputes with patients and their families

79.0% of doctors and 71.3% of nurses revealed they would adopt precautionary measures to evade medical disputes and they were very often carrying out those measures in the past. Less than 5.0% of both doctors and nurses revealed not adopting any precautionary measures to evade medical disputes (Figure 16). Comparing the doctors group and the nurses group, there was no statistical difference ($\chi^2 = 4.550, P = 0.208$).

Conclusions

Professional analysis of medical staff in public hospitals: hospital development

Hospitals being the place where the medical staff works, utilize talents, and achieve the values that are required. The hospitals and medical staff depend closely on each other. Obviously, the development of hospitals plays a very important role in the medical staff career. Medical staff's recognition of the level of hospital development affects their professional manners and behavior directly. Based on the above research results, we summarized medical staff's views on hospital development into two aspects.

The medical staff in public hospitals had certain approval towards the development of their working hospitals, but the particular situation was not one of optimism

Although most of the respondent medical staff in public hospitals revealed that their hospitals could possibly realize continuous development, only 25% on average believed their hospitals will possibly realize continuous development. This is generally related to the bad environment for development in public hospitals. More than half of the respondents revealed that the government and the society in general are giving less support to the development of public hospitals especially the government. 76.5% of all the medical staff agreed that more is demanded in terms of performance and output from public hospitals but less support is given by the government. Jun et al. (1999) states, as non-profit hospitals, the public hospitals are taking on quite a number of public health functions but they are getting few supports from the government.

In addition, the media have paid more attention to the deficiencies of public hospitals; the relationship between medical staff and patient and the deteriorating medical conditions in the hospitals are frequently publicized in the media. All of these problems add to the stress medical staff have to cope with on their jobs. The confusion in the minds of the staff and the worries over being put under media scrutiny makes them believe that of the hospitals is not certain.

A comparative response of medical staff in tertiary and secondary hospitals towards the development of their working hospitals

According to the survey results, medical staff in
secondary hospitals compared with those in tertiary hospitals is less optimistic of development in their hospitals. This is mainly due to the lack of precise visions and strategic plans for development. In real terms, the secondary hospitals’ comprehensive strength is weaker than that of the tertiary hospitals, and their ability to provide basic medical services is also weaker than that of the community health service organizations. Xiu (2007) states that transformation from community health service institutions to special hospitals in geriatrics and chronic diseases will be helpful for secondary hospitals to break through development bottlenecks and realize continuous development.

Professional analysis of medical staff in public hospitals: medical profession

Medical staff’ esteemed level of their jobs is affecting their performance and management skills. Survey results led us to conclude that medical staff’ esteemed level of the medical profession is low because of the under mentioned reasons.

Medical staff’ job pride and satisfaction

According to the research less than 40% of medical staff’ were proud of their jobs, and nearly 70% disapprove of their children engaging in the medical profession. All of these demonstrated that most medical staff’ are not satisfied with their jobs and do not take pride in doing their jobs. Liu (2004) studies show that medical staff’ job satisfactions include good interpersonal relations with patients and colleagues, good professional reputation, better organizational structure and management of hospitals, definite goals of hospitals and departments, and development of personal professional skills. Presently in China, the results of this research show that the relationships between medical staff and patients have been getting worse, and the reputation of medical professionals have been deteriorating. Under the prevailing circumstances medical staff’ cannot be satisfied with their jobs. Li et al. (2006) and Maslach et al. (2001) show that a drop in the level of respect for the medical profession is likely to induce medical staff’s burnout and satisfaction with their jobs. Li et al. (2003) and Zhou et al. (2004) stated that job satisfaction burnout have a negative influence on the quality of medical treatment medical staff’ offer and their professional development. The research shows that medical staff’ are burnout and dissatisfied with their jobs and media coverage is compounding the stress on the staff. Lacovides et al. (2003) stated that the deteriorating effects of stress and burnout can have a negative impact on family life and interpersonal relationship which leads to a negative attitude towards work and life in general.

