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## Pathways From Food Insecurity to Intimate Partner Violence Perpetration Among Peri-Urban Men in South Africa



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**Introduction:** Although poverty is sometimes seen as a driver of intimate partner violence victimization, less is known about how it intersects with men's violence perpetration. Food insecurity is a sensitive marker of poverty that may have unique mechanisms leading to men's intimate partner violence perpetration given its association with gender roles and men "providing for the family."

**Methods:** Using cluster-based sampling, the team conducted an audio-assisted questionnaire in 2016 among men living in a peri-urban settlement near Johannesburg, South Africa. The aim was to examine the relationship between men's food insecurity and their use of past-year intimate partner violence, and to explore the pathways linking these two conditions.

**Results:** Among 2,006 currently partnered men, nearly half (48.4%) perpetrated intimate partner violence and more than half (61.4%) were food insecure. Food insecurity was associated with doubled odds of intimate partner violence (OR=2.15, 95% CI=1.73, 2.66). This association persisted after controlling for sociodemographics, relationship characteristics, and neighborhood clustering. In a structural equation model, food insecurity retained a direct relationship with men's violence perpetration and worked through indirect pathways of mental health and relationship quality.

**Conclusions:** Addressing men's perpetration of intimate partner violence may require examination of broader structural challenges, such as food insecurity. Future interventions should consider livelihood strategies alongside relationship and mental health approaches.

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### INTRODUCTION

Globally, one in three women experience violence by a male partner in their lifetime.<sup>1</sup> Poverty has been shown to heighten women's vulnerability to intimate partner violence (IPV),<sup>2</sup> and increasingly violence prevention focuses on women's economic empowerment. However, data around poverty and IPV are conflicting, and much of the extant literature draws upon women's experience of IPV rather than men's perpetration. It is crucial to understand how poverty intersects with men's perpetration of IPV if programs are to limit its impact and, ultimately, prevent it.

One sensitive proxy marker for poverty is food insecurity.<sup>3</sup> Food insecurity is defined as having uncertain or

limited availability of nutritionally adequate food or the inability to acquire safe, acceptable foods.<sup>4</sup> Beyond sheer hunger from insufficient food intake, food insecurity also includes poor dietary quality and worry or anxiety over securing food supplies.<sup>5</sup>

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Food insecurity has been associated with increased odds of IPV victimization in a small group of extant studies. In nationally representative data from the U.S. and United Kingdom, food insecurity increased odds of past-year IPV experience among women.<sup>2,6</sup> In California, women with very low food security had fivefold increased odds of reporting IPV in the past year.<sup>7</sup> Mixed methods data from Ecuador suggest that possible pathways linking food insecurity to women's experience of IPV include greater conflict and stress within couples and reduced household wellbeing.<sup>8</sup>

Fewer studies, however, have explored how food insecurity is associated with men's perpetration of IPV. A multi-country study in five Asian countries found a bivariate relationship between food insecurity and higher rates of men's use of partner violence.<sup>9</sup> In qualitative research in Cote d'Ivoire, the stress of food insecurity and urban poverty led to IPV perpetration among men, who felt unable to meet their gendered role of providing for the family.<sup>10</sup> No other research, to the authors' knowledge, has assessed the relationship between food insecurity and men's IPV perpetration.

This study aims to examine the relationship between men's food insecurity and their report of past-year IPV perpetration. The study also aims to explore the pathways linking these two conditions using cross-sectional data collected among men in a peri-urban settlement near Johannesburg, South Africa.

