Unifying the Applications and Foundations of Biomedical and Health Informatics
J. Mantas et al. (Eds.)
IOS Press, 2016

doi:10.3233/978-1-61499-664-4-198

Exploring Overtime Utilization Patterns in Healthcare Organizations

Lamia ALMORSY[a] and Mohamed KHALIFA[a,1]
[a] *King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia*

Abstract. To control healthcare costs it is essential to analyze and improve staffing, the largest organizational expense, by improving utilization of human resources. King Faisal Specialist Hospital and Research Center explored overtime utilization patterns. There was no significant correlation between overtime utilization and workload (P=0.91, r=0.04) or number of staff (P=0.71, r=0.12). Some departments showed a positive correlation between overtime utilization and workloads, others showed no correlation or even a negative correlation between overtime utilization and workloads. Consideration of other factors is recommended, including staff turnover rates, productivity and efficiency, staff competency and training. Further analysis of overtime utilization should be conducted per employees' grade and profession, to compare the utilization of the technical, non-technical and administrative staff members. The hospital information system should not only be used to login overtime utilization and workload, but should also be enhanced to monitor, control and analyze these performance indicators.

Keywords. Overtime Utilization, Human Resources, Healthcare, Hospitals.

Introduction

Human resources have been described as the heart of the healthcare processes, the most important aspect of healthcare systems. Despite their importance, human resources have been a neglected component of the healthcare system [1]. The management of human resources in healthcare is essential to enable the delivery of effective and efficient medical services and to achieve positive clinical outcomes and patient satisfaction. Before requesting more resources for improvement, we need to measure the utilization patterns of available resources [2]. To control healthcare costs it is essential to analyze and improve staffing, the largest organizational expense, by improving utilization of human resources including overtime hours. Overtime is defined as the amount of time someone works beyond regular working hours, workload is the amount of work that an employee can or is expected to perform, and overtime utilization can be defined by four attributes; control over working hours, rewards, time off duty versus time on, and disruption due to a lack of preparation. The analysis of overtime is an important step towards development of appropriate staffing strategies [3]. As a part of a performance improvement project, the clinical services division at King Faisal Specialist Hospital and Research Center, Jeddah, Saudi Arabia decided to study the relationship between overtime utilization and workload to explore utilization patterns and develop evidence based strategies and recommendations to improve it.

[1] Corresponding Author. Consultant, Medical Informatics. Email: dr.m.khalifa@gmail.com.

1. Methods

All twelve departments under the clinical services division, as listed in Table 1 were included in the study. Three variables were considered; overtime utilization, workload and number of staff; extracted from the hospital information system. The study compared two durations; Sep to Dec 2015 with Sept to Dec 2014, to determine the percentage of change of each variable and explore any possible significant correlation mainly between overtime utilization and workload then overtime utilization and number of staff. Data then was collected manually to validate the data of the hospital information system. Correlation and regression analysis were used to determine whether or not a significant correlation exists between the studied variables.

2. Results

In most departments, there was no significant correlation between the change in overtime utilization and the change in workload (P=0.91, r=0.04) or the change in number of staff (P=0.71, r=0.12). Table 1 shows the percentage of change in workload, overtime utilization and number of staff of studied departments.

Table 1. Percentage of Change in Workload, Overtime Utilization and Number of Staff.

#	Department	% Change in Overtime Utilization	% Change in Workload	% Change in Number of Staff
1	Department of Pathology & Laboratory Medicine	-4%	15%	3%
2	Respiratory Care Services (RCS)	16%	29%	-4%
4	Central Sterile Supply Department (CSSD)	36%	-1%	-13%
5	Clinical Radiology	-23%	2%	-14%
5	Physical and Occupational Therapy (PT)	-6%	-8%	4%
6	Cardiology Non-Invasive Laboratory (CNIL)	-7%	0%	-6%
7	Clinical Nutrition	0%	8%	-13%
8	Anesthesia Auxiliary	18%	-15%	0%
9	Clinical Neurophysiology Laboratory (CNPL)	9%	13%	33%
10	Cardiac Catheterization Laboratory (Cath. Lab)	25%	4%	-4%
11	Ambulance Services	26%	6%	11%
12	Dental Lab	0%	17%	0%
*	**Total**	**3%**	**15%**	**-1%**

