



## **Investigating the Realization of Magnet Hospital Components in Educational Hospitals of Shahid Sadoughi University of Medical Sciences-Yazd**

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### **ABSTRACT**

**Background:** Today, there are hospitals called “Magnet Hospital” that are renowned for attracting and retaining expert nurses. These hospital have designed a set of work environment standards to support professional nursing practice. The present research aimed to investigate the feasibility of magnet (attractive) hospital components.

**Methods:** This descriptive cross-sectional study was performed in 2019. The sample included 200 nurses working in educational hospitals of Shahid Sadoughi University of Medical Sciences in Yazd; the samples were selected by stratified sampling. Data collection was done by using a standard questionnaire whose reliability and validity had been approved. The questionnaire included four dimensions (personnel strategies, management style, professional progression, and autonomy). Data analysis was done by SPSS<sub>22</sub> and T-test statistics.

**Results:** The average scores of personnel strategies, professional progression, management style, and autonomy in the studied hospitals were respectively obtained as  $2.94 \pm 0.78$ ,  $3.29 \pm 0.85$ ,  $3.01 \pm 0.81$ , and  $3.36 \pm 0.59$ . The mean score of feasibility was obtained as  $3.1359 (\pm 0.61491)$  in control group; these scores were significantly higher than the cutoff point (3) ( $P$ -value  $< 0.05$ ). In general, the studied hospitals were at an optimal level in terms of magnet hospital components.

**Conclusion:** Regarding the potential capacities of the studied hospitals and their movement towards acquiring the magnet hospital components, promotion of magnet properties such as strong leadership, employee empowerment, respect, cohesion, cooperation, recognition and recruitment of the nursing staff should be paid attention.

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**Key words:** Magnet hospital, Nurse, Educational hospital

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## Introduction

Hospital is considered as the most important healthcare institute; because it is a major organ providing healthcare services and the first level of referring the patients, and it has a set of specific responsibilities. Therefore, as any other organization, hospitals need an efficient and effective leadership at either macro or micro organizational levels. This purpose can be achieved only if the hospital managers adjust their leadership style with the due conditions and the hospital goals. Appropriate leadership style and presence of qualified senior and middle managers in hospitals can help the managers to better handle the affairs; also, these factors provide a useful guide for the policy makers and managers to cope with organizational problems and obstacles and manage the personnel (1).

The term "magnet hospital" was first introduced in USA in 1980s when the properties required for retention of the nurses and providing proper healthcare services for patients were identified in 14 hospitals. These properties were classified in the following categories: management (management style, organizational structure, personnel affairs, competency, personnel strategies, and professional positions), professional performance (patient care quality, education, and nursing attitude), and professional progression (environmental adaptation programs for new employees, in-service and continuous training, supporting the formal educations and professional progression) (2). In terms of achieving their goals, magnet hospitals are evaluated in five areas: transformation-oriented leadership, organizational empowerment, novel knowledge and innovation, and achievements, and experimental results (3). The next transformation of magnet recognition program in 1980s was based on the primary concepts and an effort to recognize the healthcare organizations; this transformation included provision of excellent nursing service, high-quality caring for patients, and innovation in professional nursing performance. By the year 2010, 344 healthcare organizations changed into magnet hospitals in 44 states of America. Also, two

hospitals in Australia, a hospital in New Zealand, and a hospital in Lebanon were assigned the title of magnet hospital (2).

Formal magnet hospital certification program was started by "American Nurses Credentialing Center" in the early 1990s in order to recognize the excellent nursing services and promote the quality. According to the findings, magnet hospitals provided a higher treatment quality reported by the nurses, a lower death rate among the hospitalized patients, and the patients' higher satisfaction (2). Furthermore, such environments provided a higher welfare for the nurses in terms of factors such as lower damage caused by lower emotional or psychological exhaustion, higher job satisfaction, and lower turnover intention reported by the nurses in magnet hospitals (2).

