



Impact of Clinical Pharmacist Education on Knowledge of Pregnancy Induced Hypertension (PIH) among Pregnant Women

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Research Article

Please cite this paper as Lavanya S^{1*}, Jeevana Jyothi B², Lochana G¹, Minu Kurian¹, Surya Renjan¹, Sruthi P Jose¹, Krishna Kumar D¹. Impact of Clinical Pharmacist Education on Knowledge of Pregnancy Induced Hypertension (PIH) among Pregnant Women IJPTP, 2015, 6(4), 2603-2608.

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Abstract

Objective: The study is focused to assess the impact of clinical pharmacist's education on knowledge of pregnancy-induced hypertension (PIH) among pregnant women.

Methodology: A prospective study was carried out in the outpatient department of Obstetrics & Gynecology (OBG) of a tertiary care hospital. A patient documentation and knowledge based questionnaire was designed by the clinical pharmacist and assessed during their baseline to assess their knowledge about PIH and again same questionnaire was given to assess their improvement in knowledge at final visit. The patient education was also provided on lifestyle modification, medication adherence and to monitor their reduction in blood pressure (BP) according to Joint National Commission VIII (JNC) guidelines.

Results and Conclusion: A total of 370 pregnant women came to the outpatient department of OBG, among them 36 patients were identified with PIH. In baseline 27.8% of patients have knowledge about PIH and in the final visit 94.4%, significant improvement in knowledge was observed. In baseline, systolic BP (mean \pm SD) was found to be 148.9 ± 12.8 mm Hg and diastolic BP (mean \pm SD) was found to be 90.6 ± 5.8 mm Hg. In the final visit the systolic BP (mean \pm SD) was found to be 132.5 ± 9.7 mm Hg and diastolic BP (mean \pm SD) was found to be 83.9 ± 4.9 mm Hg. The PIH patients who had received clinical pharmacist education on knowledge, lifestyle modification, and medication adherence showed a better improvement in their knowledge and reduction in BP.

Keywords: pregnancy induced hypertension, blood pressure, clinical pharmacist, knowledge.

Introduction

Hypertensive disorder in pregnancy is characterized by the raised BP in a pregnant woman after 20 weeks of gestation without the presence of protein in urine or other signs of preeclampsia ^[1]. The new onsets of complications were including PIH, preeclampsia, eclampsia, fetal growth retardation, preterm birth and perinatal death. Hypertension during pregnancy affects nearly 6-8% of pregnant women and possibly leads to increased maternal and fetal morbidity and mortality ^[2]. Women may have experience hypertension in pregnancy, with or without proteinuria and with or without any adverse manifestations ^[3]. Maternal hypertensive disorder manifested as different phases like gestational hypertension, preeclampsia, and eclampsia which is associated to a disorder at the stage of placenta with defective placentation that affects the ischaemic placental destruction ^[4]. In gestational hypertension, pathogenic mechanisms will generate milder arterial hypertension (AH) and controlled by antihypertensive drugs ^[5]. In preeclampsia superimposed on chronic hypertension the pathogenic mechanisms of pregnancy will cause chronic AH ^[6]. In eclampsia, the mechanism focused on the function of the cerebral vasculature and auto-regulation of cerebral blood flow (CBF) during elevations in blood pressure ^[7].

In India, hypertensive disorder in pregnancy responsible for the major



proportion of perinatal death and higher incidence of preeclampsia occurred around 8-10% of the pregnant women^[8]. The incidence of primigravidae was observed about 10% and multigravidae is about 5%^[9]. The complications such as gestational hypertension (3.8%), preeclampsia (1.3%), preexisting hypertension (0.7%) and preexisting hypertension with superimposed preeclampsia (0.4%) were observed in women^[10]. Patient education plays a significant role in preventing the symptoms, monitoring BP regularly and improving their knowledge about PIH to maintain the optimum blood pressure control. It can be achieved through patient education on their pharmacotherapeutic regimens and monitoring plans. Patient education makes the patient to understand better about their disease, symptoms, complications, medication adherence and lifestyle modification may enhance their quality of life. This can be done by using patient information leaflets (PILs). The PILs were used by the clinical pharmacists to help the patients to understand about the hypertensive disorder clearly^[11]. The usage of pictographic approach improves the patients to know about their disease condition, symptoms and lifestyle medication including diet and exercise^[12]. The trained clinical pharmacist will provide better clinical pharmacy services like patient counseling, monitoring of complications, maternal and fetal outcome, medication adherence on antihypertensive drugs and regular follow up to the antenatal clinic^[13].

Material and Method

A prospective observational study was conducted in a multi specialty hospital located at Chennai, from a period of 6 months [January to June 2015]. The institutional ethical committee permission was taken to conduct this study. Informed consent was taken from all pregnant women who had participated in our study and also described the study protocol. The outpatients in the department of OBG with PIH after second trimester of their gestational period were selected for the study. The study was included pregnant women of age between 18 to 40 years. The past obstetric history due to pregnancy induced hypertension. The study was excluded pregnant women with normal blood

pressure, age less than 18 years and past history of hypertension/ renal disease/ immunological disorder.