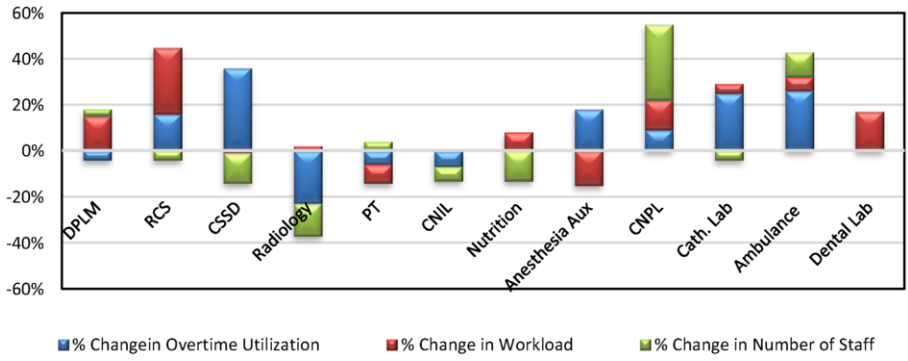

Figure 1. Percentage of Change in Workload, Overtime Utilization and Number of Staff.

3. Discussion and Recommendations

It is essential for organizations when measuring their staff productivity, efficiency and effectiveness to study the relationship between overtime utilization, workload and number of staff [4]. Our study found no correlation between overtime utilization and change in workload or number of staff. No explanation was found for the observed changes, which indicates that the current process monitoring overtime utilization is not effective and needs improvement. Directly proportional relationship between the workload and the overtime utilization may be relevant and as discussed in many studies even essential to create and maintain healthy work environments [5]. However, this is not the case in all departments. It is reported that healthcare staffing, with fewer members, increased workload, and non-proportional utilization of overtime are linked in many studies to negative patient outcomes including falls and medication errors [6]. Studies also discuss that prolonged exposure to job stress among healthcare professionals could lead to burnout syndrome, lower performance and negative influence on patient outcomes [7, 8]. On the other hand, human resource management should be aware of the overtime over utilization if any and should direct such resource to a more important activity or patients' needs [9]. Therefore, further consideration of other factors is recommended, those may include number of staff and staff turnover rates, staff productivity and efficiency, staff competency and training. Our study also recommends that further analysis of overtime utilization should be conducted per employees' grade and profession, to compare the utilization of the technical, non-technical and administrative staff members. The hospital information system should not only be used to login overtime utilization and workload, but should also be enhanced to monitor, control and analyze these performance indicators.

References

[1] C. Hongoro, B. McPake, How to bridge the gap in human resources for health, *The Lancet* **364** (9443) (2004), 1451-1456.

[2] H.M. Elarabi, F. Johari, The Impact of Human Resources Management on Healthcare Quality, *Asian Journal of Management Sciences & Education* **3** (1) (2014), 13-22.

[3] V.M. Lobo, A. Fisher, J. Ploeg, G. Peachey, N. Akhtar‐Danesh, A concept analysis of nursing overtime, *Journal of advanced nursing* **69** (11) (2013), 2401-2412.

[4] L.J. Hayes, L. O'Brien-Pallas, C. Duffield, J. Shamian, J. Buchan, F. Hughes, N. North, Nurse turnover: a literature review–an update, *International journal of nursing studies* **49** (7) (2012), 887-905.

[5] A. Pearson, L.O.B. Pallas, D. Thomson, E. Doucette, D. Tucker, R. Wiechula, Z. Jordan, Systematic review of evidence on the impact of nursing workload and staffing on establishing healthy work environments, *International Journal of Evidence‐Based Healthcare* **4** (4) (2006), 337-384.

[6] C. Duffield, D. Diers, L. O'Brien-Pallas, C. Aisbett, M. Roche, M. King, K. Aisbett, Nursing staffing, nursing workload, the work environment and patient outcomes, *Applied Nursing Research* **24** (4) (2011), 244-255.

[7] B.A.C. Sharp, C.M. Clancy, Limiting nurse overtime, and promoting other good working conditions, influences patient safety, *Journal of nursing care quality* **23** (2) (2008), 97-100.

[8] N. Embriaco, L. Papazian, N. Kentish-Barnes, F. Pochard, E. Azoulay, Burnout syndrome among critical care healthcare workers, *Current opinion in critical care* **13** (5) (2007), 482-488.

[9] K. Bloor, A. Maynard, J. Hall, Planning human resources in health care: towards an economic approach: an international comparative review, *Canadian Health Services Research Foundation - Fondation canadienne de la recherche sur les Servicess de santé*, 2003.