Several studies suggest that magnet hospitals provide an environment that promotes the nurses' satisfaction and accelerates the process of diagnosing the diseases by authorizing the nurses in caring for patients. This environment is formed by a set of different factors that affect the patient care system in a direct or indirect manner. Nursing managers focus on improving the nurses' working environment. So, they should provide some evaluation tools for improvement of the nurses' working environment (4).

Magnet hospitals provide a higher level of nursing cares (4) with a lower cost. The higher technological complexities and improvement of the patients in these hospitals (5) has been paid attention in recent years.

Based on Donabedian model, magnet hospitals are characterized by the following properties in term of the structure, process, and the results: Transformation-oriented management, structural empowerment, the best job performance, novel knowledge, innovation and improvement, and high-quality experimental achievements. These components are considered as the necessary items of a positive working environment for nurses (6).

According to Kramer and Schmalenberg (3), the fundamental principles of a magnet hospital include 54 items classified in eight dimensions



including cultural values, clinical autonomy, employees' competency, nursing manager's support, nursing performance control, nurse-doctor relationships, the nurses' clinical competency, and educational support (3). Chen and Jahantgen proposed a model mentioning the following properties for magnet hospitals: personnel strategies, management style, autonomy, professional progression, the quality of nursing management, and relationships with other scientific areas. Other studies have mentioned different properties such as decentralized organizational structure, flexible work hours, emphasis on professional autonomy and its development, and systematic relationship between the management and the employees as the key characteristics of magnet hospitals in America. These factors have been employed in many hospitals in other countries such as Australia, New Zealand, Canada, and European and Asian countries (2). The American Nurses Credentialing Center has introduced 14 magnet components as the evaluation criteria (6); these 14 components, the properties proposed by Kramer and Schmalenberg (3), Chen and Jahantgen's magnet hospital model (2), and other models create a methodological constraint in choosing the characteristics of magnet hospitals depending on the application of behavioral and organizational sciences and their relevant data in hospitals. Regarding the few number of studies investigating the components of magnet hospitals in Iran and also the emphasis of educational hospitals of Yazd on groups work among the doctors and nurses to achieve an optimal care and professional interaction, the main question of the research is raised as the following: To what extent are the components of magnet hospital realized in these hospitals based on Chen and Jahantgen's model

## Materials and Methods

This cross-sectional study was performed in 2019 aiming to investigate the feasibility of magnet hospital components in educational hospitals of Shahid Sadoughi University of Medical Sciences in Yazd city (Shahid Rahnemoun

Hospital, Mohammad Sadegh Afshar Hospital, and Shahid Sadoughi Hospital). The population (939 people) included all the nurses working in the three mentioned educational hospitals of Shahid Sadoughi University of Medical Sciences. Due to the different methods of providing nursing services, impossibility of applying the magnet hospital components, and heterogeneity of the variables, the nurses working in operating room, angiography, and emergency wards were excluded from the study. So, 200 questionnaires were distributed among the nurses working in other wards and 183 filled questionnaires were collected. The samples were selected by stratified sampling with optimum allocation; so that the sample size was determined proportional to the size of each category.

As the considered population includes the nurses of every class (hospital), the population members are homogenous in each class. In order to investigate the feasibility of magnet hospital components in educational hospitals of Shahid Sadoughi University of Medical Sciences, the hospitals were classified in four categories and the number of the selected nurses was determined proportional to the size of each class.

The inclusion criteria were determined based on the research goal i.e. investigating the feasibility of magnet hospital components in educational hospitals of Shahid Sadoughi University of Medical Sciences in Yazd. The samples were selected by stratified sampling with optimum allocation out of the population of the educational hospitals. For this purpose, every hospital was considered as a class and the sample size was determined proportional to the population of the hospital. The numbers of the samples selected out of each hospital are as the following: 95 nurses selected out of the population of Shahid Sadoughi Hospital ( $N = 446$ ), 60 nurses selected out of the population of Afshar Hospital ( $N = 284$ ), and 45 nurses selected out of the population of Shahid Rahnemoun Hospital ( $N = 209$ ).

The sample size was calculated by the following formula regarding the correlation of coefficient.

