

Actual Operation of Private Prehospital Emergency Medical Service Systems in Certain Regions of South Korea

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Abstract

This study aims to analyze the actual conditions of the managers and employees of private emergency medical service systems and to provide basic data for the activation of a private Emergency Medical Service System (EMSS). Structured questionnaires were distributed to the managers and employees of private emergency patient transport services. From August 1 to October 30, 2013, a survey was conducted face-to-face by personal visits and the collected data were processed using IBM SPSS Statistics 20.0. The average monthly income of the managers was 13.69 million won and net profit after operating expenses was 3.3 million won. Of total employees, 62.7% were in their twenties, while 68.7% earned an average of 1.5 million won or less a month and 31.3% more than 1.5 million won a month. This study found that the operational situation of the private transport services was very poor and that they were poorly managed; therefore, in order to achieve qualitative improvements in public health care, there is a need for private transport services to obtain financial assistance for Emergency Medical Service (EMS) and to have stable administration.

Keywords: Emergency Medical Service, Prehospital System, Private Emergency Patient Transport Service

1. Introduction

Prehospital emergency medical service systems in South Korea can be divided into operations established before 1995 based on participation by private systems and operations established since 1995 based on legislation for Emergency Medical Service (EMS). A remarkable change in EMS has been the establishment of 119 EMS teams. In 1982, there were only 9, 119 teams with 54 members, while as of 2012 there were 1, 254 ambulances and 4,771 members¹. EMS statistics show that the number of transports increased by 48.7% to 460,488 cases and the number of people transported increased by 47.9% to 471,125 persons during the past ten years². These results show that

government-led 119 teams do almost all life-saving activities at the prehospital stage and their free-of-charge national operation has been allowed to increase dramatically in size. Consequently, the private emergency medical system established before 1995 has become almost extinct and the private prehospital EMS system has become almost dysfunctional.

One of the major tasks for private EMS teams is the inter-hospital transport of emergency patients and they took 44 percent (156,299 cases) of all such transports in 2012 to become an integral part of the EMS system³. Although the demand for private prehospital EMS has been increasing yearly and private emergency patient transport services should be investigated and analyzed in

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general, most studies have been local and fragmented, such as a report on the plan to rationalize the treatment fee for private transport service⁴, a report on the plan to improve the emergency patient transport system⁵ and a report on implementing an authorization system to improve the quality of private transport service⁶; however, no research or analysis has been made on the actual conditions of private emergency patient transport services. The intention of this study is to investigate the actual operation of private transport services with the aim of activating a private EMS system and revitalizing the currently troubled private emergency patient transport service.

2. Methods

2.1 Subjects

This study was conducted by descriptive research that analyzes data collected through a structured questionnaire provided to managers and employees of private emergency patient transport services. A total of 13 managers and 70 employees at registered private emergency patient transport services were selected by snowball sampling in North J Province, South J Province and K Metropolitan City. The survey was conducted from August 1 to October 30, 2013 and finally 13 copies from managers and 67 from employees were analyzed after excluding 3 who refused to complete the questionnaire and others who gave insincere responses that were not statistically useful.

2.2 Research Tools and Analytical Method

The procedure for producing a questionnaire and for developing questions to test reliability and the method of conducting a survey were as follows:

First, managers of private emergency patient transport services were selected on the basis of the report on the plan to rationalize private and corporate transport services⁴. The questionnaire used for the managers was of the read-and-answer type because it contained sensitive questions about the financial situation as well as about demographic characteristics, managers' characteristics, facilities, personnel, equipment, operational condition, recording, traffic law violation, opinions about the increase of medical fees, activation plan, income statistics and opinions about field tasks.

Second, for the employees of private emergency patient transport services, a professor at a department of first aid was asked to give advice in pursuit of higher reliability

and validity for questions on the basis of job satisfaction and turnover intention⁷. The questionnaire for employees was of the self-directed type, took around 10 minutes and contained questions on demographic characteristics, job characteristics, work difficulty, patient assessment and frequency of recording. The collected data were processed using IBM SPSS Statistics 20.0.

