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## Original Research Article

# The influence of lifestyle of obstetrics and gynecology female residents on gynecological and obstetrical outcomes in Saudi Arabia

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## ABSTRACT

**Background:** Obstetrics and gynecology (OB/residency is characterized by long working hours, high clinical demands, and significant psychological stress. These factors may adversely affect the lifestyle and reproductive health of female residents. The aim of the study was to investigate the impact of OB/GYN residency on physical well-being, mental health, and gynecological and obstetric outcomes compared to women from the general population.

**Methods:** A cross-sectional study was conducted between January and August 2024 using a culturally adapted, pilot-tested online questionnaire distributed to Saudi married women with children. Participants included 119 OB/GYN female residents and 91 age-matched controls. Data collected included demographic information, lifestyle characteristics, work-related stress indicators, menstrual and reproductive history, and obstetric outcomes. Statistical analyses were performed using SPSS version 25, with Chi-square and Mann-Whitney U tests applied for group comparisons ( $p < 0.05$ ).

**Results:** OB/GYN residents reported significantly higher rates of sleep disturbances (72.3% vs. 29.7%), concentration difficulties (71.4% vs. 45.1%), and perceived work-related stress ( $>8/10$ : 44.5% vs. 5.5%) compared to controls ( $p < 0.001$ ). They also reported significantly less sleep ( $<6$  hours: 60% vs. 30.8%). Despite similar BMI, dietary habits, and exercise routines between groups, pregnancy complications were more frequent among residents (51.3% vs. 35.2%,  $p = 0.02$ ), and they had significantly lower pregnancy rates ( $p = 0.0001$ ). No significant differences were found in abortion rates, cesarean deliveries, or labor augmentation.

**Conclusions:** OB/GYN residency is associated with increased psychological and lifestyle stressors that may negatively impact reproductive health. Although residents reported comparable happiness levels, their higher stress, reduced sleep, and lower pregnancy rates with increased complications underscore the need for supportive policies to enhance well-being. Future research should focus on targeted interventions to mitigate stress and improve health outcomes among female medical residents.

**Keywords:** OB/GYN residency, Female physicians, Psychological stress, Reproductive health, Pregnancy outcomes, Work-life balance

## INTRODUCTION

In medical residency programs, particularly in obstetrics and gynecology (OB/GYN), residents endure grueling schedules characterized by long working hours and minimal opportunities for rest.<sup>1</sup> This intense workload often leads to chronic sleep deprivation among residents, which has significant implications for their health and professional performance. In numerous countries, the demanding nature of OB/GYN residencies is largely associated with the extensive weekly work hours, which not only contribute to sleep deficits but also increase the likelihood of errors and malpractice issues due to fatigue and decreased alertness.<sup>2</sup>

Research indicates that such demanding conditions contribute to an unhealthy lifestyle among OB/GYN residents. One frequently observed outcome is a rise in body mass index (BMI) among residents, which is associated with adverse reproductive health outcomes such as prolonged time to achieve pregnancy and higher risks of first-trimester miscarriage. Lifestyle habits prevalent among residents, such as smoking and excessive caffeine consumption, further compound these health risks. These factors underscore the urgent need for interventions promoting healthier lifestyles among medical residents.<sup>3</sup>

A healthy lifestyle encompasses several key practices that are essential for improving overall well-being and mitigating the adverse effects of residency stress. Adequate sleep, maintaining a normal body weight through nutritious diet and regular physical activity, and avoiding harmful habits like smoking are crucial components. Research indicates that residents focusing on these health areas tend to see improvements in both their physical condition and mental well-being.<sup>3,4</sup> Positive mental health, characterized by emotions such as joy, happiness, and overall positive mood, plays a pivotal role in enhancing work performance and reducing the risk of chronic illnesses.<sup>5</sup> Conversely, negative mental states like chronic stress and worry have been linked to increased susceptibility to illness and mortality. Therefore, interventions aimed at improving the mental well-being of OB/GYN residents can potentially yield significant benefits in terms of both personal health and professional outcomes.<sup>5</sup>

