

Türkiye’de Gebelerde Fiziksel Rahatsızlık ve Yüksek Riskli Durumların Görülme Sıklığı: Sistematik Derleme ve Meta-Analiz

Prevalence of Physical Disorders and High-Risk Situations in the Pregnant Women in Turkey: A Systematic Review and Meta-Analysis

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ÖZ

Amaç: Bu çalışma Türkiye’de yapılan kesitsel çalışmalara dayalı olarak, gebelik sürecinde gelişen fiziksel rahatsızlıklar ve yüksek riskli durumların görülme sıklığı belirlenmesi amacı ile yapıldı.

Yöntem: Bu çalışma, kesitsel araştırmaların dahil edildiği bir sistematik derleme ve meta-analiz çalışması olarak yapıldı. Taramalar Nisan 2021’de ulusal ve uluslararası veri tabanları üzerinden “gebelik, Türkiye, hiperemesis, hipertansiyon, preeklampsi, diyabet, idrar enfeksiyonu, düşük, erken doğum, erken membran rüptürü, plasenta previa, abruption plasenta” anahtar kelimeleri kullanılarak gerçekleştirildi. Sistematik derlemeye dahil edilen araştırmaların metodolojik kalitesi Joanna Briggs Enstitüsü’nün Analitik Kesitsel Çalışmalar için hazırladığı JBI Kritik Değerlendirme Kontrol Listesi kullanılarak değerlendirildi. Veriler meta-analiz yapılarak sentez edildi.

Bulgular: Bu meta-analize 19 araştırma dâhil edildi ve bu çalışmaların toplam örneklem hacmi 159 022 idi. Bu verilere dayalı olarak yapılan meta-analizlerde tahmini görülme sıklığının gestasyonel diyabet için %7.8, üriner enfeksiyon için %16, preterm doğum eylemi için %10, erken membran rütürün için %8.7, preeklampsi için %2.8, gestasyonel hipertansiyon için %2.7, HELLP sendromun için %0.3, eklampsi için %0.1, hiperemesis gravidarum için %4, düşük tehdidi için %6.6, düşük için %3.8, üçüncü trimesterde kanama öyküsü için %1.2, placental abruption için %0.4, placenta previa için %0.3 olduğu belirlenmiştir.

Sonuç: Bu sistematik derlemede gebelik sürecinde bazı fiziksel rahatsız ve yüksek riskli durumların yaygın olduğu sonuçları elde edilmiştir. Bu sonuçlara dayalı doğum öncesi bakım hizmetlerinin planlanması ve sunumuna katkı sağlanabilir.

Anahtar Kelimeler: Gebelik, Yüksek risk, Sağlık problemleri, İnsidans, Meta-analiz, Bakım.

ABSTRACT

Objective: This study was conducted to determine the incidence of physical disorders and high-risk situations develop during pregnancy, based on cross-sectional studies conducted in Turkey.

Methods: This study was conducted as a systematic review and meta-analysis study that included cross-sectional studies. The scans were carried out in April 2021 through national and international databases using the keywords "pregnancy, Turkey, hyperemesis, hypertension, preeclampsia, diabetes, urine infection, miscarriage, premature birth, premature rupture of membranes, placenta previa, abruption placenta". The methodological quality of the research included in the systematic review was assessed using the JBI Critical Appraisal Checklist for Analytical Cross-Sectional Studies prepared by the Joanna Briggs Institute. Data were synthesized by meta-analysis.

Results: Nineteen articles were included in this meta-analysis, amounting to a total volume of 159,022 samples. Based on the data, we observed that authors of the meta-analyses estimated a prevalence of 7.8% for gestational diabetes, 16% for urinary infection,

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8.7% for premature rupture of membranes, 10% for preterm labour, 2.8% for preeclampsia, 2.7% for gestational hypertension, 0.3% for HELLP syndrome, 4% for hyperemesis gravidarum, 0.1% for eclampsia, 6.6% for threat of miscarriage, 3.8% for miscarriage, 1.2% for a history of bleeding in the third trimester, 0.4% for placental abruption, and 0.3% for placenta previa.

Conclusion: In this systematic review, it was concluded that some physical discomfort and high-risk conditions are common during pregnancy. These results may contribute to the planning and delivery of prenatal care services.

Key words: Pregnancy, Physical disorders, High-risk, Incidence, Meta-analysis, Care.

1. INTRODUCTION

Pregnancy is a natural, physiological process and in this period, many changes take place in the mother's body to accommodate the growth and development of the foetus and to avert possible risks to the pregnancy and delivery. Depending on the extent of these changes, some pregnant women develop physical disorders and high-risk situations (1,2). Being knowledgeable about the type of physical disorders and high-risk situations that can develop and their incidence is of vital importance in the planning and provision of health services.

