Risk factors of gestational hypertension for pregnant women

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Abstract

Background: Gestational hypertension (GH) is characterized by the new onset of hypertension after 20 weeks gestation without any maternal or fetal features of preeclampsia, followed by return of blood pressure to normal within 3 months post-partum. At first presentation, this diagnosis will include some women (up to 25%) who are in the process of developing preeclampsia, but have not yet developed proteinuria or other manifestations.

Objectives: Determination of risk factors of gestation hypertension among pregnant women and to find out the relationship between some demographic characteristic and gestation hypertension.

Methods: A case-control study design was conducted at maternity and obstetric teaching hospital in holy Karbala city to identify risk factors of hypertension for women during pregnancy. The study was initiated from the period of 25 October (2022) to 22 April (2023). A non-probability (convenience sampling) of 25 patients who has been diagnosed with gestational hypertension and 25 Patients who doesn't diagnose with gestational hypertension. A simple random sampling was used to select 25 pregnant women with no hypertension and 25 pregnant women with diagnosed gestational hypertension at Gynecology and Obstetrics Teaching Hospital in Karbala City of Iraq. Valid and reliable checklist tool was used to evaluate the risk factors of gestational hypertension for pregnant women, while the questionnaire used to collect demographic data.

Results: The results reveal there about 48% of sample have gestational hypertension within 15-25 years and about 40% of primary school have gestational hypertension also show about 80% housewife sample have gestational hypertension and44%from enough Economic situation about 48% of gestational hypertension sample sometime eat foods that contain fat before and during pregnancy

Conclusion: Based on the findings of the present study, the result of this study reveals high significant relationship with some risk factors like, genetic factors (renal diseases) and significant concerning item, add salt to the foods was eaten and age.

Keywords: gestational hypertension, risk factors, pregnant woman

Introduction

Gestational hypertension (GH) is characterized by the new onset of hypertension after 20 weeks gestation without any maternal or fetal features of preeclampsia, followed by return of blood pressure to normal within 3 months post-partum. At first presentation, this diagnosis will include some women (up to 25%) who are in the process of developing preeclampsia, but have not yet developed proteinuria or other manifestations. Some women initially diagnosed in this category will manifest persistent blood pressure elevation beyond 12 weeks post-partum and eventually be classified as having chronic hypertension (Saudan 1995) [27]. Hypertension is usually the first clinical feature of PE, before the onset of proteinuria in most cases. At first presentation it is often difficult to know if a pregnant woman with new hypertension will remain thus or progress to develop pre-eclampsia. As the outcomes of these disorders are so different, it is mandatory to treat each case as emerging pre-eclampsia. On the other hand, women with GH may be managed safely as outpatients, and it would be helpful to know both the absolute risk of progression from gestational hypertension to pre-eclampsia, and the factors at initial presentation which predict this progression. (Chesley LC, 1985) [9].

Objectives

- To Determination of risk factors of gestation hypertension among pregnant women.
- Find out the relationship between some demographic characteristic and gestation hypertension.

Methods/study design and participants

A case-control study design was carried out at, at maternity and obstetric teaching hospital in holy Karbala city to identify risk factors of hypertension for women during pregnancy. The study was initiated from the period of 25 October (2022) to 22 April (2023). Sample size was calculated by using a non-probability (convenience sampling) of 25 patients who has been diagnosed with gestational hypertension and 25 Patients don't diagnose with gestational hypertension.

Inclusion criteria included women who have been diagnosed with gestational hypertension for included in the study group and women don't have been diagnosed with gestational hypertension for included in the control group. Exclusion criteria include pregnant women who have a diagnosed hypertension before pregnancy. The data were collected through the utilization of structured questionnaire and by mean of interviewing technique with the subjects who were individually interviewed at maternity and obstetric teaching hospital in holy Karbala city. Content validity for the early developed instrument is determined through the use of panel of expert to investigate the clarity, relevancy, and adequacy, of the questionnaire in order to achieve the present study's

objectives. Reliability assessments according to the internal consistency of the questionnaire were (0.72) by using Cronbach Alpha test. The data collected was entered into the computer to be analyzed by using the statistical package for social science (SPSS) version 20. The statistical procedure, which is applied for the data analysis and assessment of the results, includes the following: Descriptive Statistics (frequencies (F), Percentages (%), Cumulative percent, mean of score (M.S) were used to summarize the data. Inferential Statistics: Such analysis is Alpha-Cronbach, to assess the questionnaire reliability according to the internal consistent and liner regression to assess correlation between factors with gestational hypertension.

