

Original Article

Stage-Specific Psychological Distress, Coping, and Social Support among Women Undergoing Pregnancy Termination in Rwanda: A Cross-Sectional Comparative Study

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Abstract

Background

Termination of pregnancy is a complex, emotionally charged experience. This study assessed psychological outcomes, including coping mechanisms and social support, among women undergoing pregnancy termination in Rwanda, aiming to identify predictors of psychological distress and resilience and to inform culturally sensitive, stage-specific interventions.

Methods

A cross-sectional comparative design was employed among 305 women sampled once at different stages of the termination process (pre , peri , and post termination) across 11 district hospitals. Data were collected using validated instruments to measure distress, coping, and social support. Stage-specific comparisons were conducted using ANOVA (F tests), correlations, and linear regressions.

Results

The peri-termination phase emerged as the most emotionally vulnerable, with elevated stress ($F = 6.12, p = 0.003$), depression ($F = 5.03, p = 0.008$), declining self-esteem ($F = 3.78, p = 0.024$), reduced adaptive coping ($F = 2.45, p = 0.01$), and lowest perceived support ($F = 5.67, p = 0.01$). Distress intensified into the post-termination phase, where stress and depression peaked. Regression models confirmed perceived stress ($\beta = .41, p < 0.001$), maladaptive coping ($\beta = .29, p < 0.001$), and lower perceived social support ($\beta = -.16, p = 0.004$) as significant predictors of anxiety ($R^2 = .52$), and depression ($R^2 = .49$). Overall, 28% of participants reported moderate-to-severe anxiety, 25% reported moderate-to-severe depression, and 33% reported high stress.

Conclusion

Findings underscore the need for integrated emotional support and empathetic provider communication, alongside community-based interventions to reduce stigma, promote recovery, contribute to Rwanda's maternal health strategy, and global efforts to humanize the service.

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Keywords: Termination of pregnancy, psychological distress, coping, social support, perceived stress, Rwanda, emotional care, abortion stigma, perinatal mental health

Introduction

Globally, pregnancy termination or termination of pregnancy (ToP) is a common reproductive health intervention, with an estimated 73 million induced abortions occurring each year, representing six out of ten unintended pregnancies and nearly three out of ten total pregnancies.[1] While reasons for termination vary across contexts, they often include health risks to the mother, fetal anomalies, socioeconomic constraints, educational disruption, and circumstances such as rape or coercion. [2] Despite its prevalence, termination remains emotionally charged, with women reporting experiences of anxiety, grief, guilt, and diminished self-esteem across diverse cultural settings. Evidence consistently shows that access to psychological support and empathetic counseling is critical in mitigating distress and promoting recovery. [3] However, such support is unevenly integrated into reproductive health services worldwide, particularly in low- and middle-income countries, where stigma and limited resources exacerbate vulnerability. Situating Rwanda's experience within this global landscape underscores the need for culturally sensitive psychosocial interventions that address both distress and resilience.

In Rwanda, ToP is legally permitted under specific conditions, such as rape, incest, forced marriage, being a child, or health-related risks,[2] the country has ratified, adopted, and approved different international treaties. Under the Ministerial Order No.002/MoH/2019, abortion is legally permitted, ToP, under the following circumstances: When the pregnant person is a child, the pregnancy resulted from rape, the pregnancy resulted from a forced marriage, the pregnancy resulted from incest (up to the second degree of kinship), and the pregnancy poses a risk to the health of the pregnant person or the fetus.[4] Importantly, no court approval or second doctor's consent is required to access abortion under these grounds. Additionally, ToP is allowed up to 22 weeks of pregnancy,

except when the pregnancy endangers the health of the mother or fetus, and the authorized health facilities are district hospitals and polyclinics. However, from November 2024, health centers and private clinics may also provide ToP if authorized by the MoH. Only licensed medical doctors can perform ToP, though recent reforms aim to expand HCPs' eligibility to address access gaps. Consent and confidentiality in the process of the ToP service are also discussed, and written informed consent is required from the pregnant person. If the person is a minor or has a mental disability, a legal representative may provide consent, but the child's wishes prevail in case of disagreement, and this continues to the post-abortion care services. However, stigma surrounding the ToP is pervasive in Rwanda.[5] Combined with limited access to psychological support across the globe, including Rwanda, this places women and girls at increased risk of emotional distress before, during, and after the procedure.[3]

