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## Association between perceived mental stress and physical activity in elderly Korean people

*To the editor*: Korea has experienced rapid socio-economic growth over the past several decades and also one of the highest growth rates in the world. The proportion of the elderly population aged over 65 years will increase dramatically from 7.2% in 2000 to 20.8% in 2020. The growth of the elderly population in Korean society threatens its national health.[1]

Higher levels of stress can lead to a series of negative consequences such as depression and suicide.[2] Physically active people are not only less sensitive to negative influences of daily stress, but are also less responsive to physical stress.[3] Among stress-coping activities, physical activity (PA) has been shown to be beneficial to both physical and mental health and has been regarded as an effective method to prevent stress-related diseases.[4] Thus, helping elderly people who do not have established patterns of PA to acquire healthy habits for increasing PA is useful in terms of public health.

This study used national data from the fifth Korea National Health and Nutrition Survey (KNHANES-V) in 2010 and 2011 to investigate whether the level of PA is associated with perceived mental stress (PMS) status in elderly Korean people. KNHANES-V was conducted using a systematic stratified cluster sampling design. 2 837 elderly people aged over 65 years were selected for this study sample.

Participants were asked to rate their PMS status as very high, high, low, and none. Questions of PA information were compared with the guidelines of the American College of Sports Medicine.[5] Information regarding the gender, age, education, family socio-economic status, and marital status of each participant was collected as confounding factors during interviews.

Males show higher levels of education, family socio-economic status, married status, and positive PMS status compared to females. Participation ratios of vigorous, moderate, and low PA significantly declined with age in both males and females (table I). The crude odds ratios (COR)

**Table I**
**Characteristics of elderly Korean people**

| *Characteristics* | *Males (n= 1 233)* | *Females (n= 1 604)* | *Total (n= 2 837)* | *$X^2$ value* | *p value* |
|---|---|---|---|---|---|
| Age (years) | | | | | |
| 65-74 | 863 (70.0) | 1 060 (66.1) | 1 923 (67.8) | 5.572 | .062 |
| 75-84 | 340 (27.6) | 491 (30.6) | 831 (29.3) | | |
| 85 ≤ | 30 ( 2.4) | 53 ( 3.3) | 83 ( 2.9) | | |
| Education | | | | | |
| < elementary school | 582 (47.2) | 1 342 (83.6) | 1 924 (67.8) | 459.276 | <.001 |
| Elementary school | 205 (16.6) | 127 ( 7.9) | 332 (11.7) | | |
| Middle school | 284 (23.0) | 116 ( 7.3) | 400 (14.1) | | |
| High school ≤ | 162 (13.1) | 19 ( 1.2) | 181 ( 6.4) | | |
| Family socio-economic status | | | | | |
| Low | 594 (48.6) | 891 (56.4) | 1 485 (53.0) | 19.125 | <.001 |
| Average | 330 (27.0) | 336 (21.3) | 666 (23.6) | | |
| Middle high | 170 (13.9) | 192 (12.2) | 362 (12.9) | | |
| High | 127 (10.4) | 160 (10.1) | 287 (10.3) | | |
| Marital status | | | | | |
| Married | 1 121 (90.9) | 779 (48.6) | 1 900 (67.0) | 590.916 | <.001 |
| Separated | 7 ( 0.6) | 13 ( 0.8) | 20 ( 0.7) | | |
| Widowed | 87 ( 7.1) | 782 (48.7) | 869 (30.6) | | |
| Divorced | 18 ( 1.5) | 30 (1.9) | 48 ( 1.7) | | |
| Perceived mental stress | | | | | |
| Very high | 22 ( 1.8) | 84 ( 5.2) | 106 ( 3.8) | 89.423 | <.001 |
| High | 141 (11.4) | 373 (23.3) | 514 (18.1) | | |
| Low | 642 (52.1) | 685 (42.7) | 1 327 (46.8 | | |
| None | 428 (34.7) | 462 (28.8) | 890 (31.4) | | |
| Physical activity participation | | | | | |
| Vigorous activity* | 181 (14.7) | 168 (10.8) | 349 (12.3) | 75.013 | <.001 |
| Moderate activity‡ | 166 (13.7) | 372 (23.2) | 538 (19.0) | | |
| Low activity§ | 952 (77.2) | 1 021 (63.7) | 1 973 (70.0) | | |