Confidence interval of the correlation coefficient

$$w = \frac{1}{2} \ln (1 + r/1 - r)$$

$$\text{Sample size } n = \frac{(z_1 - \frac{\alpha}{2} + z_1 - \beta)2}{(w)^2} + 4$$

$\alpha = 5\%$  type one error

$\beta = 20\%$  type two error

$r = 0.2$  correlation coefficient

Based on the above data, the sample size was obtained as 197. However, we determined the sample size as 200 regarding the probability of sample loss.

The number of patients selected from Rahnemoun Hospital = 209

The number of patients selected from Afshar Hospital = 284

The number of patients selected from Shahid Sadoughi Hospital = 446

The total number of nurses = 939

The sample size in each class was calculated by the following formula:

$$n_i = (N_i / \sum N_i) n$$

$$\text{Rahnemoun Hospital } n = \frac{209}{939} \times 200 = 45$$

$$\text{Afshar Hospital } n = \frac{284}{939} \times 200 = 60$$

$$\text{Sadoughi hospital } n = \frac{446}{939} \times 200 = 95$$

Data collection was done by using a questionnaire including the magnet hospital components designed based on the works performed by Christensen et al, Sigrist, Smith, Theorell et al, and Vander Hidgden (7, 8, 9, 10, 11); this questionnaire measures the “quality of nursing management” in terms of seven components including: providing the opportunities of development and empowerment of the nurses, regarding the collective decision making and collaborative management, respecting and supporting the supervisor, and communication opportunity.

This questionnaire includes 19 items in four dimensions of personnel strategies (3 items), management style (7 items), professional progression (4 items), and autonomy (5 items).

Reliability of the questionnaire was obtained as 0.78 based on Cronbach's alpha coefficient. Personnel strategies and policies were measured in

terms of three factors including: personnel policies, procedures for the nurses' job involvement and financial support, supporting the work-family interaction, and the nurses' involvement in providing high-quality care services. Reliability of the questionnaire was obtained as 0.778 based on Cronbach's alpha coefficient.

Professional progression was measured in terms of four factors including: the hospital managers' support of development, innovation, continuous learning, progress-based supportive programs for clinical functions, task allocation, and presence of the educational supervisor for handling the affairs. Reliability of the questionnaire was obtained as 0.84 based on Cronbach's alpha coefficient.

Autonomy was measured by using the summarized version of Kramer et al (3) questionnaire based on five factors including task allocation, autonomy for caring for the patients, setting the speed of doing the tasks, time-related decision making, and autonomy in training the patients. Reliability of the questionnaire was obtained as 0.73 based on Cronbach's alpha coefficient. The total internal consistency of the questionnaire was obtained as 0.870 based on Cronbach's alpha coefficient. The items were scored based on a five-point Likert scale (quite disagree- quite agree) ranging from 1 to 5.

The content validity of the questionnaire was checked based on the supervisors and the advisors' opinions. Also, it was tried to analyze the questionnaire based on the experts' opinions. The final questionnaire was designed and distributed after applying the experts' opinions and modifying the questionnaire.

The questionnaire was distributed among 20 healthcare experts working in hospitals. In order to determine the CVR, the experts were asked to check each item choosing one of the three choices of “It is necessary”, “It is useful, but not necessary”, and “It is not necessary”. As a result of the analysis, CVR was obtained ranging from 0.5 to 0.72. Since the results reported by the 20 experts were higher than 0.42, the content validity of the variables was approved. The total CVR was obtained as 0.80 (> 0.79); so, the content validity of the scale is also approved. The participants



answered the questions based on a five-point Likert scale.

The collected data was analyzed by SPSS<sub>22</sub> based on T-test. Realization of the components was checked by one-sample t test.

It is worth mentioning that the participants joined the study with an informed consent and their information was kept private. This research has been registered in Ethics Committee of Shahid Sadoughi University of Medical Sciences in Yazd under the ethics code IR.SSU.SPH.REC.1399.003.

