Original Article

Profile of High-Risk Pregnancy Attending Primary Healthcare Centers in Babylon Governorate in 2019

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Abstract

Background: Access to healthcare and prevention of maternal and neonatal mortality are of major components of social justice. Pregnancy could be a distinctive and natural physiological method among females, however will be deteriorated following background or sudden disorders of mother or fetus. Pregnancy is classified as high risk when mother, fetus, or neonate is more susceptible to disability, disorders, or death. High-risk pregnant mothers are women with history of chronic diseases (hypertension, thyroid disease cardiovascular disorders, and diabetes mellitus), history of abortion during previous pregnancies, multiparity, those aged <18 or more than 35 years, intervals <3 years pregnancies, delivery by cesarean section (CS), and gravidity more than four. **Objectives: (**1) Identify the prevalence of high-risk pregnancy (HRP) attending primary health care centers in Babylon province. (2) Assess the risk factors associated with HRP. **Patients and Methods:** An exploratory descriptive cross-sectional study to be conducted at about 10 primary healthcare centers include a convenient sample of 290 pregnant women who visit the antenatal care unit in Babylon governorate from February to May 2019. There are two tools used for data collection: Tool I: Morrison and Olsen high risk scoring inventory tool, it is simple, valid form for antenatal risk scoring which categorize patient as low, (0–2) high (3–6) or extreme high (7 or more) on the basis of past obstetric history, medical and surgical history and current pregnancy. Tool II: An interview questionnaire sheet designed by researches for data collection by which the pregnant are to be interviewed for about 10 min after giving their verbal consent. **Results:** The mean age of pregnant women is 25.53 ± 5.72; 54.1% from urban area and the majority not employee, i.e., 92.4% and their education level was primary, i.e., 37.6%, 40.7% had + ve husband consanguinity, and 86.2% had regular menstrual cycle. The risk factor affecting current pregnancy was mainly: anemia (18.6%) and hypertension (6.9%), and 6.2% sensitized due to RH negative. The factors affecting past pregnancy included the following: multipara (8.3%), previous miscarriage (12.1%), and previous CS (16.2%). Only 3.1% had previous surgery in the genital tract, 3.2% had gestational diabetes, and 1.7% had chronic hypertension. **Conclusion:** The results demonstrated the need for health surveillance and education, counseling and guiding women at risk. Early diagnosis, prompt treatment, and prevention should be taken as soon as possible by regular antenatal care to prevent complication.

Keywords: Healthcare centers, high-risk pregnancy, risk factors

Introduction

Pregnancy is an amazing phenomenon in female's life and usually promotes to successful outcomes. This period should be observed by pregnant woman herself and caregivers as part of a healthy life. Pregnancy is an experience involving dynamic actual physical, social, and psychological changes.[1] During pregnancy, a little number of women present with adverse clinical and/or obstetric conditions for their wellness and/or the fetus, constituting the group called high-risk pregnancy (HRP).[2] In general, the risk factors that may put the mother and fetus in bad conditions are individual characteristics, undesirable sociodemographic conditions, reproductive history, clinical, and obstetric conditions isolated or correlated with other complications that affect the progression of pregnancy, such as hypertension, diabetes mellitus (DM), and obesity, among others.[1,3] Different risk factors for HRP has been identified such as maternal age, multiple pregnancies, and interval between pregnancies below 1 year which consider risk factors for risky gestation.[4] Hypertensive disorders of gestation

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as well as preclampsia complicate up to 10% of pregnancies worldwide, constituting one in every of the common reason for perinatal mortality and morbidity.[5] DM in pregnancy is associated with hazards to the mother and to the developing fetus. Preterm labor, miscarriage, and preeclampsia are more common in women with previously developed diabetes. Stillbirth, congenital malformations, perinatal mortality, and hypoglycemia are more common in babies born to women with preexisting diabetes.[6] Teenage pregnant commonly develop pregnancy-related hypertension and anemia and to go through preterm labor and delivery than women who are older.[7] Obesity throughout pregnancy is considered a high-risk condition because it is linked to many complications. Compared with women who are normal weight, obese patients have a higher prevalence of infertility. Once they conceive, they have higher rate of early miscarriage and congenital anomalies. Incidence of cesarean section (CS) delivery, DM, and chronic hypertension increased in obese women. Fetuses born to obese mothers have a higher chance of being macrosomic and may have shoulder dystocia. In addition to being large at birth, babies born to obese mothers are also more susceptible to be overweight and obese in adolescence and adulthood.[8] This exploratory descriptive cross-sectional survey was prepared as an attempt to identify profile of HRP among Iraqi pregnant women in Babylon province and to allow the healthcare professionals prompt recognition, effectively prohibit, manage women with risk factors which successively results in decreased frequency of maternal and neonatal mortality.

