Tzu Chi Medical Journal 2021; 33 (1): 87–90

Original Article

The workload of obstetric doctors working in different modes at a medical center

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Submission : 16-Mar-2020
Revision : 07-Apr-2020
Acceptance : 06-Jun-2020
Web Publication : 06-Aug-2020

Abstract

Objective: The workload of obstetric and gynecologic (OB-GYN) physicians has been an unprecedented increase because of the decrease in the number of such physicians. This study aimed to demonstrate that the hospitalist mode was the best mode for the work-life balance of OB-GYN physicians. **Materials and Methods:** This was a retrospective study in a tertiary academic hospital. Patients were admitted to the labor ward for delivery. The number of deliveries performed by each OB-GYN physician in different working modes was measured. We reviewed the medical charts of women admitted for delivery as well as the shift schedule of OB-GYN physicians from January 1, 2018, to June 30, 2018. We classified deliveries into three modes: the traditional mode (patient designation), on-call mode, and the hospitalist mode. Traditional mode was the work mode currently. On-call mode and the hospitalist mode were simulated conditions. The number of deliveries and the total OB-GYN physician worked time for their shift were recorded. The differences between the three modes and between OB-GYN physicians were assessed using analysis of variance. **Results:** In total, 237 deliveries were recorded over 6 months (3 deliveries were excluded from our data); these deliveries were performed by four OB-GYN physicians named A to D. Significant differences in workload were noted between OB-GYN physicians working in the traditional mode and those in the on-call mode, but no significant differences were noted among those working in the hospitalist mode. All OB-GYN physicians worked an average of seven shifts, and no significant differences among them were noted. **Conclusion:** The hospitalist mode might be the optimal mode for OB-GYN physicians to achieve a favorable work-life balance if their original main jobs are obstetric practice.

Keywords: *Gynecology, Hospitalist, Obstetrics, On-call, Tradition*

Introduction

Obstetric and gynecologic (OB-GYN) physicians in Taiwan are overworked. The mean age of OB-GYN physicians is 55 years old, and the number of OB-GYN physicians at the time of this writing has decreased by 10% compared to that of 10 years ago [1]. Consequently, the workload of each OB-GYN physician has increased. The news reported that only 4 OB-GYN physicians can provide services in Taitung County, which comprises an area of 3,515 km^2 and has a population of 224,500 people [2].

Currently, Taiwan OB-GYN physicians are working in either the traditional or on-call mode. The traditional mode means the delivery of a baby is always by the patient's designated OB-GYN physician. In other words, no matter what time, the designated OB-GYN physician must provide the delivery service when his/her patient is in labor. The on-call mode is that an OB-GYN physician is responsible for the delivery of a baby during the day time, and another on-duty OB-GYN physician is responsible for on-call at night. To improve the care quality in obstetrics, the hospitalist mode is introduced recently [3].

The term "hospitalist" was first used in the 1990s. A hospitalist is a physician whose professional focus is on hospitalized patients [4]. The hospitalist mode has been implemented for OB-GYN physicians in the United States and has achieved favorable results [4,5]. Those working in the hospitalist mode are available any time in the delivery

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Access this article online

Quick Response Code:

Website: www.tcmjmed.com

DOI: 10.4103/tcmj.tcmj_41_20

How to cite this article: Su IM, Ding DC. The workload of obstetric doctors working in different modes at a medical center. Tzu Chi Med J 2021; 33(1): 87-90.

room, providing services to women in labor. The hospitalist mode can decrease an OB-GYN physician's workload, increase their job satisfaction, facilitate the provision of better care, and decrease instances of malpractice [6]. Recently, the hospitalist specialty in OB-GYN physicians is growing in the US. Hospitalist OB-GYN physicians are, on average younger and have a higher rate of career satisfaction than their nonhospitalist counterparts. The hospitalist mode provides a considerable degree of flexibility in an OB-GYN physician's work schedule and compensation [7]. In Taiwan, hospitalists have been introduced to departments of internal medicine, traumatology, and emergency medicine in different medical centers. This has been proven providing a better quality of care and solving the overcrowding problem in emergency departments [8].

