



Prospective Associations Between Fathers' Engagement in Infant Caregiving and Their Weight-Related Behaviors and Mental Health

American Journal of Men's Health
January-February 1–7
© The Author(s) 2022
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/15579883221079152
journals.sagepub.com/home/jmh


Brian K. Lo, PhD¹ , Sebastien Haneuse, PhD²,
Brent A. McBride, PhD³, Susan Redline, MD, MPH⁴,
Elsie M. Taveras, MD, MPH^{5,6}, and Kirsten K. Davison, PhD¹

Abstract

Fathers' engagement in infant caregiving is linked with positive social, emotional, and developmental outcomes in children; however, its relationship with fathers' own health is largely unknown. This longitudinal study examined associations between fathers' caregiving engagement with their 6-month-old infants and their physical activity, sugar-sweetened beverage (SSB) consumption, nighttime sleep duration, and depressive symptoms 6 months later when infants were 12 months old. Participants were 143 fathers of infants (62.7% non-Hispanic White, 82.3% with a bachelor's degree). Fathers reported their frequency of engagement in seven caregiving activities when infants were 6 months old. Fathers' physical activity, SSB consumption, nighttime sleep duration, and depressive symptoms were assessed when infants were 6 and 12 months old. Multivariate logistic regression analysis was used to assess if fathers who reported higher infant caregiving at 6 months had more positive health outcomes at 12 months, controlling for fathers' age, race/ethnicity, education, employment, household income, and the outcome at 6 months. Fathers who reported higher caregiving engagement when infants were 6 months old had increased odds of being sufficiently physically active 6 months later (unadjusted odds ratio [OR] = 1.19, 95% confidence interval [CI] = [1.00, 1.41]; adjusted OR = 1.47, 95% CI = [1.11, 1.96]). No links were identified between fathers' caregiving engagement and their SSB consumption, nighttime sleep duration, or depressive symptoms. In summary, fathers' engagement in infant caregiving may be beneficial to their physical activity in the first year after birth. There was insufficient evidence in this study that the benefits of caregiving engagement were experienced broadly across multiple health outcomes.

Keywords

fathers, engagement, caregiving, physical activity, weight-related health

Received November 10, 2021; revised January 18, 2022; accepted January 21, 2022

Introduction

Men in the United States are becoming more engaged in child caregiving (Livingston & Parker, 2019). While we know that fathers' early engagement is beneficial for children's developmental, psychological, and cognitive outcomes (Amodia-Bidakowska et al., 2020; Behson et al., 2018; Rollè et al., 2019; Yogman et al., 2016), the impacts of fathers' caregiving engagement on fathers' own health are largely unknown (Grau-Grau et al., 2022). Previous studies reported that entering parenthood may put men at higher risks of weight gain (Garfield et al., 2016; Rattay & von der Lippe, 2020; Saxbe et al., 2018; Umberson et al., 2011), reduced physical activity (Pot & Keizer, 2016;

¹School of Social Work, Boston College, Chestnut Hill, MA, USA

²Department of Biostatistics, Harvard T.H. Chan School of Public Health, Boston, MA, USA

³Division of Nutritional Sciences, University of Illinois at Urbana-Champaign, Urbana, IL, USA

⁴Division of Sleep and Circadian Disorders, Department of Medicine, Brigham and Women's Hospital & Harvard Medical School, Boston, MA, USA

⁵Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, USA

⁶Division of General Academic Pediatrics, Department of Pediatrics, Massachusetts General Hospital for Children, Boston, MA, USA

Corresponding Author:

Brian K. Lo, School of Social Work, Boston College, McGuinn Hall 106K, 140 Commonwealth Ave, Chestnut Hill, MA 02467, USA.
Email: brian.lo@bc.edu



Rattay & von der Lippe, 2020; Saxbe et al., 2018), less sleep (Saxbe et al., 2018; Wynter et al., 2020), and depression (Saxbe et al., 2018; Wynter et al., 2020). Beyond becoming a father, it is unclear if fathers' level of engagement in infant caregiving plays a role in shaping their weight-related behaviors and mental health. This research brief examines the relationship between fathers' engagement in caregiving with their 6-month-old infants and their weight-related behaviors and mental health 6 months later.