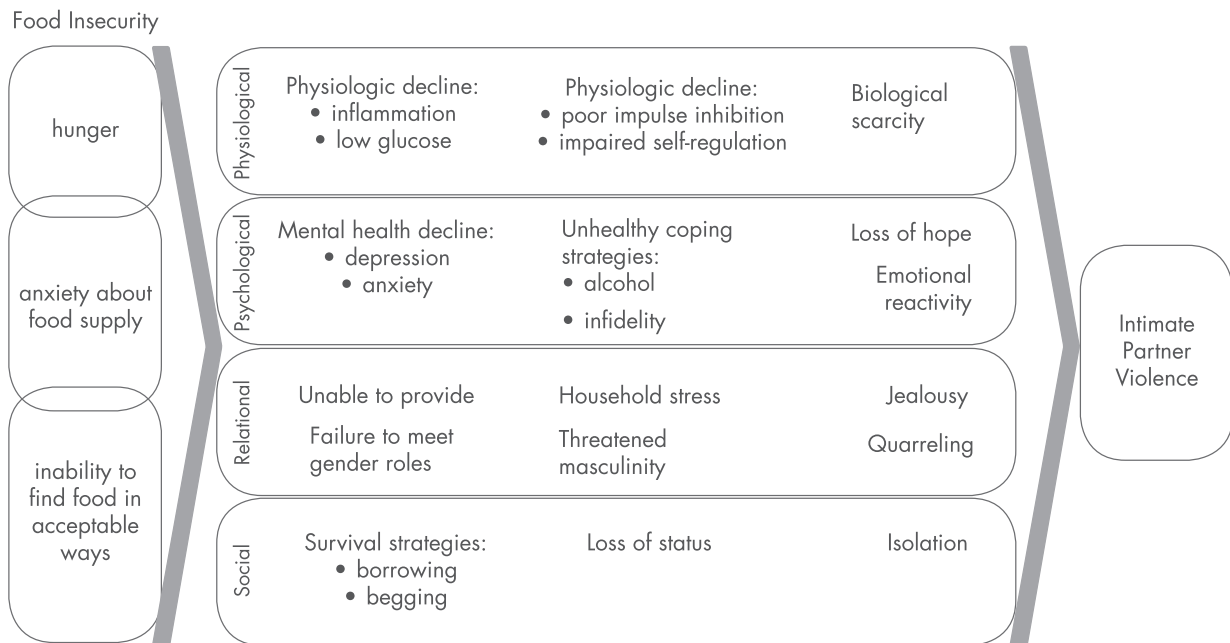
## METHODS

Given the dearth of empirical findings on poverty and men's IPV perpetration, this analysis draws upon a growing body of theoretical work. A masculinities approach suggests that men attain dominance through socially sanctioned means, such as earning income, being a provider, or serving as a patriarch within the household.<sup>11</sup> Another useful theoretical approach is family stress theory, which suggests a lack of material resources may lead to violence regardless of gender considerations.<sup>12</sup> One rationale is that stress depletes psychological resources required to enact self-control over the violence act.<sup>13</sup> The theoretical work is combined into a socioecological model that posits pathways between food security and IPV perpetration at physiological, psychological, relational, and social levels (Figure 1).

The study was conducted in a semi-formal settlement, called a township, near Johannesburg, South Africa, during January–July 2016. This peri-urban area took form in the mid-1990s, when the fall of apartheid pass laws allowed non-whites to move closer to cities. Today, most residents live in government-subsidized housing and informal shacks. The area is home to half a million people, including high numbers of migrants from other African countries. Many residents lack access to basic services, such as running water, sewerage, and rubbish removal.

### Study Sample

Trained research assistants recruited a volunteer sample of men who lived in a pre-defined research area (called a cluster) for >12 months and were aged 18–40 years. The sample was recruited by a local mobilization team who used convenience sampling methods during daytime hours at local places (schools, street corners, outside restaurants) within a total of 18 clusters. Data collection was conducted in the language of participant choice (English,



**Figure 1.** Conceptual framework linking food insecurity to intimate partner violence perpetration.

isiZulu, Tswana, or Sepedi) on tablet computers using audio computer-assisted data collection (ACASI) software. ACASI allows important data to be collected about legal and illegal activity while ensuring anonymity. Data from tablets were uploaded multiple times daily to an encrypted server housed at the university.

Participation was on the basis of written, informed consent and each participant was reimbursed R50 (approximately U.S. \$3.50). The protocol was registered with ClinicalTrials.gov (NCT02823288). Ethical approval was obtained from the University of the Witwatersrand Human Research Ethics Committee (M150443). Researchers received intensive training on IPV, the study protocol, collecting sensitive information, and ensuring data quality and participant confidentiality. Study procedures complied with ethical recommendations of the United Nations Multi-Country Study on Men and Violence.