Patients and Methods

Study design, setting and time

An exploratory descriptive cross-sectional study was conducted at about 10 primary health care centers in Babylon governorate from February to May 2019.

Study population

This study included a convenient sample of 290 pregnant women who visit the antenatal care unit in Babylon primary health care centers.

Sample size

The total sample required for this study is 290 pregnant women according to the fallowing equation:

$N = Z^2 P(1–P)/d^2$

N = sample size, P = prevalence, Z = 1.96, d = 0.05, Sample size = 29.

Statistical analysis

The collected data were coded, entered, and analyzed using SPSS, statistical package version 23 (SPSS, IBM Company, Chicago, USA).

Tools of data collection

Two tools used for data collection:

- Morrison and Olsen high-risk scoring stocking tool. It is a simple and proper form for antenatal risk scoring. It shows several risk factors in certain pregnancy influence the pregnancy out comes and these factors are more easily demonstrated in term of numerical score which categorize patient as low risk, (0–2) high risk (3–6) or extreme high risk (7 or more) on the basis of past obstetric history, medical and surgical history and current pregnancy
- Tool II: An interview questionnaire sheet designed by researcher for data collection by which the pregnant are to be interviewed for about 10 min after given their verbal consent.

Pilot study

A pilot study has been planned and conducted before starting collection of data for 2 weeks in two primary health care centers to test the questionnaire for any modification required, any other difficulties, to detect the time needed for data collection and to assess whether the research is realistic and workable. The pilot sample includes 29 pregnant women who were excluded from the sample.

Results

Table 1 shows that most of the women were at age 16–35 years and constitutes 90.7%. The mean age of studied women was 25.53 years ± standard deviation [SD] 5.72. Approximately 1.7% of the pregnant women were <16 years and 7.6% were aged >35 years; 37.6% of them had primary education level, 54.1% lived in urban area, 92.4% homemakers, and 99.7% of them were nonsmoker.

Table 2 shows that most of the women got conception at age 16–35 years and constitutes 92.8%; 59.3% of them had no

Table 1: Sociodemographic characteristics of 290 Babylonian pregnant women

Sociodemographic factors	Frequency, *n* (%)
Age	
<16	5 (1.7)
16-35	263 (90.7)
>35	22 (7.6)
Mean±SD	25.53±5.72
Education level	
Illiterate	28 (9.7)
Primary	109 (37.6)
Secondary	90 (31.0)
high education	63 (21.7)
Currently in school	
Yes	12 (4.1)
No	278 (95.9)
Currently working	
Yes	22 (7.6)
No	268 (92.4)
Smoking	
Current	1 (0.3)
Non smoker	289 (99.7)
Setting	
Urban	157 (54.1)
Rural	133 (45.9)

Table 2: Gynecological factors affect pregnancy of 290 Babylonian pregnant women

Variables affecting pregnancy	Frequency, *n* (%)
Age of conception	
<16	9 (3.1)
16-35	269 (92.8)
>35	12 (4.1)
Any degree of consanguinity	
Yes	118 (40.7)
No	172 (59.3)
Your menstrual cycle	
Regular	250 (86.2)
Irregular	40 (13.8)
Are you currently breastfeeding	
Yes	17 (5.9)
No	273 (94.1)
Any previous use of contraception	
Yes	55 (19.0)
No	235 (81.0)