There are divergent perspectives on the potential impact of caregiving engagement on fathers' behaviors and health. The *role strain perspective* argues that resources are finite and that additional roles and responsibilities will lead to role overload and risky behaviors (Goode, 1960). Conversely, the *role enhancement perspective* predicts positive effects of caregiving engagement because a greater number of roles and responsibilities enhance one's resources, social connections, and positive emotions, which collectively outweigh or mitigate the strain from having multiple roles and responsibilities (Sieber, 1974).

While prior research has reported that fathers gain more weight in the long term and have poorer weight-related behavioral and mental health outcomes in comparison with childless men (Saxbe et al., 2018), studies that have examined social roles in men, including the role of fatherhood, generally support the *role enhancement perspective*; in industrialized countries, men who occupy more social roles including being a father have better health outcomes than those with fewer social roles (DePasquale et al., 2018; Janzen & Muhajarine, 2003; Kuntsche et al., 2009; Takeda et al., 2006; von der Lippe & Rattay, 2016). Several weaknesses or characteristics of prior social role studies limit our understanding of how the role of fatherhood may influence men's weight-related behaviors and associated mental health outcomes. First, prior social role research largely relied on cross-sectional designs, precluding conclusions about the prospective effects of caregiving on men's health. Second, most studies have focused on men's self-rated health and psychosocial well-being with little attention given to fathers' weight-related behaviors that are consistently linked with risk of weight gain including physical activity (Cleven et al., 2020; Jakicic et al., 2019), sugar-sweetened beverage (SSB) consumption (Hu, 2013; Luger et al., 2017), and sleep (Bacaro et al., 2020; Cooper et al., 2018). This limits our understanding on the mechanisms that might put men at higher risks of weight gain after becoming a father. Third, prior social role studies have also overlooked the distinct variations of fathers' caregiving demands and responsibilities over the course of fatherhood. Compared with fathers with older children, caregiving demands are much higher among fathers with infants.

Using a longitudinal design, this study extends prior research by examining the relationship between fathers' engagement in caregiving with their 6-month-old infants and their self-reported physical activity, SSB consumption, sleep, and depressive symptoms 6 months later. The inclusion of depressive symptoms as a weight-related mental health outcome is because depression and obesity often coexist (Mediouni et al., 2020; Weiss et al., 2020) and depression appears to increase the likelihood of engaging in unhealthy weight-related behaviors such as physical inactivity (Helgadóttir et al., 2015; Schuch et al., 2017; Vancampfort et al., 2017). Consistent with the results of prior social role studies (DePasquale et al., 2018; Janzen & Muhajarine, 2003; Kuntsche et al., 2009; Takeda et al., 2006; von der Lippe & Rattay, 2016), we anticipate that results will support the *role enhancement perspective* and illustrate the benefits of caregiving on men's weight-related health.

Method

Study Participants

This study included fathers who participated in a longitudinal, prospective observational study examining associations between infant sleep patterns and growth from birth to 24 months: Rise & Sleep Health in Infancy & Early Childhood (SHINE) birth cohort. Detailed recruitment strategies have been described elsewhere (Yu et al., 2021). Briefly, between 2016 and 2018, 224 fathers were recruited along with mothers and infants after delivery at Massachusetts General Hospital in Boston, Massachusetts. Eligibility for fathers included living in the same household as the mothers and infants and being the biological father of the infant. We recruited residential biological fathers to foster greater retention rates at follow-ups. To remain eligible in the study, fathers had to sleep in the same home as the study infant at least one night per week at follow-ups. Our analytical sample included 143 fathers who completed the study questionnaires at intake and when their infants were approximately 6 and 12 months old. The Partners Health Care Institutional Review Board reviewed and approved all the study activities (protocol # 2015P002292). All participants included in the study provided their written informed consent.

Measures

At each time point, fathers completed a brief online survey. Fathers' caregiving engagement was measured when infants were 6 months old. Fathers' physical activity, SSB consumption, nighttime sleep duration, and depressive symptoms were assessed when infants were 6 and 12 months old.

