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Strategy for Addressing Overcrowding at a Central Hospital: A preliminary Survey in Southern Vietnam

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ABSTRACT

Introduction: Hospital overcrowding is an international crisis, and there are typically three indicators of this overcrowding. Some previous interventions for overcrowding were found to be incorrect due to a lack of vision; nevertheless, they are the foundation of modern interventions. Tu Du Hospital has had to deal with a huge influx of patients, resulting in the current overcrowding situation. As a result, solutions to counteract the problem of overcrowding immediately emerged, leading to free space in hospitals and benefits to overall public health.

Method: This was a cross-sectional study conducted at Tu Du Hospital in Ho Chi Minh City, Vietnam from May to July 2013. Patients, staffs, and managers recommended some solutions for hospital overcrowding, including building more facilities, improving the organization, developing satellite departments, and establishing family doctor networks.

Result: A total of 200 inpatients, 100 medical staff members, and 88 hospital managers were included in this study. Of the patients, 80.8% choose the hospital for the high-tech facilities and 83.7% for the skillful staff. About 42% of patients accept with the overall quality of hospital.

Conclusion: The survey proved that the overcrowding situation at Tu Du Hospital was actually a kind of "fake" overcrowding. The plan is promoting countryside facilities that associated with Tu Du hospital the objectives must be set up following criteria. This research has uncovered the true form of overcrowding at Tu Du Hospital. A possible strategy for Tu Du Hospital going forward is the implementation of the three proposed interventions at various levels of the healthcare system in Vietnam.

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INTRODUCTION

Hospital overcrowding is an international crisis that has recently received significant attention by many developed countries; it has also emerged as an issue for developing countries. Some hospitals describe overcrowding in term of numbers; for example, it can be determined as at least 6 patients waiting for admission or at least 12 patients waiting for care [1].

Mehugh (2010) reported that about half of American emergency departments were working over-capacity and that nine out of ten hospitals experienced holding and boarding patients while they waited for long periods of time [2]. Other reasons can result in this concern at emergency departments (EDs) can be reviewed were shortages of on-call physicians who are specialists in certain areas of patient care, delays in the cleaning process after patient discharge, incorrect diagnostic and subsidiary services on inpatient units, and inconsistent resources to handle discharged patients [3].

The General Accounting Office indicates that there is no standard measure for the condition of "*overcrowded*" due to various and inconsistent emergency departments [4]. Nevertheless, there are three indicators that commonly present as symptoms of overcrowding. The first indicator is

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the number of hours a hospital spends diverting patients to others emergency departments. The second indicator is the number of patients and the lengths of their stays, whether they are boarded or are waiting to be transfer into other EDs [5,6]. Finally, the third indicator is the number of patients who leave before their medical evaluations because of long waiting times. These symptoms clearly indicate how crowded EDs struggle in these situations.

The three indicators of rate of ambulance diversion, boarding time, and length of stay, this has reviewed a lot of factors that interpret the occurrence of hospital overcrowding [4]. Such factors partially come from inside the hospital, such as lack of inpatient beds, lack of staff, the deviation qualification between hospitals, inconsistent framework and resources, the synchronization between discharge and admission, and equipment constraints. Furthermore, external factors include unpredictable patients who arrive at hospitals without prior arrangements, population variation, demographics and perspective improvement, uncertainty of demand, regulation constraints, hospital policies, and geography limitation [4].

Overcrowding at emergency departments or overloading at hospitals has some serious typical impacts on the healthcare industry. When a hospital is overloaded, it is the time that mistakes and errors occur at the highest rate. Unlike other in other businesses or fields where mistakes are repaid by money, in hospitals it is difficult to estimate the damage of a mistake as it can carry along with it a chain of effects that patients then suffer during the floating time. It costs time, supplies and physical and human resources to correct, but it compromises service quality in six dimensions, including safety, effectiveness, efficiency, timeliness, patient centeredness, and equity [2]. Patients with slightly severe conditions sometimes worsened and their conditions became serious if there was no immediate evaluation and treatment. Overcrowding also can diminish community trust. Though emergency departments are optimized to work 24/7, the situation is difficult when crowding results in a reduced ability to provide care due to long wait times [2,3,7]. Moreover, this issue brings with it a number of problems, including ambulance refusals, prolonged waiting times, increased suffering because of delays, precipitated and overlooked medication, and inadequate consequences for patients [3].