Table 3: Factors affecting current pregnancy

Current pregnancy	Frequency, *n* (%)
PROM	
No	290 (100.0)
Hypertension during pregnancy	
Yes	20 (6.9)
No	270 (93.1)
Anemia	
Yes	54 (18.6)
No	236 (81.4)
IUGR	
Yes	1 (0.3)
No	289 (99.7)
Oligohydramnia or polyhydramnia	
Yes	1 (0.3)
No	289 (99.7)
Multiple gestation	
Yes	6 (2.1)
No	284 (97.9)
Fetal malpresentation after 36 weeks	
No	290 (100.0)
Sensitization due to RH negative	
Yes	18 (6.2)
No	272 (93.8)
Prolong pregnancy	
Yes	1 (0.3)
No	289 (99.7)
Bleeding >20 week	
Yes	2 (0.7)
No	288 (99.3)
Bleeding <20 week	
Yes	3 (1.0)
No	287 (99.0)

IUGR: Intrauterine growth retardation, PROM: Premature rupture of membrane

degree of consanguinity with their husbands, in 86.2%, their menstrual cycle was regular, and the majority, i.e., 94.1%

Table 4: Factors developed in past pregnancy or pregnancies which consider risk factors for current pregnancy

Past pregnancy or pregnancies	Frequency, *n* (%)
Age <16 or >35 years	
Yes	17 (5.9)
No	273 (94.1)
BMI <18 or >22.5 before pregnancy	
Yes	239 (82.4)
No	51 (17.6)
First visit <20 week	
Yes	4 (1.4)
No	286 (98.6)
Primi	
Yes	63 (21.7)
No	227 (78.3)
Para 5 and more	
Yes	24 (8.3)
No	266 (91.7)
Previous miscarriage	
Yes	35 (12.1)
No	255 (87.9)
Ectopic pregnancy	
Yes	7 (2.4)
No	282 (97.6)
Previous period of infertility	
Yes	8 (2.8)
No	282 (97.2)
Antepartum or past partum hemorrhage	
No	290 (100.0)
Fetal death during or after labor	
Yes	10 (3.4)
No	280 (96.6)
Preeclampsia or hypertension	
Yes	1 (0.3)
No	289 (99.7)
Preterm labor	
Yes	2 (0.7)
No	288 (99.3)
Postdate delivery	
Yes	1 (0.3)
No	289 (99.7)
Delivered baby >4 kg	
Yes	1 (0.3)
No	289 (99.7)
Delivered baby <2.5 kg	
Yes	1 (0.3)
No	289 (99.7)
Delivered baby with congenital anomaly	
Yes	1 (0.3)
No	289 (99.7)
Previous cesarean section	
Yes	47 (16.2)
No	243 (83.8)
Obstructed labor	
Yes	1 (0.3)
No	289 (99.7)

BMI: Body mass index

were not breast feeding, and 81% of them not use any contraception.

Table 5: Past medical and surgical history

Past medical and surgical history	Frequency, *n* (%)
Previous surgery in the genital tract	
Yes	9 (3.1)
No	281 (96.9)
Chronic renal disease	
No	290 (100.0)
Diabetes mellitus	
No	290 (100.0)
Chronic hypertension	
Yes	5 (1.7)
No	285 (98.3)
Heart disease	
No	290 (100.0)
Multiple gestation	
Yes	6 (2.1)
No	284 (97.9)
Epilepsy	
Yes	1 (0.3)
No	289 (99.7)
Gestational diabetes	
Yes	9 (3.2)
No	281 (96.8)
Psychological disorder	
Yes	1 (0.3)
No	289 (99.7)
Bleeding disorder	
No	290 (100.0)

The current pregnancy-associated morbidities which were considered as causes of HRP among the studied women included anemia (18.6%), pregnancy-induced Hypertension (6.9%), multiple gestation (2.1%) and sensitization duo to RH negative (6.2%), gestational diabetes (3.2), and vaginal bleeding (1.7%) [Table 3].

The results in [Table 4] shows that the majority of women (94.1%) aged (16–35) were in previous pregnancies. High rate of abnormal body mass index (BMI) was 82.4% which results in HRP. Also, HRP women manifested remarkably elevated frequencies as regards recent history of previous pregnancy associated morbidities, recent delivery with (CS) (16.2%), recurrent abortions (12.1%) in addition to multiparty (8.3%), ectopic pregnancy (2.4%), previous period of infertility (2.8%), fetal death during or after delivery (3.4%), preterm labor (0.7%).