3. Findings

3.1 Manpower and Facilities for Private Emergency Patient Transport Services

The current conditions of manpower and facilities for private emergency patient transport services. Table 1 show that, for manpower, there were three emergency medical technicians per unit in most cases (53.8%), with 2.6 on average. For facilities, the office, including a parking lot, was 107 m² in area in most cases (61.5%), while 15.4% had no office. For vehicles, 84.6% possessed no regular ambulance, while there were three special ambulances per unit in most cases (61.5%), with 2.6 on average.

3.2 Managers' Income and Operating Profit

The monthly average income of the managers of emergency patient transport services was 13.6923 million won and net profit after personnel expenses and operating expenses was 3.3077 million won, shown in Table 2.

Table 1. Manpower and facilities for private emergency patient transport service

Classification			%
Manpower	Number of emergency medical technicians	2 people	38.5%
		3 people	53.8%
		4 people	7.7%
Facilities	Area of office (including parking lot)(m ²)	99 m ²	15.4%
		107 m ²	61.5%
		132 m ²	7.7%
		No office	15.4%
Vehicles	Number of special ambulances	No	84.6%
		2	15.4%
	Number of special ambulances	2	38.5%
		3	61.5%

Table 2. Managers' income and operating profit

Contents		M±S.D
Income	Manager's monthly income(10,000 Won)	1,369.23±265.784
Profit	Monthly net profit after personnel expenses and operating expenses (10,000 Won)	330.77±82.104

3.3 Demographic Characteristics of Employees of Private Emergency Patient Transport Services

The demographic characteristics of the employees of private emergency patient transport services, Table 3 show that 61.2% were males and 38.8% females and that most were in their twenties (26.9% were 26 years or younger and 35.8% were 26 to 30 years). Also most were college graduates (55.2%) or university graduates (31.3%).

3.4 Job Characteristics of Employees of Private Emergency Patient Transport Services

The job characteristics of the employees of private emergency patient transport services (Table 4.) indicate that the situation of the employees is very poor with 46 employees (68.7%) earning an average of 1.5 million won or less a month and 21 (31.3%) earning more than 1.5 million won a month. For licenses, 24 employees (35.8%) were nurses, 23 (34.3%) level-1 emergency medical technicians and 20 (29.9%) level-2 emergency medical technicians. Emergency medical technicians have played an insignificant role within the EMS system since legislation concerning the EMS service was introduced in 1994.

Table 3. Demographic characteristics of employees of private emergency patient transport services

Classification		N (%)
Gender	Male	41(61.2%)
	Female	26(38.8%)
Age (year)	≥ 25	18(26.9%)
	26-30	24(35.8%)
	31-40	19(28.4%)
	40 ≤	6(9.0%)
Education level	High school graduates	9(13.4%)
	Junior college graduates	37(55.2%)
	University graduates	21(31.3%)
Married state	Single	32(47.8%)
	Married	35(52.2%)

Table 4. Job characteristics of employees' of private emergency patient transport services

Classification		N (%)
Income (monthly/10,000won)	>150	46(68.7%)
	150 ≤	21(31.3%)
Licenses	Level 1 EMT	23(34.3%)
	Level 2 EMT	20(29.9%)
	Nurse	24(35.8%)
Pre-employment career of working at hospital (years)	1-3	40(59.7%)
	3-6	23(13.4%)
	6-10	7(10.5%)
	10 ≤	2(3.0%)

3.5 Working Conditions of Employees of Private Emergency Patient Transport Services

The working conditions of employees of private emergency patient transport services, Table 5 show that they mainly deal with inter-hospital transports (62.7%) and hospital-home transports (20.9%). On average they deal with about 1.6 transports a day with the figures broken down into two (56.7%), one (32.8%), or three or more (10.4%) per day. Most respondents did not work in shifts and the mean number of paid days off per month was more likely to be five to eight than one to four.