A pilot study was conducted on a convenience sampling of (10) patients with gestational hypertension. The pilot study sample was excluded from the original sample of the study. The purposes of pilot study are: To know whether respondents understand the question and directions or if they find certain questions objection able in some way; enhance the reliability of the questionnaire and determine the average time required for the data collection.

Sample size is 25 pregnant women at confidence level 95%, N: Total population (50), p: Probability (0.50), z: Confidence level at 95% = (1.96), and d: Standard Error (0.05). Purposive non probability sample sampling did use in this study for choosing 50 subjects, 25 of them for each one group. 10 of them were dropout from both study and control groups at the actual study initiation, those dropout subjects excluded from actual sample to become 50 participants, 25 of them for each one group of study. the researchers collected the data by questionnaire tool. Data collection was performed throughout questionnaire instruments were filled during interview. Questionnaire included include 12 items: demographic variables which were: (age group, level of education, Occupation, Residency, Body mass index, working hours, Number of sleep, Economic status Gravid, Para, Abortion, Gestation age). All items are rated on a three-point Likert-type scale. These items have been rated and scored according to the following patterns:

Risk factors of hypertension for women during pregnancy was scored with three scale level as follow: (3) for always responses, and (2) for sometimes responses, and (1) for never responses, and some items was scored with (2) for yes responses and (1) for no responses. After constriction of data collection instruments, face and content validity of the study tool were assessed by group After reviewing the related literatures and relevant studies, a draft instrument was developed by the researchers, a structured questionnaire consisting of closed ended questions in order to assess risk factors of hypertension for women during pregnancy at maternity and obstetric teaching hospital in holy Karbala city. It consists of four main parts as follow:

This part of study instrument represents the demographic data consist of (11) items, which includes age, level of education, occupation, place of residency, weight, length, office hours, the number of sleep hours, economic status, and gravida, para, abortion history. The Validity of the questionnaire, content validity for the early developed instrument is determined through the use of panel of expert to investigate the clarity, relevancy, and adequacy, of the questionnaire in order to achieve the present study's objectives. A preliminary copy of questionnaire was designed presented to (11) experts. They were faculty members from College of Nursing / University of Karbala, were asked to review the questionnaire. Results indicated that the majority of experts had agreed that questionnaire was appropriately designed and developed to measure the risk factors of hypertension for women during pregnancy at maternity and obstetric teaching hospital in holy Karbala city. The tools were distributed to the assess its comprehensiveness, clarity and accuracy. These were rephrased based on the experts' opinion. Based on their recommendations; modification and additions of some items were done**.** A pilot study was conducted for two weeks at July 2023 on 10 pregnant woman who diagnosed with gestational hypertension and those were excluded from the main study sample. The reliability of the checklist tool was assessed through a pilot study and the Cronbach's alpha was (0.72). All participants completed the questionnaire at hospital and returned it to the researcher the same day. In addition to the expert's responses, their suggestions were taken into considerations. So far, modifications are employed and the final copy of the constructed instrument is complete to be an appropriate tool for conducting the study.

Ethical considerations

Before initiation the study, formal administrative approval was obtained and written consent was obtained from gynecological and obstetric hospital to collect data of the study.

Data analysis

The data were analyzed in the statistical package of social sciences (SPSS) version 23. Frequencies, percentages, for descriptive statistics. The significance level was set at < 0.05.