The World Health Organization (WHO) has reported that about 303,000 women die each year around the world because of pregnancy-related complications. It has also been revealed that 2.6 million babies are stillborn and 2.7 million lose their lives while they are still neonates. The main complications causing maternal death are haemorrhage, infection, preeclampsia, and eclampsia (3,4). The Turkey Health Statistics Annual Report for 2019 reports a maternal mortality rate of 13.1 per 100,000 and an infant mortality rate of 9 per thousand (5). Again, according to Turkey's National Maternal Mortality Study, complications leading to maternal mortality are stated as haemorrhage, hypertensive diseases in pregnancy, and infection (6,7). It is important in terms of protecting the health of both mother and child and reducing mortality rates that early diagnosis is made and treatment is provided for the physical conditions that may impact a woman's health during pregnancy (1,4).

The most common physical conditions encountered in pregnancy are nausea and vomiting, head- and backache, breathing difficulties, varicose veins and oedema, cramps in the legs, haemorrhoids and urinary system infections. When such problems combine with various risk factors, the health of the pregnant woman is compromised and these disturbances may necessitate medical treatment and hospital care (8-10). Quality prenatal monitoring and care during pregnancy can prevent these physical conditions and high-risk situations, contributing to early diagnosis and averting any potential complications (2,4).

Midwives are health professionals who provide pregnant women with close monitoring and care services; identifying ongoing problems and participating in the treatment process. Among the basic competencies and responsibilities of midwives, as defined by the International Confederation of Midwives, are diagnosing risks during pregnancy, continuing treatment, and in high-risk cases, providing quality prenatal care services that also include medical referrals (11). According to the legislature in Turkey, midwives are expected to provide comprehensive prenatal care, identify high-risk cases emerging during pregnancy, and take the necessary precautions to ensure that safe and reliable referrals are made (12,13). In this context, the other responsibilities of midwives

including preventing the harm that any physical discomfort appearing during pregnancy may produce, identifying possible risks at the earliest, and taking precautions to protect the health of both mother and baby are emphasized (1,4,11).

We found that there were various meta-analyses in the international literature regarding the prevalence of some physical discomfort that pregnant women may experience (14-17). In Turkey, on the other hand, there were some observational studies on the prevalence of physical disorders and high-risk situations that develop during pregnancy, but we noted that there was no comprehensive data that could illuminate the status of this issue on a national scale. At the same time, there was no comprehensive and current data in the literature about hospitalization rates and the reasons for hospitalization. It was for this reason that we decided to undertake this systematic review and meta-analysis by pooling the results of existing studies to present a comprehensive view of the situation in Turkey in this context. We believe that the data obtained will contribute to the planning and presentation of quality prenatal care services and consequently to the improvement of mother and child, family, and public health.

Aim of the Study and Study Questions

This study was conducted to determine the prevalence physical disorders, and high-risk situations develop during pregnancy, based on cross-sectional studies conducted in Turkey. Question of study; 1) What is the prevalence of physical disorders and high-risk situations, developing in pregnancy?

2. MATERIALS AND METHODS

This systematic review and meta-analysis was carried out to create a working protocol; in its writing, we followed the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) (18). The working protocol was recorded in PROSPERO (CRD42021246025). To reduce the risk of bias during the study process, literature review, article selection, data extraction, and quality assessment of the included articles were carried out independently by two researchers (T.D. and P.E.) under the supervision of the responsible researcher. Differences of opinion that developed during the process of converting the independent studies of the two authors into a single common text were resolved through discussion in sessions attended by the principal researcher. Furthermore, a pilot study was conducted before the stages of the research, with all researchers participating.

Eligibility Criteria

The studies included in this study met the following criteria; Population (P): Pregnant women in Turkey, Exposure (E): Pregnancy, Outcomes (O): Physical disorders and high risks developing during pregnancy (hyperemesis, hypertension, diabetes, urinary infection, miscarriage, threat of miscarriage, early labour and other disorders, as defined in the studies). Study design (S): Cross-sectional studies published in Turkish and English over the period between 2015 and 2021

that appeared in a general scan on any topic regarding pregnancy and reported data on physical disorders and hospitalizations.

Observational studies and reviews, experimental and qualitative studies with sample groups with a specific disorder (e.g., adolescent and advanced-age pregnant women, the hospitalized, those using assisted reproductive techniques, those with asthma, hypertension, and diabetes mellitus, any psychological disorder, and endocrinological illness) were excluded from the study.

Searching Strategy

The literature search for this study was executed in April 2021. It was decided not to update the scans as it was thought that the pandemic process could have an impact on the results of the study. The literature search for the study was performed on the Web of Science, PubMed, Embase, PsycINFO, EBSCO, Clinics of Turkey, DergiPark and National Thesis Centre electronic databases. The search was conducted using the keywords “pregnancy AND Turkey AND (hyperemesis OR hypertension OR preeclampsia OR diabetes OR urinary infection OR miscarriage OR “preterm labour*” OR “premature rupture of membranes” OR “placenta previa” OR “abruption placentae”). The reference lists appearing in studies included in our research and in other reviews on the same subject were also checked for additional scanning.

Selection of Studies

Based on the inclusion criteria for this systematic review, two of the authors (T.D. and P.E.) worked independently to identify and select the studies. The studies that were eligible for inclusion in this study were selected, after the elimination of duplicated articles, based on titles, abstracts and full text. Consensus regarding the studies on which there was disagreement was reached through discussion in sessions attended by all three authors.