The aim of this study was to explore whether the hospitalist mode was the optimal mode for OB-GYN physicians to achieve a favorable work-life balance.

Materials and methods

Data source

This was a retrospective study of a medical center in Taiwan. In that hospital, 40 to 60 babies were delivered per month in 2018. The protocol of our study was approved by the research ethical committee (REC) of Hualien Tzu Chi Hospital (IRB 108-129-B). The REC has waived the patient consent because of little risk of patients.

Study design

We reviewed the medical charts of women admitted for delivery as well as the shift schedules of the OB-GYN physicians from January 1, 2018, to June 30, 2018. Five OB-GYN physicians were responsible for their own patients and were required to be on duty. In our hospital, OB-GYN physicians assist their patients in delivery even at night (the most common time when deliveries occur). The extracted data included the number of deliveries performed by each OB-GYN physician, the time of delivery, the number of shifts worked by each OB-GYN physician, and the name of the patient's OB-GYN physician. The number of deliveries combined standard vaginal delivery and Cesarean section (C-section). We excluded cases of termination and intrauterine fetal death with a gestational age <24 weeks because we were unable to compile data on such cases due to the method of payment for the attendant procedures is different from standard vaginal deliveries or C-section. We also excluded data pertaining to one OB-GYN physician in particular because their workload was disproportionately lower than that of their colleagues.

The primary outcome of three modes

We classified deliveries into three modes: the traditional mode, on-call mode, and hospitalist mode. Our definition of the modes is taken from the "Definitions of Obstetric and Gynecologic Hospitalists" [3]. An OB-GYN hospitalist is an OB-GYN physician who specializes in the practice of hospital OB-GYN care. This may include the obstetric unit, the antepartum unit, the postpartum unit, the emergency department, inpatient units, and inpatient consultative OB-GYN services [3]. The hospitalist mode was on-duty OB-GYN physician providing delivery service for the entire day. The traditional mode was the patient's designated OB-GYN physician responsible for delivering the baby all the time. The on-call mode was the OB-GYN physician provides delivery service during the day time and another on-duty OB-GYN physician responsible for on-call at night. The on-call and hospitalist modes in this study were simulated conditions.

This study demarcated 5:30 PM as the boundary between day and night. We used the letters "A, B, C, and D" to represent the four OB-GYN physicians in our data.

Statistical analysis

Our continuous data were presented as mean ± standard deviation. The differences between the three modes and between OB-GYN physicians were assessed using analysis of variance. The statistical analyses were performed using SPSS (Version 21.0; IBM Corp, Armonk, NY, USA). Values of $P < 0.05$ were considered statistically significant.

Results

Differences in delivery numbers among different modes

In total, 237 deliveries, conducted over a 6-month period, were included in our data. As shown in Table 1 in the traditional and on-call modes, physician A performed the most deliveries (54.2% and 40.7%, respectively), and physician D performed the least (6% and 14.2%, respectively). Significant differences existed between the number of deliveries by physicians in the traditional mode and on-call mode [Table 1, $P < 0.000$]. However, no significant differences existed in the number of deliveries by physicians working in the hospitalist mode [Table 1, $P = 0.289$].

Differences in on-duty times among different modes

An OB-GYN physician's number of shifts was also included in our data; the average number of shifts was 7 every month. No significant differences were noted between the numbers of shifts for the OB-GYN physicians [Table 2, $P = 0.101$].