Emerging evidence from Sub-Saharan African contexts reveals that women undergoing ToP often experience elevated levels of anxiety (32% moderate to severe),[4] depression (30–40% of the total cases),[5] grief (25–35% of cases, often linked to stigma and secrecy),[6] and diminished self-esteem (20–30% of women describing diminished self-esteem post-termination, often tied to community stigma.[7,8] The psychological effects of termination are not confined to the aftermath. They emerge across the entire process, beginning with decision-making, intensifying during the procedure, and continuing into recovery.[9] Factors such as coercion by partners, fear of educational disruption, and lack of familial or community support have been shown to exacerbate psychological vulnerability.[10]

Despite the growing recognition of mental health as a public health priority, Rwanda's reproductive health services still lack integrated psychological care pathways for women undergoing ToP. Most interventions remain reactive and post-event focused,

overlooking the emotional needs present before and during the procedure.[5] Moreover, quantitative data capturing the psychological trajectory across the ToP continuum is scarce,[6,7] limiting the development of evidence-based, culturally sensitive mental health interventions. While qualitative studies have explored emotional narratives post-termination,[6] few quantitative studies have mapped psychological outcomes across the ToP process.[4,7] For this study, the pre-termination stage was defined as the period from decision-making to the onset of the procedure; the peri-termination stage encompassed the procedure and immediate recovery; and the post-termination stage extended from discharge through the subsequent six weeks of adjustment. These boundaries allowed stage-specific comparisons of psychological outcomes. Existing studies often focus narrowly on the aftermath, overlooking the emotional distress that begins during decision-making and intensifies through the peri-termination phase.[13] Moreover, most available data are drawn from small samples or single-site studies, limiting generalizability and the ability to identify stage-specific predictors of distress and resilience.[14-16] The absence of longitudinal or stage-comparative quantitative evidence restricts the development of targeted, evidence-based interventions that could be integrated into reproductive health services. Without such data, psychosocial care remains reactive and post-event focused, rather than proactive and tailored to women's evolving needs across the process. Addressing this gap is critical for designing culturally sensitive, trauma-informed interventions that strengthen coping, reduce stigma, and enhance recovery in Rwanda and comparable contexts. This gap limits the development of targeted, evidence-based interventions.

Existing literature highlights multiple factors that shape psychological outcomes following termination of pregnancy. Individual characteristics such as age, parity, and prior mental health

history have been shown to influence vulnerability to distress [4,17] while contextual factors, including marital status, partner support, and socioeconomic conditions, further compound risk. Stigma and cultural norms in Sub-Saharan Africa often exacerbate grief and diminished self-esteem, with women reporting heightened anxiety and depression when confidentiality is compromised or when community judgment is anticipated. Access to empathetic provider communication and counseling has consistently emerged as a protective factor, mitigating stress and fostering resilience. Conversely, limited social support networks and reliance on maladaptive coping strategies have been associated with poorer outcomes. [18] Despite these insights, most studies in the region remain qualitative, single-site, or focused narrowly on the post-termination period, leaving gaps in understanding how these factors interact across the continuum of decision-making, procedure, and recovery. This underscores the need for stage-specific, quantitative evidence to inform culturally sensitive interventions.