Data Extraction

Research data was collected using the data extraction tool developed by the researchers. This data extraction tool made it possible to collect data on the study design and area of interest, the year and place in which the study was conducted, the sample size, participant features, mean age and range, physical disorders developing during pregnancy, hospitalizations and the reasons for these hospitalizations. The data extraction was made by two researchers (T.D. and P.E.) independently of each other and both researchers met together to check the text and agree upon a final version.

Methodological Quality Evaluation of the Studies

The methodological quality of the studies included in this systematic review was independently assessed by two investigators (T.D. and P.E.). A single text was compiled in a combined session and then checked by the third author, thus arriving at a final commonly accepted text. Differences of opinion between the researchers were sorted out through discussion. The JBI Critical Appraisal Checklist for Analytical Cross-sectional Studies developed by the Joanna Briggs

Institute (JBI) was used in our examination of the methodological quality of the studies (19). There are eight questions in the checklist which elicit a choice of response of Yes, No, Unclear or Not Applicable. If, in our review of the methodological quality of the studies, less than 50% were assessed as “Yes,” the quality would be evaluated as “Average,” if 51%-80% were assessed as “Yes,” the quality would be “moderate,” and if more than 80% were assessed as “Yes,” the quality would be accepted as “Good quality.”

Data Synthesis

The data obtained in this study were synthesized by meta-analysis. Meta-analyses of the study were performed using Comprehensive Meta-Analysis Version 3-Free Trial (<https://www.meta-analiz.com/pages/demo.php>). To assess heterogeneity between studies, Cochran Q and Higgins I² tests were used, and heterogeneity was considered significant when the I² value was more than 50%. If I² was less and equal than 50%, Fixed Effect Model outcomes were taken into account, and if it was greater, Random Effect Model outcomes were taken into account. A confidence interval (CI) of 95% and estimated ratios for each outcome variable were calculated. Also, Egger’s regression intercept was used to determine publication bias among the studies. All of the tests were calculated on a two-tailed basis and a $p \leq 0.05$ value was accepted to be statistically significant.

3. RESULTS

Searching Results

The first search undertaken for this study resulted in 1203 records being reached. After screening for titles and abstracts and excluding duplicated articles, a total of 32 articles were reached for full-text review. After the review and selection of full-text studies according to the inclusion criteria, a total of 19 articles were included in this study, with the addition of additional studies. An explanation concerning the selection of articles is shown in Figure 1.

Characteristics of the Studies and the Participants

Nineteen articles were included in this meta-analysis, amounting to a total volume of 159,022 samples. All of the articles had been published in English. Thirteen (68.4%) were designed as retrospective cross-sectional, four (21.1%) as prospective cross-sectional, and two as (10.5%) cross-sectional research. The studies were conducted over the period 2007-2020 and published in 2015-2020. The studies were carried out in six different provinces and five different regions of Turkey: seven in Central Anatolia (20-26), six in the Marmara Region (27-32), three in the Aegean Region (33-35), and two in Southeastern Anatolia (36,37). One study, however, did not specify where the data had been collected (38). It was seen that data had been collected from hospital medical records in eighteen of the articles, and from a questionnaire in another study. The sample sizes in the articles varied in the range of 63-77 227 (24,29). We found that the ages of the pregnant women were in the range of 12-49 (Table 1).

