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Better Opportunities for Physical Activity at Work and Home Have Positive Effects on Body Mass Index

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SONNET Director's Note:

The SONNET network has primarily focused on addressing basic resource needs such as food insecurity and inadequate transportation. These needs are part of a broader array of social determinants of health – the social, economic, environmental and personal conditions that affect an individual's decisions and behaviors. The research featured in this newsletter reminds us of the effect that these broader determinants can have on the health of KP members and individuals in our communities.

What's going on?

Obesity now affects one third of Americans (1) and gives rise to or worsens chronic health conditions such as diabetes, hypertension, arthritis, and sleep apnea (2). People who live or work in environments where physical activity is difficult to achieve, for example, because of lack

of sidewalks, playgrounds, or other common spaces, will be more sedentary than those who live or work in environments with more opportunities for physical activity, and they may be more likely to gain weight over time (3-7). Few studies have considered the potential influence of a worksite environment on BMI status (8-9) and none – to our knowledge – have assessed the impact of both residential and worksite measures on BMI status of employed adults.

We studied a stratified random sample of Kaiser Permanente Georgia (KPGA) health plan members who were: 1) continuously enrolled in KPGA for one year prior to study recruitment, 2) employed by one of the 100 largest private or public employers offering KPGA as an insurance option, and 3) 25-59 years of age. Participants were surveyed online and by mail in 2005 ("baseline").

BMI was calculated from weight and height measures in the electronic medical record from 2005 through 2009. The median of BMI measures over a year was used as the annual BMI.

Worksite Physical Activity Features (WPF) Score. Respondents were asked about six features that could influence physical activity at their worksite: walking trails or sidewalks at the worksite, an exercise facility at the worksite or within walking distance, walking groups or other organized groups for participation in sports or physical activities at the worksite, an employer program that distributed information on exercise, employer-provided time off (or flexible time) for fitness activities, and employer-provided gym discounts. All responses were classified as available ("Yes") or presumed to be not available ("No", "Not Sure", or "Not Applicable"). The WPF scale ranges from 0 (least supportive of physical activity) to 100 (most supportive of physical activity) (10).

Residential Physical Activity Features (RPF) Score. Respondents were asked about one household characteristic (availability of exercise equipment at home) and five neighborhood characteristics (availability of sidewalks, street lighting at night, and walking or biking paths within walking distance or no more than a 5-minute drive; and neighborhood safety in terms of crime and presence of unattended dogs). All responses were classified as present ("Yes") or presumed to be not present ("No", "Not Sure"). The RPF scale ranges from 0 (least supportive of physical activity) to 100 (most supportive of physical activity) (11-12).

What were the results?

Among the survey respondents, 70.3% were 45-59 years of age, 60.8% were female, and 49.3% were African-American. Mean (sd) baseline BMI was 30.8 (7.0) kg/m2.

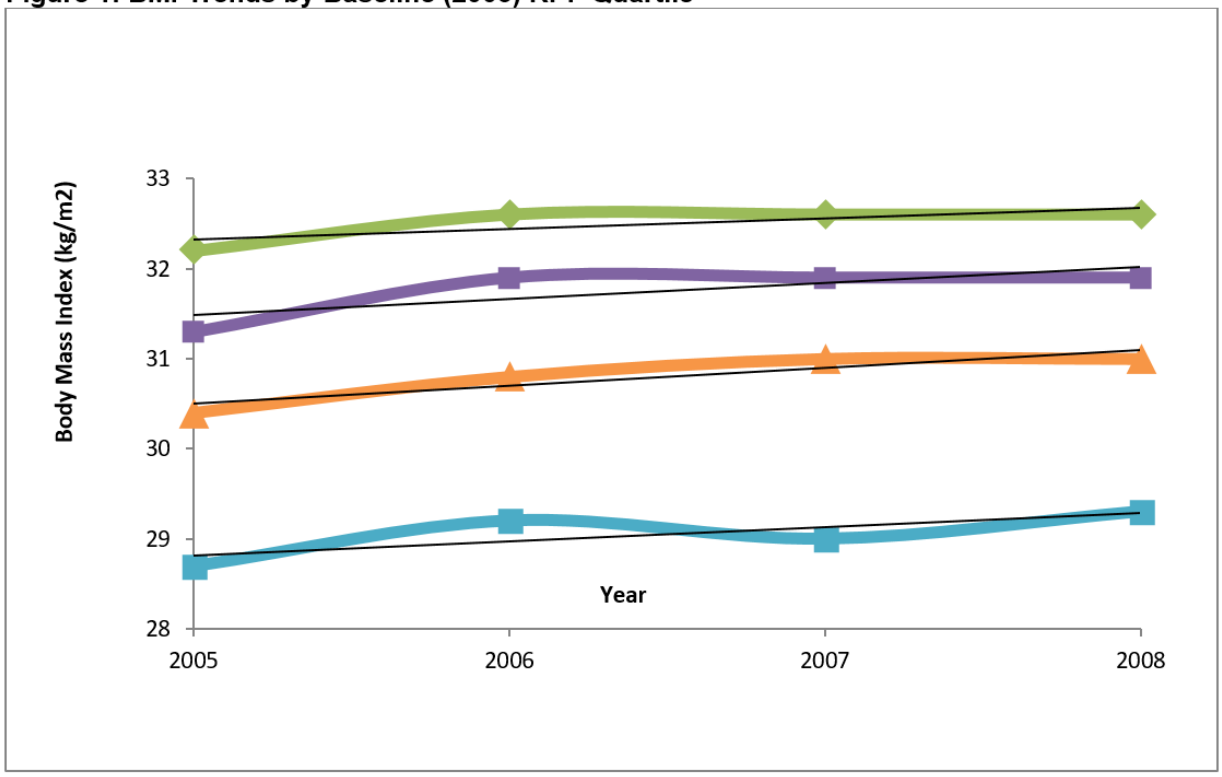
When first surveyed, participants reported their neighborhoods were more conducive to physical activity than where they worked (mean (sd) baseline RPF score of 69.4 (22.4) versus 31.9 (27.6), respectively).

Both RPF and WPF measured in 2005 negatively affected BMI that year (-0.166 and -0.056, respectively). **That is, both neighborhoods and worksites with more features that are supportive of physical activity (higher scores) were associated with lower BMI.**

Employed adults in this sample experienced a modest mean weight gain of 0.144 ($p<0.01$) kg/m2 annually (0.42 units total) over the 4-year study period. Those who lived in residential areas with features least supportive of physical activity (green line – Figure 1) had persistently high BMI on average over the 4-year period, and those who lived in residential areas with features most supportive of physical activity (blue line – Figure 1) had persistently low BMI. The same pattern was observed for worksites (data not shown).

Overall, we found that better opportunities for physical activity where people live and work have beneficial effects on BMI among employed adult members of KPGA. For employed adults, features of the home, neighborhood, and worksite all contribute to population health.

Figure 1: BMI Trends by Baseline (2005) RPF Quartile



Those who *lived* in residential areas with features **least supportive of physical activity.**
Those who *lived* in residential areas with features **most supportive of physical activity.**

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