Methodology:

Hypertensive disorder in pregnancy was identified after second trimester having blood pressure > 140/90 mm Hg. At baseline period, all PIH patients received usual medical care after obtaining their Informed consent and the patients clinical details were entered in the patient documentation form which includes patient demographic details such as age, patient past medical & medication history, social & family history, past obstetric history of PIH, gravida, biochemical analysis, co-morbidities, and medication adherence.

The PIH knowledge based questionnaire consists of ten questions which were used by the clinical pharmacist to pregnant women in baseline and final study period. The questionnaire was administered one on one to the PIH women by clinical pharmacist personally through face to face contact. This is to assess the knowledge of patients regarding their disease, medication and diet. After obtaining the baseline measurements, patient education and PILs were provided to make the patients more aware about their disease, medication used, diet and physical exercise. The PILs were designed in English & Tamil (native language) and leaflets contained information about PIH, symptoms, complications and dietary & life style modifications. On an average of 30 minutes were spent with each patient depending on the education level and understanding capability of the patients. Final follow up were made to assess the improvement in patient knowledge about PIH and to monitor their reduction in BP according to JNC VIII guidelines^[14].

Statistical Analysis:

The results were analyzed using SPSS version 22.0. The results were expressed as mean \pm SD, percentage frequencies with



95% Confidence interval. The result of before intervention and after intervention was compared by using Student t-test. The P value <0.05 was considered as statistically significant. Paired student t-test was used to find the significant difference of total answers between before and after patient education.

Results

In the present study 370 pregnant women visited the department of OBG among them 36 PIH patients was identified during the study period. Among them 18 (50.0%) patients were 26-30 years and followed by 8 (22.2%) patients were 21-25 years (Figure 1).

Figure 1: Age Category of PIH Patients (n=36)

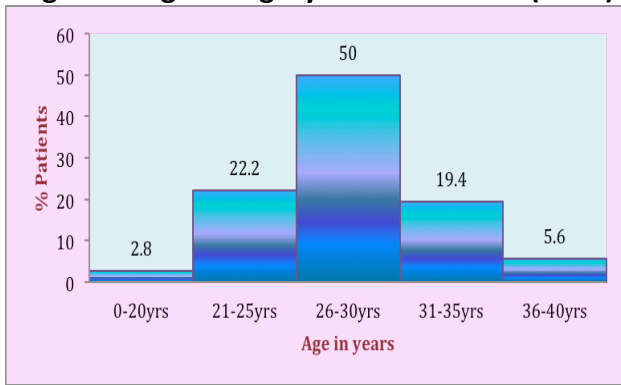


Table 1: Descriptive Analysis of BMI Categories

Parameter	Frequency [n=36]	Percentage (%)
Healthy	2	5.6
Obese	16	44.4
Overweight	18	50.0

Among 36 patients, 14(39%) patients were found to be primigravida and 22(61%) were found to be multigravida. Family history shows that 7 (19.4%) patient had diabetes, 7(19.4%) patient had hypertension and 1(2.8%) patient had other disease. Among the total 27 (75%) patients were literate and remaining 9 (25%) patients were illiterate.

The anti-hypertensive drugs prescribed among the patients were found to be 27(75.9%) with alphasopa, 8(22.2%) with labetalol and 1(2.8%) with both labetalol and alphasopa. The measurement of physical exercise, before patient education (maximum-10mins) was found 1.86±3.39 mins. After patient education, (maximum-25mins) was found to

be 11.25±6.47 mins. There was a significant difference observed in the physical exercise done by the PIH patients before and after patient education given by the pharmacist (Table 2).

Table 2: Analysis of Physical Exercise (IN MINUTES) (n=36)

Parameter	Max	Mean	S.D	95% CI	
				Lower	Upper
Physical exercise before education	10	1.86	3.399	0.71	3.01
Physical exercise after education	25	11.25	6.478	9.06	13.44

All the 36 PIH patients were found to be prescribed with a minimum of 1 and maximum of 6 medications and found to be 3.47±1.10 (95% CI 3.10 to 3.85). During the measurement of baseline blood pressure, the mean of systolic blood pressure was found to be 148.9 ± 12.8 mm Hg (95% CI 144.55 to 153.23) and the mean diastolic blood pressure was found to be 90.6 ± 5.8 mm Hg (95% CI 88.58 to 92.53). At the final follow up the mean systolic blood pressure was found to be 132.5± 9.7 mm Hg (95% CI 129.23 to 135.77) and the mean diastolic blood pressure was found to be 83.9 ± 4.9 mm Hg (95% CI 82.22 to 85.56). The changes in BP of PIH patients before and after education were significantly improved (Table 3).

The patient’s knowledge about PIH, medication usage, storage and importance of compliance, and diet before and after patient education was significantly improved (Table 4).