Results

Table 1: Distribution of socio-demographic characteristics of the study sample (n=50)

Socio-demographic characteristics		Frequency (F)	Percentage (%)	Cumulative percentage %
Age Groups	15-24	24	48.0	48
	25-34	17	34.0	82
	35-44	9	18.0	100
	Total	50	100	
Level of education	Illiterate	8	16.0	16
	Read & Write	13	26.0	42
	Primary school	8	16.0	58
	Secondary school	14	28.0	86
	Graduated Institute	5	10.0	96
	University graduated	2	4.0	100
	Total	50	100	
Occupation	Free business	2	4.0	4
	Housewife	40	80.0	84
	Student	3	6.0	90
	Employee	5	10.0	100
	Total	50	100	
Residency	Rural	9	18.0	18
	Urban	41	82.0	100
	Total	50	100	
BMI	< 18.5	0	00.0	0
	18.5 - 24.9	6	12.0	12
	25 - 29.9	15	30.0	42
	≥ 30	29	58.0	100
	Total	50	100	
Office hours	Less 6	30	60.0	60
	6-8	8	16.0	76
	More 8	12	24.0	100
	Total	50	100	
Number of sleep	Less 6	4	8.0	8
	6-8	19	38.0	46
	More 8	27	54.0	100
	Total	50	100	
Economic situation	Enough	25	50.0	50
	Barely enough	18	36.0	86
	Not enough	7	14.0	100
	Total	50	100	
Gravid	1-3	28	56.0	56
	4-6	20	40.0	96
	7-10	2	4.0	100
	Total	50	100	
Para	1-3	38	76.0	76
	4-6	12	24.0	100
	Total	50	100	
Abortion	0	27	54.0	54
	1-2	17	34.0	88
	3-4	5	10.0	98
	More 5	1	2.0	100
	Total	50	100	
Gestational age	Less 37	11	22.0	22
	= 37	28	56.0	78
	More 37	11	22.0	100
	Total	50	100	

Table 2: Statistical result of socio-demographic factors associated with gestational hypertension

No.	Socio-demographic factors		Having gestational hypertension		Do not having gestational hypertension	
	Items	Categories	Frequency (F)	Percent (%)	Frequency (F)	Percent (%)
1.	Age	15-24	12	48	12	48
		25-34	6	24	11	44
		35-44	7	28	2	8
		Total	25	100	25	100
2.	Level of education	Illiterate	6	24	2	8
		Read & Write	3	12	10	40
		Primary school	2	8	6	26
		Secondary school	10	40	4	16
		Graduated Institute	3	12	2	8
		University graduated	1	4	1	4
		Total	25	100	25	100
3.	Occupation	Free business	1	4	1	4
		Housewife	20	80	20	80
		Student	1	4	2	8
		Employee	3	12	2	8
		Total	25	100	25	100
4.	Residency	Rural	4	16	5	20
		Urban	21	84	20	80
		Total	25	100	25	100
5.	BMI	< 18.5	0	0	0	0
		18.5 - 24.9	1	4	5	20
		25 - 29.9	8	32	7	28
		≥ 30	16	64	13	52
		Total	25	100	25	100
6.	working hours	Less 6	15	60	15	60
		6-8	3	12	5	20
		More 8	7	28	5	20
		Total	25	100	25	100
7.	Number of sleep	Less 6	2	8	2	8
		6-8	12	48	7	28
		More 8	11	44	16	64
		Total	25	100	25	100
8.	Economic situation	Enough	14	56	11	44
		Hardly enough	9	36	9	36
		Not enough	2	8	5	20
		Total	25	100	25	100
9.	Gravid	1-3	13	52	15	60
		4-6	11	44	9	36
		7-10	1	4	1	4
		Total	25	100	25	100
10.	Para	1-3	19	76	19	76
		4-6	6	24	6	24
		7-10	0	0	0	0
		Total	25	100	25	100
11.	Abortion	0	14	56	13	52
		1-2	8	32	9	36
		3-4	2	8	3	12
		More 5	1	4	0	0
		Total	25	100	25	100
12.	Gestational age	Less 37	7	28	4	16
		= 37	12	48	16	64
		More 37	6	24	5	20
		Total	25	100	25	100

Table 2 show socio-demographic factors associated with gestational hypertension, about 48% of sample have gestational hypertension within 15-25 years and about 40% of primary school have gestational hypertension. also show about 80% Housewife sample have gestational hypertension and 44%from enough Economic situation of sample not have gestational hypertension and about 60%from 6-8 hours of office hours sample have gestational hypertension also reveals about 52% of 1-3 gravda and 76%of 1-3 para and 56%of abortion have gestational hypertension.