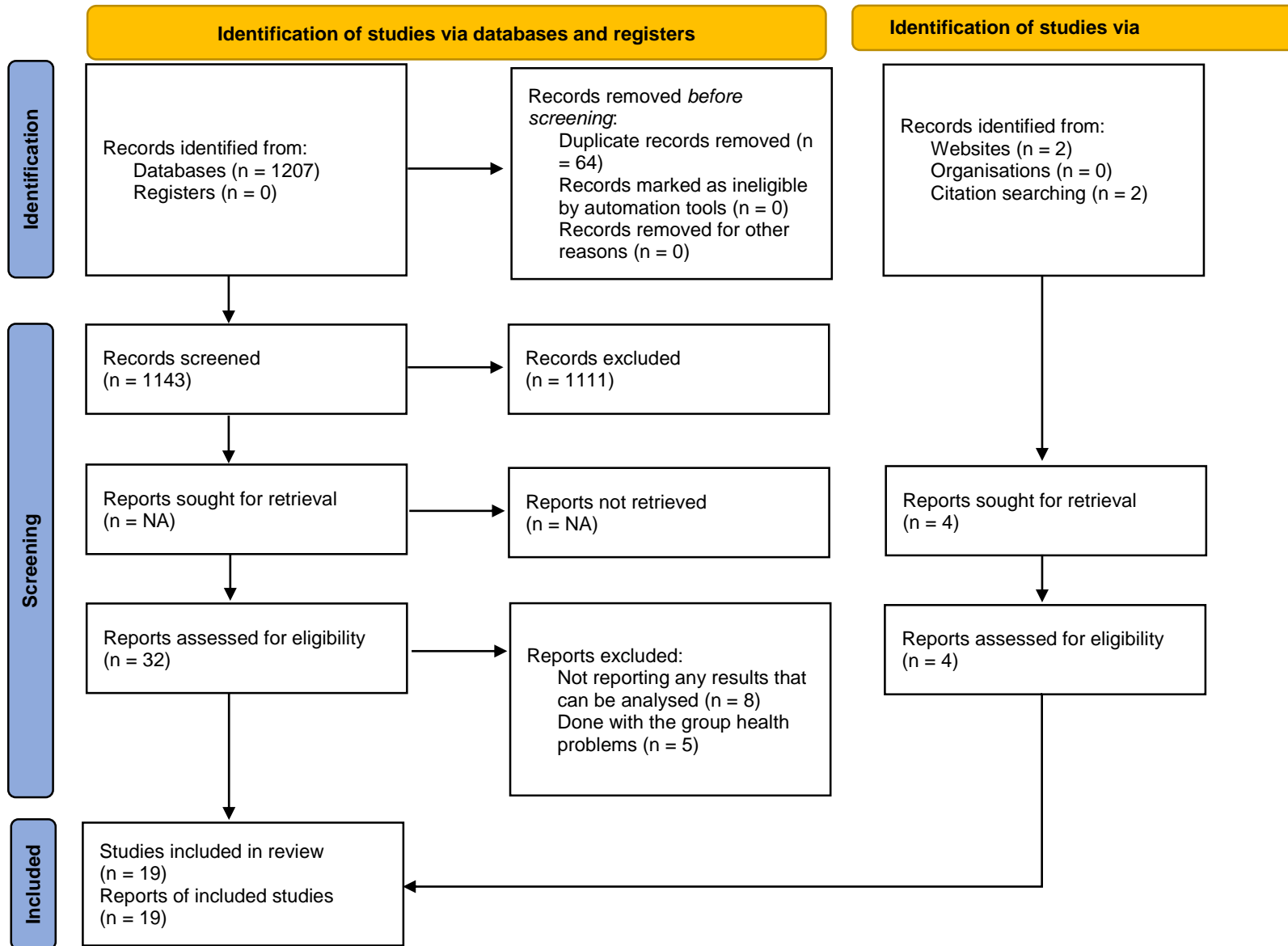


Figure 1. Flowchart of the Study

Table 1. Characteristics and main findings of studies included in the systematic review

Author(s) / Publication city	Data collection year	Study design / data source	Number of participants	Mean /median age, year (SD)	Disturbances during pregnancy and the number of cases
Aktün et al. (27) / İstanbul	2012-2013	Retrospective cross- sectional / hospital records	1360	29.3±3.4 30.8±3.2	Preterm birth: 64 Gestational hypertension: 30 Preeclampsia: 22 Gestational diabetes mellitus: 380
Arslan Çetin et al. (28) / İstanbul	2013-2018	Retrospective cross- sectional / hospital records	7750	19-29	Preterm birth: 852 Premature rupture of membranes: 186 Preeclampsia: 182 Eclampsia: 7 HELLP: 25 Placenta previa: 29 Gestational diabetes mellitus: 205 Placental abruption: 52
Ayaz et al. (29) / İstanbul	2018-2020	Cross-sectional / questionnaire	63	30.35±5.27	Threat of miscarriage: 10 Hyperemesis gravidarum: 13 Gestational diabetes mellitus: 4 Hypertension: 2
Aydın et al. (38) / 51 centres in different locations	2016-2017	Prospective cross- sectional / hospital records	1110	18-45	Gestational diabetes mellitus: 427
Bademkiran et al. (37) / Diyarbakır	2017-2018	Retrospective cross- sectional / hospital records	1328	21-35	Premature rupture of membranes: 793 Hypertension: 125 Gestational diabetes mellitus: 17
Bayraktar et al. (33) / İzmir	2016-2018	Retrospective cross- sectional / hospital records	625	19-35	Preterm birth: 80
Budak and Araç (36) / Diyarbakır	2016-2017	Retrospective cross- sectional / hospital records	2623	26.82 ± 5.7 26.54 ± 5.3	Preterm birth: 121 Gestational diabetes mellitus: 208
Çakmak et al. (30) / Bursa	2016-2017	Retrospective cross- sectional / hospital records	8916	16-35	Miscarriage: 342 Preterm birth: 307 Premature rupture of membranes: 746 Placenta previa: 19 Gestational diabetes mellitus: 416 Placental abruption: 63 Hypertension: 503

Table 1. Characteristics and main findings of studies included in the systematic review (continue)