## Measures

Men's perpetration of IPV was measured using an index of items on physical and sexual violence in the past year.<sup>14</sup> A total of eight items asked about behaviorally specific acts of violence (e.g., hitting, strangling, forcing sex) with answers on a Likert-type scale (never, once, few, many). IPV was defined as a dichotomous measure (any use of physical or sexual violence) and as a continuous measure of intensity (summing the responses). Food insecurity was measured using three items of the Household Food Insecurity Access Scale that ask about (1) having no food in the house; (2) going to sleep hungry; and (3) going without food.<sup>15</sup> In structural equation modeling (SEM), food insecurity was constructed as a latent variable. Unemployment asked about work in the past 3 months. Relationship characteristics included demographics about sexual partners and behaviors. Relationship control was measured using the Sexual Relationship Power and Control scale, which asked men to rate behaviors on a 4-point Likert scale,<sup>16</sup> with higher scores denoting more relationship control, dichotomized at the top tertile of responses. Gender attitudes were measured using the Gender Equitable Men's Scale, which rates beliefs on a 4-point Likert scale<sup>17</sup> and dichotomized at the highest tertile. Depression was measured using Center for Epidemiological Studies screener for depressive symptoms, with probable depression dichotomized at a cut off of 21. Alcohol was measured using the Alcohol Use Disorders Identification Test (AUDIT), which asks ten items about drinking in the past month and is dichotomized as problem drinking at score  $\geq 8$ . Sociodemographics included age, education (years of schooling), marital status, household size, and monthly income. Migrancy was assessed by the province of the participant's birth and coded as a dichotomous outcome, with migrancy meaning birth outside of Gauteng Province.

## Statistical Analysis

This analysis was conducted in January through March 2018 among currently partnered men. The analyses were conducted in Stata, version 13.1. The internal consistency of all the scales was assessed by evaluating Cronbach's  $\alpha$ . Bivariate analyses of the outcome variable were assessed against the exposure variable and sociodemographic variables. Bivariate analyses (*t*-test, chi-square test) were conducted to examine differences by IPV status for normally distributed and categorical variables. Nonparametric bivariate analyses (Wilcoxon) were conducted for non-normally distributed variables.

To measure the association between food insecurity and recent IPV, bivariate logistic regression models were conducted. Sociodemographics associated with IPV perpetration were adjusted for in bivariate analysis and used stepwise backwards elimination to drop variables with nonsignificant *p*-values until the models appeared parsimonious. The ORs and the  $\alpha$  statistic are presented at the significance level of 0.05.

SEM with maximum likelihood with missing values estimation was used to test pathways between food insecurity, potential mediators, and IPV intensity. Bivariate regression and evidence from extant literature was used to guide preliminary model building. Model modifications were performed based on modification indices and theoretical plausibility. After deriving a path model solution, each latent construct was regressed on age (in years) and education (in years) and nonsignificant paths were trimmed. Measures for model fit included a parsimonious measure (root mean square error of approximation [RMSEA]) and an incremental measure (Bentler's comparative fit index [CFI]).<sup>18</sup> Acceptable model fit assumed the model met the following criteria: RMSEA < 0.05 and CFI  $\geq 0.95$ .

## RESULTS

A total of 2,006 currently partnered men were included in this analysis. Men were aged a median of 27 years and less than half had high-school education (Table 1). Roughly three quarters of men were born outside of Gauteng province, the region where the peri-urban settlement of interest is located.

Nearly half of participants ( $n=971$ , 48.4%) reported IPV perpetration in the past year. A total of 1,211 men (61.6%) reported past-month food insecurity. Current unemployment was reported by one third (32.9%) of the cohort. Participants reported a past-month income at a median of R700 (roughly U.S. \$55). Nearly half (46.8%) of participants lived with their current partner and just more than half (51.9%) reported quarreling in the past year.

In bivariate analysis, sociodemographics associated with men's recent IPV perpetration included younger age, lower education, and non-migrancy. Those reporting current food insecurity reported a higher rate of IPV (70.3%) than those who reported being food secure (53.6%,  $p < 0.001$ ). Those reporting depressive symptoms had higher rates of IPV perpetration (35.5%) than those without depressive symptoms (17.6%,  $p < 0.001$ ). Similar patterns were seen with problem drinking. Relationship characteristics of quarreling, being controlling, and gender-inequitable views were associated with IPV in bivariate analysis.