Regarding past medical and surgical history, our study shows that 3.1% have previous surgery in genital tract, 1.7% have chronic hypertension, 3.2% have gestational diabetes, 2.1% have multiple gestation, 0.3% have epilepsy, and 0.3% have psychological disorders [Table 5].

Table 6 shows that there is a positive association between age, setting, and degree of risk. Maternal age in high-risk group was mostly in the risky range <18 and over 35. There were significant differences between the two groups; also, the setting had significantly influence the risk group while other sociodemographic factors as education level, employment, and smoking did not affect degree of risk.

The gynecological factors were not significantly affecting the risk, and there were no differences between the two risk groups [Table 7].

Table 6: The association between sociodemographic factors and degree of risk

Sociodemographic characteristics	Lower	High	Sever	Total	Degree of freedom	χ^2	*P*
Age							
<16	5 (2.3)	0 (0)	0 (0)	5 (1.72)	4	13.513	0.009*
16-35	202 (93.08)	58 (82.85)	3 (100)	263 (90.68)			
>35	10 (4.6)	12 (17.14)	0 (0)	22 (7.58)			
Education level							
Illiterate	21 (8.8)	8 (11.4	1 (33.3)	28 (9.7)	6	7.1	0.303
Primary	84 (38.7)	25 (35.7)	0 (0)	109 (37.6)			
Secondary	70 (32.3)	18 (25.7)	2 (66.7)	90 (31.0)			
High education	44 (20.3)	19 (27.1)	0 (0)	63 (21.7)			
Currently in school							
Yes	10 (4.6)	2 (2.9)	0 (0)	12 (4.1)	2	0.540	0.763
No	207 (95.4)	68 (97.1)	3 (100)	278 (95.9)			
Currently working							
Yes	15 (6.9)	7 (10.0)	0 (0)	22 (7.6)	2	0.969	0.616
No	202 (93.1)	63 (90.0)	3 (100)	268 (92.4)			
Smoking							
Yes	1 (0.5)	0 (0)	0 (0)	1 (0.3)	2	0.338	0.845
No	216 (99.5)	70 (100.0)	3 (100)	289 (99.7)			
Setting							
Urban	110 (50.7)	44 (62.9)	3 (100)	157 (54.1)	2	5.723	0.046*
Rural	107 (49.3)	26 (37.1)	0 (0)	133 (45.9)			

*Fisher-exact test

Table 7: The association between gynecological factors and degree of risk

Gynecological factors	Lower	High	Sever	Total	df	χ^2	*P*
Age_at_conception							
<16	5 (2.3)	4 (5.7)	0 (0)	9 (3.1)	4	4.489	0.344
16-35	205 (94.4)	61 (86.6)	3 (100)	269 (92.5)			
>35	7 (3.2)	5 (7.1)	0 (0)	12 (4.1)			
Your menstrual cycle							
Yes	184 (84.64)	64 (90.9)	2 (66.7)	250 (86)	2	2.933	0.231
No	33 (15.36)	6 (9.1)	1 (33.3)	40 (14)			
Are you currently breast feeding							
Yes	14 (6.5)	3 (4.26)	0 (0)	17 (5.8)	2	0.639	0.727
No	203 (93.5)	67 (95.4)	3 (100)	273 (94.2)			
Any previous use of contraception							
Yes	37 (17)	18 (25.5)	0 (0)	55 (19)	2	3.294	0.193
No	180 (83)	52 (74.5)	3 (100)	235 (81)			

Table 8: The association between factors affecting current pregnancy and degree of risk