Some previous interventions tried incorrectly to deal with overcrowding due to lack of vision, but these interventions remain the foundation of modern interventions for overcrowding [5,7-11]. For example, freestanding EDs are one of the practical interventions suggested to deal with the issue. However, there are many effective interventions that help reduce the issue of overcrowding, but these interventions depend on the different situations and locations.

Recently, Tu Du Hospital has experienced a large influx of patients due to overcrowding. This has resulted in struggles for many operational units, including downsizing in managerial aspects, such as quality management and technical management. It is difficult and absurd to have an inpatient caring for their child or struggling to recover on less than half a bed; it is just as difficult to look at the frustrated faces of staff members who are doing their best to responsibly care for patients. It is typical to witness patients' families waiting in hallways, hospital yards, and even in the streets; this can have the effect of seeming to turn the whole hospital area into a kind of refugee camp. Therefore, solutions to counter these problems must be immediately provided in order to liberate hospitals from overcrowding for the benefit of overall public health.

METHODOLOGY

Study design and ethics considerations

This was a cross-sectional study conducted from May to July 2013. The study site was Tu Du Hospital, which is the largest maternity and obstetrics specialized hospital located in Ho Chi Minh City, Vietnam. The protocol of this study was approved by the Ethics Committee of the hospital. No surgery or intervention was applied to the mothers or infants. The research complied with ethical standards by obtaining informed consent, ensuring respondent autonomy, and guaranteeing anonymity and confidentiality. No details that could point to the participants' identities were reflected on the questionnaires, and only members of the research team were authorized to collect information on the participants.

Study population and sampling

This research will rely on the information that was collected as primary data and secondary data. The reason for including both types of data needed is to support the extension of the research. The primary data collected from the survey represents the information obtained closest to the current time of the issue. In cases where primary data is insufficient, secondary data will be utilized in order to save time and cost. For example, in this research, secondary data collection included the annual basic report of the hospital across three years, from 2010 to 2012, along with data on the internet, magazines, and reports that support comparisons.

Based on the literature view, there are three indicators for the overcrowded hospital or ED: (1) diversion, (2) boarding, (3) patients leaving before a medical evaluation. However, the three indicators depended on type of hospital (general or

specialized), geography (urban, rural or metropolitan area), hospital background, and the surrounding hospital system. In practice, the research collection tool chosen was a research survey to be given to three group of participants: (1) patients, (2) medical employees, and (3) executive members.
Overall, there were three surveys that were designed to be integrated with each other. The purpose was to reflect and make comparisons in order to conduct a deeper analysis of overcrowding. Some sections of the surveys contained the same questions regarding understanding the perspectives among different respondent groups about the same issue.

Study instrument

The survey on patients was organized according to the following four sections: A) discovering where patients came from and how they arrived at Tu Du Hospital; B) evaluating patients' knowledge about their own cases and measuring the capacity of register service; C) understanding how respondents evaluated hospital services during overcrowding; D) determining why patients chose the hospital and whether they knew this center was already crowed. Each section addressed the question that relevant to the given research objective. The first section focused on patients who had already been admitted and who were identified as external factors causing overload. Unlike the two other groups, patients have less awareness of or experience with overcrowding. The basis for the design and structure of this survey was patients' stage of pregnancy, given that these patients are at the highest risk during overcrowding. To avoid confusion and to provide comfort to and cooperation with patients, it proved better to use a structure that corresponded to treatment or pregnancy phases.
Medical employees and staff members were the group with the most experience directly interacting with the overcrowding. Therefore, the structure of the survey was based on the order of research objectives as follows: (1) find cause, (2) determine impact, and (3) find solution through personal experience. The scope of this survey was provided according to the following sections: A) defining the current working environment; B) defining the current working intensity; C) discovering the awareness of staff about the phenomenon of overcrowding; and D) recommending possible solutions for the hospital to reduce overcrowding.

