

**Methods:** Participants were N=155 individuals who completed the Nogales Cardiometabolic Health and Sleep (NOCHES) and were contacted about completing a COVID sub-study (95% Hispanic/Latino). Participants were asked for the number of nightmares that they have experienced since the pandemic started. They were also asked whether they had nightmares about confinement, claustrophobia, suffocation, oppression, drowning, failure, helplessness, natural disasters, anxiety, evil forces, war, separation from loved ones, being chased, sickness, death, COVID, and apocalypse. They were also asked whether they experienced, due to the pandemic, increased general, financial, food, housing, familial, relationship, and media-related stress. Each of these items was coded from 0 (“Strongly Disagree”) to 3 (“Strongly Agree”), with total scores ranging from 0-21. Regression analyses (linear for frequency and binary logistic for content) examined stress score as independent variable, adjusted for age, sex, financial status, education, and mental health (PHQ4).

**Results:** Those who experienced greater pandemic-related stress reported more nightmares (age/sex-adjusted  $B=0.23$ ,  $p<0.0005$ , fully-adjusted  $B=0.23$ ,  $p<0.0005$ ). They were also more likely to have nightmares about confinement (adjusted odds ratio [OR]=1.69,  $p=0.008$ ), suffocation (OR=1.41,  $p=0.020$ ), failure (OR=1.23,  $p=0.049$ ), being chased (OR=1.24,  $p=0.013$ ), sickness (OR=1.26,  $p=0.022$ ), and COVID (OR=1.37,  $p=0.003$ ).

**Conclusion:** Those who experienced more pandemic-related stress reported more nightmares, even after adjusting for depression/anxiety symptoms. In addition, those with more pandemic-related stress were more likely to have nightmares about COVID itself, as well as confinement and suffocation, being chased, failure, and sickness in general. Perhaps efforts to reduce pandemic-related stress will reduce these nightmare experiences, which may have beneficial effects on other areas of mental health.

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### COVID-19 PANDEMIC SLEEP AND DREAMS AT THE US-MEXICO BORDER

*Luz Isalva,<sup>1</sup> Dora Valencia,<sup>1</sup> Sadia Ghani,<sup>1</sup> Marcos Delgadillo,<sup>1</sup> Célyne Bastien,<sup>2</sup> Purnima Madhivanan,<sup>1</sup> Karl Krupp,<sup>1</sup> John Ruiz,<sup>1</sup> William Killgore,<sup>1</sup> Chloe Wills,<sup>1</sup> Michael Grandner<sup>1</sup>*

<sup>1</sup>University of Arizona, <sup>2</sup>Universite Laval

**Introduction:** The impact of the COVID-19 pandemic in the border region is not well-described, including the impact of pandemic-related sleep disturbances on dream experiences, despite frequent reports of meaningful changes to dreams in the population.

**Methods:** Participants were 155 individuals who completed the Nogales Cardiometabolic Health and Sleep (NOCHES) Study and a COVID sub-study (95% Hispanic/Latino). Participants were asked whether, as a result of the pandemic, they have experienced more schedule regularity, improved/worsened sleep, more initial or middle-of-the-night insomnia, more sleepiness, and more napping. They were also asked whether they experienced more, fewer, or the same amount of dreams in general, positive dreams, and negative dreams. Multinomial logistic regressions were used to examine overall, positive, and negative dream recall (more or less vs same) as outcome and perceived change in sleep as independent variable, adjusted for age, sex, socioeconomic, and mental health symptoms (assessed with PHQ4).