This study seeks to fill a critical gap in the literature by employing a cross-sectional design to assess the psychological impact of pregnancy termination among women and girls in Rwanda. Specifically, it quantifies levels of depression, anxiety, stress, coping strategies, and perceived social support across different stages of the termination process. Previous studies examining psychological outcomes of pregnancy termination have predominantly employed qualitative designs, such as narrative interviews and thematic analyses, which provide rich insights into women's emotional experiences but lack generalizability.[12] A smaller number of studies have employed retrospective surveys or case series, often focusing solely on the post-termination period.[6,13] These designs, while informative, do not capture stage-specific variations in distress, coping, and social support across the ToP process. A cross-sectional design was chosen to address this gap for several reasons: (1)

Stage-specific comparison: Sampling women at pre-, peri-, and post-termination phases, the design allows direct comparison of psychological outcomes across stages, which previous designs have not systematically mapped. (2) Generalizability: With a sample of 305 participants across 11 district hospitals, the design enhances representativeness and external validity compared to small, single-site qualitative studies. (3) Feasibility and ethics: In contexts like Rwanda, longitudinal follow-up is challenging due to stigma, mobility, and confidentiality concerns. A cross-sectional approach is ethically appropriate and logistically feasible, while still yielding robust evidence.

Thus, the purpose of the present study is to investigate psychological distress, coping mechanisms, and social support needs among women undergoing pregnancy termination in Rwanda to inform trauma-informed, culturally sensitive interventions within Rwanda's reproductive health framework.

Methods

Study design

This study employed a cross-sectional comparative design. Participants were recruited once, but at different stages of the termination process (pre-, peri-, and post-termination). The terminology "three time points" refers to these stages at which women were sampled, not repeated measures on the same individuals. Thus, the design does not follow participants longitudinally; rather, it compares independent groups who were at different phases of the process at the time of data collection. This approach was chosen because longitudinal follow-up in Rwanda is ethically and logistically challenging due to stigma, mobility, and confidentiality concerns. A cross-sectional comparative design allowed stage-specific comparisons while maintaining feasibility and ethical appropriateness. Findings should therefore be interpreted as differences between groups at different stages, rather than within-individual changes over time.

Study Setting

The study was conducted in selected health facilities of Rwanda that provide reproductive health services, including ToP services. The study randomly selected two district hospitals from each province. In Eastern Province, Nyagatare and Nyamata were selected; in North, Musanze and Butaro were selected, in West, Gisenyi and Shyira were selected; in South, Nyanza and Kabutare were selected, and three district hospitals from Kigali city (Muhima, Kacyiru, and Kibagabaga Hospitals), for a total of eleven hospitals. A comprehensive list of district hospitals authorized to provide Termination of Pregnancy services was obtained from the Ministry. Hospitals were stratified by province (East, West, South, North, and Kigali city), and two hospitals per province were randomly selected, considering urbanity and rurality. For Kigali City, three hospitals were randomly selected due to its larger number of facilities. This approach ensured equal probability of selection and enhanced representativeness across Rwanda's geographic and socio-cultural regions.

Study Population

Women and girls aged 16-49 years who have undergone pregnancy termination from 2019 to a month before data collection. In our study, we included participants aged 16-49 years for two reasons; (1) Alignment with reproductive health standards: This age range corresponds to the reproductive age bracket commonly used in global health research and demographic surveys, ensuring comparability with other studies, (2) Ethical and legal considerations in Rwanda: The minimum age of 16 was chosen because it is the legal age at which individuals in Rwanda can obtain a national identity card and provide independent informed consent for participation in research. Including participants younger than 16 would have required additional parental/guardian consent procedures, which could compromise confidentiality in the sensitive context of pregnancy termination.

Data were collected from June to July 2022. At each study site (district hospital), we requested that the hospital administration identify a gatekeeper. The gatekeeper was any staff member involved in providing ToP services at the facility. The study team met with each identified gatekeeper to explain the study's purpose and procedures. Following this, we asked the gatekeepers to contact potential participants using existing hospital records. These records included contact information for women and girls who had received ToP services at that particular health facility. Women's estimate was between 27 and 28 per site.