## Results

In this study, 183 nurses from educational hospitals affiliated to Shahid Sadoughi University of Medical Sciences participated. According to the demographic data, 16.4 % of the participants were man and 84.2 % of them were woman. The majority of the participants were 30-40 years old (39.9 %). In terms of education level, 84.2 % of the participants had a bachelor's degree, and in terms of working background, 49.2 % of them had a working background of less than ten years (Table 1).

According to Table 2, the highest and the lowest average scores of magnet hospital components were respectively reported for autonomy ( $3.36 \pm 0.59$ ) and personnel strategy ( $2.94 \pm 0.78$ ) (Table 2).

According to Table 3, the nurses reported the highest and the lowest feasibility of magnet hospital components respectively in the hospital 1

(with the average scores of  $3.22 \pm 0.64$ ) and hospital 2 (with the average score of  $3.04 \pm 0.67$ ).

In hospital 1, the highest and the lowest average scores were respectively reported for autonomy ( $3.50 \pm 0.68$ ) and personnel strategy ( $2.96 \pm 0.73$ ).

In hospital 2, the highest and the lowest average scores were respectively reported for professional progression ( $3.39 \pm 0.75$ ) and personnel strategy ( $2.86 \pm 0.83$ ).

In hospital 3, the highest and the lowest average scores were respectively reported for autonomy ( $3.36 \pm 0.59$ ) and personnel strategy ( $2.98 \pm 0.77$ ).

In hospitals 1, 2, and 3, it was reported that the components of professional progression and autonomy are feasible at the significance level of  $P\text{-value} < 0.05$  (Table 3).

According to Table 4, the average score of feasibility in the control group was reported as 3.1359 with the standard deviation of 0.61491; so, the result was significantly higher than the cutoff point (3) ( $P\text{-value} < 0.05$ ) (as the questionnaire was answered based on a five-point Likert scale, the cutoff point is considered as 3). So, the assumption of feasibility of magnet hospital components in education hospitals of Shahid Sadoughi University of Medical Sciences has been approved (Table 4).

**Table 1.** Demographic information of the nurses working in educational hospitals affiliated to Shahid Sadoughi University of Medical Sciences

	Variable	Frequency (N)	Percentage (%)
Age	Below 30 years	70	38.3
	31-40 years	72	39.3
	41-50 years	41	22.4
Gender	Man	30	16.4
	Woman	153	84.6
Education level	High school diploma	7	3.8
	Associate degree	3	1.6
	Bachelor's degree	154	84.2
	Master's degree	19	10.4
	Ph.D.	0	0
Working background	Less than 10 years	90	49.2
	10-20 years	47	25.7
	More than 20 years	25	13.7
	Missing	21	11.5
Total		183	100

**Table2.**The mean scores of magnet hospital components

Component	Frequency(N)	Mean	SD
Personnel strategy	183	2.94 ± 0.78	
Professional progression	181	3.29 ± 0.85	
Management style	183	3.01 ± 0.81	
Autonomy	181	3.36 ± 0.59	
Magnet	183	3.13 ± 0.61	

**Table 3.**The mean scores of magnet hospital components for each of the studied hospitals

Hospital	Component	Frequency(N)	Mean	SD	Sig
1	Personnel strategy	44	2.96 ± 0.737	0.735	
	Management style	44	3.09 ± 0.831	0.472	
	Professional progression	44	3.33 ± 0.897	0.018	
	Autonomy	44	3.50 ± 0.681	0.00	
	Magnet	44	3.22 ± 0.648	0.028	
2	Personnel strategy	56	2.86 ± 0.835	0.246	
	Management style	56	2.91 ± 0.892	0.497	
	Professional progression	54	3.39 ± 0.755	0.00	
	Autonomy	54	3.24 ± 0.507	0.001	
	Magnet	54	3.04 ± 0.670	0.599	
3	Personnel strategy	83	2.98 ± 0.771	0.850	
	Management style	83	3.03 ± 0.749	0.707	
	Professional progression	83	3.21 ± 0.888	0.029	
	Autonomy	83	3.36 ± 0.599	0.00	
	Magnet	83	3.14 ± 0.554	0.016	