3.6 Work Difficulty of Employees of Private Emergency Patient Transport Services

The work difficulty for employees of private emergency patient transport services (Table 6.) was evaluated for each item using a five-point Likert-type scale ranging from 1 very difficult to 5 very easy so that a lower score means a lower

Table 5. Working conditions for employees of private emergency patient transport services

Classification		N(%)
Main work	Inter-hospital transports	42(62.7%)
	Home-hospital transports	11(16.4%)
	Hospital-home transports	14(20.9%)
Number of transports (in eight hours)	1	22(32.8%)
	2	38(56.7%)
	3 ≤	7(10.4%)
Work in shifts	Yes	23(34.3%)
	No	44(65.7%)
Paid days off(per month)	1-4	1(1.5%)
	5-8	66(98.5%)

Table 6. Work difficulty of employees of private emergency patient transport services

Contents	M±SD
Communication with patients and caregivers	1.30±0.603
Formation of trust with patients and caregivers	2.24±0.836
Formation of trust with the medical staff in hospitals	1.88±0.327
Communication with the medical staff in hospitals	1.60±0.799
System for collaboration with the medical staff in hospitals	1.33±0.587

level of work difficulty while a higher score means a higher level of work difficulty. The level of work difficulty was low for communication with patients and caregivers (1.30), the system for collaboration with the medical staff in hospitals (1.33) and communication with the medical staff in hospitals (1.60); however, it was high for formation of trust with patients and caregivers (2.24) and formation of trust with the medical staff in hospitals (1.88). These results indicate that to reduce the work difficulty of employees it is necessary to improve the formation of trust with patients and caregivers as well as with the medical staff in hospitals.

4. Discussion

As shown in this study, private transport services have experienced difficult operating conditions and have been managed poorly since the task of emergency patient transport was transferred to 119 teams. They are now isolated in the South Korean EMS system and are poorly supported at the national level. Kim and Kim⁸ contended that the provision of EMS was led by 119 EMS teams, but these had several problems including increase of free rides and shortages of manpower, equipment and budget because of excessive demand, poor medical performance, etc. To solve these problems, they suggested that a private-public partnership system should be introduced because the introduction of such a system could lead to efficient management of EMS. Lee⁹ suggested a payment system for EMS provided by fire-fighters in order to reduce the likelihood that non-emergency patients would use this ambulance service. In other words, Lee⁹ contended that a payment system for 119 ambulances would make it possible to differentiate clearly between emergency patients and non-emergency patients and to provide qualitative improvements. Kim¹⁰ indicated that no

more than 64.6% of ambulance drivers employed by the providers of private emergency patient transport services had any experience of receiving emergency treatment training. While this current study focused on systems in its analysis of emergency medical systems in private transport services, Kim¹⁰ emphasized the educational aspects in dealing with emergency treatment training in private transport services; however, neither Kim¹⁰ nor this study made a systematic composition either for education or for systems.

Meanwhile, Nam and Kim¹¹ examined the temporal and spatial distribution of the EMS of 119 EMS teams and presented a plan for making efficient use of resources. Kim et al.¹² investigated user awareness of and satisfaction with 119 EMS teams and suggested a direction for their improvement. Both Nam and Kim¹¹ and Kim et al.¹² tried to help develop and improve the public EMS system; however, Kim et al.¹² also suggested the need to establish a paid transport enterprise. In contrast, Park¹³ investigated the actual use of 119 EMS teams and private transport services. Park¹³ found that 119 EMS teams were more frequently used for transport service and that more people wanted to use a 119 EMS team for transport service. There were similar levels of satisfaction for both 119 EMS teams and private transport services. Park¹³ suggested positive support and guidance for private transport enterprises in charge of public EMS. In an analysis of EMS users, Lee et al.¹⁴ found that such factors as the presence of accidents or diseases, the means of transportation to the Emergency Room (ER), delay in arriving at the ER and post-service measures might affect satisfaction. In a difference with this study, Lee et al.¹⁴ analyzed the use of EMS in general, instead of comparing private and public EMS systems. In contrast with the public EMS system, there is no research on the private EMS system in South Korea and there is not even basic data for research.

This study is expected to provide a basis for finding problems with the private transport service and means for its activation and it also prepares the groundwork for a private ambulance service system in South Korea. This study has several limitations: first, it selected private emergency patient transport service providers only in some regions; second, it involved only a few providers because of regional restrictions; third, there are only a few employees because of the regional restrictions; fourth, it failed to expand the survey population to include all concerned; and fifth, care should be taken in generalizing the results because there was no overall research of transport service managers and employees.

5. Conclusion

Few studies have been conducted on private ambulance service systems and this study is expected to prepare the groundwork for detecting problems with the private transport service and for making institutional improvements. It is also expected to form the basis for improvement in the awareness of private ambulance services and their working operations.

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