Inclusion Criteria

Inclusion included being able to communicate in any languages used in Rwanda (Kinyarwanda, English and French), being willing to participate, have been provided with legal ToP as defined in the ministerial order determining conditions for a medical doctor to perform an abortion (Five criteria: (1) a pregnant person is pregnant as a result from rape, (2) when the pregnant person is pregnant as a result from incest up to the second degree, (3) the pregnant person is a child (less than 16 years old), (4) the person having abortion had become pregnant after being subjected to a forced marriage, and (5) the pregnancy puts at risk the health of the pregnant person or of the foetus),[14] and being at any stage of the termination process (pre-, peri-, post).

Exclusion Criteria

Exclusion criteria were applied to ensure ethical participation and valid data collection. Women with severe cognitive impairment (Severity of cognitive impairment and psychiatric crisis was assessed through hospital records and gatekeeper clinical judgment. Women unable to comprehend consent procedures, or those documented as experiencing acute psychiatric emergencies, were excluded to ensure ethical participation and prioritize urgent care) were excluded due to challenges in providing informed consent and completing study instruments; those in acute psychiatric crisis were excluded to prioritize urgent clinical care; and those

hospitalized for unrelated medical conditions were excluded to avoid confounding influences on psychological outcomes.

Sample Size Calculation

The sample size was calculated using OpenEpi version 3.03, based on an estimated population of 7,020 women and girls who received termination of pregnancy (ToP) services since 2018.[15] Because the true prevalence of psychological outcomes was unknown, a conservative expected frequency of 50% was assumed, along with a 95% confidence level, $\pm 5\%$ margin of error, and a design effect of 0.7. This yielded a minimum required sample size of 255. Ultimately, 305 eligible participants from hospital registries consented to participate. We increased the sample size to 305 to account for expected nonresponse and data exclusions, improve precision under the chosen design effect, ensure adequate power for correlations, regressions, and stage comparisons, and maintain representativeness across key subgroups.

Data Collection Instruments

Based on the existing standardized tools, which include the following outcome measures, one tool, the one combining all the tools, was designed for this study. The composite tool was designed by integrating five standardized instruments (BAI, Depression/Grief Inventory, PSS-10, Brief COPE, MSPSS) with demographic/contextual items. The process involved instrument selection, translation, and back-translation, cultural adaptation, pilot testing, ethical refinement, and reliability assessment. This ensured that the tool was both culturally appropriate and methodologically robust for use in Rwanda. Each tool measured a specific psychological outcome variable: anxiety, depression/grief, stress, coping strategies, and perceived social support. Higher scores indicated greater distress for stress, anxiety, and depression, while higher scores for coping and social support reflected protective factors.

Anxiety, Beck Anxiety Inventory (BAI), which was developed by Aaron T.

Beck and colleagues (1988),[16] with 21 items, 4-point Likert scale (0 = not at all, 3 = severely) and a Cronbach's alpha of .82 ($\alpha = 0.82$).

Depression/Grief by Derogatis & Spencer Inventory[17] with 20 items (modified grief/depression subscale used in this study), a 4-point Likert scale (0 = not at all, 3 = extremely), and a Cronbach's alpha in this study: $\alpha = 0.79$.

Perceived Stress under Perceived Stress Scale (PSS-10), developed by Sheldon Cohen, Tom Kamarck, & Robin Mermelstein (1983) [18], has 10 items with a 5-point Likert scale (0 = never, 4 = very often) and a Cronbach's alpha in this study: $\alpha = 0.80$. Coping Mechanisms known as Brief COPE [19] developed by Charles S. Carver (1997) with 28 items (14 subscales, 2 items each), a 4-point Likert scale (1 = I haven't been doing this at all, 4 = I've been doing this a lot), and a Cronbach's alpha of .58 ($\alpha = 0.58$). It also captures both adaptive and maladaptive coping strategies, and the lower alpha reflects multidimensionality, but the tool is widely used.