To better understand the impact of lifestyle on obstetric and gynecological outcomes, researchers have compared the health profiles of OB/GYN female residents with those of women in the general population of similar age groups. This comparative analysis aims to identify specific lifestyle factors that may influence reproductive health outcomes, such as fertility rates and pregnancy complications.<sup>1-6</sup> By studying these correlations, healthcare providers can develop targeted interventions to support the health and well-being of OB/GYN residents while optimizing patient care. In conclusion, the demanding nature of OB/GYN residency programs necessitates a proactive approach towards promoting

healthier lifestyles among medical trainees. Addressing factors such as sleep deprivation, unhealthy dietary habits, and inadequate physical activity not only benefits the individual residents but also enhances the quality of care provided to patients. By fostering a supportive environment that prioritizes resident well-being, medical institutions can contribute to the long-term health and professional satisfaction of their healthcare workforce.

## METHODS

### *Study design*

This cross-sectional study was conducted between January and August 2024 via an online questionnaire targeting Saudi married women with children. The survey was hosted on Google Forms and distributed through social media and professional networks by the authors. Participants included two groups: female OB/GYN residents and age-matched women from the general population. The residency group was composed of female residents working in various hospitals, including King Fahad Hospital of the University, which is affiliated with Imam Abdulrahman Bin Faisal University.

Non-Saudi women, individuals from medical specialties other than OB/GYN, and male residents were excluded. All participants were provided with detailed information about the study and gave their written informed consent prior to participation.

### *Ethical considerations*

This study was carried out in accordance with the institutional research board of Imam Abdulrahman Bin Faisal University's Faculty of Medicine, which gave its approval to the study protocol.

### *Structure of the questionnaire*

The writers created the questionnaire after performing a thorough analysis of the pertinent research, which was then translated into Arabic and adjusted with Saudi Arabia culture accordingly. A member of the obstetrician-gynecologist team with prior experience working with questionnaire-based research was then invited to review the questionnaire.

The questionnaire was pilot tested with ten different participants who met the eligibility requirements. This pilot testing was undertaken to assess the questionnaire's format, clarity, and length. Following the results of this pilot testing, a few small changes were made to the original questionnaire. The participants were made aware that their participation in the survey was fully voluntary, and they were offered the option to drop out of the study. Their names and contact information, among other personal information, would be kept in the strictest confidence and used only for scientific study.

The questionnaire included demographic data, healthy lifestyle characteristics, occupational data, gynecological and obstetrics characteristics. First is the demographic data collected including the participant's age, marital status, number of offspring, and residence type. Specifically, respondents were asked to provide their current age, indicate whether they were married or not, state the number of offspring they have, and describe their current residence type.

Next are the health-related lifestyle characteristics gathered from participants including their height, weight, dietary habits, exercise routine, recent weight changes, caffeine and alcohol consumption, drug or medication use, sleep patterns, concentration levels, anxiety and worry, and general feelings of happiness. Specifically, respondents were asked to provide their current height and weight, indicate whether they maintain a healthy diet and exercise regularly, note any recent weight gain or changes in caffeine intake, report on any alcohol, drug, or medication abuse, share details on their weekly exercise frequency, sleep duration and quality, difficulties with concentration, excessive anxiety and worry, and overall feelings of happiness in daily life. Following that is the occupational data which is focused on the job's characteristics to measure the burdensome on both samples, including working hours per day and week, how stressful is the work environment, number of night shifts per month and the hospital delivery rate monthly and yearly.

Furthermore, gynecological characteristics are measured by menstrual cycle regularity, duration and heaviness of the menstruation. On the other hand, obstetrical characteristics are measured by parity and gravidity before and during residency, pregnancy complications such as (GDM, preeclampsia, intrauterine fetal death), abortions, the need for labour augmentation and emergent cesarean section delivery. The questionnaire measures how obstetrics and gynecology residency's work environment may have an effect on the obstetrics and gynaecology outcomes for the residents.

