



Which social factors that may be associated with high parathyroid hormone levels?

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Objectives

- Hyperparathyroidism affects 10 % of the healthy population and is usually caused by low oral intake of calcium and vitamin D deficiency.
- Secondary hyperparathyroidism due to vitamin D deficiency leads to mineralization disorders of the bones, low bone mineral density, osteoporosis and ultimately an increased risk of bone fracture in adults.
- In this study, we aimed to investigate the causes of elevated PTH levels in postmenopausal women without the use of drugs that may affect of PTH levels and without concomitant diseases.

Methods

- A total of 156 postmenopausal women, aged ≥ 50 years, had no menstruation for at least 2 years and had no disease known to affect calcium metabolism were considered for inclusion in this study. Serum PTH levels were higher in 113 postmenopausal women and normal in 43 postmenopausal women.
- Education, occupation, average duration of exposure to sunlight per day in summer and winter, consumption of calcium-rich foods of people were questioned.
- Participants were divided into four groups according to their educational levels: had no formal education, primary school graduates, high school graduates and college graduates and they were divided into two groups according to their religious beliefs: covered and non-covered people.
- They were also classified according to their occupational status as housewives, workers and retired people. Sunlight exposure behavior was measured by one question: 'In the last 7 days, how long did you expose yourself to sunlight everyday on average? Three choices (less than 30 min, from 30 to 60 min and more than 60 min) were offered. Less than 30 min was considered inadequate exposure, from 30 to 60 min was considered moderate exposure and more than 60 min exposure was considered sufficient.
- Daily calcium intake was calculated using calcium consumption questionnaire prepared by Turkish Dietetic Association. People, who had more than daily 500 mg calcium consumption and less than daily 500 mg calcium consumption, were divided into two groups.

Results

- When all cases were evaluated together, serum PTH levels were significantly higher in housewives than workers and retired people ($p < 0.001$); in participants with less than a high school graduates than more than with a high school graduates ($p = 0.008$); in covered people than non-covered people ($p = 0.025$).
- Living alone and smoking were found to have no effect on serum PTH levels. PTH levels were not significantly different between groups with adequate calcium consumption and inadequate calcium consumption and also PTH levels were not significantly different between groups with insufficient sunlight exposure and sufficient sunlight exposure.

Table-4: Serum PTH levels of all participants

		PTH (pg/ml)	P
Social life	Living alone (n=21)	84.8 ± 8.8	0.478
	Living with partner/children (n=135)	95.5 ± 4.8	
Educational level	Less than a high school graduates (n=118)	101.4 ± 5.4	0.008
	More than a high school graduates (n=38)	75.1 ± 4.5	
Occupation	Housewives (n=95)	99.4 ± 5.7	<0.001
	Workers / Retired (n=61)	88.0 ± 6.5	
Smoking	Yes (n=25)	88.0 ± 7.9	0.544
	No (n=131)	96.3 ± 4.9	
Be covered	Yes (n=100)	103.2 ± 6.1	0.025
	No (n=56)	80.2 ± 4.1	
Sunlight exposure	Sufficient (n=60)	90.2 ± 6.2	0.387
	Insufficient (n=96)	97.9 ± 5.8	
Calcium consumption	Sufficient (n=49)	94.7 ± 6.4	0.680
	Insufficient (n=107)	95.1 ± 4.3	

Conclusions

- Considering all cases, women whom are defined as housewife, dressed up covering their head and arms and with education level less than high school have statistically significant elevated parathyroid hormone levels.