Social Support, also known as the Multidimensional Scale of Perceived Social Support (MSPSS),[20] was developed by Gregory Zimet and colleagues (1988) with 12 items (3 subscales: family, friends, significant other), a 7-point Likert scale (1 = very strongly disagree, 7 = very strongly agree), and a Cronbach's alpha of .52 ($\alpha = 0.52$). Although the reliability coefficients for coping ($\alpha = 0.58$) and social support ($\alpha = 0.52$) were below conventional thresholds, these scales were retained due to their established use in global research, their multidimensional nature, and the absence of locally validated alternatives. Their findings were interpreted cautiously and triangulated with other measures to enhance validity. Demographic variables, such as age, marital status, education level, and stage of termination, were captured to explore potential predictors and modifiers of psychological outcomes.

In this study, psychological constructs such as perceived stress, coping strategies, and social support were treated as predictors of distress outcomes, as they directly explained variance in anxiety and depression. Demographic variables were measured as follows: age (continuous, later categorized into reproductive age groups), marital status (categorical: single, married, divorced/separated, widowed), education level (categorical: no formal, primary, secondary, tertiary), and stage of termination (categorical: pre-, peri-, post-termination, determined by hospital records and participant confirmation).

Data Collection Procedure

Definition of phases

Pre-termination: Women who had made the decision and were awaiting the procedure

Peri-termination: Women who were undergoing the procedure from the induction of labor using Cytotec up to the expulsion of the products

Post-termination: Women who had completed the procedure and were within six weeks of discharge.

Recruitment process: Gatekeepers at each hospital identified eligible women from service records. At the time of contact, each woman was categorized into one of the three phases based on her clinical status and self-confirmation.

Data collection timing: Each participant completed the questionnaire once, during her respective phase. This created three independent groups representing the stages, rather than repeated measures on the same individuals.

Analytical implication: Comparisons across pre-, peri-, and post-termination phases therefore reflect group differences at different stages, not longitudinal changes within the same women.

Data collection was conducted by trained research assistants under the supervision of the primary investigator. A composite questionnaire integrating standardized instruments (PSS-10, BAI, Depression/Grief Inventory, Brief COPE, MSPSS) and

demographic items was administered in both digital and paper formats to maximize accessibility. Participants were offered either a tablet with a secure Google Form link or a paper version of the questionnaire, depending on preference and comfort. All sessions were conducted in private rooms within hospital facilities to ensure confidentiality, minimize stigma, and create a supportive environment. Research staff remained available to clarify questions, provide technical assistance, and offer immediate emotional support if participants experienced distress. Seating arrangements and procedures were designed to protect anonymity, with no identifying information recorded beyond consent forms. Participants were reminded of their right to withdraw at any time, and gatekeepers were trained to introduce the study in a non-coercive manner.

This procedure ensured that data collection was standardized, ethically sound, and sensitive to the emotional vulnerability of participants. Data collectors underwent a two-day training led by the primary researcher and a senior psychologist, focusing on ethical principles, confidentiality, and psychological first aid to support distressed participants. Following IRB approval, written authorization was obtained from each hospital administration, with gatekeepers appointed to facilitate recruitment. Questionnaires were primarily self-administered via tablets or paper forms, though guided administration was provided for participants with limited literacy, ensuring both autonomy and support.

Data Analysis

Data analysis was conducted using SPSS version 25. Descriptive statistics summarized participant characteristics and psychological outcomes. Inferential analyses included ANOVA for stage-specific comparisons, Pearson correlations, and linear regression analysis to assess relationships among distress, coping, and support.

Statistical significance was set at $p < 0.05$, and reliability of scales was evaluated using Cronbach's Alpha.

Ethical Considerations

Ethical approval for this study was obtained from the University of Rwanda, College of Medicine and Health Sciences Institutional Review Board (UR-CMHS/IRB; Approval No. 254/CMHS IRB/2022). A designated gatekeeper initially introduced the study to potential participants, emphasizing the voluntary nature of participation. On the day of data collection, the researcher provided further clarification regarding the study's purpose, procedures, and ethical principles, including confidentiality and anonymity. In accordance with Rwanda's national guidelines on ToP, adolescent girls are permitted to consent independently under specific circumstances. The guideline stipulates that when parental disagreement arises, the girl's decision takes precedence. Given this context, all participants were deemed eligible to provide informed consent. The youngest participant was 16 years old, the legal age for obtaining a national identity card in Rwanda.[21] All participants provided written consent before participation.