Statistical analysis

Collected data was entered into a self-designed table using Microsoft Excel 2010 for Windows. The raw data was adjusted to remove missing data and was coded for analysis. SPSS 20.0 was used for data analysis. Descriptive statistics were applied for data presentation.

RESULTS

A total of 200 inpatients, 100 medical staff members, and 88 hospital managers were included in this study. The majority of patients came from provinces other than Ho Chi Minh City (79.5%) and traveled to the hospital via motorbike (49.8%) for less than three hours (38.5%). There were only 32% of cases where an appointment was made before admission; 72% of patients were diverse cases from lower-level hospitals. It was also found that the majority of patients did not need to be at this hospital given their pathologies and the risks indicated on their evaluations. Patients had to wait over two hours after registration and over two hours to receive their medical laboratory results. However, according to medical staff members, a patient has to be boarded for more than one hour after admission is made (**Table 1**).
Figure 2 shows the consequences of overcrowding in terms of patient perception. About 35.7% of all patients were dissatisfied, indicating that service quality was lower-particularly regarding speed, with 31.2% saying service was "slow." Of all patients, 72.6% chose this hospital for specific reasons, with 80.8% choosing it for high-tech facilities, 74.6% for prestigious associations, 78.8% for fame, 83.7% for skillful staff, and 40.6% for high insurance rates. The study also found that Tu Du Hospital was the known and chosen by 58.2% of participants because of the opinions of friends or relatives and by 21.4% because of information seen online or via social networking. However, the patients' expectations were contrary to their actual experiences.
Table 1 shows the opinions of employees and managers about the hospital's overcrowding. The majority of staff members and leaders indicated that overcrowding only happens at well-branded or specialized hospitals. Three basic disadvantages of overcrowding were highly perceived by both groups. However, there was a slight difference in responses: staff members cared more about the infrastructure, such as the lack of infrastructure that affects quality of care; leaders worried more about cross-infection between patients that creates additional demands (something that negatively influences the quality of care from staff members) and causes health problems for staff members in the long term. Therefore, both groups observed that this overcrowding needs to be solved as soon as possible.
Regarding solutions for hospital overcrowding, **Figure 2** presents a high agreement on improving organization, setting up "satellite departments",

and connecting patients with family physician networks (family doctors).

DISCUSSION

The current survey has proven that the overcrowding situation at Tu Du Hospital is actually a “fake” overcrowding. The real problem did not primarily come from inside the hospital, including the hospital’s staff members, equipment, and general or specific framework. The root of the issue was found to be located in patient flow. To verify the hypothesis as correct in the case of Tu Du Hospital, the research was based on following points: i) patients were able to freely enter the hospital from everywhere without a controlling system (based on analyzed data from the patient survey); ii) patients came to the hospital without clearly understanding their disease or situation; iii) a common perspective held by medical staff members at Tu Du Hospital and confirmed by leaders from other hospitals leaders, including hospitals of different levels, about actual patient flow (analyzed data from surveys for staff members and leaders); and iv) different perceptions held by patients about various central hospitals and provincial/district-level hospitals (found in a combination of analyzed data from all surveys). In summary, the main reason for overcrowding was determined to be patients underestimating the capacity of hospitals at lower-level hospitals, resulting in these patients moving to city hospitals for better quality of care. The consequences are various in the healthcare system, especially in gynecology, obstetrics, and perinatology.

For hospitals, this “fake” overcrowding has generally led to many negative outcomes, such as lack of staff members, lowered quality of care due to resource shortages, staff stress and burnout, and high staff turnover rates. These issues increased the possibility of mistakes made during operations, leading to lowered patient safety. All of these factors result in negative effects for both patients and staff. In a short period of time, this issue has damaged the quality management of the hospital, including human resources, resource and time management, and the image of Tu Du Hospital. Therefore, this chaotic distribution channel of patients was found to diminish the general value of the hospital’s services, shifting its reputation to that of lower-level medical providers when it should continue to be known for superior competence in healthcare provision.