**Results:** Those who reported more schedule regularity were less likely to report more negative dreams (Relative Risk Ratio [RRR]=0.40,  $p=0.010$ ). Those who reported improved sleep were also more likely to report more positive dreams (RRR=3.97,  $p=0.004$ ). Those with

worsened sleep were more likely to report fewer dreams overall (RRR=2.23,  $p=0.037$ ), fewer positive dreams (RRR=2.24,  $p=0.003$ ) and more negative dreams (RRR=3.69,  $p<0.0005$ ). Those with more initial insomnia were more likely to report fewer positive dreams (RRR=2.43,  $p=0.002$ ) and more negative dreams (RRR=4.12,  $p<0.0005$ ). Those with more middle-of-the-night insomnia reported fewer dreams overall (RRR=2.35,  $p=0.018$ ), fewer positive dreams (RRR=2.55,  $p=0.001$ ), and more negative dreams (RRR=5.01,  $p<0.0005$ ). Those with more daytime sleepiness were more likely to report fewer dreams overall (RRR=4.75,  $p<0.0005$ ), fewer positive dreams (RRR=1.92,  $p=0.019$ ), and more negative dreams (RRR=3.91,  $p<0.0005$ ), and were less likely to report more positive dreams (RRR=0.26,  $p=0.018$ ). Those who reported napping more were more likely to report fewer dreams overall (RRR=2.78,  $p=0.008$ ), fewer positive dreams (RRR=2.10,  $p=0.008$ ), and more negative dreams (RRR=2.83,  $p=0.003$ ), and were less likely to report more positive dreams (RRR=0.16,  $p=0.004$ ).

**Conclusion:** Those whose sleep worsened due to the pandemic reported less dream recall, and dream content that was more negative and less positive overall.

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### COVID-19 PANDEMIC SLEEP CHANGES RELATED TO SOCIAL AND FINANCIAL IMPACTS AT THE US-MEXICO BORDER

*Ruya Arce,<sup>1</sup> Dora Valencia,<sup>1</sup> Sadia Ghani,<sup>1</sup> Marcos Delgadillo,<sup>1</sup> Purnima Madhivanan,<sup>1</sup> Karl Krupp,<sup>1</sup> John Ruiz,<sup>1</sup> Azizi Seixas,<sup>2</sup> Giardin Jean-Louis,<sup>2</sup> William Killgore,<sup>1</sup> Chloe Wills,<sup>1</sup> Michael Grandner<sup>1</sup>*

<sup>1</sup>University of Arizona, <sup>2</sup>NYU Grossman School of Medicine

**Introduction:** The COVID-19 pandemic has caused major impacts to social and financial status for many people, including those living in the vulnerable US-Mexico border region. This study examined relationships between changes in sleep and perceived impacts to social and financial stability due to the pandemic.

**Methods:** Participants were 155 individuals who completed the Nogales Cardiometabolic Health and Sleep (NOCHES) and were contacted about completing a COVID sub-study (95% Hispanic/Latino). Participants were asked if the COVID-19 pandemic was causing them to feel more socially isolated, negatively impacting their finances, causing increased worry about finances, affecting their primary job, causing a job loss, and impacting their belief life will one day return to normal. In addition, they were asked to report the degree to which they experienced pandemic-related changes to sleep, including a regularity, overall improvement/worsening, initial and middle-of-the-night insomnia, daytime sleepiness, and napping. Logistic regression analyses were adjusted for age, sex, socioeconomic, and mental health (PHQ4).

**Results:** Those who kept a more regular schedule had lower odds of endorsing isolation (OR=0.32,  $p<0.0005$ ) and higher odds of believing things will return to normal (OR=1.67,  $p=0.041$ ). Those whose sleep improved also had lower odds of feeling isolated (OR=0.40,  $p=0.005$ ). Those with worsened sleep had increased odds of feeling isolated (OR=2.14,  $p=0.023$ ), experiencing a financial impact (OR=1.85,  $p=0.016$ ) and increased financial worry (OR=1.71,  $p=0.033$ ), and lower odds of believing things will return to normal (OR=0.53,  $p=0.012$ ). More initial insomnia was associated with isolation (OR=3.62,  $p=0.001$ ), financial impact, (OR=1.89,  $p=0.015$ ), financial worry (OR=1.87,  $p=0.016$ ) and job impact (OR=1.95,  $p=0.010$ ). More middle-of-the-night insomnia was associated with financial worry (OR=1.82,  $p=0.016$ ) and job impact (OR=1.93,  $p=0.009$ ). More

sleepiness was associated with job loss (OR=1.84,p=0.043). More napping was associated with financial impact (OR=1.89,p=0.017) and worry (OR=1.88,p=0.017), impact to job (OR=1.89,p=0.016) or lost job (OR=1.81,p=0.041), and decreased likelihood of believing things will return to normal (OR=0.45,p=0.003).