Caregiving engagement was measured using 7 items from the Early Childhood Longitudinal Study-Birth cohort survey (Avenilla et al., 2006). Using a 6-point response scale (0 = *never*, 1 = *rarely*, 2 = *a few times a month*, 3 = *a few times a week*, 4 = *about once a day*, 5 = *more than once a day*), items assessed the frequency of engagement in preparing meals, feeding, changing diapers, putting child to sleep, bathing, taking child outside the home, and dressing child. Each item was rescored to reflect whether fathers engaged in the activity at least daily and then summed to create a composite daily caregiving engagement score ranging from 0 to 7 indicating the number of caregiving activities in which they engaged on a daily basis.

Physical activity was measured using the Godin Leisure-Time Exercise Questionnaire (GLTEQ). Responses to items assessing moderate and strenuous activity were used to calculate whether participants were sufficiently physically active using the recommended cut-off of 24 units. Prior research supports the validity of the GLTEQ in a wide range of populations (Amireault et al., 2015; Amireault & Godin, 2015; Motl et al., 2018; van Poppel et al., 2010).

SSB consumption was measured using validated questions from the National Health and Nutrition Examination Survey (NHANES) Dietary Screener Questionnaire (DSQ) (National Cancer Institute Division of Cancer Control & Population Science, 2021). SSB consumption was dichotomized into less than once per week and at least once per week based on the general recommendations that SSB consumption should be minimized (Dietary Guidelines Advisory Committee, 2015).

Nighttime sleep duration was calculated based on responses to items assessing weeknight and weekend night sleep duration ($[\text{hours of nighttime sleep per weekday} \times 5] + [\text{hours of nighttime sleep per weekend day} \times 2] / 7$). Average nighttime sleep duration was dichotomized into <7 hr and ≥ 7 hr based on current recommendations (Consensus Conference Panel et al., 2015).

Depressive symptoms were screened using the 2-item Patient Health Questionnaire (PHQ-2). PHQ-2, which has been validated in prior research (Chae et al., 2012; Gjerdincjen et al., 2009), assesses depressed mood and anhedonia (i.e., little interest or pleasure in doing things) with a positive response to either item indicating the presence of depressive symptoms (i.e., a positive screening) and the need for further evaluations.

Demographic characteristics included fathers' race/ethnicity, age, educational attainment, family household income, and employment status. Age, race/ethnicity, and education were measured at study intake (i.e., the infant's birth). Household income and employment status were measured at birth and when infants were 6 months old; the measures at 6 months were utilized.

Statistical Analysis

Descriptive statistics (percentages/counts) were used to characterize participants' demographics and health outcomes. Multivariate logistic regression models were fit to estimate the odds ratio (OR) association between fathers' caregiving engagement at 6 months and each of being sufficiently physically active, consuming SSBs less than once a week, getting at least 7 hr of nighttime sleep, and having no depressive symptoms when infants were 12 months old. Each outcome variable was assessed separately, with both unadjusted and adjusted models fit. In the latter, we controlled for fathers' race/ethnicity, education, age, employment status, and annual household income along with the outcome at 6 months. Controlling for the outcomes at 6 months in the adjusted models was to account for the potential influence of fathers' health outcomes at 6 months on their 12 months' health outcomes. We considered children's temperament, number of children in the household, child care usage, mothers' breastfeeding status, mothers' employment status, and coparenting support as potential covariates as they might drive fathers' engagement (Diniz et al., 2021). We decided not to include them as covariates because their direct effects on paternal weight-related health are unclear in the current literature and none of them were associated with both fathers' engagement and our outcome variables in this study through bivariate examinations. Analyses were conducted using SAS version 9.4 software (SAS institute Inc., Cary, NC, USA). Throughout, statistical significance was evaluated at the $\alpha = .05$ level.

Results

The majority of the fathers were between 30 and 39 years old ($n = 105$; 76.1%), had completed a bachelor's degree or beyond ($n = 116$; 82.3%), were employed full time ($n = 127$; 89.4%), and had an annual household income of US\$80,000 or higher ($n = 110$; 78.6%) (Table 1). Slightly more than half of the fathers were non-Hispanic White ($n = 89$; 62.7%) with much smaller proportions of Hispanic or Latino ($n = 20$; 14.1%), Asian ($n = 24$; 16.9%), and Black/African American ($n = 9$; 6.3%). At 6 months, on a daily basis, 36 fathers (25.5%) engaged in 0 to 2 caregiving activities, 78 fathers (55.3%) engaged in 3 to 5 caregiving activities, and 27 fathers (19.2%) engaged in 6 to 7 caregiving activities.