Author(s) / Publication city	Data collection year	Study design / data source	Number of participants	Mean /median age, year (SD)	Disturbances during pregnancy and the number of cases
Dinçgez Çakmak et al. (31) / Bursa	2016-2017	Retrospective cross- sectional / hospital records	1306	16-40	Preterm birth: 243 Gestational diabetes mellitus: 97
Hançerlioğulları et al. (20) / Ankara	2018	Prospective cohort / hospital records	525	18-45	Gestational diabetes mellitus: 49
Karacaaltıncaba et al. (23) / Ankara	2013-2015	Cross- sectional / hospital records	1478	18-49	Gestational diabetes mellitus: 159
Kanmaz et al. (34) / İzmir	2013-2015	Retrospective cross- sectional / hospital records	24838	28.04 ± 6.225 27.46 ± 6.185	Threat of miscarriage: 1626 Hyperemesis gravidarum: 493 Preterm birth: 3404 Preeclampsia: 831 Gestational diabetes mellitus: 1027 Placental abruption: 67
Kansu Çelik et al. (21) / Ankara	2014-2015	Prospective cohort / hospital records	356	17-43	Preterm birth: 31 Preeclampsia: 10 Gestational diabetes mellitus: 67
Kansu Çelik et al. (22) / Ankara	2016	Prospective cohort / hospital records	285	28.7 ± 5.62	Preterm birth: 21 Premature rupture of membranes: 9
Karataşlı et al. (35) / İzmir	2013-2016	Retrospective cross- sectional / hospital records	17213	12-30	Hyperemesis gravidarum: 454 Preterm birth: 4029 Preeclampsia: 565 Gestational diabetes mellitus: 649 Placental abruption: 51 Placenta previa: 62 Threat of miscarriage: 680

Table 1. Characteristics and main findings of studies included in the systematic review (continue)

Author(s) / Publication city	Data collection year	Study design / data source	Number of participants	Mean /median age, year (SD)	Disturbances during pregnancy and the number of cases
Özgü Erdiñç et al. (24) / Ankara	2007-2017	Retrospective cross-sectional / hospital records	77227	15-49	Gestational diabetes mellitus: 4684
Soysal et al. (32) / İstanbul	2012-2015	Retrospective cross-sectional / hospital records	332	16-24	Preterm birth: 66 Premature rupture of membranes: 22 Gestational diabetes mellitus: 6 Urinary tract infection: 54 Third trimester bleeding: 4
Tonguç et al. (25) / Kayseri	2013-2014	Retrospective cross-sectional / hospital records	320	17-44	Gestational diabetes mellitus: 91
Uludağ and Karasu (26) / Kayseri	2010-2015	Retrospective cross-sectional / hospital records	11367	26.7 ± 7.6	Eclampsia: 21

Quality Assessment Results of the Studies

The quality results of the studies showed that 47.4% (9 studies) of the studies were assessed as good and 52.6% (10 studies) as moderate. While the studies fully responded to five of the Critical Appraisal Checklist's items, one item was matched by 79% and two others by 47.4% of the studies (Table 2).

Prevalence of Physical Disorders and High-Risk Situations Developing in Pregnancy

Data on the prevalence of gestational diabetes appeared in 16 of the studies examined included in this study (20,21,23-25,27-32,34-38). In the meta-analysis, the estimated prevalence of gestational diabetes was found to be 7.8% (95% CI: 0.05-0.11; z: -12.20, p<0.001; Table 3).

Data about preterm labour were reported in eleven studies (21,22,27,28,30-36). The estimated prevalence of preterm labour was found to be 10% in the meta-analysis (95% CI: 0.07-0.14; z: -11.14, p<0.001). Data about the prevalence of early membrane rupture (EMR) were stated in five studies in this meta-analysis (22,28,30,32,37). The pooled results of the studies indicated that the estimated prevalence of EMR was 8.7% (95% CI: 0.02-0.33; z: -2.82, p<0.001; Table 3).

Data on the prevalence of hypertension in pregnancy was reported in five studies included in this review (27-30,37). In the meta-analysis, the prevalence of hypertension estimated on the basis of these studies was calculated to be 2.7% (95% CI: 0.01-0.06; z: -7.75, p<0.001). Data on the prevalence of preeclampsia was reported in five studies included in this systematic review

(21,27,28,34,35). In the pooled results of these studies, the estimated prevalence of preeclampsia was found to be 2.8% (95% CI: 0.02-0.03; z: -38.51, p<0.001; Table 3).

There were data on the prevalence of eclampsia in two studies included in this review (26,28). In the meta-analysis of these studies, the estimated prevalence of eclampsia was calculated to be 0.1% (95% CI: 0.001-0.003; z: -18.70, p<0.001). In one study included in the systematic review, data were reported on HELLP syndrome (Haemolysis, Elevated Liver enzymes and Low Platelets) (28). In the meta-analysis based on these studies, the estimated prevalence of HELLP syndrome was calculated to be 0.3% (95% CI: 0.002-0.005; z: -28.62, p<0.001; Table 3).

In four studies included in the meta-analysis, data were reported on the prevalence of placental abruption (28,30,34,35). In the meta-analysis based on these studies, the estimated prevalence of placental abruption was calculated to be 0.4% (95% CI: 0.003-0.007; z: -20.66, p<0.001). Data were reported in three studies included in this systematic review on placenta previa (28, 30, 35). The pooled results of the studies indicated that the estimated prevalence of placenta previa was 0.3% (95% CI: 0.002-0.004; z: -37.15, p<0.001; Table 3).