**Conclusion:** Pandemic-related stress was linked with sleep disturbances. Worse sleep was indicative of increased social isolation, greater financial fears, more job-related impacts and less of a general sense that things would return to normal.

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### COVID-19 PANDEMIC SLEEP DISTURBANCES RELATED TO STRESS EXPERIENCES AT THE US-MEXICO BORDER

Tommy Begay,<sup>1</sup> Dora Valencia,<sup>1</sup> Sadia Ghani,<sup>1</sup> Marcos Delgado,<sup>1</sup> Purnima Madhivanan,<sup>1</sup> Karl Krupp,<sup>1</sup> John Ruiz,<sup>1</sup> Azizi Seixas,<sup>2</sup> Giardin Jean-Louis,<sup>2</sup> William Killgore,<sup>1</sup> Chloe Wills,<sup>1</sup> Michael Grandner<sup>1</sup>

<sup>1</sup>University of Arizona, <sup>2</sup>NYU Grossman School of Medicine

**Introduction:** The COVID-19 pandemic has impacted many individuals at the vulnerable US-Mexico border region in a variety of ways. Fear, worry, and stress have increased for many, as has poor sleep. The present study evaluated the degree to which worsened sleep due to the pandemic impacted stress experiences.

**Methods:** Participants were N=155 individuals who completed the Nogales Cardiometabolic Health and Sleep (NOCHES) and were contacted about completing a COVID sub-study (95% Hispanic/Latino). They were asked the degree to which their sleep worsened due to the pandemic. They also reported the degree to which they agreed with statements regarding various pandemic-related stress experiences. These included infection-related stresses, stresses about community impact, personal psychosocial stresses, stresses about consequences of potential infection, media and society-related stresses, feelings of safety, and how the pandemic has impacted home life. Ordinal logistic regressions were used to determine whether changes in sleep were associated with agreement with statements about pandemic-related stress experiences, adjusted for age, sex, financial status, education, and mental health (PHQ4).

**Results:** Those who perceived that their sleep worsened were more likely to report greater endorsement of beliefs that they were infected (ordinal Odds Ratio [oOR]=2.82,p<0.0005), they could possibly be infected (oOR=1.98,p=0.003), they feared testing (oOR=1.94,p=0.006), COVID-19 would impact their community (oOR=1.75,p=0.017) and would do so for a long time (oOR=1.90,p=0.006), they experience more general (oOR=4.10,p<0.0005), financial (oOR=3.15,p<0.0005), food-related (oOR=2.97,p<0.0005), housing-related (oOR=2.14,p=0.002), family-related (oOR=2.53,p<0.0005) and relationship (oOR=3.37,p<0.0005) stress, their shopping was impacted by scarcity (oOR=1.76,p=0.014), and they are at high risk for COVID (oOR=1.87,p=0.008). Furthermore, media coverage of COVID-19 had increased their stress (oOR=2.46,p<0.0005), there is too much panic about COVID-19 (oOR=1.67,p=0.032), and they themselves are scared of getting COVID-19 (oOR=1.95,p=0.005), worried about the future (oOR=1.71,p=0.022), feel less secure (oOR=0.59,p=0.028), are thriving less (oOR=0.40,p<0.0005), and their mental health is not improving (oOR=0.46,p=0.002).

**Conclusion:** Worse sleep due to the COVID-19 pandemic was associated with increased reports of stresses across a wide range of domains. Perhaps sleep health interventions could improve social and emotional health in these domains and reduce stress experiences and better cope with the pandemic. Alternatively, mental health interventions should perhaps be targeted to this population.

