

*Educational Research Article***Effect of shift work on patient-doctor relationship in emergency department**

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**Abstract**

**BACKGROUND:** This study aimed to find effect of shift work on patient-doctor relationship in Emergency Department.

**METHODS:** In a prospective cross-sectional study, 352 patients (mean age of  $44 \pm 17$  years, 131 females and 221 males) referred to the emergency department of Rasoul-Akram hospital were enrolled in the study. The patient-doctor relationship questionnaire (PDRQ) was asked to be filled by patients. The questionnaires contained 9 items and the appropriateness of the statements was simplified to a scale of 1 (not at all) through 5 (totally).

**RESULTS:** Comparing three shift works, the highest PDRQ score was for morning ( $27.1 \pm 5.5$ ) and the lowest value was for afternoon shift ( $23.8 \pm 5.3$ ). PDRQ score for night shift was  $25.1 \pm 6.9$  ( $p = 0.002$ ).

**CONCLUSIONS:** The results of this study encouraged that patients' satisfaction of relationship with doctors was the lowest in the afternoon and it may be better to implement some strategies to reduce residents' workloads and increase quality of works in the afternoon shifts.

**KEYWORDS:** Patient-Doctor Relationship, Patient Satisfaction, Shift Work.

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A basic principle for the best medical care is the quality of relationship between doctor and patient<sup>1</sup> and it is an important concept in health care especially emergency care. Many publications in the medical care have indicated that the 'medical health service' will improve if attention is paid to improve the patient-doctor relationship. There is a tendency to link difficult patient-doctor relationship to difficult patients.<sup>2-7</sup> The difficult patient-doctor relationship is generally discussed from the patient's perspective and the instruments used to measure physician responses.

There are a few studies that explored the patient-doctor relationship from the patient's perspective. Furthermore, there is also a complex situation in Emergency Medicine (EM) as

a unique specialty which focuses upon providing a breadth of coverage for acute care whenever it is needed.<sup>8-10</sup> Since emergencies happen at any time of day or night and require immediate expert care, shift work is an essential component of EM practice. It has been found in many studies that shift work can disrupt human circadian rhythms which are normally acclimated to daytime wakefulness and nighttime rest.<sup>11,12</sup> At the physiological level, medical investigations have demonstrated that circadian desynchronization can lead to changes in hormonal levels, increase the risk of cardiovascular disease, produce sleep-cycle disturbances and result in significant fatigue.<sup>13-22</sup>

However, there is not any study that evaluated the effect of shift work on patient-doctor relationship which is the most impor-

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tant issue in medical care from the patient's perspective. This study dealt with the effects of shift work on patient- doctor relationship from the patient's perspective in emergency medical practice.

## Methods

### Setting

The study was carried out in the emergency department of Rasoul-Akram hospital (Tehran, Iran) on 3 first year residents of emergency practice in three shift works (morning, afternoon and night).

### Development of the patient doctor relationship questionnaire (PDRQ)

The PDRQ contains 9 items. These 9 items were: I trust my physician; my physician is dedicated to help me; my physician helps me; my physician has enough time for me; I benefit from the treatment by physician; I find my physician easily accessible; I can talk to my physician, my physician and I agree on the nature of my medical symptoms; my physician understands me. In addition, the appropriateness of the statements was simplified to a scale of 1 (not at all) through 5 (totally).

The questionnaire was tested on 30 healthy medical students volunteers and were interviewed after wards. The main aim was to see if the items were understandable. The goal of the questionnaire was explained to them, and they were asked if they considered the statements to be relevant and comprehensive.

### Study sample

The three EM residents handed out PDRQs to 400 consecutive patients. The patients filled the questionnaires at home and the results were asked by phone. Their anonymity was guaranteed and they were assured that their physicians would not be informed about the results. Of the 400 patients, 352 (88%) responded. Based on the outcome we categorized patients to four groups: (1) discharged with good condition; (2) discharged with informed consent; (3) admitted to other units and (4) with follow up visit after discharge. All participants gave

written informed consent for inclusion in the study. The study protocol was approved by the Ethic Committee of the Iran University of Medical Sciences (Tehran, Islamic Republic of Iran).

### Analysis

Factor analysis was performed and Cronbach alpha as well as inter-item correlations were determined to evaluate questionnaire reliability (85%).<sup>5</sup> One-way ANOVA and Pearson correlations were performed. Data are shown as mean  $\pm$  SD.  $p < 0.05$  was considered as significant. All tests were done with SPSS (Statistical Package for Social Sciences) for Microsoft Windows version 16.0.

## Results

A total of 352 patients with a mean age of  $44 \pm 17$  years were enrolled to the study (131 females and 221 males). The mean value of PDRQ score did not differ between male and female ( $25.09 \pm 5.7$  vs.  $25.3 \pm 6.4$ ,  $p = 0.594$ ). Comparison of the values of 9 items and sum of these items are shown in table 1.

The highest PDRQ score was for morning shifts ( $27.1 \pm 5.5$ ), the lowest value was for afternoon shifts ( $23.8 \pm 5.3$ ) and this value for night was  $25.1 \pm 6.9$  ( $p = 0.002$ , Table 2).

The highest value was for the first group and the lowest was for the third group ( $27.5 \pm 6$  vs.  $16.4 \pm 3.1$ ,  $p < 0.001$ ).