The finding of this research is quite difficult to previous research. However, it has indicated causes similar to those in the report of the GAO [4]. The GAO found that the various causes of overcrowding included lack of inpatient beds, lack of staff members in the workforce, incompatible practices, and resource constraints. There are many possible interventions, such as adding more resources, fast-tracking processes, volume flexibility, and enhancing patient flow by applying technologies to reduce time and enhance accessibility. However, this research has shown that the actual property of problem is merely a “fake” overcrowding situation. Although controlling the internal patient flow in the hospital is an appropriate solution, we should impose an intervention to re-shape the patient distribution channel. One possible solution is creating freestanding EDs.

Because the main cause of overcrowding is external, Tu Du Hospital has less capacity to control the situation effectively. Despite the overload of symptoms, the root of this problem is laid on the perspective of medical users. To emphasize, they generally think that superior hospitals always provide better and safer treatment than their local medical units. Obviously, high-tech medical technologies and higher qualified staff largely work at central hospitals. Therefore, we could not suggest that their views were wrong or unfounded. Nevertheless, patients continued to feel that they had no other choice and were forced to suffer from the decline in the medical services caused by overcrowding. Moreover, it can be fatal for patients if staff are no longer able to keep their focus on care due to overloaded work schedules. No matter what the various negative effects might be at different levels, any of these effects could downgrade a hospital’s reputation.

Hence, the outcome of strategy arms to restructure the patient distribution that fit with the overall capacity of Tu Du Hospital. The main objective was determined to be controlling patient flow because this can appropriately adjust the number of admissions and benefit both patients and medical staff in many aspects of healthcare provision. Our study strongly suggests the hospital’s administrators apply the principle of family medicine to ensuring a network of family doctors are available at lower medical facilities at the provincial and district levels.

Why does Tu Du has to implement this strategy outside of its operating area? The reason is to persuade patients to use the medical services outside of the central area under the association of Tu Du Hospital. The plan is to promote countryside facilities associated with Tu Du Hospital, whose objectives must then be set up according to the following criteria: i) local hospitals have the capacity to provide quality care; ii) local medical facilities have secured patient trust; and iii) close relationships between patients and physicians are ensured to provide correct, effective, and timely therapy to patients.

The research was largely based on the information collected from three groups affected by the same problem, overcrowding. However, the study has

some limitations. This research team had limited access to the population of concern. For example, the actual active inpatient count of Tu Du Hospital was more than 1,600 inpatients in 2012, based on annual report. However, the sample size of the study was only 200 participants due to the constraints of time and funding. Therefore, the results may not reflect the true number of current situations. As of now, the hospital is under heavy pressure due to overcrowding. Patients were already dissatisfied, and this unrest means that they may give biased information that affected the final results of the study. On the other hand, although the permission gained but it required avoiding sensitive questions that compromise hospital benefit. Just as with medical staff members, they have to work seemed double times, so that they are difficult to access. The target for leader and manager participation was set for 100, but only 88 identified participants responded. Thus, the study may lose some of its critical value in terms of data and suggestions that could contribute to developing solutions for overcrowding in hospitals.

CONCLUSION

This research has unveiled the true form of overcrowding at Tu Du Hospital. The possible strategy for Tu Du Hospital was determined to be implementing three proposed interventions at different levels of the healthcare system in Vietnam. Furthermore, on the condition that all three interventions are established, it is promised a value improvement from inner of hospital to rural areas such as relations, measured patients flows in short term program and provide better practical data to predict and plan for the new expansion to deal with changes of society and developing trend of the world. Although this strategy requires time, investment, and government support, it could address overcrowding and help to reconstruct and maintain the balance of the patient distribution channel. This not only benefits the organization itself but also promises stable development in the healthcare system.