In bivariate logistic regression adjusting for clustering (Table 2), food insecurity was associated with doubled odds of using recent IPV, with an OR of 2.15 (95% CI=1.73, 2.66). Relationship characteristics of quarrels in the past year, male controlling behavior, and men's

**Table 1.** Bivariate Association Between Predictors and Use of Recent Intimate Partner Violence Among Partnered Men (n=2,006)

Characteristics	Total cohort	Intimate partner violence		
		No IPV (n=1,035)	Recent IPV (n=971)	p-value ( $\chi^2$ , Wilcoxon or t-test)
Socio-demographics				
Age (years), median (IQR)	27 (23–32)	<b>28.6</b>	<b>26.9</b>	< <b>0.001</b>
High school education, n (%)	833 (40.9)	<b>44.3</b>	<b>37.3</b>	<b>0.001</b>
Migrant, n (%)	1,491 (72.9)	<b>76.0</b>	<b>69.8</b>	<b>0.002</b>
Poverty				
Unemployed, n (%)	669 (32.9)	34.3	31.6	0.195
Past-month earnings, median (IQR)	745 (3–2,500)	1,616.0	1,536.0	0.523
Food insecurity, n (%)	1,230 (61.4)	<b>53.6</b>	<b>70.3</b>	< <b>0.001</b>
Relationship, n (%)				
Live together	956 (46.8)	45.8	47.5	0.548
Past-year quarrels with partner	1,049 (51.9)	<b>45.4</b>	<b>59.3</b>	< <b>0.001</b>
Controlling	657 (33.2)	<b>24.5</b>	<b>42.4</b>	< <b>0.001</b>
Gender inequitable	599 (30.4)	<b>24.3</b>	<b>37.5</b>	< <b>0.001</b>
Mental health, n (%)				
Depressive symptoms	527 (26.0)	<b>17.6</b>	<b>35.5</b>	< <b>0.001</b>
Problem drinking	804 (41.2)	<b>32.2</b>	<b>51.1</b>	< <b>0.001</b>

Note: Boldface indicates statistical significance ( $p < 0.05$ ). IPV, intimate partner violence.

gender inequitable views increased odds of IPV. Participants reporting symptoms consistent with either probable depression or problem drinking had >2-fold odds of reporting recent perpetration.

In multivariate analysis, food insecurity increased the odds of men's recent perpetration of IPV (AOR=2.13, 95% CI=1.75, 2.54) after controlling for important socio-demographics (Model 1; Table 2). Once potential

**Table 2.** Adjusted Associations Between Predictors and Men's Use of Recent Intimate Partner Violence

Variable	OR (95% CI)	Recent physical/sexual IPV		
		Model 1 AOR (95% CI)	Model 2 AOR (95% CI)	Model 3 AOR (95% CI)
Sociodemographics				
Age, years	<b>0.96 (0.93, 0.96)***</b>	<b>0.95 (0.94, 0.97)***</b>	<b>0.95 (0.92, 0.95)***</b>	<b>0.95 (0.92, 0.97)***</b>
High school education	<b>0.81 (0.62, 0.99)*</b>	<b>0.81 (0.59, 0.99)*</b>	0.88 (0.63, 1.10)	<b>0.88 (0.59, 1.11)*</b>
Migrant	<b>0.69 (0.59, 0.87)**</b>	<b>0.73 (0.66, 1.00)*</b>	<b>0.75 (0.62, 0.97)*</b>	0.65 (0.59, 1.10)
Poverty				
Unemployed	0.83 (0.74, 1.03)	0.88 (0.72, 1.09)	0.89 (0.79, 1.19)	0.88 (0.80, 1.21)
Food insecure	<b>2.15 (1.73, 2.66)***</b>	<b>2.18 (1.75, 2.54)***</b>	<b>1.89 (1.53, 2.32)***</b>	<b>1.66 (1.31, 2.11)***</b>
Relationship characteristics				
Live together	1.05 (0.88, 1.25)	—	<b>1.29 (1.24, 1.88)*</b>	<b>1.44 (1.13, 1.93)**</b>
Past-year quarrels	<b>1.82 (1.50, 2.13)***</b>	—	<b>1.73 (1.43, 2.18)***</b>	<b>1.36 (1.31, 2.06)*</b>
Controlling	<b>2.11 (1.87, 2.75)***</b>	—	<b>1.82 (1.39, 2.25)***</b>	<b>1.79 (1.36, 2.21)***</b>
Gender inequitable	<b>1.62 (1.50, 2.23)***</b>	—	1.19 (1.14, 1.78)	1.16 (0.88, 1.51)
Mental health				
Probable depression	<b>2.56 (2.02, 3.25)***</b>	—	—	<b>2.08 (1.59, 2.70)***</b>
Problem drinking	<b>2.29 (1.79, 2.73)***</b>	—	—	<b>1.75 (1.38, 2.24)***</b>

