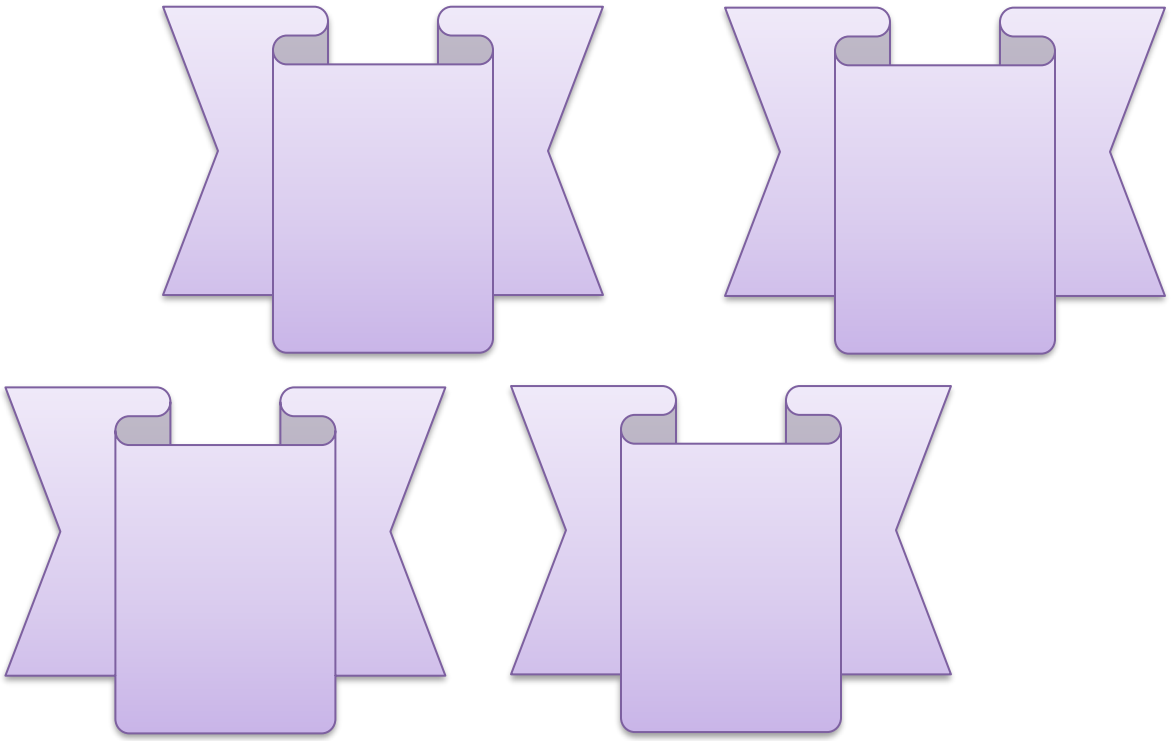
International Journal of Medical Arts

Volume 5, Issue 4, April 2023

https://ijma.journals.ekb.eg/



Print ISSN: 2636-4174

Online ISSN: 2682-3780

Available online at Journal Website
https://ijma.journals.ekb.eg/
Main Subject [Psychiatry]

Original Article

Prevalence of Depression in Pregnant Woman and Its Effect Throughout Pregnancy and Neonatal Outcome

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Article information

Received: 19-04-2023

Accepted: 04-06-2023

DOI: 10.21608/IJMA.2023.206879.1675.

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Citation: Gabr AAM, Mohamed AS, Zahran AM. Prevalence of Depression in Pregnant Woman and Its Effect Throughout Pregnancy and Neonatal Outcome. IJMA 2023 April; 5 [4]: 3197-3205. doi: 10.21608/IJMA.2023.206879.1675.

ABSTRACT

Background: Strong societal expectations are challenged by pregnancy-related depression, which presents difficult treatment decisions for doctors, especially when it comes to medicine. Prenatal depression has gotten little study interest and is sometimes disregarded in favor of postnatal depression, a more prominent illness.

Aim of the work: Evaluate depression neonatal outcomes in a population-based sampling of pregnant women with antenatal depression disorders. Determine the prevalence of mental illnesses, evaluate the obstetrics result and health care use during gestation and delivery.

