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Physical activity and its association with hypertensive disorders of pregnancy in rural area of Kashmir Valley: A cross-sectional study

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Abstract

Background: Hypertensive disorders of pregnancy (HDP) are the leading cause of maternal morbidity and mortality, complicating 2-8% of all pregnancies worldwide. Without intervention, women with HDP are at risk of many disorders. The causes of HDP are not well understood therefore, its prevention remains challenge. However, physical activity as one modifiable risk factor has shown promising results in the prevention of HDP.

Aim and Objective: To identify the association of physical activity with hypertensive disorders of pregnancy.

Material and Methods: This cross-sectional study was conducted to estimate the association of physical activity with hypertensive disorders in pregnancy. The study was conducted in registered pregnant women in 11 sub-centres of a rural health block of Kashmir. The data collected was compiled and analysed using SPSS version 20.00.

Results: The total activity score of hypertensive women was 38.61±9.12 compared to 48.07±17.06 of normotensive pregnant women and the difference was statistically significant (P=0.006).

Conclusion: Decreased physical activity may be the risk factor for hypertension in pregnancy.

Keywords: risk factors, pregnancy, physical activity, hypertension

Introduction

Hypertensive disorders of pregnancy (HDP) are the leading cause of maternal morbidity and mortality, complicating 2-8% of all pregnancies worldwide [1, 2]. Without intervention, women with HDP are at risk of many disorders. The causes of HDP are not well understood therefore, its prevention remains challenge[2]. However, physical activity as one modifiable risk factor has shown promising results in the prevention of HDP. One hypothesis suggests that the amount of time a woman spends in sedentary activity during pregnancy may be indicative of risk of pre-eclampsia than the amount and type of physical activity performed [3, 4, 5].

Material and Methods

This cross sectional study was conducted to estimate the association of physical activity with hypertensive disorders of pregnancy. The study was conducted in registered pregnant women in 11 sub-centres of a rural health block of Kashmir. An elaborate activity questionnaire was used to assess the physical activity of the study population. This questionnaire was developed by Rao S et al (2003)[6]in their study among rural Indian pregnant women. The data so collected was compiled and analysed using SPSS version 20.00.

Ethical Clearance

Approval was obtained from the Institutional Ethical Committee, SKIMS.

Results

Table 1: Activity pattern of the study population

Activity pattern	Total N=350(100%)	Hypertensive N=26 (100%)	Non-hypertensive N=324 (100%)
Rest in afternoon	108(69.1%)	1(3.8%)	107(33.0%)
Watching TV	126(36%)	25(96.1%)	101(31.2%)
Cooking	301 (86.0%)	21(80.8%)	280(86.4%)
Washing Clothes	240 (68.6%)	18(69.2%)	222(68.5%)
Washing Utensils	225 (64.3%)	15(57.7%)	210(64.8%)
Care of animals	218 (62.3%)	8(30.8%)	210(64.8%)
Fetching firewood	211 (60.3%)	16(61.5%)	195(60.2%)
Fetching water	168 (48.0%)	14(53.8%)	154(47.5%)
Breastfeeding	224 (64.0%)	2(7.7%)	222(68.5%)
Farming	86 (24.6%)	0	86(26.5%)
Hand embroidery	13 (3.7%)	0	13(4.0%)
Other Activities	0	0	0

Table 1 depicts the activity pattern of the study population. It is evident from the table that the majority of the women used to cook whereas 14% of the women did not report any cooking activity. Most of the women (68.6%, 64.3%, and 60.3%) were involved in washing clothes, utensils and fetching firewood, respectively as their main domestic activities. Conversely, the main domestic activity of the hypertensives (80%) was cooking while washing clothes, washing utensils, fetching water and firewood were reported by 69.2%, 57.7%, 61.5% and 53.8% of the hypertensive women respectively. 62.3% were involved in animal care or

milking and 48% had to fetch water. 69.1% of the total women used to take afternoon naps among whom only 3.8% Were the hypertensive women. It was noticeable that 36% of the women reported watching television, among whom the majority (96.1%) were hypertensive women. 64% of the total women and 7.7% of the hypertensive women were breastfeeding their youngest child. The women also made a considerable contribution in activities like farming (24.6%) and hand embroidery (3.7%) while no hypertensive woman contributed in such activities.