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### COVID-19 PANDEMIC SLEEP DISTURBANCES RELATED TO DIETARY BEHAVIOR AT THE US-MEXICO BORDER

Dora Valencia,<sup>1</sup> Sadia Ghani,<sup>1</sup> Marcos Delgado,<sup>1</sup> Purnima Madhivanan,<sup>1</sup> Karl Krupp,<sup>1</sup> John Ruiz,<sup>1</sup> Azizi Seixas,<sup>2</sup> Giardin Jean-Louis,<sup>2</sup> William Killgore,<sup>1</sup> Chloe Wills,<sup>1</sup> Michael Grandner<sup>1</sup>

<sup>1</sup>University of Arizona, <sup>2</sup>NYU Grossman School of Medicine

**Introduction:** The COVID-19 pandemic has disrupted life at the US-Mexico border in many ways, including sleep and dietary behavior. Given the potential long-term impact of worsening sleep and metabolic health due to the pandemic, the present study examines whether changes to dietary behavior were associated with changes to sleep.

**Methods:** Participants were 155 individuals who completed the Nogales Cardiometabolic Health and Sleep (NOCHES) Study and were contacted about completing a COVID-19 sub-study (95% Hispanic/Latino). Participants reported the degree to which they experienced pandemic-related changes to sleep, including a more regular schedule, overall improvement, overall worsening, more initial insomnia, more middle-of-the-night insomnia, more daytime sleepiness, and more napping. They were also asked whether as a result of the pandemic they consumed an overall healthier diet, more homecooked meals, more processed meals, more regular meals, whether they enjoyed food more, and degree of overeating. Ordinal regressions with diet change as outcome and sleep change as predictor were adjusted for age, sex, education, and socioeconomic.

**Results:** Those who reported more regular sleep were more likely to report a healthier overall diet (oOR=3.12,p<0.0005), more homecooked meals (oOR=2.18,p=0.001), more enjoyment of food (oOR=1.71,p=0.028), and less likelihood of overeating (oOR=0.59,p=0.033). Similarly, those who reported more "improved" sleep reported healthier overall diet (oOR=7.42,p<0.0005), more homecooked meals (oOR=2.59,p=0.001), more regular diet (oOR=2.15,p=0.006), more enjoyment of food (oOR=2.92,p<0.0005), less consumption of processed foods (oOR=0.54,p=0.039), and less overeating (0.33,p<0.0005). Those whose sleep worsened reported eating more processed foods (oOR=1.78,p=0.030) and overeating (oOR=3.90,p<0.0005). Those who reported more initial insomnia reported eating more processed foods (oOR=1.93,p=0.016), more regular diet (oOR=1.65,p=0.042), and overeating more often (oOR=4.11,p<0.0005). More middle-of-the-night insomnia was associated with eating more processed foods (oOR=2.45,p=0.001), more regular diet (oOR=1.66,p=0.031), and overeating more often (oOR=3.68, <0.0005). Those with more daytime sleepiness also reported eating more processed foods (oOR=2.36,p=0.003), more regular diet (oOR=1.79, =0.019), and overeating more often (oOR=3.28,p<0.0005). More napping was associated with a more regular diet (oOR=1.90,p=0.011) and more overeating (oOR=3.53,p<0.0005).

**Conclusion:** Overall, worse sleep led to worse dietary behavior, especially eating more processed food and overeating.

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### CHANGING SLEEP DURING THE COVID PANDEMIC ASSOCIATED WITH DAYTIME COGNITIVE FUNCTION

Anjalee Jajoo,<sup>1</sup> Kathryn Kennedy,<sup>1</sup> Matthew Lujan,<sup>1</sup> William Killgore,<sup>1</sup> Chloe Wills,<sup>1</sup> Michael Grandner<sup>1</sup>

<sup>1</sup>University of Arizona