INTRODUCTION

Demographics

- Previous research suggests that both social support and sleep quality can significantly impact health-related outcomes in women living with HIV.1,2
- Previous research has also indicated that social support has a significant influence on sleep in HIV-infected individuals.3
- High levels of oxytocin (OT), a stress hormone associated with social behavior, and social support may have salutary effects on sleep quality in animal and human populations.4
- In low-income women living with HIV (WLWH), higher levels of OT have shown to moderate the effects of perceived stress on immune system decrements, which may work through differences in health behaviors (e.g., sleep) and/or interpersonal processes (e.g., social relationships).5
- Investigating how OT influences social relationships and health-related behaviors may lead to better understanding of disease management in WLWH.6
- The current study examines naturally circulating OT, social support and sleep quality in a sample of low-income WLWH.
- Hypotheses:
  - Previous research findings, we hypothesized that social support would have a direct effect on sleep quality.
  - Given that OT may moderate the influence of psychosocial factors on immune status in WLWH, we hypothesized that OT may moderate the influence of social support on sleep as a health behavior.

METHOD

Measures: Participants reported the amount of support received from various sources (e.g., friends, relatives, health care providers) using the UCLA Social Support Inventory (UCLASSI) and their sleep quality using the Pittsburgh Sleep Quality Index (PSQI). The PSQI has 6 subscales: sleep latency, sleep quality, sleep duration, habitual sleep efficiency, sleep disturbance, and use of medication. Morning venous blood samples were taken to measure naturally circulating levels of OT using ELISA immunosassay procedures.

Covariates: To clarify the association between these specific variables, covariates included length of time since HIV diagnosis, HAART adherence, depression (Center for Epidemiologic Studies Depression scale (CES-D), and perceived stress (Perceived Stress Scale; PSS).

Analysis Plan: To examine our first hypothesis we conducted hierarchical regression analyses. Covariates were entered into the first step of the regression model followed by all sources of support or OT in the second block. To examine our second hypothesis we conducted moderated regression analyses. Covariates were again entered into the first step followed by the centered predictor variable (source of support). The centered moderator variable (OT) was entered into the third step, and an interaction term between the centered predictor variable and centered moderator variable was entered into the final step of the model. Significant interaction terms were decomposed and graphed with one standard deviation above and below the centered mean representing high and low levels of the moderator variable.

RESULTS

Direct Effects of Social Support on Sleep Quality
- Total support from friends had a significant direct effect on sleep latency, $\beta = .334$, SE = .028.
- Total support from relatives had a significant direct effect on sleep duration, $\beta = .304$, SE = .025, sleep medication, $\beta = .316$, SE = .032, and PSQI total score, $\beta = .355$, SE = .086.
- No other types of support had significant direct effects on the PSQI subscales or total score.

Oxytocin as a Moderator of the Effects of Social Support on Sleep Quality
- Moderated hierarchical regression analyses revealed a significant interaction between social support from friends and OT in explaining global sleep quality as well as habitual sleep efficiency.
- Specifically, for participants with high levels of endogenous OT, social support from friends was associated with higher global sleep quality ($t = 1.91$, p = .05) and marginally better habitual sleep efficiency ($t = 1.76$, p = .05).
- In contrast, for those with low levels of OT, social support from friends was associated with lower levels of global sleep quality ($t = 2.10$, p = .05) and poorer habitual sleep efficiency ($t = 3.07$, p = .05).

CONCLUSIONS

- The results suggest that the beneficial effects of supportive relationships on sleep quality, particularly from friendships, may be enhanced by high levels of OT.
- Interestingly, high social support is related with poorer sleep in women with low levels of OT, suggesting that qualitative aspects of social relationships and their effects may vary as a function of OT level.
- Research examining the relationships between OT, social interactions, and health-related outcomes may aid in informing interventions to improve disease management in WLWH.

REFERENCES


Direct Effects of Social Support on Sleep Quality

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<thead>
<tr>
<th>Source of Social Support</th>
<th>Sleep Latency</th>
<th>Sleep Quality</th>
<th>Sleep Duration</th>
<th>Habitual Sleep Efficiency</th>
<th>Sleep Disturbance</th>
<th>Sleep Medication</th>
<th>PSQI Total Score</th>
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<td>Friends</td>
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<td>Relatives</td>
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<td>All</td>
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Oxytocin Total Score

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<td>Standard Deviation</td>
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