Table 3: The relationship between Risk factors and gestational hypertension

No	Factors	*p* value	Significant level
1	Age	0.048	S
2	Education	0.963	NS
3	Occupation	0.694	NS
4	Residency	0.999	NS
5	Body mass index	0.929	NS
6	Office hours	0.992	NS
7	Number of sleep	0.693	NS
8	Economic situation	0.123	NS
9	Gravid	0.240	NS
10	Para	0.530	NS
11	Abortion	0.227	NS
12	Gestation age	0.839	NS
13	Do you eat foods that contain fat before and during pregnancy?	0.121	NS
14	Did I suffer from a lack of Calcium before and during pregnancy?	0.651	NS
15	Preferably add salt to the digested foods you eat	0.042	S
16	You cook food using unsaturated oils (vegetable oils as olive oil)	0.452	NS
17	Do you smoke?	0.900	NS
18	Do you exercise daily?	0.393	NS
19	Do you do the homework yourself?	0.267	NS
20	You take a break after every period of work	0.853	NS
21	Renal diseases	0.057	S
22	Hypertention diseases	0.187	NS
23	Factors genetic	0.009	HS

S=Significant, NS=Non Significant, HS= High Significant

Table 3 reveals that are age and preferably add salt to the digested foods you eat and renal diseases high significant relationship with load pressure high significant related genetic factors.

Discussion

Regarding to socio-demographic characteristics of study samples as table (1) revealed that 44.4% of study sample within age group of 60 > years old and 8.9 within age group 20-29 years old, among our study sample 53.3% of patients was male and married respectively. In addition to that this table also indicate are most (46.7%) of patients are female and housewife, and about 72.2% of patients life in rural areas and 27.8% of patients life in urban areas in addition to this table also indicate (48.9%) of this sample were have insufficient monthly income, and about (20.0%) have sufficient monthly income.

This finding disagreement with the study (8; p(82) mentioned Shows distribution of the studied patients according to their socio-demographic data : Regarding the age distribution of the studied patients, it was found that the near three quarter (70%) of studied patients aged from (45-65). Regarding the gender, it was found that male sex (80%). As regarding marital status, it was found that the majority 52 (86.7%) of studied patient were married. While regarding the level of education one half of the studied patients 30 (50%) has read and write. As regarding the income, it was found that the 53.3% of studied patients have income less than 1000 pound monthly.

In addition to that this table also indicate are most (46.7%) of patients were housewife, and about (1.1%) of patients were student, this result disagreement with the study Only 15 (12.5%) were. A total of 85 (87.5%) were unemployed (26; p(3).

Concerning duration dialysis, this result revealed (52.2%) of patient have less than 3 years of dialysis, and about (15.6%) of patient have more than 5 years, this result disagreement with the study The years of dialysis it was found that (71.7%) of the studied patients range from 5- 10 Years dialysis (20;p(23). about (55.6%) were had three dialysis session per week, and about (1.1%) were had four dialysis session per week, this finding agreement with the study that mentioned in most studies, participants did the exercises three times a week. Two studies12,15 used two exercise sessions/week. The total duration of the physical exercise protocols ranged from 6 to 40 weeks (23p(190).

In addition to this table also indicate that most (93.3%) of study sample negative, and about (5.6%) of study sample positive.

Table (3) revealed that are most of study sample (40%) are having hypertension and 35% of them having diabetes mellitus in addition to hypertension and about 6% of them having only diabetes mellitus, this result agreement with the study result that mentioned that about Thirty patients (88%) had hypertension. Eleven (32%) had diabetes. Six (18%) had known coronary artery disease. Two (6%) had a history of stroke, and three (9%) had a history of peripheral vascular disease (6;p(2566).