Table 2: Comparison of mean activity score between hypertensives and non-hypertensives

Activity Pattern	Activity score* (Mean ± SD)	Hypertensive Mean ± SD	Non-hypertensive Mean ± SD	P-value
Night sleep	9.214±1.975	7.846±1.912	9.324±1.941	0.0001
Afternoon Nap	6.640 ±0.578	6.962±0.196	6.614±0.591	0.003
Watching TV	12.129±2.556	9.769±1.366	12.318±2.535	0.0001
Cooking	2.633±1.326	2.700±1.669	2.627±1.297	0.788
Washing Clothes	2.354±1.801	3.096±2.470	2.294±1.727	0.029
Washing Utensils	2.221±1.853	2.558±2.511	2.194±1.792	0.336
Care of animals	0.846±0.819	0.308±0.471	0.889±0.825	0.0001
Fetching firewood	2.406±2.248	2.192±2.000	2.423±2.269	0.616
Fetching water	3.263±4.419	2.731±3.194	3.306±4.504	0.524
Breastfeeding	1.889±1.710	0.192±0.801	2.025±1.691	0.0001
Farming	3.232±7.246	0	3.491±7.471	0.018
Hand embroidery	0.940±5.185	0	1.015±5.382	0.337
Total activity score	47.36±16.77	38.61±9.12	48.07±17.06	0.006

**Higher score represents higher physical activity*

Table 2 shows mean activity scores for separate activities of the hypertensive and normotensive women. Total mean daily activity score differed significantly between hypertensive and normotensive groups (P=0.006). Hypertensive women used to sleep at night more than normotensive women and it was statistically significant (p=0.000). There was statistically significant difference between mean activity scores of the two groups for activities like afternoon rest (P=0.003), watching TV (P=0.0001), washing clothes (P=0.029), animal care (P=0.0001), breastfeeding (P=0.0001) and farming (P=0.018). However, no significant difference was found between mean activity scores of these two groups for activities like cooking , washing utensils, fetching water, fetching firewood and hand embroidery(*P*>0.05).

Discussion

We observed that most of our study subjects were involved in cooking, washing clothes, washing utensils, fetching firewood and animal care or milking as their main domestic activities (86.0%, 68.6%, 64.3 and 60.3%, 62.3% respectively) of the women used to take a rest in the afternoon. It was noticeable that 36% of the women reported watching television, among which the majority (96.1%) were hypertensive women. The normotensive women also made a considerable contribution to activities like farming (24.6%) and hand embroidery (3.7%) while no hypertensive woman contributed in such activities. The mean total activity score of hypertensive women was 38.61±9.12 compared to 48.07±17.06 for normotensive pregnant women and the difference was statistically significant (P=0.006). Thus we conclude that hypertensive women were physically less active than their normotensive counterparts. The hypertensive pregnant women used to sleep more during night but were taking less afternoon naps and were keeping themselves busy by watching television for more than two hours per day. These differences were statistically significant as compared to normotensive women (P=0.0001, P=0.003 and P=0.0001, respectively). Their routine physical activity in the form of washing clothes, taking care of animals and farming was much less than their normotensive counterparts and the difference was statistically significant (P=0.029,P=0.0001 and P=0.018, respectively). But other activities like cooking, washing utensils, fetching water and fetching firewood were almost equally distributed in both the groups. In accordance to our study Spracklen et al (2016) [7] have reported that increased physical activity during pregnancy may reduce preeclampsia risk while sedentary lifestyle may increase the risk for the disease. Chasan-Taber LC et al (2015) [8] reported in age-adjusted analyses, high levels of early pregnancy household/care giving activity were associated with reduced risk of total hypertensive disorders (OR = 0.4, 95% CI 0.1–0.9) and preeclampsia (OR = 0.3, 95% CI 0.1–0.9) relative to low levels. They also reported that sedentary behavior was not significantly associated with hypertensive disorder. Study conducted by Landsbergis PA et al (1996) [9] has evaluated the association between household activities and the risk of preeclampsia. All cases of pregnancy-induced hypertension in their study occurred among those who were employed during the first trimester of pregnancy. The association with employment was not explained by primiparity or other known risk factors, or by physical work demands, long work hours, or total hours of paid work, housework, and child care. Stressful job characteristics, however, did show association with pregnancy-induced hypertension.

Conclusion

Decreased physical activity may be the associated risk factor for hypertension in pregnancy.

Recommendation

Mild to moderate household daily routine activities are important for a normal uncomplicated pregnancy.

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