In unadjusted logistic regression models, fathers' caregiving engagement at 6 months was marginally associated with their physical activity at 12 months (unadjusted OR = 1.19; 95% confidence interval [CI] = [1.00, 1.41]); no relationships were identified between fathers' caregiving engagement at 6 months and their SSB consumption (unadjusted OR = 0.86; 95% CI = [0.72, 1.02]), nighttime

Table 1. Fathers' Characteristics (n = 143).

Socioeconomic characteristics	N	%
Age (years)		
<30	13	9.4
30–34	50	36.2
35–39	55	39.9
≥40	20	14.5
Missing	5	—
Race/ethnicity		
White	89	62.7
Black or African American	9	6.3
Asian	24	16.9
Hispanic or Latino	20	14.1
Missing	1	—
Education level at study intake		
<Bachelor's degree	25	17.7
Bachelor's degree	40	28.4
≥Graduate degree or higher	76	53.9
Missing	2	—
Employment status at 6 months		
Employed full time	127	89.4
Employed part time	9	6.3
Not in the workforce	6	4.2
Missing	1	—
Household income at 6 months		
<US\$80,000	30	21.4
US\$80,000–US\$199,999	57	40.7
≥US\$200,000	53	37.9
Missing	3	—
Behavioral characteristics at 12 months		
Average nighttime sleep duration (hr)		
<7	78	54.9
≥7	64	45.1
Missing	1	—
Sugar-sweetened beverage consumption		
<Once per week	82	42.3
≥Once per week	60	57.8
Missing	1	—
Physical activity^a		
Insufficiently active	68	48.6
Sufficiently active	72	51.4
Missing	3	—
Depressive symptoms^b		
Negative	105	73.4
Positive	38	26.6
Missing	0	—
Count of daily caregiving engagement at 6 months		
0	14	9.9
1	9	6.4
2	13	9.2
3	24	17.0
4	23	16.3
5	31	22.0
6	18	12.8
7	9	6.4
Missing	2	—

^aBased on the Godin Leisure-Time Exercise Questionnaire with a score ≥24 indicating being sufficiently active. ^bBased on the 2-item Patient Health Questionnaire (PHQ-2) with a score >0 out of 6 points indicating a positive depressive symptoms screening and signaling the need for a confirmatory test.

sleep duration (unadjusted OR = 1.01; 95% CI = [0.85, 1.19]), and depressive symptoms (unadjusted OR = 1.02; 95% CI = [0.84, 1.23]) at 12 months (Table 2). In adjusted models, the association between fathers' caregiving engagement and physical activity was statistically significant with an increased odds of being sufficiently physically active (adjusted OR = 1.47; 95% CI = [1.11, 1.96]); for every additional caregiving activity that fathers engaged in on a daily basis, there was a 47% increase in the odds of them attaining sufficient physical activity at 12 months. Findings for fathers' SSB consumption (adjusted OR = 0.95; 95% CI = [0.77, 1.18]), nighttime sleep duration (adjusted OR = 1.12; 95% CI = [0.86, 1.47]), and depressive symptoms (adjusted OR = 1.03; 95% CI = [0.81, 1.30]) did not change in the adjusted models.

Discussion

In this study, we found limited evidence to support the *role enhancement perspective* and no evidence to support the *role strain perspective*. Fathers reporting greater caregiving engagement at 6 months had a greater likelihood of being sufficiently physically active at 12 months. Fathers' caregiving engagement was not associated with fathers' nighttime sleep duration, SSB consumption, or depressive symptoms.