### **Statistical analysis**

IBM SPSS Statistics version 25 was used for the data analysis. All variables had descriptive statistics computed for them, including means, frequencies, percentages, and standard deviations when needed. Chi square tests were used to evaluate the connections between category variables.

The Mann-Whitney U test was employed to compare group differences for variables that did not fit the assumptions of parametric testing.

For every analysis,  $p < 0.05$  was designated as the level of statistical significance. In order to offer information regarding the extent of the observed effects, effect sizes were calculated when necessary.

## **RESULTS**

During the study, a total of 210 women actively participated by completing the questionnaire. Among these participants, 119 individuals, accounting for 56.7% of the total, were OB/GYN female residents from 40 different hospitals. This group demonstrated a response rate of 74.7%. The remaining 91 participants, comprising 43.3% of the total, were controls who were acquaintances of the researchers.

The age distribution among the controls showed that the majority, 60 (65.9%), were over the age of 35. In contrast, among the OB/GYN Residents, the age distribution was as follows: 35 individuals or 29.4% were between the ages of 25-30, 40 individuals or 33.6% were between the ages of 30-35, and 34 individuals or 28.6% were over the age of 35. Regarding housing, the study reported that most controls, 60 individuals or 66%, lived in villas. On the other hand, only 58 OB/GYN female residents, accounting for 48.7% of the total, lived in villas. Our analysis showed no significant difference in married status, BMI, healthy diet, alcohol and drug consumption, and exercise. Although happiness is higher in OB/GYN female residents, the analysis reported statistically significant increase of stress or tension, sleeping, and concentration difficulties in OB/GYN female residents compared to controls. Around 71 (60%) OB/GYN female residents sleep less than 6 hours, while 55 (60.4%) of the controls sleep between 6-8 hours daily. When participants asked to rate the stress level in their work environment: around 53 (44.5%) of OB/GYN female residents voted more than eight, but only five of controls (5.5%) voted more than eight. Most controls 40 (44%) voted 4-6 and only 29 (24.4%) voted 4-6. the number of deliveries per month at the hospital where they work would vary greatly from month to month. Generally, the median number of deliveries could be 380 with IQR (150-600). Our data shows that Prince Sultan Military Medical City hospital (PSMMC) has the highest number of deliveries that ranges between 1500 to 2000 each month.

The study examined the obstetric and gynecological outcomes in the study population. While the overall rate of irregular menstruation was similar between the groups ( $p=0.56$ ), a notable finding was that 17.6% of the OB/GYN residents reported changes in their menstrual period during residency.

The pregnancy rate was more in the control group compared to the resident group [3 (1-5) verses 2 (0-4),  $p=0.0001$ ], a notable finding was that around 48 (55.8%) of residents who didn't have children before, have children after residency and around 53 (72.6%) of residents who have children before, have children after residency. However, a significant difference between the groups in the rates of pregnancy complications ( $p=0.02$ ), there is no significant difference between the groups in abortion, augmentation of labor, or cesarean delivery.

**Table 1: Comparison of demographic, lifestyle, and work-related characteristics between OB/GYN residents and controls.**

Variables	OB/GYN residents N (%)	Controls N (%)	P value
	119 (56.7)	91 (43.3)	
<b>Married</b>	99 (83.2)	80 (87.9)	0.34
<b>Housing in villas</b>	58 (48.7)	60 (66)	0.01
<b>BMI</b>	25.15 (22.34-27.68)	25.78 (23.61-28.01)	0.09
<b>Healthy diet</b>	56 (47.1)	38 (41.8)	0.34
<b>Alcohol consumption</b>	1(0.8)	0	0.46
<b>Drugs consumption</b>	5 (4.2)	3 (3.3)	0.44
<b>Exercise (time/week)</b>	1 (1-2)	1 (1-2)	0.83
<b>Difficulty with sleep</b>	86 (72.3)	27 (29.7)	0.0001
<b>Concentration difficulty</b>	85 (71.4)	41 (45.1)	0.0001
<b>Tension and fear due to activities</b>	86 (72.3)	55 (60.4)	0.07
<b>Working more than 40 h weekly</b>	96 (80.7)	35 (38.5)	0.0001
<b>Sleeping less than 6 hours</b>	71 (60)	28 (30.8)	0.0001
<b>Stress work environment rating &gt;8</b>	53 (44.5)	5 (5.5)	0.0001
<b>Happiness</b>	94 (79)	81 (89)	0.05

