



Making A Case For Calcium Supplementation For The Prevention Of Pregnancy Hypertension In Ethiopia

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Abstract

Calcium supplementation during pregnancy has a beneficial effect on reducing the risk of developing hypertensive disorders. As part of antenatal care, the World Health Organization recommends 1.5–2.0 g elemental calcium per day for all pregnant women living in the area with low calcium intake and particularly to those at higher risk of gestational hypertension. The aim of this study was to investigate the usual dietary calcium intake level of Ethiopian women of child bearing age (15–45y) defined by region, area of residence and age, to understand whether calcium supplementation for pregnant women is needed in Ethiopia.

Nationally and regionally representative Ethiopian National Food Consumption Survey data set was used for analysis. ANOVA was used to compare and determine which regions, areas of residence and age category were consuming low mean calcium levels in comparison with the estimated average requirement (EAR) of women (1100mg for 14–18 y and 800 mg for above 19 y).

The national average calcium mean intake of women of child bearing age was estimated at 317.32 ±1.01 mg per day, which is below the EAR for women. The mean intake of all region were found below the EAR, with women in the Afar and SNNPR region consuming the highest as compared to other regions (P<0.05). The mean intake of both rural and urban resident women were also found below the EAR and the women in rural areas were found associated with higher calcium consumption with mean intake of (325.80±1.01 mg, p<0.05) as compared to urban women. The mean intake of women in the age range of 15 to 18 (344.64±1.05-mg) was significantly higher than women between 19–32y (322.11±1.01 mg) and from 32–45 y (297.09±1.020 mg; p<0.05).

Our finding clearly indicates that calcium supplementation is needed as a part of antenatal care in all regions of Ethiopia both at urban and rural setting and for all age category, hence policy makers must consider this in light of the recent WHO recommendation.

Key words . Maternal hypertension , pre-eclampsia , eclampsia , calcium supplementation, Antenatal care

Introduction

Hypertensive disorders of pregnancy including (pre-existing) chronic hypertension and gestational hypertension, pre-eclampsia and eclampsia, complicate approximately 2–8% of all pregnancies and have been associated with preterm and low birth weight and maternal mortality (Duley, 2009). In Ethiopia, pre-eclampsia/eclampsia complicated 1.2% of all institutional deliveries. Given the low institutional delivery rate and an expected incidence of 2–8% of all deliveries, and 11% of all maternal deaths and 16% of direct maternal deaths were due to this obstetric complication (Asheber *et.al*, 2011).

Various studies have suggested that calcium supplementation during pregnancy has a beneficial effect on reducing the risk of developing hypertensive disorders during pregnancy (WHO, 2013). Considering these scientific facts World Health Organization (WHO) recommends 1.5–2.0 g elemental calcium from the 20 weeks' of gestation until the end of pregnancy, for all pregnant women living in the area with low calcium intake and particularly those at higher risk of gestational hypertension as part of the antenatal care (WHO, 2013 page 7). However implementation of this recommendation requires monitoring of women's total daily calcium intake (diet, supplements and antacids). The overall intake of calcium per day should not exceed locally established upper tolerable limit (UL). In the absence of local UL, an upper limit of calcium intake of 3 g/day can be used (WHO, 2013 page 8).

Currently in Ethiopia calcium supplementation for pregnant women is not a part of antenatal care, hence policy makers must consider this in light of the recent WHO recommendation. However no intake data were previously available in Ethiopia to inform the policy decision to include calcium supplementation in existing antenatal care programs. Hence research was needed to assess whether dietary calcium intake is low among the relevant subpopulations in Ethiopia, particularly among women of child bearing age, and to assess factors affecting calcium intake.

The objectives of the study was to investigate the usual dietary calcium intake level of Ethiopian child bearing age women (15–45y) defined by region, area of residence and age, using data from the 2011 Ethiopian National Food Consumption Survey (ENFCS) and to understand whether calcium supplementation for pregnant women is needed in Ethiopia.

Method

Nationally and regionally representative Ethiopian National Food Consumption Survey data collected from 7908 women 15–45 y of age (weighted for relative population sizes) were analyzed. ANOVA was used to compare and determine which regions, area of residence and age category were consuming low calcium levels in comparison with the estimated average requirement (EAR) of women (1100mg for 14–18 y and 800 mg for 19 to 50y).

Result

The national average calcium mean intake of women of child bearing age is estimated at 317.32 mg per day, which is below the estimated average requirement (EAR) for women's (1100mg for 14–18 y and 800 mg for above 19 y). Also the mean intake in each region was found to be below the EAR. Women in Afar and SNNPR region consumed the highest compared to other regions (487.77 & 464.71 mg respectively; p<0.05) and women in Somali region consumed the least with an estimated mean intake of (141.92±1.0±1.04 mg; p<0.05). Women living in the rural areas were found associated with higher calcium consumption with mean intake of (325.80±1.01 mg, p<0.05). The mean intake of women in the age range of 15 to 18 (344.64±1.05 mg) was significantly higher than women between 19–32y (322.11±1.01 mg) and from 33–45y (297.09±1.02 mg; p<0.05). The summarized results are presented in the table given below.

Table : Dietary calcium intake of women of child bearing age in Ethiopia (2011)

Determining factors	Sample size	Mean(mg) ±SE	95% Confidence Interval	
			Lower Boundary	Upper Boundary
Region				
Tigray	750	296.67±1.04 ^d	276.80	317.96
Afar	563	487.77±1.04 ^e	455.23	522.63
Amhara	992	353.20±1.03 ^e	334.42	373.03
Oromiya	1048	345.52±1.03 ^e	328.34	363.61
Somalia	678	141.92±1.04 ^a	131.22	153.50
B/Gumuz	601	417.68±1.04 ^f	385.04	453.08
SNNPR	1023	464.71±1.03 ^e	442.55	487.99
Gambella	497	366.58±1.05 ^e	336.09	399.83
Harari	478	210.88±1.04 ^e	194.77	228.33
Addis Ababa	792	309.30±1.02 ^d	296.17	323.00
Dire Dawa	484	188.07±1.04 ^b	175.55	201.48
Area of residence				
Urban	2209	296.43±1.02 ^a	287.11	306.06
Rural	5697	325.80±1.01 ^b	317.44	334.39
Mothers age				
15–18	372	344.64±1.05 ^b	315.17	376.88
19–32	5766	322.11±1.01 ^a	314.41	330.00
33–45	1694	297.09±1.02 ^a	283.58	311.24
National	7906	317.32±1.01	310.79	323.98

a–g any two means in the same column not followed by the same letter are significantly different

Conclusion and Recommendation

From the result found it can be concluded that the dietary calcium intake of child bearing age women in Ethiopia is very low as compared to the Dietary Reference Intakes of Estimated Average Requirement for women. Hence our finding clearly indicates that calcium supplementation is needed as a part of antenatal care in all regions of Ethiopia both in urban and rural settings and for all age categories, hence policy makers must consider these findings in light of the recent WHO recommendation.

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