From the *role enhancement perspective*, the positive association between fathers' caregiving engagement and their physical activity level can be partly due to the resources and supports that fathers gained through providing infant care to mitigate the competing demands between work and family for physical activity. Prior studies have reported that when fathers are more involved with their children, they are more satisfied with their lives, more socialized, and more connected with their families and communities (Behson et al., 2018). There are a number of factors that could explain the positive effects of caregiving were limited to fathers' physical activity. This relationship may be explained by a unique aspect of fathering where fathers generally engage in more physical play with their children and are more likely to role model physical activity than mothers (Amodia-Bidakowska et al., 2020). There may not be clear links between fathers' diet and their approach to parenting. The general lack of association between fathers' caregiving engagement and their weight-related behaviors and mental health in our study aligns with prior observations that paid work or employment is more pertinent to men's health, while parent and partner roles are more pertinent to women's health (Glauber & Day, 2018; von der Lippe & Rattay, 2016).

Our study's null findings also suggest that there may be other more important factors other than caregiving to trigger changes in fathers' weight-related behaviors and mental health entering fatherhood. For example, access to parental leave and flexible work arrangements are consistently

Table 2. Prospective Associations Between Fathers' Caregiving Engagement at 6 Months and Paternal Weight-Related Behaviors and Mental Health at 12 Months.

Paternal weight-related behaviors and mental health at 12 months	Fathers' daily caregiving engagement count at 6 months	
	Unadjusted	Adjusted ^a
	Odds ratio [95% CI]	
Being sufficiently physically active	1.19 [1.00–1.41]	1.47* [1.11–1.96]
Consuming SSBs less than once per week	0.86 [0.72–1.02]	0.95 [0.77–1.18]
Having at least 7 hr of nighttime sleep	1.01 [0.85–1.19]	1.12 [0.86–1.47]
No depressive symptoms	1.02 [0.84–1.23]	1.03 [0.81–1.30]

Note. Boldface indicates statistical significance (* $p < .01$). SSBs = sugar-sweetened beverages; CI = confidence interval.

^aControlled for fathers' age (continuous), fathers' race/ethnicity (White, Asian, African American/Latino), fathers' education (<a bachelor's degree, bachelor's degree, \geq graduate degree) at intake, fathers' employment at 6 months (full-time, not full-time), annual household income at 6 months (< US\$80,000, US\$80,000–US\$199,999, \geq US\$200,000), and outcome at 6 months.

identified to be critical for fathers to enhance work–family balance (Ewald et al., 2020), and failure to do so might contribute to poor sleep (Buxton et al., 2016; Cardenas et al., 2021), unhealthy eating (Bauer et al., 2012), and poor mental health (Allen et al., 2000; Cardenas et al., 2021). At the personal level, social cognitive factors such as self-regulation and motivation are identified to be important factors in regulating weight-related behaviors in prior studies (Greaves et al., 2017). Future research should examine how these policy and individual factors influence fathers' weight-related behaviors and mental health over the course of fatherhood.

This study has two main strengths. First, the use of a longitudinal design contributes to our understanding of the prospective associations between fathers' engagement level and health. Second, unlike the majority of the past research on social roles, we measured fathers' caregiving engagement frequencies in our study, acknowledging the variability of fathers' caregiving engagement across households. Our study has some limitations. Fathers in our study were from the greater Boston area, generally older, biological fathers living with the mothers and infants, and with mid to high socioeconomic status. Findings may not be generalizable to other populations. In addition, fathers self-reported their engagement level and health outcomes, which might have contributed measurement error. We did not measure fathers' education attainment beyond study intake at 6 months. Although unlikely, fathers' education might have changed since their child's birth. Finally, only a small portion of fathers reported depressive symptoms. This might have limited our ability to detect meaningful associations between caregiving engagement and depressive symptoms.

Conclusion

This study provides novel information on the prospective associations between fathers' caregiving engagement and their weight-related outcomes. Fathers with greater

caregiving engagement when the infants were 6 months old were more likely to be sufficiently physically active 6 months later, and the time that fathers devote to infant caregiving does not have negative ramifications for their own health. Given the widespread benefits of father engagement on children's health and developmental outcomes (Amodia-Bidakowska et al., 2020; Behson et al., 2018; Rollè et al., 2019; Yogman et al., 2016), findings of our study further suggest that father engagement should be highly encouraged, possibly through paternity leave policies and flexible work arrangements.

Acknowledgments

We are grateful to the fathers who participated in our study.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the National Institute of Diabetes and Digestive and Kidney Diseases (R01 DK107972); SR was partly supported by the National Heart, Lung, and Blood Institute (R35 HL135818).