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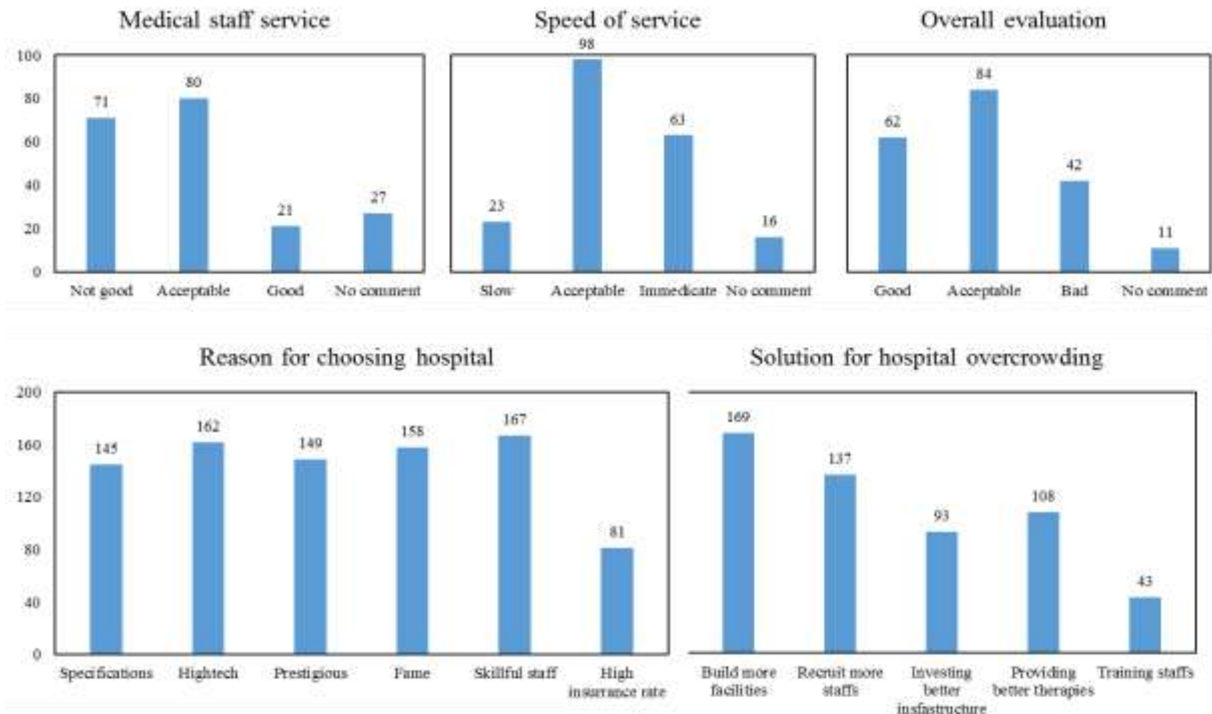


Figure 1: Patient evaluations of hospital quality and solutions for hospital overcrowding

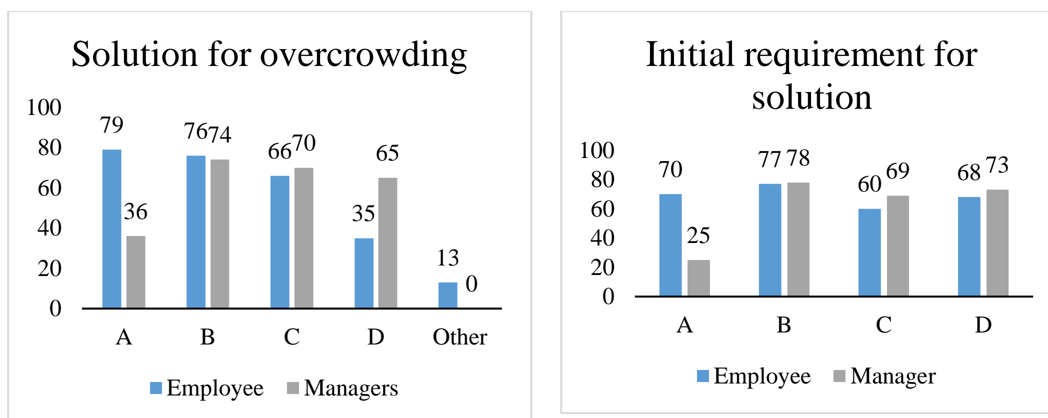
Table 1. General information of participating patients (N=200)