Table 2. Critical Appraisal of Included Studies

Included studies	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Total (%)	Quality score
Aslan Çetin et al. (28)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Aktün et al. (27)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Ayaz et al. (29)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Aydın et al. (38)	Y	N	Y	Y	Y	Y	Y	Y	87.5	Good
Bademkırın et al. (37)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Bayraktar et al. (33)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Budak and Araç (36)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Çakmak et al. (30)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Diñgez Çakmak et al. (31)	Y	N	Y	Y	N	N	Y	Y	62.5	Moderate
Hañçerliođulları et al. (20)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Kanmaz et al. (34)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Kansu Çelik et al. (21)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Kansu Çelik et al. (22)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Karacaaltıncaba et al. (23)	Y	N	Y	Y	Y	Y	Y	Y	87.5	Good
Karataşlı et al. (35)	Y	N	Y	Y	N	N	Y	Y	62.5	Moderate
Özgü Erdiñ et al. (24)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Soysal et al. (32)	Y	Y	Y	Y	Y	Y	Y	Y	100	Good
Tonguç et al. (25)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Uludađ and Karasu (26)	Y	Y	Y	Y	N	N	Y	Y	75	Moderate
Total (%)	100	79	100	100	47.4	47.4	100	100		

Q: question; Y: yes; N: no.

Table 3. Meta-analysis findings related to physical health problems developing during pregnancy

Variables	Study number	Number of cases/ Total	Estimated ratios (%95 CI)	Heterogeneity			Test for overall effect: Z/ p
				Tau ²	Q-value / df / p	I ²	
Gestational diabetes mellitus	16	8 489 /146 745	0.078 (0.05-0.11)	0.62	3147.66/15/<0.001	99.52	-12.20/<0.001
Preterm birth	11	9 218 / 65 604	0.10 (0.07-0.14)	0.41	2129.83/10/<0.001	99.53	-11.14/<0.001
Premature rupture of membranes	5	1756 /18 611	0.087 (0.02-0.33)	3.44	2469.12/4/<0.001	99.84	-2.82/<0.001
Hypertension	5	685 / 18 089	0.027 (0.01-0.06)	0.99	272.65/4/<0.001	98.53	-7.75/<0.001
Preeclampsia	5	1 610 / 51 517	0.028 (0.02-0.03)	0.03	30.50/4/<0.001	86.89	-38.51/<0.001
Eclampsia	2	28 / 19 117	0.001(0.001-0.003)	0.16	2.69/1/0.101	62.86	-18.70/<0.001
HELLP	1	25 / 7 750	0.003 (0.002-0.005)	0.00	0.00/0/1.000	0.00	-28.62/<0.001
Placental abruption	4	233 / 58 717	0.004 (0.003-0.007)	0.26	47.60/3/<0.001	93.70	-20.66/<0.001
Placenta previa	3	110 / 33 879	0.003 (0.002-0.004)	0.04	4.58/2/0.101	56.30	-37.15/<0.001
Hyperemesis gravidarum	3	960 / 42 114	0.04 (0.03-0.06)	0.16	78.98/2/<0.001	97.47	-12.74/<0.001
Threat of miscarriage	3	2 316 / 42 114	0.066 (0.04-0.10)	0.15	140.62/2/<0.001	98.58	-10.92/<0.001
Miscarriage	1	342 / 8916	0.038 (0.035-0.043)	0.00	0.00/0/1.000	0.00	-58.43/<0.001
Urinary tract infection	1	54 / 332	0.16 (0.13-0.21)	0.00	0.00/0/1.000	0.00	-11.02/<0.001
Third trimester bleeding	1	4 / 332	0.012 (0.05-0.32)	0.00	0.00/0/1.000	0.00	-8.76/0.005

In three studies reviewed, data were reported on the prevalence of hyperemesis gravidarum (29,34,35). According to the pooled results of these studies the estimated prevalence of hyperemesis gravidarum was 4% (95% CI: 0.03-0.06; z: -12.74, p<0.001; Table 3).

Three studies included in this study contained data on the prevalence of the threat of abortion (30,34,35). In the meta-analysis, the estimated prevalence of the threat of abortion was calculated to be 6.6% (95% CI: 0.04-0.10; z: -10.92 p<0.001. One study included in our systematic review contained data on miscarriage (30). In the meta-analysis based on this study, the estimated prevalence of abortion was calculated to be 3.8% (95% CI: 0.03-0.04; z: -58.43, p<0.001; Table 3).

In another study reviewed, the authors reported data on urinary infection (32). In the calculations based on these data, the estimated prevalence of urinary infection was found to be 16% (95% CI: 0.13-0.21; z: -11.02, p<0.001; Table 3).

In another study, data was provided on cases of haemorrhaging in the third trimester (32). The calculations showed the prevalence of haemorrhaging in the third trimester to be 1.2% (95% CI: 0.01-0.03; z: -8.760, p<0.001; Table 3).

Results on Publishing Bias and Heterogeneity Between Studies

We found no statistically significant publishing bias in any of the meta-analysis sets created to pool the findings of three or more studies in this systematic review. Similarly, we found I² to be more than 50% in all of the meta-analysis sets created to pool the study findings of two or more articles (Table 3).