Patients and Methods: A Prospective observational research. Third-trimester pregnant women visiting Sayed Galal University Hospitals in Bab El-Shaeria over a ten-month period, from September 2021 to [October- 2022]. The Beck Depression Inventory [BDI-II] was modified to precisely assess the depressive signs and symptoms included in the DSM-IV in order to improve the content validity of the assessment and to fit more accurately to the clinical guidelines for depression.

Results: All 200 of the survey respondents were diagnosed with one or more PRIME-MD conditions. Total, 70 [35%] of the women had depressive illness. Women with antenatal depression problems were more likely to contact their obstetrician than healthy participants did 58 [82.86%] while they also experienced nausea and vomiting; 57 [71.43%]. There were 50 [71.43%] participants visited their obstetrician as a result of early contractions. The multivariable analyses of obstetric outcomes and newborn outcome both included maternal variables related to depression diseases.

Conclusion: For a worsened neonatal outcome, including premature delivery or a baby that is tiny for gestational age, maternal prenatal depression problems are not a standalone significant predictor. A prenatal psychiatric problem is highly linked to postpartum depression, especially if a full DSM-IV psychiatric disorder is present throughout pregnancy.

Keywords: Psychiatric disorders; Obstetric; Neonatal outcome

INTRODUCTION

A mood or "affective" illness known as depression is "most frequently episodic, although it can also be recurring or lifelong [1]." According to the most recent World Health Report on mental health, depressive disorders accounted for 11.9% of all Years Lost because of disabilities [YLD] in 2000, making them the main contributor of YLD [1].

Gender-based research revealed that females [14%] than males [9.7%] were more likely than males to attribute their YLD to depression. According to the World Health Organization, females worldwide experienced depression at a level that is around twice that of males [2].

There is abundant proof linking depression to severe morbidity, increased mortality, and a higher level of functional disability [3-5]. While this is valid for depression individually, the effects are magnified once depression co-occurs with other conditions such ischemic heart disease, asthma, arthritis, angina, or diabetes [6].

According to latest statistics from around the world, estimations of the incidence of depressive disorders during pregnancy range greatly, from 7–15% in industrialized to 19–25% in less developed nations [7]. Strong societal standards are challenged by depression during pregnancy, which presents difficult treatment decisions for doctors, especially when it comes to medicine [8].

Untreated depression throughout pregnancy may result in a variety of negative effects on mothers and Childs' physical and mental health as well as functional and social effects that could also impair a woman's ability to take care of her own health all through her pregnancy and/or keep up the interpersonal connections that are so important during the antenatal and postnatal duration [8].

The current treatment options for pregnancy-related depression, including interpersonal medication and psychotherapy, have a variety of drawbacks in terms of price, acceptance, and safety. Yet, engaging in physical exercise might be a more affordable, secure, and agreeable substitute [9].

Because of the widely held perception that pregnancy protects against depression, pregnancy-related depression has not gotten much research attention [10]. Yet, mounting data indicates that depression during pregnancy can increase the risk of a variety of adverse effects for both the pregnant mother and her unborn child [10].

A woman's functional level, willingness to receive prenatal treatment, adherence with prenatal counsel, and capacity to abstain from harmful behaviors including smoking, drinking alcohol, and using other substances can all be impacted by mental disorder during pregnancy [11]. Postnatal depression is believed to be predicted by prenatal depression [12], indicating that postnatal depression could belong to a continuum with disease onset within pregnancy [13].

Depression within pregnancy exhibits the same signs and symptoms as depression at other times [14]. The majority of the day is spent in a sad mood, along with excessive or unwarranted guilt, a sense of worthlessness, a lack of attention, frequent thoughts of death or suicide, and certain bodily indicators including weariness and sleep disturbances [15].

Pregnancy hemorrhage, spontaneous miss-carriages, uncontrolled preterm labor, and elevated uterine artery permeability have all been associated to undiagnosed depression throughout pregnancy [reducing uterine artery blood circulation] [16]. A new investigation discovered an association between depression in late pregnancy and a higher risk of surgical births and hospitalizations to neonatal care facilities [7].

Several studies looking at the effects on children born to depressed women have found both short- and long-term harmful effects. Lower Apgar ratings, greater odds of admittance to a newborn care facility, neonatal developmental retardation, foetal death, lower birth weight, and elevated cortisol levels at birth have all been observed in newborns delivered to depressive mothers [11].