Discussion

Significant differences existed between the number of deliveries by physicians in the traditional mode and on-call

Table 1: Differences in the number of deliveries performed in different modes

Physician	A	B	C	D	*P*
Traditional mode	21.33±5.54	11.67±3.01	4.00±1.55	2.33±1.97	0.000
On-call mode	15.33±4.13	9.00±2.19	8.00±2.76	5.33±3.56	0.000
Hospitalist mode	8.33±3.14	9.33±2.73	10.67±2.25	7.33±3.08	0.289

Data are given as mean±SD and represent the number of deliveries performed per month. SD: Standard deviation

Table 2. The number of shifts (duty number) per month for different doctors

Physician	A	B	C	D	*P*
Duty numbers	6.33±0.52	7.17±0.98	7.17±0.75	7.33±0.516	0.101

Data are given as mean±SD and represent the number of shifts worked per month. SD: Standard deviation

mode [Table 1, $P < 0.000$]. However, no significant differences existed in the number of deliveries by physicians working in the hospitalist mode [Table 1, $P = 0.289$]. No significant differences were noted between the numbers of shifts for the OB-GYN physicians [Table 2].

The relationships between pregnant women and their obstetricians have always been intimate and strong. Thus, obstetricians perform deliveries even when they are not on duty. This unpredictability in working conditions causes prolonged work hours and insufficient sleep. In a previous study conducted in Houston, 62 of 100 OB-GYN physicians were required to work >80 h each week [9]. In addition, sleep deprivation is a common problem among physicians, especially OB-GYN physicians. A continuous 17–19 h of wakefulness causes cognitive impairment equivalent to a serum alcohol concentration of 50 mg/dL; not sleeping for 24 h causes cognitive performance impairment equivalent to a serum alcohol concentration of 100 mg/dL [10]. Sleep deprivation also affects surgical skills and increases the incidence of errors [11]. As a personal health concern, sleep deprivation may increase the risk of medical conditions such as stroke and obesity [12]. Therefore, the working conditions of OB-GYN physicians must be improved.

The delivery numbers of physician A might contribute to the difference in delivery numbers of physicians between traditional mode and on-call mode. No matter in traditional mode or on-call mode, physician A delivered most of the deliveries. This could be contributed by several factors, such as obstetrics-focus practice, the base of patients, and the delivery time. Obstetricians examined more pregnant women than OB-GYN physicians, or this obstetrician had more pregnant women patients than other doctors. The third reason might be due to the delivery time of patients for physician A was mostly in day time. These reasons might cause more deliveries by physician A.

A previous study also demonstrated a significantly eliminated obstetrical safety events from 11 to 0 following the OB hospitalist implementation [13]. Another previous study also proved that OB hospitalists could increase the vaginal birth after cesarean rate and decreased the C-section rate [14]. Another population cohort study showed OB hospitalists could decrease the induction rate (adjusted odds ratio [OR], 0.85; 95% confidence interval [CI], 0.71–0.99) and the preterm labor rate (adjusted OR, 0.83; 95% CI, 0.72–0.96) [15]. Nevertheless, our study could not have the results regarding maternal and neonatal outcomes due to on-call, and hospitalist modes were simulated conditions.

There were still several limitations that existed in this investigation. This investigation using a retrospective design in which the power of the study is lower than the prospective study. On-call and hospitalist modes were simulated conditions. Therefore, we cannot calculate the outcome of maternal and neonatal outcomes after these modes. Moreover, using the hospitalist mode in our hospital may not be suitable because we only have two OB-GYN physicians focusing on obstetrics, meaning their income would be greatly affected. The subspecialty of the OB-GYN physician may affect the appropriate on-duty mode selection. The current mode setting was focused on obstetrics practice. If a gynecologic practice is the main job of the OB-GYN doctor, the on-call mode may be a better choice than the hospitalist mode to achieve work-life balance (fewer deliveries than hospitalist mode but plus gynecologic practice).

Conclusion

Our study found that when working approximately the same number of shifts, OB-GYN physicians performed approximately the same number of deliveries per month in the hospitalist mode. In other words, the hospitalist mode might solve the overwork problem for OB-GYN physicians (with the almost same delivery numbers) to achieve a favorable work-life balance.

Acknowledgment

The authors would like to thank Dr. Jon-Son Kuo for English editing.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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