Table 3: Stages of Hypertension in PIH patients (n=36)

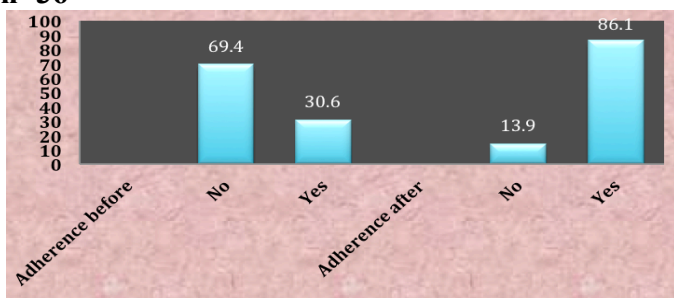
STAGES	BEFORE EDUCATION	
	Systolic BP (%)	Diastolic BP (%)
PRE-HYPERTENSION	3 (8.33)	4 (11.11)
STAGE-I	24 (66.66)	25 (69.44)
STAGE-II	9 (25)	7 (19.44)
STAGES	AFTER EDUCATION	
	Systolic BP (%)	Diastolic BP (%)
PRE-HYPERTENSION	23 (63.88)	23 (63.88)
STAGE-I	12 (33.33)	13 (36.11)
STAGE-II	1 (2.77)	0 (0)

Table 4: Assessment of Knowledge of Patients towards PIH (n=36)

KNOWLEDGE ON PIH	FREQUENCY	PERCENTAGE (%)
Knowledge before education		
AWARE	05	13.9
NOT AWARE	31	86.1
Knowledge after education		
IMPROVED	35	97.2
NOT IMPROVED	01	2.8

Among 36 patients, before education, 25(69.4%) were not shown adherence and remaining 11(30.6%) patients were shown good adherence. After education, 31(86.1%) followed adherence and the remaining 5(13.9%) patients were showed non adherence. There was a significant difference observed ($p < 0.0001$) when comparing medication adherence (Figure 2).

Figure 2: Assessment of Medication Adherence n=36



Discussion

In the present study, majority of PIH patients were fall under the age group of 26-30 years and observed that the incidence of hypertensive disorders in pregnancy were occurred in this age group. However, in a previous study Goonewardene et al [17] reported that younger teenage mothers (≤ 19 years) had a higher risk of gestational hypertension and preeclampsia. Another study by Manjusha sajith et al [18] reported that the age group was 18-22 years and also they reported that age was an important influencing factor on the incidence of hypertensive disorders.

In the present study it was observed that 19.4% had family history of hypertension and diabetes. In a previous study Kirsten Duckitt et al [19] observed that the positive family history was found to be a significant risk factor of PIH and also that risk of pre eclampsia was increased in women with previous history of pre eclampsia, pre existing diabetes and a family history of PIH or pre eclampsia.

In the present study, patient’s medication adherence was assessed and the scores were compared as medication possession ratio and the results showed that after intervention, 86.1% were adhered to medications and the remaining 13.9% patients were non adherent. However, the previous study done by Rahmathulla et al [20] reported that baseline participants exhibited poor adherence to the medications. It was in contrast to our findings, their results shows that inadequate blood pressure control at the end of the study, however in the same study showed that the patients who had received extensive counseling from a pharmacist regarding the disease management showed a greater improvement in medication adherence.

Our study provided a better insight of knowledge of patients about the disease, medication use, symptoms of PIH, and



awareness of PIH, risk factors, diet, and physical exercise was improved after patient education. Before pharmacist education, 86.1% were unaware about PIH and after pharmacist education the knowledge of PIH significantly improved in 97.2%. Similarly the previous studies also ^[21] found that patient counseling was effective in improving patients knowledge towards the disease management and also addresses the pharmacists role on effective participation in the management of hypertensive patients as an essential supplement to traditional physician only mode.

The previous studies were reported that the knowledge on PIH through patient education was increased significantly after patient counseling ^[24, 25]. The regular monitoring of blood pressure and follow up to the antenatal clinic was observed after patient education. It recommends the importance of patient education to achieve better therapeutic outcomes. The interventions should include strong educational components with baseline individual face to face counseling by the pharmacist ^[15-16, 22]. This helped patients to develop better knowledge on hypertension and determination in preventing the hypertension. The previous studies reported that significant reduction in blood pressure was achieved after patient education that results in reduced risk of maternal morbidity and mortality. The management of PIH and preeclampsia in a tertiary centre diminished and limited the impact of serious maternal outcome ^[23, 26]. In the present study, there is a significant increase in the knowledge of PIH among the study population in terms of disease, signs and symptoms, better understanding about the disease, life style modification and thereby improved the patient compliance and adherence to the drug therapy followed by good improvement caused by underlying hypertension disease with an optimal outcome of therapy.

Conclusion

The clinical pharmacist plays important role in the education on knowledge of PIH among pregnant women about their disease, lifestyle modification and pharmacotherapy to achieve an optimal outcome of therapy. The present study provided an

insight for the management of PIH with the help of PILs and other patient education inputs.

Acknowledgement

The authors would like to thank our principal Dr. Grace Rathnam, C.L.Baid Metha College of Pharmacy and also thank to all study participants and the staff at the Fortis Malar Hospital, Chennai.

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AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

Not commissioned; externally peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.