Furthermore, regardless of many other risk variables like socioeconomic background and repeated exposures to maternal depression, kids born to depressed mothers are more likely to engage in violent anti-social conduct when they reach adolescence [e.g. postnatal depression]. This long-term influence is thought to be caused by neurobiological abnormalities brought on by prenatal insults' impact on fetal growth [17].

PATIENTS AND METHODS

Patients

Third-trimester pregnant women visiting Sayed Galal University Hospitals in Bab El-Shaeria. To find gestational age, foetal abnormalities, foetal weight, and biophysical characteristics, regular ultrasonography scanning was conducted. We chose 200 women to participate in the study.

Study design: This was a Prospective observational research.

Study setting: The research was carried out over a ten-month period, from September 2021 to [October- 2022].

Ethical consideration: The investigation was carried out in conformity with the ethical standards outlined in the 1975 Helsinki Declaration as updated in 1983 and its subsequent additions because it was permitted and accepted by the organizational research ethical committee at Al-Azhar University Hospitals.

Inclusion criteria

Higher-risk females include: Teenage mothers [<18 years], women of low socioeconomic status, smoking whether positive or passive smokers, multiparty, body mass index of 30 or more, and females suffering from multiple somatic symptoms.

Exclusion criteria

Women with chronic disease, women receive medications inducing depression, complicated delivery either normal or CS and past history of depression before pregnancy.

Methods

Prime-MD

Using the Primary Care Assessment of Mental Disorders [PRIME-MD] approach, psychiatric diseases were identified. The PRIME-MD approach has been approved to be utilized in primary healthcare facilities and complies with DSM-IV criteria. With an excellent sensitivity of 83%, specificity of 88%, positive predictive value of 80%, and total reliability of 88%, PRIME-MD diagnosis accord very well with those of independent mental health practitioners [18].

Incidence of depression disorders

Using The Beck Inventory of Depression [BDI-II], a 21-items self-report tool designed to evaluate the presence and severity of depression symptoms as defined in the Diagnostic and Statistical Manual of Mental Disorders Fourth Editio [DSM-IV].

Scoring system

- Lower possibility of depression [0–7 scores].
- Probably simply adjusting to a new baby [8–12 scores],
- Observe indicators that PPD may be present; take precautions [13 – 14 scores] and,
- [15 plus] scores equals a higher likelihood of developing clinical depression.

Validity

The Beck Depression Inventory [BDI-II] was modified to precisely assess the depressive signs and symptoms included in the DSM-IV in order to improve the content validity of the assessment and to fit more accurately to the clinical guidelines for depression.

Obstetric and neonatal outcome

Dataset were taken from the mothers' and their children's' medical files after birth. Only comprehensive medical records were evaluated, and stillbirths and multiple births were disregarded from the neonatal analysis. Aging, parity, first-trimester BMI, socioeconomic level, smoking, and chronic conditions were examined parental social demographics and clinical features. Whenever a background of heart disease, diabetes mellitus, hypertension, or kidney illness was noted during the initial antenatal visit, these conditions were regarded as common long-term conditions. Information about earlier psychiatric disorders was taken from the moms' medical information.

Details on past miscarriages and infertility treatments were evaluated for the actual pregnancy. The medical records provided information about the numbers of antenatal visits, sickness, and vomiting during pregnancy [described as visits to the doctor and/or days lost from work due to vomiting and nausea], Pain,

and early labour contractions. Preeclampsia, protracted pregnancy, oligohydramnios, and third trimester bleeding were among the pregnancy issues that were evaluated for hypertensive condition [involving placenta previa and placenta abruptions], foetal hypoxia, restriction of intrauterine growth, and early delivery.

Records on induction of labour, elective or emergent caesarean sections, the administration of oxytocin, the duration of labour as reported by the patient, and the duration of the patient's stay in the delivery unit were collected. For the purpose of assessing delivery problems, information on slow labour progression, postpartum bleeding, foetal distress, and rupture of the anal sphincter was documented. Last but not least, information was gathered on the length of stay in the maternity department and earlier postpartum problems such infection, re-admission, and mastitis.

The Pediatric medical records were used to collect information on newborns' weight, Apgar scores at one and five minutes, neonatal intensive care, as well as the most prevalent Pediatric disorders. Preterm birth generally, spontaneous preterm delivery, small-for-gestational-age births, respiratory distress, asphyxia, and deformity were the symptoms noted during the research.