Geographical location			Waiting for physician check-in (hour(s))		
Ho Chi Minh City	41	20.5	Less than 1	30	15.2
Other provinces	159	79.5	Less than 2	53	26.7
Means of transportation to hospital			Less than 3	99	49.5
Bus	29	14.5	Less than 4	17	8.6
Car	47	23.7	Waiting for laboratory test (hour(s))		
Motorbike	100	49.8	Less than 1	9	4.6
Ship/ Canoe	17	8.4	Less than 2	29	14.3
Plane	7	3.6	Less than 3	123	61.4
Time of transport (hour(s))			Less than 4	39	19.7
Less than 1	5	2.4	Private bed		
Less than 2	29	14.5	Yes	39	19.4
Less than 3	77	38.5	No	161	80.6
Less than 4	49	24.4	Patient per room		
More than 4	40	20.2	Less than 4	10	4.8
Made an appointment prior to admission			Less than 6	17	8.4
Yes	136	68	Less than 8	49	24.3
No	64	32	More than 8	125	62.5
Diversion form other hospital			Knew about the hospital overcrowding		
Yes	46	72	Yes	61	30.4
No	18	28	No	139	69.6
Arrive later than planned			Heard about the hospital from		
Yes	22	35	Friends	116	58.2
No	42	65	Internet sources	43	21.4
Severity of the situation			Advertising, clinics, others	41	20.4
Mild	13	6.7			
Medium	49	24.6	*Note: Data presents as frequency (n)*		
Serious	93	46.5	*and percentage (%)*		
Unknown	40	20.2			

Table 2. Employees' and managers' opinions regarding hospital overcrowding

	Employees		Managers	
	n	**%**	**n**	**%**
Perception of overcrowding				
Hospital overcrowding	11	10.6	14	15.38
Happens in most hospitals	31	30.9	17	19.23
Happens only at well-known or specialized hospitals	58	58.5	58	65.39
External factors causing overcrowding				
More illness	22	21.6	18	20.8
Better health information	21	20.5	18	20.8
Better economic conditions	27	26.5	11	12.2
Incapacity of lower level hospitals	30	31.4	14	16.1
Other reason*	0	0	26	30.1
Overcrowding at large or specialized hospitals				
Directly without going to provincial hospitals	20	20.3	13	14.81
Severe or complicated cases	14	14.3	3	3.7
Do not believe in the ability of provincial hospitals	23	22.9	10	11.12
Agree with all	43	42.5	62	70.37
Reason for choosing hospital				
Modern facilities	28	28.8	27	30.5
Qualified doctors and medical staff	26	25.5	30	34.2
Strong reputation and well-known brand	25	24.8	10	11.2
International cooperation	16	15.7	10	11.7
High insurance rate	5	5.2	11	12.4
Disadvantages of overcrowding				
Lack of personnel, facilities, and time for service	82	82.1	65	73.32
More infection and complicated cases	56	56.4	70	80.1
Overworked staff	53	52.8	67	75.8
If patient focused on one hospital				
Overwhelm admission	59	58.5	75	85.71
Waste time and higher cost	88	88.1	75	85.71
Irrational patient allocation	86	85.7	69	78.28

** Other reasons: The provincial hospitals do not ensure the quality of medical services; professional capacity of hospitals is higher and more reliable; feeling insecure to take treatment at province hospitals; province hospitals just affordable to give symptomatic treatment rather than the complete treatments; the best condition for medical staff to learn and develop professional skill; uneven remuneration between large hospital, specialist hospital, and lower level hospitals.*



A	Build more facilities, develop size beds, recruit more staff, add more additional equipment for the hospital is overloaded.	Build more modern hospital.
B	Improving the organization by applied new information technology on management and operation of the hospital to increase the efficiency of health care, reduce wait times, reduce personnel do manual work, the registration remote diagnosis and treatment, set up effective schedule for patient.	Strengthen information dissemination about health education, disease prevention, food safety, improving the living environment, pay attention to occupational diseases, disease prevention.
C	Development model of the "satellite department" in the hospital sector, enhanced training support and transfer technology to lower levels.	Specialty Hospital sent the good doctor to the lower level hospitals.
D	Construction and development of family doctor network along with supported from health insurance to increase the number of patients who have screened at the clinic system. Then orienting the difficult cases direct to correctly the leading specialist hospitals.	Improving the availability of hospital organizations, management, human resources, application of modern technology to promote the capacity of hospital and also established satellite departments in hospitals that lead to cooperation, support, transfer technology to the provincial hospital / county / district / regional hospitals.
Other	Develop "day hospital" programs.	

Figure 2: Employees' and managers' recommendations for addressing hospital overcrowding