4. DISCUSSION

In this systematic review and meta-analysis based on the results of studies conducted in Turkey, we sought to examine the prevalence of physical disorders and high-risk situations developing, hospitalization rates, and the reasons for such hospitalization during pregnancy. Our study presents the pooled results of 19 studies that contain reports of the prevalence of 14 different health issues that develop during pregnancy. However, we could reach no data reported on hospitalization rates or the reasons for such hospital admissions during pregnancy for the period for which we performed a search for our systematic review. The data obtained from the studies are valuable in that they reveal comprehensive national data which may be beneficial in terms of contributing to the literature in the context of planning and implementing quality prenatal monitoring and care services.

The prevalence of gestational diabetes was found to be 7.8% in this systematic review. Indeed, in a previous meta-analysis performed in Turkey of the data of 41 studies published over the period 2004-2016, this rate was reported as 7.7% (39). Recent meta-analyses published in different countries, however, report a gestational diabetes prevalence of 4.4%-14.8% (40-43). In a cohort study from Germany with a large-sized sample, this rate was reported to be 13.2% (44). These results show that the prevalence of gestational diabetes has not changed significantly over recent years and in this respect is generally similar to results obtained in other countries. At the same time, the extreme values observed in other countries may be explained by the differences in diagnostic techniques and criteria.

We observed in our study that the estimated prevalence of preterm labour is 10%. Similar results were reported in a meta-analysis by Muchie et al. (15) and Sharifi et al. (45) (10.48% and 10%, respectively). The rate was 7.04% in the systematic review by Jing et al. (46). In a study based on results obtained from different countries, the prevalence rate of preterm labour was 21.8% in Pakistan, 12.4% in Zambia, 9.8% in Kenya and 10.7% in Guatemala (47). These figures demonstrate that preterm labour is a common health issue among pregnant women.

The prevalence rate of EMR in this systematic review was 8.7%. Similarly, Galletta et al. reported a rate of 8.9% in the study they conducted in Brazil (48). Contrary to this finding, in a study conducted in Uganda (49) as well as another African study by Lundebj et al. (50), the authors reported a rather high prevalence rate for EMR (12.1% and 29%, respectively). It is satisfying to know that this health issue is of lesser prevalence in Turkey. The difference may be explained by the quality of prenatal care services and also by the characteristics of the sample group.

Our meta-analysis revealed a prevalence rate of 2.7% for gestational hypertension. Gemechu et al. (14) and Noubiap et al. (16) reported much higher rates in their meta-analyses (4.1% and 5%, respectively). Contrary to these findings, the authors of a population study conducted in Sweden reported a very low prevalence rate for gestational hypertension (1.7%) (51). The different findings might be associated with the differences in the number of studies reviewed, their research designs and their sample sizes, as well as with the structure of healthcare services, socioeconomic status and cultural backgrounds in the various countries.

The estimated prevalence rate for preeclampsia in this study was 2.8%. A similar result was reported in a population study conducted in Sweden (2.9%) (51). In systematic reviews and meta-analyses performed in Ethiopia (17), Sub-saharan Africa (14), and in another African study (16), the reported prevalence of preeclampsia was higher (4.74%, 4.1% and 4.4%, respectively). According to these results, it can be seen that the prevalence of preeclampsia varies from study to study and by country. It can therefore be said that prevalence may be associated with a country's healthcare services and with socioeconomic and cultural factors.

The prevalence rate of eclampsia in this systematic review was 0.1%. This rate is significantly lower than rates reported in systematic reviews and meta-analyses carried out in Iran (52), Africa (14), and in that by Noubiap et al. (16) (0.23%, 1.5% and 1.5%, respectively). A prospective study in Ethiopia revealed a rate of 2.7% (53). The result we obtained in our study is quite pleasing and reflects the satisfactory quality of prenatal healthcare services provided in our country.

The prevalence of HELLP syndrome was 0.3% in our study. This rate was reported as 13% in a meta-analysis published in Ethiopia (54). Results indicate that the prevalence of HELLP varies from country to country and it is gratifying to know that the rate is so low in Turkey.

We found an estimated prevalence rate of 9.7% for preterm labour. Muchie et al. (15) and Sharifi et al. (45) reported similar results in their meta-analysis. In the meta-analysis of Jing et al. (46), the prevalence rate reported for preterm labour was 7.04%. According to data found in a study based on country populations, the prevalence of preterm labour is 21.8% in Pakistan, 12.4% in Zambia, 9.8% in Kenya, and 10.7% in Guatemala (47). Globally, preterm labour is the primary factor for the death of children below five (54). On the other hand, WHO states that around one million children die worldwide every year due to complications from preterm births, and survivors often suffer from lifelong health problems such as disability, learning difficulties, vision and hearing problems (55). These results are significant in that they reveal the negative effects of preterm labour on the health of mothers, infants and children. The current knowledge on the prevalence of preterm birth may guide the development and implementation of prenatal health care policies on the subject.