## Discussion

We intended to develop a short questionnaire to determine the patient-doctor relationship from the perspective of the patient focusing on attitude of doctors in the emergency department. The total response rate (88%) was higher than the response rate in the primary care setting (55%). It was comparable with the response rate of Poulton study<sup>23</sup> in a similar population. One reason for the difference in response rate could be the fact that the patients were asked by phone despite the previous study that patients had to send their questionnaire by mail. There were no significant differences in terms of demographic variables and

**Table 1.** Comparison of value of PDRQ scores between three residents

	Resident A	Resident B	Resident C	p
My doctor helps me	3 ± 0.69	2.75 ± 0.76	2.89 ± 0.62	0.361
My doctor has enough time for me	2.67 ± 0.58	2.5 ± 0.64	2.59 ± 0.62	0.079
I trust my doctor	3.8 ± 0.97	3.69 ± 0.92	3.6 ± 0.65	0.09
My doctor understands me	2.4 ± 0.73	2.5 ± 0.84	2.43 ± 0.78	0.241
My doctor is dedicated to help me	2.59 ± 0.5	2.46 ± 0.74	2.61 ± 0.63	0.524
My doctor and I agree on the nature of my medical symptoms	3.7 ± 1.04	3.82 ± 0.9	3.78 ± 1.1	0.739
I can talk to my doctor	2.82 ± 0.51	2.9 ± 0.62	2.76 ± 0.86	0.273
I benefit from the treatment of my doctor	3.7 ± 0.97	3.55 ± 0.8	3.74 ± 0.56	0.148
I find my doctor easily accessible	2.9 ± 0.63	2.96 ± 0.8	3.03 ± 0.94	0.258
Total	27.5 ± 6.1	27.13 ± 6.9	27.43 ± 5.7	0.814

initial PDRQ-9 scores between the 352 participants in the study and this is similar to the study of Goodger et al.<sup>24</sup>

We investigated the difference of PDRQ scores by patients who treated in three shift works. The assumption was that patients who were assessed at night or afternoon might have a more negative view on their relationship

with EM residents. This could be due to the disturbance in circadian rhythm or the effect of high number of patients which might have negative impact on their relationship. Though these were speculative reasons, we wanted to explore if the three shift works show difference in satisfaction of patients from doctor relationship.

**Table 2.** Comparison of value of PDRQ based on shift work

	Morning	Afternoon	Night	p
My doctor helps me	3.06 ± 0.66	2.8 ± 0.54	2.87 ± 0.88	0.031
My doctor has enough time for me	2.6 ± 0.58	2.3 ± 0.54	2.5 ± 0.7	0.033
I trust my doctor	3.7 ± 0.99	3.4 ± 0.73	3.4 ± 0.1.1	0.113
My doctor understands me	2.4 ± 0.68	2.1 ± 0.68	2.4 ± 0.91	0.015
My doctor is dedicated to help me	2.3 ± 0.67	2.04 ± 0.44	2.06 ± 0.83	0.003
My doctor and I agree on the nature of my medical symptoms	3.7 ± 0.93	3.3 ± 0.89	3.3 ± 1.2	0.014
I can talk to my doctor	2.8 ± 0.6	2.6 ± 0.53	2.5 ± 0.61	0.011
I benefit from the treatment of my doctor	3.6 ± 0.93	3.3 ± 0.73	3.6 ± 0.62	0.091
I find my doctor easily accessible	2.6 ± 0.61	2.4 ± 0.8	2.6 ± 0.94	0.043
Total	27.1 ± 5.5	23.8 ± 5.3	25.1 ± 6.9	0.002

Of course, when evaluating a questionnaire that focuses on the patient's perception of the helping attitude of resident, one should be aware of the possibility that patients give socially acceptable answers. We tried to eliminate this problem by assuring patients anonymity, and by collecting the questionnaires by direct phone of psychiatry department. Still, it remains possible that patients were biased towards a positive judgment in the assessment of resident. In addition, patients suspected of having a less positive doctor-patient relationship did indeed give a statistically significant less positive opinion. This suggests that the PDRQ-9 might be able to discriminate between good and moderate doctor-patient relationships.

In our study PDRQ score was higher in the morning. Lowest score was in the afternoon and night score was lower than morning. It was probably due to the lowest number of patients referred to emergency department in morning. This can be attributed to a work schedule that is unadjusted to resident's circadian patterns. This is in agreement with the results of other studies in industrialized coun-

tries.<sup>25,29</sup> Irregular work schedules caused more social and subjective problems, as well as shift work dissatisfaction than regular schedules.<sup>30,31</sup>

Shift worker residents were not generally satisfied with their work schedule as compared with day workers and in the study by Dula and his colleagues it was shown that cognitive ability declines over the course of consecutive overnight shifts.<sup>32</sup> Therefore, the reduction of resident's satisfaction of shift work may cause weaker relationship between patients and doctor and this may have led to lower PDRQ score in the night compared to morning.

## Conclusion

The results of this study encourage that patients' satisfaction of relationship with doctors is lowest in the afternoon and it may be better to do some other strategies to reduce residents' work load at night.

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## Conflict of Interests

Authors have no conflict of interests.

## Authors' Contributions

HSh and AEN: Tireless commitment to the accuracy and precision of edition. SI: Chief manager and statistical calculations. NV: Designer of questionnaire and MAMJ and YGh: Gathering of questionnaires.

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