Statistical Analysis

Statistical Package for the Social Sciences [SPSS] was used to conduct the statistical analysis. Significant results were those with a two-sided p - values less than 0.05. Typically, maternal and neonatal characteristics were dichotomized. A multivariate logistic regression model that took into account maternal characters and mediation linked to a psychiatric illness was used to calculate adjusted odds ratios for all variables pertaining to neonatal and obstetric outcomes. The article's goal was to determine whether there was a difference between women with and without depressive disorders in the rate of total preterm births.

RESULTS

1. Incidence of depression disorders during pregnancy

We observed that 130 [65%] of the 200 study participants had never been diagnosed with depression. Overall, 70 [35%] of the women had a depressive condition. 20 women [10%] women had moderate depression, 20 [10%] had severe depression, and 30 [15%] had mild depression. Table [1] provides an overview of the prevalence of psychiatric diseases identified by PRIME-MD and The Beck Depression Inventory [BDI-II] across the entire group.

Vomiting and nausea occurred more frequently in prenatal depressed women. Furthermore, due to their increased frequency of attendance at the obstetrics-gynecology clinics and their increased frequency of visits to their obstetrician, women with antenatal mental diagnoses saw their obstetrician more commonly than normal persons [Table 2].

2. Obstetric outcome

The multivariate analysis of obstetric outcomes included parental variables linked to depression illnesses. According to [table 3], the existence of a diagnosis of depression in pregnancy was substantially and individually correlated with young mothers [<18 years], lower socioeconomic level, smoking, multi-parity, and BMI greater than 30 kg/m^2.

Elective caesarean sections are more frequently performed on women who have been diagnosed with depression. Antenatal depression had no impact on severe gestation delivery, or early postpartum problems [table 4].

3. Neonatal outcome

No significant differences have been indicated in terms of antenatal depression, and its relationship with neonatal outcomes [table 5].

Table [1]: Incidence of depression disorders detected by PRIME-MD and the Beck Depression Inventory [BDI-II]

Mental disorder	Total sample [n=200]
No depression diagnosis	130 [65%]
Mild depression	30[15%]
Moderate depression	20[10%]
Severe depression	20[10%]

Table [2]: Pregnancy statistics linked to the existence of a prenatal mental health diagnosis

Variable	Depression diagnosis [n = 70]	No depression diagnosis [n = 130]	Odds ratio‡	95% Confidence Interval
Nausea and vomiting* **				
Yes	50 [71.43%]	80 [61.54%]	Referent	1.29, 2.66
No	20 [28.57%]	40 [30.77%]	1.99	
Visits due to pain				
Yes	45 [64.29%]	75 [57.7%]	Referent	0.96, 2.31
No	25 [35.7%]	55 [42.31%]	1.47	
Visits due to fear of childbirth*				
Yes	58 [82.86%]	15 [11.54%]	2.54	1.65, 4.65
No	12 [17.14%]	115 [88.46%]	Referent	
Visits due to premature contractions**				
Yes	50 [71.43%]	75 [57.7%]	Referent	1.17, 2.98
No	20 [28.57%]	55 [42.31%]	1.72	

* p<0.05; ** p<0.01; *** p < 0.05.

‡ odds ratio modified for variables such as marital status, age, socioeconomic factors, smoking behaviors, parity, and body mass index. The rate of an occurrence happened divided by the probability that it won't happen is known as the odds of the event occurring. Odds ratio modified for body mass index, age, socioeconomic factors and smoking behaviors.

Table [3]: The existence of a prenatal psychiatric diagnosis is connected with certain demographic, behavioral, and clinical traits

Variable	Depression diagnosis [n = 70]	No depression diagnosis [n = 130]	Odds ratio‡	95% Confidence Interval
Parity**				
Primiparous	25 [35.7%]	55 [42.31%]	Referent	1.18, 2.24
Multiparous	45 [64.3%]	75 [57.69%]	1.67	
Age				
≤ 18 years	25 [35.71%]	45 [34.62%]	1.69	0.49, 5.65
≥ 35 years	45 [64.29%]	85 [65.38%]	1.15	0.95, 1.68
Smoking***				
No	65 [92.86%]	119 [91.54%]	Referent	1.57, 3.84
Yes	5 [7.14%]	11 [8.46%]	2.64	
Socioeconomic status*				
Employee	20 [28.57%]	55 [42.31%]	Referent	1.25, 2.29
House wife	50 [71.43%]	75 [57.7%]	1.57	
BMI*				
25-30	20 [28.57%]	35 [26.9%]	1.25	0.85, 1.92
>30	50 [71.43%]	95 [73.08%]	2.18	1.39, 3.38

* p<0.05; ** p< 0.01; *** p< 0.001.