**Table 2: Comparison of gynaecological and obstetric outcomes between OB/GYN residents and controls.**

Variables	OB/GYN residents N (%)	Controls N (%)	P value
	119 (56.7)	91 (43.3)	
<b>Irregular menstruation</b>	15 (12.6)	16 (13.4)	0.56
<b>Pregnancy</b>	2 (0-4)	3 (1-5)	0.0001
<b>Complications during pregnancy</b>	61 (51.3)	32 (35.2)	0.02
<b>Vaginal bleeding</b>	26 (21.8)	10 (11)	0.13
<b>Gestational diabetes</b>	12 (10.1)	8(8.8)	
<b>Early labor</b>	19 (16)	10 (11)	
<b>Eclampsia</b>	4 (3.4)	4 (4.4)	
<b>Abortion</b>	47 (39.5)	32 (35.2)	0.52
<b>Augmentation of labor</b>	55 (46.2)	44 (48.4)	0.75
<b>Caesarean delivery</b>	52 (43.7)	44 (48.4)	0.5

## DISCUSSION

Our research on lifestyle influence among OB/GYN female residents in Saudi Arabia reveals significant findings regarding age distribution, housing conditions, and lifestyle factors, particularly stress and sleep patterns.

Significantly, Hancke et al found OB-GYNs often work in high-pressure environments, including hospitals and clinics, where they are required to be on call for deliveries and emergencies.<sup>7</sup> This unpredictability can lead to long and irregular hours, which may affect their physical and mental well-being during pregnancy. The stress associated with managing patients and being available for childbirth can create challenges in balancing personal health and professional responsibilities.

Mohr-Sasson et al conducted a study with 97 participants- 56 female OB/GYN residents and 41 controls- who completed questionnaires evaluating diverse lifestyle and health factors.<sup>6</sup> Findings revealed that OB/GYN residents

experienced notably more negative lifestyle factors than controls, such as increased work-related stress (94.6% verses 48.8), greater sleep deprivation (75.6% verses 31.8), inferior dental hygiene (23.2% verses 65.8), and unhealthier dietary habits (62.5% verses 36.6). Both groups reported similar levels of general happiness, despite these adverse lifestyle factors. Interestingly, OB/GYN residents had a substantially higher pregnancy rate (53.6% verses 22), while no significant differences were observed in pregnancy complications, abortion rates, labor augmentation, or cesarean deliveries. Logistic regression analysis identified both residency and parity as independent factors positively associated with the higher pregnancy rate among the residents.

Socio-economic disparities were evident in housing conditions, as 66% of controls resided in villas, whereas only 48.7% of OB/GYN residents did. This difference may influence stress levels and overall well-being, as living conditions can significantly affect mental health and lifestyle choices. Although no significant differences were



found in marital status, BMI, diet, alcohol and drug consumption, or exercise, the higher reported happiness among residents starkly contrasts with their increased stress levels. This aligns with other studies suggesting that healthcare professionals frequently endure high stress from their demanding roles, potentially leading to burnout and affecting the quality of patient care. The job's demanding nature can result in heightened stress levels, potentially impacting pregnancy. Elevated stress can contribute to complications such as hypertension and preterm labor. OB-GYNs might experience emotional strain from their work's nature, involving high-stakes scenarios and occasional tragic outcomes. This emotional load can impact their mental health, a critical factor during pregnancy.<sup>7</sup> Analysis showed that 60% of OB/GYN residents sleep under six hours nightly, whereas 60.4% of controls sleep between six to eight hours.