Current pregnancy	Lower	High	Sever	Total	df	χ^2	*P*
PROM							
No	217 (100.0)	70 (100.0)	3 (100)	290 (100.0)			
Hypertension during pregnancy							
Yes	5 (2.3)	14 (20.0)	1 (33.3)	20 (6.9)	2	29.112	>0.001*
No	212 (97.7)	56 (80.0)	2 (66.7)	270 (93.1)			
Anemia							
Yes	34 (15.7)	20 (28.6)	0 (0)	54 (18.6)	2	6.509	0.039*
No	183 (84.3)	50 (71.4)	3 (100.0)	236 (81.4)			
IUGR							
Yes	0 (0)	1 (1.4)	1 (1.4)	0 (0)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	69 (98.6)	3 (100.0)			
Amniotic fluid abnormality							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Multiple gestation							
Yes	0 (0)	5 (7.1)	1 (33.3)	6 (2.1)	2	27.951	>0.001*
No	217 (100.0)	65 (92.9)	2 (66.7)	284 (97.9)			
Fetal malpresentation after 36 weeks							
No	217 (100.0)	70 (100.0)	3 (100.0)	290 (100.0)			
Sensitization due to RH negative							
Yes	0 (0)	16 (22.9)	2 (66.7)	18 (6.2)	2	66.532	>0.001*
No	217 (100.0)	54 (77.1)	1 (33.3)	272 (93.8)			
Postdate delivery							
Yes	0 (0)	0 (0)	1 (33.3)	1 (0.3)	2	95.998	>0.001*
No	70 (100.0)	70 (100.0)	2 (66.7)	289 (99.7)			
Bleeding >20 week							
Yes	0 (0)	1 (1.4)	1 (33.3)	2 (0.7)	2	48.741	>0.001*
No	217 (100.0)	69 (98.6)	2 (66.7)	288 (99.3)			
Bleeding <20 week							
Yes	2 (0.9)	0 (0)	1 (33.3)	1 (33.3)	2	31.328	>0.001*
No	215 (99.1)	70 (100.0)	2 (66.7)	2 (66.7)			

*$P \leq 0.05$ is significant. IUGR: Intrauterine growth retardation, PROM: Premature rupture of membrane

Table 8 shows the positive association between the factors affecting current pregnancy and degree of risk except premature rupture of membrane, intrauterine growth retardation, oligo or polyhydramnia and fetal malpresentation after 36 weeks which did not influence the risk of HRPs.

Other factors

Anemia, hypertension during pregnancy, multiple gestation, sensitization duo to RH negative, prolong pregnancy, and bleeding before and after 20 weeks showed significant statistical differences ($P < 0.05$).

Table 9: The association between factors affecting previous pregnancy or pregnancies and degree of risk

Previous pregnancies	Lower	High	Sever	Total	df	χ^2	*P*
Age <16 or >35 years							
Yes	9 (4.1)	8 (11.4)	0 (0)	17 (5.9)	2	5.273	0.072
No	208 (95.9)	62 (88.6)	3 (100.0)	273 (94.1)			
BMI <18 or >22.5 before pregnancy							
Yes	7 (3.2)	10 (14.3)	0 (0)	17 (5.9)	2	11.921	0.003*
No	210 (96.8)	60 (85.7)	3 (100.0)	273 (94.1)			
First visit <20 week							
Yes	3 (1.4)	1 (1.4)	0 (0)	4 (1.4)	2	0.043	0.979
No	214 (98.6)	69 (98.6)	3 (100.0)	286 (98.6)			
Primi							
Yes	58 (26.7)	5 (7.1)	0 (0)	63 (21.7)	2	12.780	0.002*
No	159 (73.3)	65 (92.9)	3 (100.0)	227 (78.3)			
Para 5 and more							
Yes	4 (1.8)	19 (27.1)	1 (33.3)	24 (8.3)	2	47.135	>0.001*
No	213 (98.2)	51 (72.9)	2 (66.7)	266 (91.7)			
Previous miscarriage							
Yes	14 (6.5)	19 (27.1)	2 (66.7)	35 (12.1)	2	29.867	>0.001*
No	203 (93.5)	51 (72.9)	1 (33.3)	255 (87.9)			
Ectopic pregnancy							
Yes	4 (1.8)	3 (4.3)	0 (0)	7 (2.4)	2	1.415	0.493
No	213 (98.2)	67 (95.7)	3 (100.0)	283 (97.6)			
Bleeding before or after delivery							
No	217 (100.0)	70 (100.0)	3 (100.0)	290 (100.0)			
Fetal death during or after labor							
Yes	3 (1.4)	7 (10.0)	0 (0)	10 (3.4)	2	11.914	0.003*
No	214 (76.4)	63 (22.5)	3 (100.0)	280 (96.6)			
Preeclampsia or hypertension							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Preterm labor							
Yes	1 (0.5)	1 (1.4)	0 (0)	2 (0.7)	2	0.745	0.689
No	216 (99.5)	69 (98.6)	3 (100.0)	288 (99.3)			
Postdate delivery							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Delivered baby >4 kg							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Delivered baby <2.5 kg							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Delivered baby with congenital anomaly							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Previous cesarean section							
Yes	22 (10.1)	24 (34.3)	1 (33.3)	47 (16.2)	2	23.380	>0.001*
No	195 (89.9)	46 (65.7)	2 (66.7)	243 (83.8)			