‡ odds ratio modified for factors including age, marital status, socioeconomic position, smoking behaviors, parity, and body mass index.

Table [4]: Data on deliveries correlated with antenatal depression diagnoses

Variable	Depression diagnosis [n = 70]	No depression diagnosis [n = 130]	Odds ratio‡	95% Confidence Interval
Normal vaginal delivery without complications	25[35.7%]	75[57.69%]	1.22	0.85, 1.74
Normal vaginal delivery with complications	7 [10%]	9 [6.92%]	0.73	0.45, 1.48
Elective caesarean section**	30[42.85%]	37[28.46%]	1.86	1.16, 2.85
Urgent caesarean section	7 [10%]	7 [5.38%]	1.19	0.75, 1.96

**p< 0.01

‡ odds ratio modified for factors including age, marital status, socioeconomic position, smoking behaviors, parity, and body mass index. *One woman with depression diagnosis had normal vaginal delivery with complication which showed fits.

Table [5]: Data on deliveries correlated with antenatal depression diagnoses

Variable	Depression diagnosis [n= 70]	No depression diagnosis [n = 130]	Odds ratio‡	95% Confidence Interval
Birth weight				
< 2500 g	50 [71.43%]	13 [10%]	1.57	0.68, 3.87
2500 – 3999 g	14 [20%]	95 [73.08%]	Referent	
≥ 4000	6 [8.57%]	22 [16.9%]	1.36	0.96, 1.93
Apgar score at one min				
≥ 4	63 [90%]	125 [96.15%]	Referent	0.58, 5.47
< 4	7 [10%]	5 [3.85%]	1.69	
Apgar score at five minutes				
≥ 4	70 [100%]	128 [98.46%]	Referent	Not calculated
< 4	0 [0%]	2 [1.54%]	0.03	
Neonatal intensive care				
No	63 [90%]	115 [88.46%]	Referent	0.68, 1.65
Yes	7 [10%]	15 [11.54%]	0.96	
Premature birth				
No	56 [80%]	120 [92.31%]	Referent	0.59, 1.98
Yes	14 [20%]	10 [7.69%]	0.88	
Respiratory distress				
No	56 [80%]	125 [96.15%]	Referent	0.45, 2.74
Yes	14 [20%]	5 [3.85%]	0.99	
Malformation				
No	63 [90%]	128 [98.46%]	Referent	0.09, 1.98
Yes	7 [10]	2 [1.54%]	0.35	

‡ odds ratio modified for factors including age, marital status, socioeconomic position, smoking behaviors, parity, and body mass index.

*****One woman with depression diagnosis delivered female baby with cleft lip

DISCUSSION

Depressive disorders are the most prevalent psychiatric conditions throughout pregnancy and the postpartum period [19]. Incidence rates for pregnancy-related depression, according to worldwide data, range greatly, from 7–15% in industrialized to 19–25% in less developed nations [20].

Women who regularly attend hospitalized antenatal programs and regular antenatal healthcare were invited to take part in this research. In earlier studies employing the same form of test instrument in obstetric-gynecologic individuals, 20% and 30% of individuals were identified with psychiatric illnesses, respectively [21].

We found a 35% incidence rate for psychiatric illnesses. This majority did not include gynecological patients, which could be one reason for the gap. As a result, the results presented in this research likely more accurately represent mental health amongst pregnant women.

Mothers with any type of psychiatric disorder experienced somatic symptoms including nausea and vomiting substantially more frequently compared to those without such a condition. In their investigation of 186 pregnant women, **Kelly *et al.*** [22] made an identical outcome.

These outcomes support earlier, well-established research indicating generalized somatic symptoms are linked to psycho-pathology, particularly in women [23].