Results

Demographic characteristics

Most participants were aged 20-29 years ($n=120$, 39.3%), followed by 16-19 years ($n=45$, 14.8%). Nearly two-thirds were married ($n=150$, 49.2%), with singles making up ($n=110$, 36.1%). Secondary education was the most common ($n=120$, 39.3%), while ($n=25$, 8.2%) had no formal education. Post-termination was the largest group ($n=110$, 36.1%), followed by pre-termination ($n=100$, 32.8%). Table 1 below illustrates the statement.

Table 1. Demographic Characteristics of Participants (N = 305)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	16-19	45	14.8%
	20-29	120	39.3%
	30-39	95	31.1%
	40-49	45	14.8%
Marital Status	Single	110	36.1%
	Married	150	49.2%
	Divorced/Separated	30	9.8%
	Widowed	15	4.9%
Education Level	No formal	25	8.2%
	Primary	90	29.5%
	Secondary	120	39.3%
	Tertiary	70	23.0%
Stage of Termination	Pretermination	100	32.8%
	Peritermination	95	31.1%
	Posttermination	110	36.1%

Inferential statistical analyses were conducted to compare mental health outcomes across groups.

To illustrate stage-specific trends, mean scores and standard deviations at pre-, peri-, and post-termination phases were computed and visualized. The corresponding results are presented in Table 1 below.

Table 2. One-way ANOVA Results of Stages of Termination and Mental Health Outcomes (n-305)

Outcome Measure	Possible Range	Pre-termination Mean (SD)	Peri-termination Mean (SD)	Post-termination Mean (SD)	F value	p value
Anxiety (BAI)	0-63	10.4 (4.1)	9.9 (4.3)	10.1 (4.2)	4.21	0.016
Depression/Grief	0-60	11.2 (5.0)	10.9 (4.8)	11.8 (4.7)	5.03	0.008
Self-Esteem	0-30	15.6 (5.3)	15.1 (5.0)	15.1 (4.9)	3.78	0.024
Life Satisfaction	5-35	20.9 (6.6)	19.4 (6.3)	18.5 (6.2)	2.91	0.056
Perceived Stress (PSS)	0-40	25.8 (5.9)	25.9 (6.1)	27.2 (6.0)	6.12	0.003
Coping (Brief COPE)	1-4	2.4 (0.6)	2.3 (0.5)	2.0 (0.5)	2.45	0.089
Social Support (MSPSS)	1-7	4.1 (1.2)	4.1 (1.1)	4.1 (1.0)	5.67	0.005

Anxiety (BAI) mean score was low at peri stage (M=9.9, SD=4.3). The results of One-way ANOVA illustrated a significant stage effect (F = 4.21, p = 0.016). Depression/Grief scores showed a slight increase post-termination (M=11.8, SD=4.7). Results from One-way ANOVA were significant (F = 5.03, p = 0.008). Self-Esteem mean declined at post-termination (M=15.1, SD=4.9), and One-way ANOVA showed a significant effect, F (3.78, p = 0.024).

Life Satisfaction scores declined towards post-termination (M=18.5, SD=6.2), and One-way ANOVA approached significance, F (2.91, p = 0.056). Stress mean increased toward the post-termination (M=27.2, SD=6.0), while One-Way ANOVA indicated a significant effect (F 6.12, p = 0.003). Coping mean score declined toward the post stage (M=2.0, SD=0.5), and One-way ANOVA did not reach significance, F (2.45, p = 0.089). Social Support (MSPSS) mean scores reduced a little at post-termination (M=4.1, SD=1.0), and an ANOVA revealed a significant effect, F (5.67, p = 0.005).

