

## Hope-Based Interventions for Female Youth Recovering from Substance Abuse in Post-Conflict Sierra Leone: A Mixed-Methods Study

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### ABSTRACT

**Importance:** Substance abuse among female youth in post-conflict, resource-limited settings is a critical public health concern, yet evidence for culturally appropriate interventions is scarce.

**Objective:** To describe changes in hope levels (agency and pathways thinking) associated with a hope-based intervention and to explore the lived experiences, sources, mechanisms and contextual factors influencing recovery.

**Design, setting and participants:** This quasi-experimental mixed-methods study was conducted at the Peace Mission Training Centre (PMTTC) and the Psychiatric Teaching Hospital in Freetown, Sierra Leone. Twenty female youth (aged 18-45 years) in substance abuse treatment were enrolled: 10 in a hope-based intervention group and 10 in a standard-care comparison group. Qualitative interviews were conducted with 8 intervention participants and 5 staff members.

**Main outcomes and measures:** Quantitative outcomes were changes in Agency and Pathways thinking, measured using Snyder's Adult Hope Scale (AHS). Qualitative outcomes included participant narratives on the role, sources and outcomes of hope, as well as contextual facilitators and barriers.

**Results:** The intervention group demonstrated statistically significant within-group improvements in agency (mean increase=9.1 points,  $p=.001$ , Cohen's  $d=1.54$ ) and pathways thinking (mean increase=12.7 points,  $p<.001$ , Cohen's  $d=3.45$ ). Significant baseline demographic differences between groups precluded causal attribution. Qualitative analysis revealed five sources of hope: spiritual/religious faith, family/parental responsibility, community/peer connection, intellectual understanding of addiction and altruism. Four mechanisms of change were identified: identity redefinition, regained self-efficacy, trauma reframing and goal-directed behaviour. Key facilitators included structured routines and peer support, while barriers included post-discharge systemic failures and societal stigma.

**Conclusions and relevance:** Hope-based interventions show descriptive promise for female youth in substance abuse recovery in Sierra Leone. Effective implementation requires trauma-informed, gender-responsive and culturally adapted approaches that address structural barriers such as poverty, inadequate aftercare and stigma.

**Keywords:** Hope-based interventions, Substance abuse recovery, Female youth, post-conflict settings, Sierra Leone, Mixed-methods research

## 1. Introduction

Substance abuse among youth, particularly female youth, has emerged as a critical public health concern with far-reaching consequences<sup>1,2</sup>. Research indicates that young women face unique challenges in recovery, including higher rates of trauma exposure, stigma and systemic barriers to treatment access<sup>3</sup>. In post-conflict settings like Sierra Leone, these challenges are compounded by a history of civil war (1991-2002), the Ebola epidemic (2014-2016) and pervasive poverty<sup>4</sup>.

Hope-based interventions, grounded in Snyder's cognitive-motivational model of hope (agency and pathways thinking), offer a promising strengths-based approach<sup>5,6</sup>. Agency refers to the belief in one's ability to initiate and sustain action toward goals, while pathways thinking is the capacity to generate strategies to achieve those goals. Studies in high-income settings have shown that hope-based interventions can improve self-efficacy and reduce substance use<sup>7-9</sup>. However, their applicability in low-resource, post-conflict African contexts has not been empirically examined<sup>10</sup>.

To address this gap, this study aimed to (1) describe changes in hope levels (agency and pathways thinking) among female youth participating in a hope-based intervention compared to a non-equivalent control group; (2) explore the lived experiences of female youth regarding the role, sources and outcomes of hope in recovery; and (3) identify contextual facilitators and barriers that interact with hope to influence sustainable recovery outcomes.

## 2. Methods

### 2.1. Study design and setting

This study employed a quasi-experimental mixed-methods design with a pre-test/post-test comparison group. The research was conducted in Freetown, Sierra Leone, at two sites: the Peace Mission Training Centre (PMTTC) Rehabilitation Centre, which delivered a structured hope-based intervention and the Psychiatric Teaching Hospital, which provided standard care.

### 2.2. Participants and sampling

A purposive sample of 20 female youth (aged 18-45 years) undergoing substance abuse treatment was enrolled. The intervention group (n=10) was recruited from the PMTC and the comparison group (n=10) from the Psychiatric Teaching Hospital. Inclusion criteria were: self-identifying as female, age 18-45, active participation in a recovery program and willingness to provide informed consent. For the qualitative component, 8 participants from the intervention group and 5 staff members (e.g., counsellors, nurses, the centre coordinator) were purposively selected for semi-structured interviews.

### 2.3. The hope-based intervention

The intervention at the PMTC was a 55- to 60-day residential program grounded in hope theory. It integrated several culturally adapted components: bi-weekly hope-centred group therapy (goal-setting, overcoming obstacles), weekly narrative hope workshops (reframing personal stories), a mentorship program connecting participants with recovered peers and bi-weekly family hope sessions. A strict daily routine provided structure and stability.

### 2.4. Data collection

Quantitative data were collected using a structured survey that included demographic questions and Snyder's Adult Hope Scale (AHS), an 8-item Likert scale measuring agency and pathways thinking. Surveys were administered pre- and post-intervention. Qualitative data were gathered through in-depth, semi-structured interviews (25-30 minutes each) conducted in the Krio dialect. Interviews explored participants' experiences of hope, recovery goals, support systems and challenges.