Data is presented as n (%)
* 20 minutes vigorous physical activity ≥ three times/week
‡ 30 minutes moderate physical activity ≥ five times/week
§ 30 minutes walking ≥ five times/week

**Table II**

**ADJUSTED MULTIPLE LOGISTIC REGRESSION MODELS OF PERCEIVED MENTAL STRESS AND PHYSICAL ACTIVITY**

| *Perceived mental stress* | *Males, OR (95% CI)* * | | | *Females, OR (95% CI)* | | |
|---|---|---|---|---|---|---|
| | *Vigorous physical activity*‡ | *Moderate physical activity*§ | *Low physical activity*# | *Vigorous physical activity*‡ | *Moderate physical activity*§ | *Low physical activity*# |
| Model 1& | | | | | | |
| None | Reference | Reference | Reference | Reference | Reference | Reference |
| Low | 0.40 (0.16-1.40) | 0.51 (0.24-1.05) | 0.74 (0.49-1.12) | 0.73 (0.44-1.22) | 0.94 (0.61-1.46) | 1.19 (0.93-1.53) |
| High | 0.19∞ (0.02-0.45) | 1.47 (0.08-2.58) | 0.23∞ (0.08-0.67) | 0.31∞ (0.15-0.66) | 1.18 (0.49-2.83) | 0.44∞ (0.25-0.79) |
| Model 2≠ | | | | | | |
| None | Reference | Reference | Reference | Reference | Reference | Reference |
| Low | 0.64 (0.94-1.42) | 0.85 (0.55-1.33) | 0.86 (0.66-1.20) | 0.76 (0.45-1.29) | 0.89 (0.57-1.39) | 1.24 (0.96-1.60) |
| High | 0.28∞ (0.18-0.61) | 1.56 (0.47-5.14) | 0.39∞ (0.20-0.59) | 0.30∞ (0.14-0.65) | 1.24 (0.51-3.05) | 0.45∞ (0.25-0.80) |

* OR and 95% CI were determined by logistic regression analysis
‡ 20 minutes vigorous physical activity ≥ three times/week
§ 30 minutes moderate physical activity ≥ five times/week
# 30 minutes walking ≥ five times/week
& Model 1: crude odds ratio
≠ Model 2: adjusted odds ratio by age, education, family socio-economic status, and marital status
∞ Denotes $p < 0.01$

and adjusted odds ratios (AOR) for the high PMS in males and females significantly decreased with meeting guideline of vigorous PA (COR [male= 0.19, female= 0.31], AOR [male= 0.28, female= 0.33], $p<.01$) and low PA (COR [male= 0.23, female= 0.44], AOR [male= 0.39, female= 0.45], $p<.01$) compared to subjects who reported no PMS (table II).

To improve PMS, the vigorous and low PA are recommended in elderly Korean people. Therefore, the independent associations between PA levels and PMS status support public health programs that encourage regular PA for elderly Korean people.

We note that when elderly Korean people perceived very much mental stress, they did not perform vigorous and low PA recommendations in the present study. These results indicate that better PMS is associated with higher vigorous and low PA in Korean elders. Highlighting that physically active people report better mental health may be a useful adjunct to encourage people to maintain and increase their levels of PA.[6,7] Therefore, from a public health perspective, it is also important to consider environmental factors associated with participation in PA levels in Korean elders.

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## Insatisfacción con la imagen corporal en niños en evaluación psiquiátrica y su relación con el sobrepeso y la obesidad de sus padres

*Señor editor:* Los alarmantes resultados publicados por la *Encuesta Nacional de Salud y Nutrición 2012*[1] en relación con la prevalencia de sobrepeso y obesidad en la población adulta representan un tema de preocupación para los profesionales de la salud mental, principalmente para los que nos ocupamos de la población pediátrica. El sobrepeso y la obesidad de los padres representan el riesgo de que los niños y adolescentes desarrollen el temor a