ORCID iD

Brian K. Lo  <https://orcid.org/0000-0001-7713-1349>

References

- Allen, T. D., Herst, D. E. L., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*(2), 278–308.
- Amireault, S., & Godin, G. (2015). The Godin-Shephard Leisure-Time Physical Activity Questionnaire: Validity

- evidence supporting its use for classifying healthy adults into active and insufficiently active categories. *Perceptual and Motor Skills*, 120(2), 604–622.
- Amireault, S., Godin, G., Lacombe, J., & Sabiston, C. M. (2015). Validation of the Godin-Shephard Leisure-Time Physical Activity Questionnaire classification coding system using accelerometer assessment among breast cancer survivors. *Journal of Cancer Survivorship*, 9(3), 532–540.
- Amodia-Bidakowska, A., Lavery, C., & Ramchandani, P. G. (2020). Father-child play: A systematic review of its frequency, characteristics and potential impact on children's development. *Developmental Review*, 57, Article 100924.
- Avenilla, F., Rosenthal, E., & Tice, P. (2006). *Fathers of U.S. children born in 2001: Findings from the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B)* (NCES 2006-002, National Center for Education Statistics, U.S. Department of Education). U.S. Government Printing Office.
- Bacaro, V., Balesio, A., Cerolini, S., Vacca, M., Poggiogalle, E., Donini, L. M., Lucidi, F., & Lombardo, C. (2020). Sleep duration and obesity in adulthood: An updated systematic review and meta-analysis. *Obesity Research & Clinical Practice*, 14(4), 301–309.
- Bauer, K. W., Hearst, M. O., Escoto, K., Berge, J. M., & Neumark-Sztainer, D. (2012). Parental employment and work-family stress: Associations with family food environments. *Social Science and Medicine*, 75(3), 496–504.
- Behson, S., Holmes, E., Hill, E., & Robbins, N. (2018). Fatherhood, work, and family across the globe: A review and research agenda. In K. Shockley, W. Shen, & R. Johnson (Eds.), *Cambridge handbooks in psychology: The Cambridge handbook of the global work-family interface* (pp. 614–628). Cambridge University Press.
- Buxton, O. M., Lee, S., Beverly, C., Berkman, L. F., Moen, P., Kelly, E. L., Hammer, L. B., & Almeida, D. M. (2016). Work-family conflict and employee sleep: Evidence from IT workers in the work, family and health study. *Sleep*, 39(10), 1871–1882.
- Cardenas, S. I., Corbisiero, M. F., Morris, A. R., & Saxbe, D. E. (2021). Associations between paid paternity leave and parental mental health across the transition to parenthood: Evidence from a repeated-measure study of first-time parents in California. *Journal of Child and Family Studies*, 30(12), 3080–3094.
- Chae, S. Y., Chae, M. H., Tyndall, A., Ramirez, M. R., & Winter, R. O. (2012). Can we effectively use the two-item PHQ-2 to screen for postpartum depression? *Family Medicine*, 44(10), 698–703.
- Cleven, L., Krell-Roesch, J., Nigg, C. R., & Woll, A. (2020). The association between physical activity with incident obesity, coronary heart disease, diabetes and hypertension in adults: A systematic review of longitudinal studies published after 2012. *BMC Public Health*, 20, 1–15.