*Fisher-exact test. BMI: Body mass index

Table 9 shows the factors that had positive significant risk such as BMI, primi gravida, multi parity, previous miscarriage, fetal death before and after labor and previous cesarean section; these factors showed significant statistical differences ($P < 0.05$) while other factors no significant statistical differences were seen.

Regarding past medical and surgical history, only previous surgery in the genital tract, chronic hypertension, and thyroid

Table 10: The association between past medical and surgical history and degree of risk

Past medical and surgical history	Lower	High	Sever	Total	df	χ^2	*P*
Previous surgery in the genital tract							
Yes	5 (2.3)	3 (4.3)	1 (33.3)	9 (3.1)	2	9.903	0.007*
No	212 (97.7)	67 (95.7)	2 (66.7)	281 (96.9)			
Chronic renal disease							
No	217 (100.0)	70 (100.0)	3 (100.0)	290 (100.0)			
Diabetes mellitus							
No	217 (100.0)	70 (100.0)	3 (100.0)	290 (100.0)			
Chronic hypertension							
Yes	0 (0)	5 (7.1)	0 (0)	5 (1.7)	2	15.990	>0.001*
No	217 (100.0)	65 (92.9)	3 (100.0)	285 (98.3)			
Heart disease							
No	217 (100.0)	70 (100.0)	3 (100.0)	290 (100.0)			
Epilepsy							
Yes	1 (0.5)	0 (0)	0 (0)	1 (0.3)	2	0.338	0.845
No	216 (99.5)	70 (100.0)	3 (100.0)	289 (99.7)			
Gestational diabetes							
Yes	1 (0.5)	2 (2.9)	0 (0)	3 (1.0)	2	3	0.223
No	216 (99.5)	68 (97.1)	3 (100.0)	287 (99.0)			
Psychological disorder							
Yes	0 (0)	1 (1.4)	0 (0)	1 (0.3)	2	3.154	0.207
No	217 (100.0)	69 (98.6)	3 (100.0)	289 (99.7)			
Bleeding disorder							
No	217 (100.0)	70 (100.0)	3 (100.0)	290 (100.0)			
Thyroid disorder							
Yes	0 (0)	1 (1.4)	1 (33.3)	2 (0.7)	2	48.741	>0.001*
No	217 (100.0)	69 (98.6)	2 (66.7)	288 (99.3)			

*$P \leq 0.05$ is significant

disorders reported significant risk to high-risk group ($P < 0.05$); other factors showed no significant differences [Table 10].

Discussion

Pregnancy is a natural, physiological event in women's life. However, recent or induced disorders in mother and/or fetus, during current pregnancy, can affect it adversely.

The attempts to maintain women's health is a health scheme primacy. Nevertheless, a lot of women die annually, from causes linked to pregnancy and delivery, and also a lot of them experience complications of pregnancy.[9]

HRP is deemed to be a major global health problem running a higher risk of perinatal and maternal mortality and morbidity.[10]

This study set the frequency of HRP among Iraqi women in Babylon province, Iraq. It also assesses risk factors and profile of HRP. In the present study, the results showed that 25.17% of the sample was at a high risk, which could be considered as a HRP, and 74.8% of pregnant women are considered as low risk pregnancy.

