

Thesis Title Calcium and Magnesium Statuses and Effects of
Calcium Supplementation in Pregnant Thai Women
Suffering From Frequent Leg Cramps.

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Abstract

Nutritional status during pregnancy is important because it affects the health of the mother and her offspring. All dietary essentials are proportionately increased to cope with the additional demands of the mother and the growing fetus, especially calcium and magnesium. Inadequate intake of these minerals may result in leg cramps during pregnancy since both minerals are important in the contraction of muscles. Therefore, the prevalence of leg cramps in pregnancy, the source and the amount of calcium and magnesium as well as the effect of calcium supplementation on cramp during pregnancy were studied in 96 normal healthy pregnant (32 pregnant controls subjects without cramp, 32 pregnant with cramp treated with calcium and 32 pregnant with cramps treated with placebo).

The prevalence of leg cramps in this study was 26.8%. The pregnant Thai women consumed an energy intake closed to Thai RDA for pregnancy (2159.81 ± 81.25 vs. 2300 kcal/d) with more protein intake than the reference value (65.17 ± 17.55 vs 51 g/d, respectively). All pregnant volunteers had lower average calcium and magnesium intakes than the recommendation (850.94 ± 192.46 and 256.71 ± 59.32 vs. 1200 and 450mg/d). Milk was the good sources of calcium and magnesium in all subjects. Pregnants with cramps consumed significantly more calcium (887.5 ± 185.7 vs. 777.9 ± 187.6 mg/d, $p = .008$) while they did not lose more urinary calcium but did suffer from lower serum calcium ($2.16 \pm .06$ vs $2.20 \pm .08$ mmol/l and ionized calcium ($1.24 \pm .04$ vs $1.27 \pm .04$ mmol/l) and more cramps than the normal pregnant. In spite of these changes, cramped mothers carried babies with greater length than the controls. It is tempting to say that more calcium had been transferred to the growing fetus of the cramped (than to the fetus of the control) causing a relative calcium depletion in the mother and resulting in leg cramps. Urinary magnesium excretion tended to be higher in the cramp than the control groups (106.8 ± 43.4 vs. 90.1 ± 33.7 mg/d, $p = .042$) while the magnesium intake between the two groups did not differ.

Frequency of cramps tended to improved after 36 th week of gestation ,with or without calcium supplementation(placebo group). Calcium supplementation, 500 mg calcium per day for 4 weeks, brought about more improvement of both the frequency of cramps and levels of serum calcium($2.20 \pm .08$ vs $2.15 \pm .07$ mmol/l) and ionized calcium($1.27 \pm .04$ vs $1.23 \pm .04$ mmol/l), while in cramp group treated with placebo showed less improvement of cramp and no changes in serum levels of calcium and ionized calcium. It was concluded that pregnant who suffered from

cramps tended to carry babies with greater length which brought about higher calcium demand than mothers who did not suffer and that inadequate calcium intake is the cause of leg cramps in pregnancy while magnesium may play a minor role.