- Consensus Conference Panel., Watson, N. F., Badr, M. S., Belenky, G., Bliwise, D. L., Buxton, O. M., . . . Tasali, E. (2015). Recommended amount of sleep for a healthy adult: A joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society. *Journal of Clinical Sleep Medicine*, 11(6), 591–592.
- Cooper, C. B., Neufeld, E. V., Dolezal, B. A., & Martin, J. L. (2018). Sleep deprivation and obesity in adults: A brief narrative review. *BMJ Open Sport & Exercise Medicine*, 4(1), Article e000392.
- DePasquale, N., Polenick, C. A., Hinde, J., Bray, J. W., Zarit, S. H., Moen, P., Hammer, L. B., & Almeida, D. M. (2018). Health behavior among men with multiple family roles: The moderating effects of perceived partner relationship quality. *American Journal of Men's Health*, 12(6), 2006–2017.
- Dietary Guidelines Advisory Committee. (2015). *Scientific advisory report of the 2015 Dietary Guidelines Advisory Committee: Advisory report to the Secretary of Health and Human Services and the Secretary of Agriculture*. <https://health.gov/sites/default/files/2019-09/Scientific-Report-of-the-2015-Dietary-Guidelines-Advisory-Committee.pdf>
- Diniz, E., Brandão, T., Monteiro, L., & Veríssimo, M. (2021). Father involvement during early childhood: A systematic review of the literature. *Journal of Family Theory and Review*, 13(1), 77–99.
- Ewald, A., Gilbert, E., & Huppatz, K. (2020). Fathering and flexible working arrangements: A systematic interdisciplinary review. *Journal of Family Theory and Review*, 12(1), 27–40.
- Garfield, C. F., Duncan, G., Gutina, A., Rutsohn, J., McDade, T. W., Adam, E. K., . . . Chase-Lansdale, P. L. (2016). Longitudinal study of body mass index in young males and the transition to fatherhood. *American Journal of Men's Health*, 10(6), N158–N167.
- Gjerdincjen, D., Crow, S., McGovern, P., Miner, M., & Center, B. (2009). Postpartum depression screening at well-child visits: Validity of a 2-question screen and the PHQ-9. *Annals of Family Medicine*, 7(1), 63–70.
- Glauber, R., & Day, M. D. (2018). Gender, spousal caregiving, and depression: Does paid work matter? *Journal of Marriage and Family*, 80(2), 537–554.
- Goode, W. J. (1960). A theory of role strain. *American Sociological Review*, 25(4), 483–496.
- Grau-Grau, M., Las Heras Maestro, M., & Bowles, H. R. (Eds.). (2022). *Engaged fatherhood for men, families and gender equality healthcare, social policy, and work perspectives*. Springer.
- Greaves, C., Poltawski, L., Garside, R., & Briscoe, S. (2017). Understanding the challenge of weight loss maintenance: A systematic review and synthesis of qualitative research on weight loss maintenance. *Health Psychology Review*, 11(2), 145–163.
- Helgadóttir, B., Forsell, Y., & Ekblom, Ö. (2015). Physical activity patterns of people affected by depressive and anxiety disorders as measured by accelerometers: A cross-sectional study. *PLOS ONE*, 10(1), Article e0115894.
- Hu, F. B. (2013). Resolved: There is sufficient scientific evidence that decreasing sugar-sweetened beverage consumption will reduce the prevalence of obesity and obesity-related diseases. *Obesity Reviews*, 14(8), 606–619.
- Jakicic, J. M., Powell, K. E., Campbell, W. W., Dipietro, L., Pate, R. R., & Pescatello, L. S., . . . Physical Activity Guidelines Advisory Committee. (2019). Physical activity