Note: Boldface indicates statistical significance (\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ). All models adjust for clustering by neighborhood. IPV, intimate partner violence.

moderators of relationship characteristics (living together, quarreling, controlling behaviors, gender inequitable attitudes) were included (Model 2), food insecurity retained a significant association with men’s IPV perpetration (AOR=1.89, 95% CI=1.53, 2.32). In the last step (Model 3), depressive symptoms and problem drinking further attenuated the relationship between food insecurity and IPV, but significance was retained (AOR=1.66, 95% CI=1.31, 2.11). Partial mediators of the impact of food insecurity on IPV were related to relationship characteristics, masculinity, and mental health (Model 3).

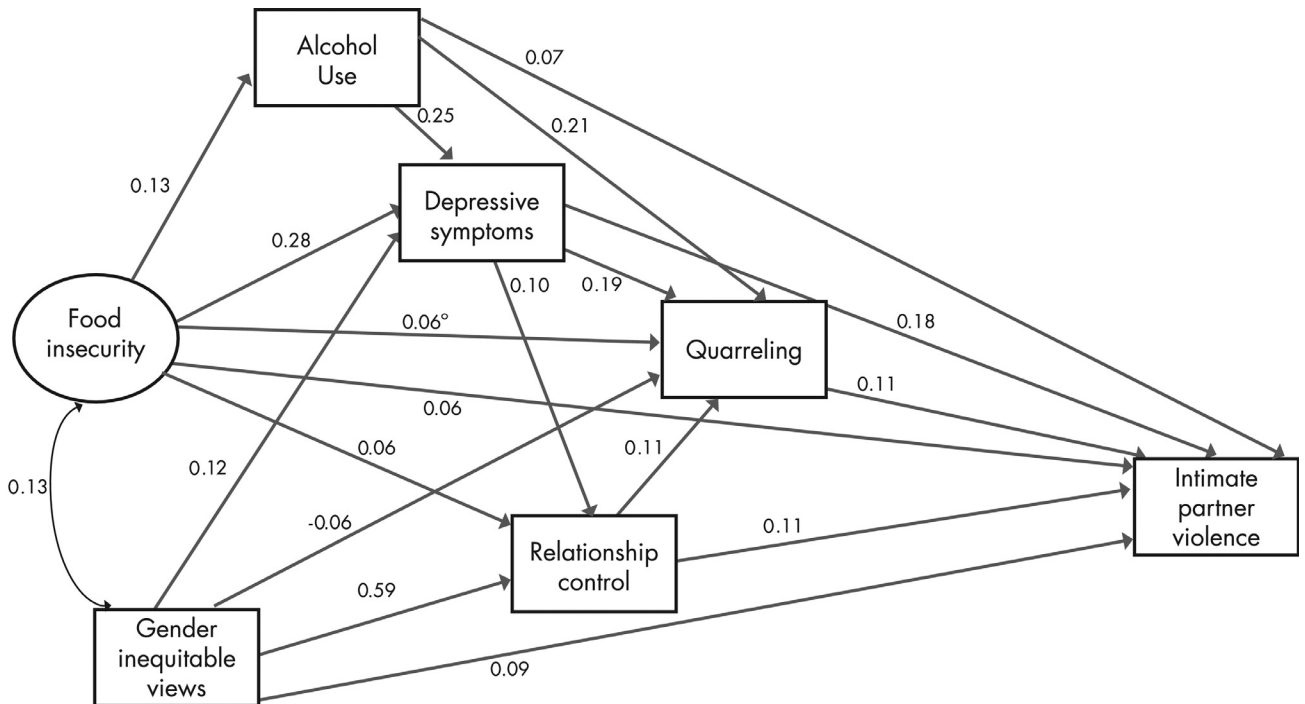
In SEM, food insecurity increased IPV through a number of indirect pathways (Figure 2). In the first pathway, food insecurity had a moderate effect on increased depressive symptoms and problem drinking, which led to significantly more IPV. In the second pathway, food insecurity coupled with inequitable views altered relationship quality through men’s increased controlling behaviors and more quarreling, both of which predicted increased perpetration of IPV. The first and second pathways interact, with depressive symptoms and problem drinking worsening relationship quality. Food

