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# Seasonal Patterns of Weight Change in Weight-Loss Treatment Seeking Adults

Margaret C. Fahey,<sup>a</sup> Robert C. Klesges,<sup>b,c</sup> Mehmet Kocak,<sup>c</sup> Wayne Talcott,<sup>b,c</sup> Jiajing Wang,<sup>c</sup> & Rebecca Krukowski<sup>c</sup>

<sup>a</sup> Department of Psychology, University of Memphis, Memphis, TN, USA <sup>b</sup> Department of Public Health Sciences, University of Virginia, School of Medicine, Charlottesville, VA, USA <sup>c</sup> Department of Preventive Medicine, University of Tennessee Health Science Center, Memphis, TN, USA

## Introduction

- Adults gain more weight in fall and winter compared to summer months.
- Seasonal weight patterns in adults engaged in a behavioral weight-loss intervention focused on self-weighing are unknown.
- Differences in these seasonal patterns based on demographic and behavioral (e.g., time from intervention enrollment) characteristics are unexplored.

## Methods

### Participants

- Active duty personnel ( $n=248$ ); 55% obese
- 51% were female and mostly (50%) aged 30- 40 years, with 27% < 30 years and 24% >40 years.
- 20% African American, 66% Caucasian, and 15% classified as Other race.
- Mostly (77%) non-Hispanic/Latino

### Weight-Loss Intervention

- Randomized to either a counselor-initiated (CI) or self-paced (SP) condition of a 12-month program based on Look AHEAD intensive lifestyle intervention.
- Received e-scales at baseline and asked to self-weigh daily.

### Season Weight

- Weight (kg) from e-scale measurements was utilized within astronomical seasons.
  - Fall (September 22<sup>nd</sup>- December 21<sup>st</sup>); Winter (December 22<sup>nd</sup>- March 21<sup>st</sup>); Spring (March 22<sup>nd</sup> – June 21<sup>st</sup>); Summer (June 22<sup>nd</sup>- September 21<sup>st</sup>)

### Analyses

- Rate of weight change (loss/gain) was compared to the subsequent season weight rate of change by gender, race, ethnicity, age group, BMI, enrollment season, and intervention condition.
- Participants were included in analyses if they provided  $\geq 2$  weeks of weight data in both compared seasons.

## Results

### Fall to Winter

- Weight change was not different by gender, race, ethnicity, age, BMI, or intervention condition.
- Dependent upon enrollment season, rate of weight change differed in winter compared to fall ( $p = 0.017$ ).

Enrollment Season	N	Fall Weight (kg) M (SD)	Fall to Winter Weight Change (kg) M (SD)
Fall	35	87.06 (15.21)	-1.03 (2.09)
Summer	42	85.27 (13.75)	0.27 (2.53)
Spring	28	80.32 (10.76)	0.49 (1.81)
Winter	23	84.10 (15.76)	0.41 (2.53)

### Winter to Spring

- Weight change was not different by race, ethnicity, age, BMI, intervention condition, or enrollment season.
- Trend of weight change difference dependent upon gender ( $p = 0.095$ ).

## Results (cont.)

Gender	N	Winter Weight (kg) M (SD)	Winter to Spring Weight Change (kg) M (SD)
Males	67	94.81 (12.17)	-0.99 (2.36)
Females	65	77.31 (9.38)	-0.38 (1.77)

### Spring to Summer

- Weight change was not different by gender, race, ethnicity, age, or BMI.
- Dependent on intervention condition, rate of weight change differed in spring compared to summer ( $p = 0.04$ ).
- Trend of weight change difference dependent upon enrollment season ( $p = 0.071$ ).

Intervention group	N	Spring Weight (kg) M (SD)	Spring to Summer Weight Change (kg) M (SD)
Counselor-initiated	80	82.94 (12.22)	-0.58 (2.30)
Self-paced	55	86.66 (14.50)	0.10 (2.02)
Enrollment Season			
Spring	40	83.86 (11.46)	-1.00 (1.97)
Winter	49	83.78 (14.03)	-0.24 (2.26)
Fall	30	85.17 (15.56)	0.05 (2.32)
Summer	16	86.69 (11.22)	0.41 (2.20)

### Summer to Fall

- Weight change was not different by gender, race, ethnicity, age, or intervention condition.
- Dependent upon enrollment season, rate of weight change differed in summer compared to fall ( $p = 0.0002$ ).

Enrollment Season	N	Summer Weight (kg) M (SD)	Summer to Fall Weight Change (kg) M (SD)
Summer	46	86.92 (14.52)	-1.85 (2.14)
Spring	34	81.26 (10.86)	-0.71 (2.20)
Winter	41	84.16 (13.17)	0.34 (2.21)
Fall	12	84.44 (14.66)	-0.30 (1.49)

## Conclusion

- Seasonal differences in weight loss depended on time from intervention enrollment, gender, and intervention group.
- However, there were no differences in race, ethnicity, BMI or age in seasonal patterns of weight loss.

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