Some research has shown that residents in obstetrics and gynecology report some of the highest levels of sleep deprivation and work-related stress compared to their counterparts in other specialties, often due to long hours and the unpredictability of their work schedules.<sup>1</sup>

Research has demonstrated that lack of sleep impairs residents' performance, especially in areas like critical thinking and clinical decision-making, which are vital in the field of obstetrics and gynecology.<sup>11</sup> The demanding workload and high number of deliveries frequently require residents to remain on call for long durations, further intensifying their fatigue and stress. This situation creates a challenging environment where residents must balance the demands of their training with the need for adequate rest and recovery.

Maintaining work-life balance can be especially challenging for OB-GYNs, notably during their own pregnancies. The need to maintain a practice while managing personal health can be challenging. Some OB-GYNs choose to reduce their obstetric workload or shift focus to gynecology to achieve a more manageable lifestyle. Such choices may reduce stress levels and support a healthier pregnancy journey.<sup>10</sup> The unique relationships that OB-GYNs develop with their patients can also play a role in their pregnancy experiences. The emotional support from patients and the fulfillment derived from their professional role can be beneficial. Still, managing professional relationships while navigating a personal pregnancy can be challenging.<sup>10</sup>

The variability in the number of deliveries per month at hospitals, with a median of 380 deliveries and some facilities like Prince Sultan Military Medical City (PSMMC) handling between 1500 to 2000 deliveries, highlights the demanding nature of the OB/GYN residency. Managing a large number of patients can greatly increase the stress and exhaustion experienced by healthcare workers. This observation is consistent with prior research highlighting the difficulties encountered by residents, especially in high-pressure fields such as

obstetrics and gynecology. Evidence consistently indicates that heavier patient loads contribute to elevated stress among medical professionals. The intense workload associated with managing a high volume of deliveries necessitates not only physical stamina but also mental resilience. Residents are required to make quick, informed decisions in high-pressure situations, which can be overwhelming, particularly for those in the earlier stages of their training. Such working conditions may contribute to burnout-characterized by emotional, physical, and mental fatigue- a common issue among medical personnel.<sup>8</sup>

### **Strengths**

The study has several strengths, including comprehensive insights into health and lifestyle differences for OB/GYN residents, effective issue identification through comparative analysis with a control group, and addressing critical reproductive health challenges while emphasizing significant mental health concerns.

### **Limitations**

However, it has several limitations, including a limited sample size, reliance on self-reported data can introduce biases and the lack of an evaluation of effective interventions for improving resident well-being. Further research should investigate the specific factors contributing to high stress, sleep disturbances, and concentration difficulties among OB/GYN residents. Comparative studies with other medical specialties may help identify unique stressors and health risks, leading to targeted improvements in residency programs and better health outcomes for OB/GYN residents.

### **CONCLUSION**

The study highlights critical differences in health and lifestyle between OB/GYN residents and the control group, underscoring the reproductive health challenges faced by female medical residents in this demanding specialty. While OB/GYN residents reported a greater sense of fulfillment in their roles, they also experienced significantly higher levels of stress, disrupted sleep, difficulty focusing, and emotional strain. Additionally, they exhibited lower pregnancy rates and a higher incidence of pregnancy-related complications compared to controls. Although menstrual irregularities were reported at similar rates in both groups, many residents experienced menstrual changes specifically during residency, suggesting a possible link to occupational stress. Interestingly, there were no notable differences in rates of abortion, labor induction, or caesarean deliveries. These findings point to the urgent need for institutional policies that promote a healthier work-life balance, improved stress management, and better support systems for residents. Prioritizing resident well-being may not only enhance their reproductive health outcomes but also contribute to better patient care. Further research is warranted to investigate

the specific factors behind the reduced fertility and increased pregnancy complications observed in this group.

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