This result was comparable to results obtained from a study in Iran which show that 75% of pregnant women have faced to at least one of gestational risk factors which consider as low risk pregnancy.[11]

The mean age of studied women was 25.53 years ± SD 5.72. Approximately 1.7% of the pregnant women were <16 years old and 7.6% were aged >35 years. Pregnancy in adolescence and after 35 years of age have been related to low birth weight, low APGAR index, prematurity, and greater occurrence of surgical deliveries.[12]

While the majority of pregnant women in our study (92.4%) were not employed at the time of the study, many researches indicated that the end results from their survey suggested that physical activity by shifted work during pregnancy may give a preventive effect against the development of gestation related morbidities such as gestational DM.[13] Furthermore, low percent of illiteracy (9.7%) was detected among (HRP) women, in contrary to the study in Egypt which conclude that 51.8% of studied women were illiterate.[14]

Results in this study have shown higher incidence of abnormal BMI (82.4%) that give rise to HRP. In this study, BMI <18.5 and more than 25 in pregnant women is considered as abnormal BMI.

In this study, the current pregnancy related comorbidities which were considered as causes of HRP among the studied women included anemia (18.6%), pregnancy-induced HTN (6.9%), multiple gestation (2.1%) and sensitization duo to RH negative (6.2%), gestational diabetes (3.2), and vaginal bleeding (1.7%). Other studies reported similar results in

some factors and different results in other factors such as the study in Egypt by Ayman Abdelhady, where they found that current pregnancy related diseases of the studied HRP women were (17%) for anemia, (13%) for HTN, (14%) for gestational DM and (3%) vaginal bleeding. These differences with other studies are assigned to socioeconomic status and some other factors like parity and age. They also deemed the reason may be due to delayed antenatal care booking and the high frequency of irregular visits. Hypertension during pregnancy increased the risk of subsequent Type 2 DM by 3.4 fold.[15] In the current study, HRP women demonstrated significantly higher frequencies of past history of previous pregnancy-associated morbidities, previous delivery with (CS) (16.2%), recurrent abortions (12.1%) in addition to multigravida (2.1%) and multiparty (8.3%), ectopic pregnancy (2.4%), previous period of infertility (2.8%), fetal death during or after delivery (3.4%), and preterm labor (0.7%). These findings are agreed with that found by study in Iran by Farajnezhad *et al*., which show that 17.1% have previous history of CS, 1.9% have history of abortion, and 2.8% have preterm delivery. Hafez, *et al*. reported that most common factors developed in previous pregnancy in women with HRP were as follows: Multipara (47%), recurrent abortions (35%), and previous delivery with CS (26%). The study performed by Rossi and Prefumo[16] indicated that previous (CS) is the main risk factor for rupture uterus and because the rate of CS is increasing globally, there is an elevating number of mothers with (CS) with a resultant higher risk of uterine rupture.[16] Regarding past medical and surgical history our study shows that 3.1% have previous surgery in genital tract, 3.2% have gestational diabetes, 1.7% have chronic hypertension, 0.3% have epilepsy and 0.3% have psychological disorders. The findings of this study was close to the findings of Farajnezhad *et al*.[11] who found that there were 2.1% of women with HRP who had history of cardiac disease and hypertension, 2.3% had epilepsy, and 0.8% had gestational diabetes. The medical history of the studied Saudi women as shown by Hafez, *et al*. revealed that 66% of them had history of medical disease such as DM (21%), hypertension (19%), and heart disease (4%).

Findings of this study confirm the requirement for more attention to pregnant mother particularly for prevention of pregnancy during improper ages, pregestational supervision, and perinatal care. Prenatal care consultation acts as a prophylactic approach. These factors that can potentially influence perinatal and pregnancy outcome.

Conclusion

The implication of routine screening for HRP during antenatal visit to primary health care centers in Babylon must be addressed. The necessity to educate families to consider family planning and prevention from undesired pregnancy becomes noticeable. Also early detection of HRP and in time and control of its complications is necessary.

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Conflicts of interest

There are no conflicts of interest.

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