Table (4) show that the majority (86.7%) of study sample unable to perform vigorous- intensity activity, and about (13.3%) have the ability to perform vigorous-intensity activity. In addition to the majority (58.4%) 0f study sample have less than three days in participate vigorous intensity activity, and about (25%) of study sample have more than three days in participate vigorous intensity exercise.

In addition to that (41.6%) 0f study sample have less than one hour in participate vigorous intensity exercise, and about (25%) of study sample have 1-3 hours in participate vigorous intensity exercise.

This finding agreement with the result of study that mentioned in most studies, participants did the exercises three times a week. Two studies used two exercise sessions/week. The total duration of the physical exercise protocols ranged from 6 to 40

weeks (23; p(190).

In addition to that the majority (42.2%) and (38.8%) of patient spend about 12-15 hours or more than 15 hours of day in sitting or reclining on a typical day, this finding agreement with the study result that mentioned Regarding clinical data, most hypertensive, diabetic patients and those with polycystic kidney disease were classified as sedentary. Regarding nutritional status, overweight participants were more sedentary, along with those with 3 to 6 years of hemodialysis. Of the patients who did not receive guidance for performing physical activity, 84.2% of them were classified as sedentary, compared with 62.5% of the patients who did receive it (22;p(237).

Table(3) revealed that about (90.0%) of study sample have lack of energy or strength, and about (96.7%) of patient have fatigue, and about (90.0%) of study sample have shortness of breathing, and about (66.7%) of patient have lack of motivation from this family, and about (81.1%) 0f study sample fear of getting hurt or injury, this finding agreement with study result that mentioned The most commonly reported barriers to physical activity were fatigue on dialysis days (67%), shortness of breath (48%), lack of motivation (i.e. 'I don't want to exercise'; 42%) and fatigue on non-dialysis days (40%). (25;p(1155).In addition to that the majority (85%) of study sample no having place for exercise, and about (78.9%) of study sample no having enough time for exercise, this finding agreement with the study result that mentioned not having enough time on dialysis days were also associated with less activity in adjusted analysis and not having a safe place to exercise and lacking an exercise partner were also associated with less physical activity(25;p(1155).The majority of study sample (92.2%) have sadness, and about (90.0%) of study sample have to much medical problem, this finding agreement with the study result that mention perception of too many medical problems (54.8%), sadness (50%) (18;p(171).In addition to table (5) that revealed about (76.7%) of study sample have vascular access(fistula), this finding agreement with the study result that mentioned the majority of the patients have a fistula connection (86.3%) (11;p(195).

Conclusions

The research demonstrate that: About 48% of sample have gestational hypertension within 15-25 years and about 40% of primary school have gestational hypertension also show about 80% Housewife sample have gestational hypertension. 44%from enough Economic situation of sample not have gestational hypertension. about 60%from 6-8 hours of office hours sample have gestational hypertension. reveals about 52% of 1-3 gravida and 76%of 1-3 para and 56%of abortion have gestational hypertension reveals about 48% of gestational hypertension sample sometime eat foods that contain fat before and during pregnancy and about 36% of gestational hypertension sample suffer from a lack of Calcium before and during pregnancy also show about 72% and 64% of do not have gestational hypertension sample Preferably add salt to the digested foods and take a break after every period of work and about 100% and 96% and 100% and 72% of gestational hypertension sample have heart disease and kidney disease and diabetes and chronic hypertension. The result of this study reveals that are age and preferably add salt to the digested foods you eat and renal diseases have significant relationship with and load pressure.

Recommendations

- We recommend that all pregnant women should be screened in order to identify cases of PIH and initiate timely management.
- Healthcare providers at ANC should intensify counselling on the choice of food.
- Continuous education on how to manage PIH among cases should be provided.
- Also, there is the need for further studies to determine types of trans fatty foods consumed by pregnant women.
- counselling about HDP should get more focus.
- In addition there is need to focus on pregnant women with family and previous history of hypertension by strengthening client-provider interaction especially through maternal and child health services.

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Ethics of approval and consent to participate

Ethical considerations in this study included obtaining formal administrative approval was obtained and written consent was obtained from the health institution and participants to participate in the study.

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