### 2.5. Data analysis

Quantitative data were analyzed using descriptive and inferential statistics (paired t-tests, independent t-tests, Cohen's d effect sizes) with SPSS. Qualitative data were transcribed verbatim and analysed using thematic analysis, following the phases of coding, theme development and interpretation.

### 2.6. Ethical considerations

Ethical approval was obtained from the Ministry of Social Welfare and the management of the participating institutions. All participants provided written informed consent. Confidentiality was maintained through the use of unique code names.

## 3. Results

### 3.1. Quantitative findings

Baseline demographic analysis revealed significant differences between the intervention and control groups. The intervention group was significantly younger (mean age 24.0 vs. 36.1 years,  $p < .0001$ ), more likely to be unmarried (60% vs. 0%,  $p = .0006$ ) and less likely to have children (40% vs. 100%,  $p = .003$ ). These differences preclude causal attribution.

Within the intervention group, participants demonstrated statistically significant improvements in both hope components from pre- to post-intervention. For the Pathways subscale, the mean increase was 12.7 points ( $t(9) = 10.95$ ,  $p < .001$ , Cohen's  $d = 3.45$ ), representing an extremely large effect size. For the Agency subscale, the mean increase was 9.1 points ( $t(9) = 4.87$ ,  $p = .001$ , Cohen's  $d = 1.54$ ), a very large effect size. The comparison group also showed significant but smaller improvements (Pathways: +6.9 points,  $p < .001$ ,  $d = 1.98$ ; Agency: +3.9 points,  $p = .002$ ,  $d = 1.32$ ).

### 3.2. Qualitative findings

Five primary sources of hope were identified from participant narratives:

- **Spiritual and Religious Faith:** Prayer and belief in divine purpose provided daily strength. "It has not been easy... but with God... I am learning to walk again" (P02, age 19).
- **Family and Parental Responsibility:** Children served as a powerful motivational anchor. "My journey is about my children... My recovery is the path to getting them back" (P10, age 29).
- **Community and Peer Connection:** Shared experience reduced shame and created accountability. "We understand each other's shame and fear... We console each other" (P10, age 29).
- **Intellectual Understanding:** Understanding addiction as a disease externalised shame. "This knowledge is power. It externalises the enemy" (P09, age 29).

- Altruism and Helping Others: Mentoring peers gave recovery a transcendent purpose. “Being a peer supporter... reframed my entire identity” (P05, age 24).

Participants described four mechanisms of change: identity redefinition (from “addict” to “survivor”), regained self-efficacy (“I am the author of my life”), trauma reframing (“turning trauma into triumph”) and goal-directed behaviour (pursuing education, family reunification).

Staff interviews identified key contextual facilitators (structured program routines, spiritual encouragement, peer support, family involvement, use of the Krio language) and significant barriers, including post-discharge systemic failures (no follow-up, no vocational training), societal stigma and negative peer influences.

#### 4. Discussion

This mixed-methods study provides a comprehensive description of hope-based interventions for female youth recovering from substance abuse in post-conflict Sierra Leone. The quantitative findings demonstrate that participants in the hope-based intervention showed significant within-group improvements in agency and pathways thinking. The qualitative findings substantially enrich this picture by revealing the specific sources, mechanisms and contextual factors that shape hope in this unique setting.

The study’s findings support and extend Snyder’s Hope Theory<sup>5,6</sup>. Consistent with the theory, participants’ recovery was goal-directed and the intervention enhanced both their motivation (agency) and their ability to plan (pathways). However, the findings also suggest that the theory’s individualist orientation may require modification for collectivist, post-conflict contexts. Participants described agency not only as an individual capacity but as a resource drawn from family, community and spiritual sources. This finding aligns with research on collectivist approaches to healing in Africa<sup>11</sup>.

The role of spirituality and faith as a primary source of hope is a key contribution. In a context where over 95% of the population identifies as Muslim or Christian, hope-based interventions may be more effective when explicitly integrated with spiritual frameworks<sup>12</sup>. This study demonstrates that faith is not merely a coping mechanism but a foundational element of meaning-making and resilience.

The identification of post-discharge systemic failures as a critical barrier highlights a major limitation of time-limited residential interventions. Hope cultivated within a structured environment may rapidly erode when individuals return to environments of poverty, unemployment and stigma<sup>13</sup>. This finding underscores the urgent need for aftercare and continuity in substance abuse treatment in Sierra Leone.

#### 5. Limitations

This study has several limitations. First, the quasi-experimental design and significant baseline differences between groups preclude any causal attribution of the intervention’s effectiveness. Second, the small sample size (N=20) limits generalizability. Third, the absence of long-term follow-up data means the durability of hope improvements is unknown. Fourth, the Adult Hope Scale has not been formally validated in the Sierra Leonean context. Finally, qualitative data were collected

only from the intervention group, preventing a full comparative analysis.

#### 6. Conclusion

This study provides descriptive evidence that hope-based interventions are associated with significant improvements in agency and pathways thinking among female youth in substance abuse recovery in Sierra Leone. The findings reveal that hope operates through multiple culturally specific sources—spiritual, relational, intellectual and altruistic—and is shaped by complex contextual facilitators and barriers. Effective implementation requires trauma-informed, gender-responsive and culturally adapted approaches that address structural barriers, including poverty, inadequate aftercare and stigma.

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#### 8. Conflict of Interest

The authors declare no conflicts of interest.

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#### 10. Ethical Approval

This study was approved by the Ministry of Social Welfare and the institutional review boards of the participating treatment centres in Sierra Leone. All procedures followed the ethical standards of the Helsinki Declaration.

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