insecurity also had a significant direct relationship with IPV. The SEM controls for age and education and the model fit was strong with RMSEA=0.017 and CFI=0.997 (Appendix Table 1, available online).

**DISCUSSION**

This study found high rates of food insecurity and IPV perpetration among currently partnered men in a peri-urban South African setting. Food insecurity was associated with doubled odds of men using recent IPV after controlling for sociodemographic characteristics. In SEM, food insecurity retained a direct relationship with men’s IPV perpetration and also worked through indirect pathways of mental health and relationship quality.

Food insecurity was experienced by a majority of men participating in the study, a higher rate than would be expected by national food insecurity estimates of 26%.<sup>19</sup> However, it aligns with research specific to peri-urban South African townships, where 49%–81% of households are shown to be food insecure.<sup>20–22</sup> Because hunger in the past 4 weeks



**Figure 2.** Structural equation model of the relationship between food insecurity and intimate partner violence (n=2,006). Note: Goodness of model fit  $\chi^2=36.4$  (df=23),  $p=0.038$ ; CFI=0.997; RMSEA=0.017 (90% CI=0.004, 0.027). Relationships represented by standardized parameter estimates, with boxes indicating measured variables and oval representing latent variable. All relationships are significant at the  $p<0.01$ , except where denoted with ° ( $p=0.07$ ). Model controls for age and education. CFI, comparative fit index; RMSEA, root mean square error of approximation.

represents a severe form of poverty, these findings underscore the immense material deprivation faced by young men in peri-urban settings.

Half of men reported past-year physical or sexual IPV perpetration. This rate is considerably higher than population-based studies in South Africa, which estimate 28%–32% of men used IPV.<sup>23,24</sup> The data presented here are not representative of the community, because they were conducted with a volunteer cohort. However, the high rates of IPV among those men who agreed to take part suggest a significant human rights and public health challenge in the study setting.

The strong statistical relationship between food insecurity and IPV perpetration suggests that these two issues intersect in men's lives. The conceptual framework theorized that food insecurity led to IPV through two pathways that align with extant literature. In the first pathway, mental health mediated the relationship between hunger and men's IPV perpetration. This fits closely with food insecurity literature that ties hunger to depression,<sup>25,26</sup> but adds a new component in linking depression to IPV perpetration. Only one study, to the authors' knowledge, has found a significant relationship between depression and men's reports of IPV,<sup>27</sup> whereas others have found no such association.<sup>28</sup> Centering mental health within the theoretical framework provides an important mechanism linking food insecurity to IPV.

Depression for men who are experiencing food insecurity directly increases their perpetration of IPV and also indirectly worsens their relationship quality in terms of controlling behaviors and more quarrelling. This complex web indicates that food and violence should be situated within gender theories. Certainly, food security is a gendered topic, with men being tasked with providing for the family, yet current literature often ignores the gendered nature of food provision. The current findings echo the qualitative masculinities literature that suggests men's inability to meet the expectations of being a provider may result in their use of violence.<sup>10</sup>

The other important pathway proposed in this study's conceptual framework and confirmed in the SEM was relationship quality. Quarreling has long been seen as a trigger for women's experience of IPV,<sup>29</sup> but only one study has found quarreling to be related to men's use of IPV.<sup>9</sup> These findings bolster this research by showing that food insecurity relates to couple quarreling, and that the context of relationship quality should be viewed in light of material deprivation and gender norms.