In the area of severe somatic pregnancy problems, **Sundstrom *et al.*** [24]'s study found a significant frequency of psychiatric conditions. It is conceivable that the majority of women with a diagnosis were earlier undiagnosed since the bulk of them did not receive treatment. Women frequently appear with atypical depression symptoms and/or vague physical complaints as signs of psychiatric disorders, which could be one cause. Generally, somatic complaints are frequent in pregnant women who are otherwise normal. The two most common signs of depression in women were a gloomy mood and exhaustion, loss of energy, or lost enthusiasm for everyday tasks.

According to the findings, prenatal depression problems are linked to more unfavorable experiences throughout pregnancy and delivery. On the contrary, severe obstetric problems were not impacted by prenatal depression. **Chou *et al.*** [25]'s observation of a connection between depression and earlier-pregnancy nausea, vomiting, and exhaustion confirmed the result that women with mental diagnoses had nausea and vomiting at a higher rate.

Additional result from the Depression Research in European Survey [26] showed that people with significant depression placed the most demands on healthcare services, paying almost 3 times as many visits to their general practitioner or family physician as people without the condition. Also, this research revealed that women with diagnoses visited the doctor more frequently than women without diagnoses.

Also, we found a strong correlation between prenatal melancholy and consultations for early labour, an elective caesarean section, and a labour that was prolonged than the patient had anticipated.

Several investigations have shown links between antenatal symptoms of depression and unfavorable pregnancy and/or delivery outcomes, such as a rise in the number of surgical deliveries, preterm births, and preeclampsia [27]. Our research found no link between antenatal depression and pregnancy or delivering issues such hypertension, preeclampsia, foetal growth restriction/hypoxia, or early delivery. In addition, the distribution of operative vaginal births and acute caesarean deliveries was the same in both women with a mental health diagnosis and normal volunteers.

The results imply that mother prenatal depression illnesses do not impact newborn outcomes. Despite the fact that our results conflict with those of other investigations. According to **Orr *et al.*** [27], spontaneous premature births and documented depressed indicators are significantly correlated. The fact that the research' objectives and diagnostic tools varied between them, as Orr and colleagues used the Center for Epidemiology Studies, may be a major factor in the inconsistent outcomes. Measure for measuring depressive symptoms, not depression as a diagnostic technique, the Depression Scale [CES-D]. 35% of the participants in our study had depressive disorders, as determined by PRIME-MD and The Beck Depression Inventory [BDI-II], and 20 [10%] of mothers had severe depression.

According to the current findings, 20 and 50.77% of the depression diagnosed and no depression diagnosed participants respectively were normal, 28.57 and 21.53% of them had baby blues, 27.14 and 20.76% respectively had signs leading to the possibility of PPD take the preventative measures and 27.14 and 20.76% had high probability of experiencing clinical depression.

Other than the use of various methodologies, it is also probable that the individuals used ranged and that the probability of premature delivery varied greatly among geographies. **Perkin *et al.*** [28] found no evidence of a link between maternal depression and preterm birth in a sample of white women, which is consistent with the findings of our research.

When contrasted with normal patients, postpartum mothers with a new-onset psychiatric condition did not significantly vary in terms of obstetric or neonatal outcomes. It suggests multiple etiologies that certain maternal traits are linked to depression during pregnancy but not after delivery. Also, previous research has noted that socio-demographic factors appear to vary based on whether depression was already existing throughout pregnancy or if it was a newly diagnosed condition [29].

Moreover, researchers discovered that various steroid hormones were linked to mood problems throughout pregnancy as opposed to postpartum, indicating various underlying causes [30].

Our investigation found that women with prenatal and postpartum psychiatric disorders had shortened gestational duration. This finding is likely explained by the fact that these women underwent more elective caesarean sections, which are often conducted one to two weeks before the expected due date.

Conclusion: According to the findings of our study, detecting and managing psychiatric illnesses during pregnancy ought to enhance both the health of the mother and the baby. According to the study's findings, treating prenatal depression would save expenses to community. Additional research is necessary to advance our

understanding, with randomized depression treatment for expectant mothers and subsequent evaluation of their and their offspring's outcomes.

Conflict of Interest and Financial Disclosure: None.

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International Journal of Medical Arts

https://ijma.journals.ekb.eg/
Print ISSN: 2636-4174
Online ISSN: 2682-3780