Medical staff’ was dissatisfied with their current salaries

Half of the respondents revealed that the gap between the current salary and expected salary was large (a gap of about 50%). Comparing the different regions PRD and NPRD, most medical staff revealed that the gap between current salaries and expected salaries was too large. Comparing tertiary and secondary hospitals, most respondents complained of their current salaries as a reason for dissatisfaction with their jobs. Zhou et al. (2004) state that medical profession involves high risks, technology and responsibilities, and medical staff are overburdened with their jobs. Some scholars pointed out that the current salary level for medical staff was not commensurate with their efforts. It is conceivable that medical staff’s positive attitudes were lower, as they were dissatisfied with their current salaries. The level of dissatisfaction with pay is bound to have a negative impact on service quality and patient care which is one of the contributing factors to high dispute between doctors and patients.

Barriball et al. (2006) findings on job satisfaction and intent to leave and turnover of hospital nurses propose that stress and leadership issues persist to exert pressure on dissatisfaction and turnover for nurses. Pay has an impact on retention and turnover of medical staff even though it didn’t come out as a major fact in this research.

Professional analysis of medical staff in public hospitals: About the current doctor/nurse-patient relationship

Kong (2006) and Kang et al. (2006) mentioned that interpersonal relations are established during the process of medical treatment between doctors/nurses and patients. The doctor/nurse-patient relationship has direct and pivotal influence on the work of medical staff especially doctors and nurses. With the different roles played during the process of medical treatment, different background of special knowledge, different medical information, and different requirements on benefits, Robinson (2002) states medical staff’s attitudes towards patients and relationship with them maybe be influenced by these factors.

Doctors and nurses, with a certain proportion, had lower esteem of the relationship between themselves and patients

The research results show that 67.6% of doctors and 40% of nurses described the relationship between themselves and their patients as not cordial. 26.8% of doctors and 20.2% of nurses felt apprehensive of
improving their relationship with patients. We can reasonably conclude that certain proportion of doctors and nurses felt there was a low level of cordial relationship between them and patients. Noticeably, more doctors, compared to nurses, complained about the worsening relation with patients.

**Most of doctors and nurses revealed that they would adopt some precautions to prevent medical disputes**

Lv et al. (1999) and Xiu (2007) pointed that one of the biggest working pressure faced by medical staff’ is the high frequency of medical disputes. In our study, 42.9% of doctors and 41.3% of nurses revealed that they were sometimes puzzled and stressed by medical disputes over the past year. The worse was that 79% of doctors and 71.3% of nurses revealed they would adopt some precautionary measures to prevent medical disputes that have occurred in the past. We expected that these precautionary measures can do more good to patients and also prevent further disputes from erupting between the staff and patients.

**Concerns over psychological state of medical staff during work, we should pay much more attention to: medical staff’s confused and inconsistent psychology during their working process**

When asked about their job pride and confidence in improving the doctor/nurse-patient relationship, at least 20% of the respondents revealed they had no idea of how to go about doing it. Some medical staff” were confused and inconsistent during their professional career. They seem to be worried about the problems within the medical profession but cautiously believe in the prospects of future development of the profession.

We need to conduct further studies on problems with the medical staff and the impact of such factors as pay, motivation, leadership and interpersonal skills management with patients, career development and learning.

The outcome will determine the adoption of appropriate actions to improve performance and management which will form the basis for future development of the hospitals and improvement in delivery services in the general health care system in the province and the country at large.

**Questionnaire on professional views on the medical profession and their jobs**

Indicate and state where appropriate: Age______ Sex________.

State your professional class in the medical profession:

Doctor______, Nurse______, Others______.

How proud are you of your profession? (A) Very proud (B) Proud (C) Neutral (D) not proud (E) Not very proud.

Will you approve of your children or relatives to join the medical profession? Yes __ No _

Is there any prospect of continuous development of the hospital? Yes ____ No ______.

Do you think there is good public and government support for hospitals? Yes__ No _

Do you think there is too much demand on public hospitals by government to perform more with less support from government? State _______________.

State your current and expected salary? Current salary____ Expected salary_____.

Do you believe there is a bad relationship between doctors/nurses and patients? Yes ____ No _____.

Do you have confidence that the relationship between doctors/nurses will be improved? Yes__ No ___.

Were you puzzled by disputes between doctors/nurses and patients and their relatives? Yes__ No ___.

Did you take any precautions to prevent disputes with patients and their relatives? Yes__ No ___.

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