A novel contribution of these findings is the relationship between food insecurity and increased partner control. This aligns with past research that suggests when

men lack control over one aspect of family life, they may increase control of a spouse to compensate.<sup>30</sup> In resource-rich settings, anticipating financial hardship (even without actual deprivation) can lead men to control female partners and use violence.<sup>31</sup> Men's controlling behavior seems to increase when the masculine "breadwinner" role is threatened.<sup>32</sup> Again, this confirms a conceptual framework that incorporates gender roles into poverty–violence linkages.

These findings suggest that economic and livelihood programs with men may reduce partner violence perpetration. Cash transfer programs with women have shown that offering families a cash grant can reduce women's IPV victimization,<sup>33–35</sup> yet in a setting like South Africa where a large proportion of the population already depend on cash grants, it is unclear how additional transfers would alter rates of violence. Little research has explored economic interventions among men, but pilot studies suggest they may reduce IPV perpetration.<sup>36,37</sup> Despite potential downsides if economic interventions reinforce traditional male roles, concerns that an influx of cash might actually increase violence perpetration (by, e.g., increasing alcohol intake) have not been borne out in the literature.<sup>38</sup> These results refine extant research by suggesting that economic interventions for men should be paired with gender training to ensure that reductions in household stress are accompanied by improvements in relationship quality. Couple interventions focused on resolving conflict without quarreling or on reducing controlling behaviors may also be important for men who live in impoverished settings. These need to be coupled with economic efforts and should be couched within building gender-equitable views in order to be effective.

Mental health may be an important aspect for future interventions. Once food insecurity is reduced through economic interventions, men's anxiety and depressed mood may be important targets for longer-term interventions. One key consideration is that any economic intervention must necessarily find ways to secure food for participants that is socially acceptable and empowering, because handouts may inadvertently lead to depressive feelings. This is particularly true for men who have strong masculinities around being a provider, suggesting that livelihood interventions involving new jobs or agricultural work is more appropriate than, say, food baskets. It is possible that brief interventions may fall short in terms of shifting the broader poverty and global inequality that truly underpin food insecurity. Nevertheless, longer-term goals around shifting the imbalance of gender and economic power should not preclude taking urgent steps in the short term to reducing food insecurity and IPV in ways that work.

## Limitations

The findings of this study should be viewed in light of design limitations. The cross-sectional nature of the data is a weakness, limiting the ability to determine causality. The analysis reversed the directions of arrows to test for potential bidirectional nature of the relationships and found that the presented SEM holds the strongest fit. Nevertheless, future analysis should use longitudinal data to confirm the proposed relationships. It is plausible that other unmeasured characteristics of men predict both hunger and partner violence.<sup>39</sup> That these findings align with diagnostic interviews utilized in other studies<sup>40</sup> helps confirm the utility of brief screeners, but precludes the ability to make a clinical diagnosis. Self-report of men's violence use is problematic but is currently the state of the science for IPV research. The anonymity of ACASI may assist with accurate reporting of IPV by men by limiting social desirability bias.

Because of convenience sampling of volunteer participants, who were necessarily available to participate in the research during daytime hours, these findings are not generalizable, and no claims can be made about the overall prevalence of conditions in these communities. The population participating in this study had similar rates of unemployment (54.4%) but lower monthly incomes than men in representative South African settlement studies.<sup>41</sup> It is unclear how men's rates of food insecurity compare with other settlements, but it is possible that food-insecure participants or those perpetrating partner violence were over-sampled through convenience methods. Lower rates of either condition may alter the strength or confidence levels of this study's estimates but would likely not change the direction of association. That the hypothesized pathways did not fully account for the relationship between food insecurity and IPV suggests that other theoretical constructs may be useful. In the SEM, the "direct" path from food insecurity to violence could represent an unmeasured construct.

## CONCLUSIONS

Food insecurity may be an underlying driver of men's perpetration of IPV. Poverty and partner violence require urgent attention, particularly in urban African settings where populations rates are increasing rapidly. Program and policy should emphasize increasing livelihood options, improving gender norms and relationship quality, and addressing mental health. These policies may improve health outcomes not only for men themselves but for the women and children living in their households.

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## SUPPLEMENTAL MATERIAL

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