- and the prevention of weight gain in adults: A systematic review. *Medicine and Science in Sports and Exercise*, 51(6), Article 1262.
- Janzen, B. L., & Muhajarine, N. (2003). Social role occupancy, gender, income adequacy, life stage and health: A longitudinal study of employed Canadian men and women. *Social Science and Medicine*, 57(8), 1491–1503.
- Kuntsche, S., Knibbe, R. A., & Gmel, G. (2009). Social roles and alcohol consumption: A study of 10 industrialised countries. *Social Science and Medicine*, 68(7), 1263–1270.
- Livingston, G., & Parker, K. (2019). *8 Facts about American dads*. <https://www.pewresearch.org/fact-tank/2019/06/12/fathers-day-facts/>
- Luger, M., Lafontan, M., Bes-Rastrollo, M., Winzer, E., Yumuk, V., & Farpour-Lambert, N. (2017). Sugar-sweetened beverages and weight gain in children and adults: A systematic review from 2013 to 2015 and a comparison with previous studies. *Obesity Facts*, 10(6), 674–693.
- Mediouni, M., Kaczor-Urbanowicz, K. E., & Madiouni, R. (2020). Future epidemic: Depreobesity. *Obesity Medicine*, 19, Article 100240.
- Motl, R. W., Bollaert, R. E., & Sandroff, B. M. (2018). Validation of the Godin Leisure-Time Exercise Questionnaire classification coding system using accelerometry in multiple sclerosis. *Rehabilitation Psychology*, 63(1), 77–82.
- National Cancer Institute Division of Cancer Control & Population Science. (2021). *Dietary Screener Questionnaire (DSQ) in the NHANES 2009-10: Dietary factors, food items asked, and testing status for DSQ*. <https://epi.grants.cancer.gov/nhanes/dietscreen/evaluation.html#pub>
- Pot, N., & Keizer, R. (2016). Physical activity and sport participation: A systematic review of the impact of fatherhood. *Preventive Medicine Reports*, 4, 121–127.
- Rattay, P., & von der Lippe, E. (2020). Association between living with children and the health and health behavior of women and men: Are there differences by age? Results of the “German Health Update”(GEDA) Study. *International Journal of Environmental Research and Public Health*, 17(9), Article 3180.
- Rollè, L., Gullotta, G., Trombetta, T., Curti, L., Gerino, E., Brustia, P., & Caldarera, A. M. (2019). Father involvement and cognitive development in early and middle childhood: A systematic review. *Frontiers in Psychology*, 10, Article 2405.
- Saxbe, D., Corner, G. W., Khaled, M., Horton, K., Wu, B., & Khoddam, H. L. (2018). The weight of fatherhood: Identifying mechanisms to explain paternal perinatal weight gain. *Health Psychology Review*, 12(3), 294–311.
- Schuch, F., Vancampfort, D., Firth, J., Rosenbaum, S., Ward, P., Reichert, T., . . . Stubbs, B. (2017). Physical activity and sedentary behavior in people with major depressive disorder: A systematic review and meta-analysis. *Journal of Affective Disorders*, 210, 139–150.
- Sieber, S. D. (1974). Toward a theory of role accumulation. *American Sociological Review*, 39(4), 567–578.
- Takeda, Y., Kawachi, I., Yamagata, Z., Hashimoto, S., Matsumura, Y., Oguri, S., & Okayama, A. (2006). The impact of multiple role occupancy on health-related behaviours in Japan: Differences by gender and age. *Public Health*, 120(10), 966–975.
- Umberson, D., Liu, H., Mirowsky, J., & Reczek, C. (2011). Parenthood and trajectories of change in body weight over the life course. *Social Science and Medicine*, 73(9), 1323–1331.
- Vancampfort, D., Firth, J., Schuch, F. B., Rosenbaum, S., Mugisha, J., Hallgren, M., . . . Stubbs, B. (2017). Sedentary behavior and physical activity levels in people with schizophrenia, bipolar disorder and major depressive disorder: A global systematic review and meta-analysis. *World Psychiatry*, 16(3), 308–315.
- van Poppel, M., Chinapaw, M., Mokkink, L., van Mechelen, W., & Terwee, C. (2010). Physical activity questionnaires for adults: A systematic review of measurement properties. *Sports Medicine*, 40, 565–600.
- von der Lippe, E., & Rattay, P. (2016). Association of partner, parental, and employment statuses with self-rated health among German women and men. *SSM—Population Health*, 2, 390–398.
- Weiss, F., Barbuti, M., Carignani, G., Calderone, A., Santini, F., Maremmi, I., & Perugi, G. (2020). Psychiatric aspects of obesity: A narrative review of pathophysiology and psychopathology. *Journal of Clinical Medicine*, 9(8), Article 2344.
- Wynter, K., Francis, L. M., Fletcher, R., McBride, N., Dowse, E., & Wilson, N., . . . Australian Fatherhood Research Consortium. (2020). Sleep, mental health and wellbeing among fathers of infants up to one year postpartum: A scoping review. *Midwifery*, 88, Article 102738.
- Yogman, M., & Garfield, C. F., & Committee on Psychosocial Aspects of Child and Family Health. (2016). Fathers’ roles in the care and development of their children: The role of pediatricians. *Pediatrics*, 138(1), Article e20161128.
- Yu, X., Quante, M., Rueschman, M., Ash, T., Kaplan, E. R., Guo, N., Horan, C. M., Haneuse, S., Davison, K., Taveras, E. M., & Redline, S. (2021). Emergence of racial/ethnic and socioeconomic differences in objectively measured sleep–wake patterns in early infancy: Results of the rise & SHINE study. *Sleep*, 44(3), zsa193.