In this study, the prevalence of placental abruption was 0.4%. In previous studies conducted in Ethiopia, this rate was reported as 3.5% (53) 1.3% (56) and 15.3% (57). In studies conducted in India, the prevalence rate of placental abruption was found to be 1.6% (58). Accordingly, it can be said that the prevalence of placental abruption is lower in Turkey, albeit varying, as reported in different studies.

We found the prevalence of placenta previa to be 0.3% in our study. Jauniaux et al. (59) and Balayla et al. (60) reported higher rates in their meta-analyses (0.56% and 10.5%, respectively). The prevalence rate of placenta previa in India (57) was reported in a prospective study as 0.87%, and in Austria (61) as 0.15%. These differing results may have stemmed from the sample sizes in the respective studies and from the individual differences between the pregnant women as related to time and location.

The prevalence rate of hyperemesis gravidarum in this study was found to be 4%. In a meta-analysis by Einarson (62), the prevalence of hyperemesis gravidarum was reported to be 1.1%

(ranging between 0.3%-3.6%). This rate was reported by Konikoff et al. (63) in their epidemiological study as 1.2%, by Fiascjhi et al. (9) in their population-based study in the U.K., as 9.1%, by Nurmi et al. (64) in their study based on Finland's national records as 1.3%, and as 12.7% in a retrospective study by Nekkanti et al. (9). The differences in the results may be related to the differences in the standards defining hyperemesis gravidarum in the various countries. The guidelines on nausea and vomiting of the American College of Obstetricians and Gynaecologists states that there is no single definition nor diagnostic criteria defined for hyperemesis gravidarum (65).

The prevalence of the threat of miscarriage in our study was 6.6%. This rate was 12.8% in a population-based study carried out in Norway (66). In the United States, a rate of 19.7% was reported in a national study (67). The risk of miscarriage was reported in India (9) as 16.8% and as 28.5% in Bangladesh (68). Based on these results, it can be said that the risk of miscarriage is at a lower level in Turkey. On the other hand, the scant number of articles (3 studies) we reviewed in this study is an indication that more research must be done in this regard.

The prevalence of miscarriage in this systematic review was 3.8%. This rate was 28% in India (9), 10% in Nepal (69) and 12.7% in a population-based study conducted in Norway (66). The rates reported in the United States, based on national records, was 18.2% (70) and 13.5% (67). The fact that our findings differed from those obtained in other countries may be attributed to the number of studies reviewed in our analysis; the small size of the sample, which indicates the need for more research to be carried out in this area.

The prevalence of urinary infection in our meta-analysis was found to be 16%. Urinary infections prevalence rates were reported by Belete and Saravanan's meta-analysis of developing countries in Africa and Asia as 13.5% (71). The rate for the same condition was reported as 9.5% by Nekkanti et al. in their study in India (9). On the other hand, WHO refers to this infection as one of the leading causes of maternal death (55). These results demonstrate that urinary infection is a common health problem that has serious repercussions.

Researchers report in studies in the literature that obstetric haemorrhaging is the most commonly encountered cause of maternal death stressing that the condition must be managed with great care (7, 55). Haemorrhaging can occur during pregnancy, labour or in the postpartum. In our study, the prevalence of haemorrhage in the third trimester of pregnancy was seen to be 1.2%. This rate was 2.7% in the study by Kumar et al. (58) and 2.5% in the study by Nisar and Banday (72). Although these rates seem low, it must be said that this is a factor that must be seriously considered in the light of its possible contribution to maternal death.

Strengths and Limitations of the Study

The high score noted in the updated quality assessment of the studies examined in this meta-analysis, the wide range of additional resources available for scanning, and the low level of publication bias constitute the strengths of the study. At the same time, most of the data studied for this systematic review were obtained from hospital records and were therefore based on reliable methods and interpretations, making it possible to approach different aspects of our subject matter,

thus adding to the strength of our research. On the other hand, the low homogeneity observed in most of the studies included in the meta-analysis may have weakened the strength of the evidence. To keep this factor under control, the Random Effect model was preferred as it is an analysis in which the extent of heterogeneity is high.

5. CONCLUSION

Based on the data, we observed in this systematic review and meta-analysis a prevalence of 7.8% for gestational diabetes, 16% for urinary infection, 4% for hyperemesis gravidarum, 10% for preterm labour, 2.8% for preeclampsia, 2.7% for gestational hypertension, 0.3% for HELLP syndrome, 0.1% for eclampsia, 6.6% for threat of miscarriage, 3.8% for miscarriage, 8.7% for premature rupture of membranes, 0.4% for placental abruption, 0.3% for placenta previa and 1.2% for a history of bleeding in the third trimester. Based on our results, we might recommend that health professionals providing and managing prenatal care make use of these data when planning and implementing their services. Another recommendation would be to encourage the initiation of more observational and systematic reviews to expand and update the scope of our results, particularly in the area of hospitalizations in pregnancy and the reasons for such admissions.

Conflict of Interest

There is no conflict of interest among all authors.

Ethical Statement

Not applicable (this paper was provided based on researching in global databases and studies whose data are used are included in the reference list).

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