\*P-value = 0.016

**Table4.**The results of one sample t-test for magnet hospital components

Variable	Mean	SD	Degree of freedom	t value	Sig
Feasibility	3.1359	0.61491	182	2.989	0.003

\*P-value = 0.003

## Discussion

The results of analyzing the hypotheses suggest the feasibility of magnet hospital components in the three educational hospitals of Yazd. The highest mean scores were respectively reported for autonomy and professional progression, and the lowest average scores were respectively reported for personnel strategies and management style. The average scores of the components were reported as the following: autonomy ( $3.36 \pm 0.59$ ), professional progression ( $3.29 \pm 0.85$ ), personnel strategies ( $2.94 \pm 0.78$ ), and management style ( $3.01 \pm 0.81$ ).

The higher is the nurses' participation in development of treatment procedures and nursing strategies, the stronger will be their professional

identity. Providing the opportunity of development by supporting the nurses, promoting their independence and autonomy, and providing the opportunity of providing nursing care services can lead to empowerment of the nurses and improve the quality of leadership (12).

Since there are various factors affecting the realization of magnet hospital properties, it is suggested to investigate the structures that are compatible with magnet components in hospitals. Furthermore, it is suggested to investigate the effect of other components such as nursing skills, education, the type of the disease, the number of occupied beds, and duration of hospitalization that are considered as the limitations of this research.



As a consistent study, Jafar Yeganeh & Ghasemi (12) investigated the feasibility of magnet hospital components and its effect on the nurses' job satisfaction in Ghods Hospital of Arak. They reported the most effective components as autonomy, personnel strategy, management style, and professional progression. Their finding is inconsistent with the results of the present study; because in the present study, the highest and the lowest average scores were respectively reported for autonomy and personnel strategy.

Elni et al (13) found that knowledge development, promotion of hospitalization quality standards, and preventive programs for childhood diseases are some of the properties of magnet hospitals, and these components can be realized by employing the nurses with management competence, independence in treatment affairs and cooperation with the doctors, and the ability to explain the treatment strategies.

Clark (14) reported that the properties required for development of evidence-orientation culture to achieve a magnet hospital include actions such as evaluating the nurses' knowledge in terms of evidence-based performance, holding journal clubs and organizing them, program-based performance, adopting proper strategies, promoting the culture of evidence-based performance by doing research and informatics access. Also, the nurses' involvement in research activities was mentioned as a property of magnet hospitals.

Iken et al (15) reported that the difference between the diagnosis results in magnet and non-magnet hospitals is not significant, and they claimed that magnet status does not have any effect on death or other outcomes. The researchers attribute the inconsistency of the findings to the deficient design of the mentioned research. Also, they have concluded that magnet hospitals have a significantly better performance than non-magnet hospitals.

## Conclusion

According to the findings, it can be stated that although the educational hospitals of Shahid Sadoughi University of Medical Sciences have

the potential capacity of a magnet hospital and they have moved towards this goal, there should be more attention to creating and preserving the magnet culture, strengthening the magnet components including strong leadership, employee empowerment, respect, cohesion, cooperation, and recruitment of the nursing staff. Also, there should be a focus on organizational support in achieving professional progression and clinical autonomy by continuous learning, supportive progress-based programs for clinical functions, and other educational programs for professional development. It should be mentioned that as other studies, this research work had some limitations some of which are mentioned in the following:

Some of the participants were unfamiliar with the research subject and goal and it was a challenge in performing the research. However, the researchers tried to eliminate the ambiguities by providing the participants with simple and clear explanations.

The other limitation was the lack of motivation in the selected samples to participate in the research; because most of the participants believe that they will not get any feedback from the research works. This problem makes it difficult to conduct further studies to improve the performance of this university.

Some of the participants were conservative in answering the questionnaire, and the employees' tiredness prevented them from collaborating in a careful manner.

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## Conflict of interests

It has no conflict of interests with any other organization or individual.

### Authors' contributions

Askari R designed study; Arabi M analyzed data; Pishehvaran M conducted research and wrote manuscript. All authors read and approved the final manuscript.

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