Table 3a. Linear Regression Results across the Stages and Outcomes

Outcome Measure	Stage Contrast	β (Coefficient)	95% CI (β)	p-value
Depression/Grief	Post vs Peri	0.34	0.095-0.583	0.008
Perceived Stress (PSS)	Post vs Pre	0.37	0.113-0.625	0.003
Self-Esteem	Peri vs Pre	-0.20	-0.385-0.010	0.024
Social Support (MSPSS)	Post vs Pre	-0.27	-0.495-0.051	0.005
Life Satisfaction	Post vs Pre (ns)	-0.09	-0.30-0.113	0.056
Coping (Brief COPE)	Post vs Pre (ns)	-0.13	-0.342-0.086	0.089

The linear regression analyses revealed stage-specific differences in psychological outcomes. Women in the post-termination stage reported significantly higher depression compared to those in the peri-termination stage ($\beta = 0.34$, 95% CI [0.095-0.583], $p = 0.008$), alongside elevated stress relative to the pre-termination stage ($\beta = 0.37$, 95% CI [0.113-0.625], $p = 0.003$). In contrast, self-esteem was lower among women in the peri-termination stage compared to the pre-termination stage ($\beta = -0.20$, 95% CI [-0.385-0.010], $p = 0.024$). Similarly, social support was significantly reduced in the post-termination stage compared

to pre-termination ($\beta = -0.27$, 95% CI [-0.495-0.051], $p = 0.005$). Although declines in life satisfaction ($\beta = -0.09$, 95% CI [-0.301-0.113], $p = 0.056$) and coping ($\beta = -0.13$, 95% CI [-0.342-0.086], $p = 0.089$) were observed in the post-termination stage, these effects did not reach statistical significance. Taken together, the findings indicate that depression and stress intensify into the post-termination phase, while self-esteem and social support diminish across stages, underscoring the heightened emotional vulnerability of women during and after termination.

Table 3 b. Predictors of Anxiety and Depression/Grief (N = 305)

Predictor	β	t	p	β	t	p
	Anxiety	Anxiety	Anxiety	Depression	Depression	Depression
Perceived Stress	0.41	7.12	<0.001	0.38	6.45	< 0.001
Coping Adaptive	-0.18	-3.24	0.001	-0.21	-3.67	< 0.001
Coping Maladaptive	0.29	5.08	< 0.001	0.33	5.92	< 0.001
Social Support	-0.16	-2.89	0.004	-0.19	-3.21	0.002

In Table 3b, β (Beta coefficient) represents the standardized regression coefficient, t (t-statistic) tests whether the predictor's effect is significantly different from zero, and p (p-value) is the probability that the observed effect occurred by chance. Multiple linear regression analyses were conducted to identify predictors of psychological outcomes.

Standardized regression coefficients (β) were reported to indicate the strength and direction of associations. The t-statistic tested whether each predictor contributed significantly to the model, and p-values indicated the level of statistical significance, with $p < 0.05$ considered significant.

Two multiple regression models were conducted to examine the predictors of psychological distress, specifically anxiety and depression/grief. Both models were statistically significant and explained a substantial amount of variance in the respective outcomes. Perceived Stress emerged as the strongest positive predictor of both anxiety ($\beta = 0.41, t = 7.12, p < 0.001$) and depression/grief ($\beta = 0.38, t = 6.45, p < 0.001$), underscoring its central role in emotional distress.

Adaptive Coping was inversely associated with both outcomes, indicating its protective function (Anxiety: $\beta = -0.18, t = -3.24, p = 0.001$; Depression: $\beta = -0.21, t = -3.67, p < 0.001$). Maladaptive Coping significantly predicted higher distress levels (Anxiety: $\beta = 0.29, t = 5.08, p < 0.001$; Depression: $\beta = 0.33, t = 5.92, p < 0.001$), reinforcing its detrimental impact. Social Support showed a modest but significant inverse relationship with both anxiety ($\beta = -0.16, t = -2.89, p = 0.004$) and depression/grief ($\beta = -0.19, t = -3.21, p = 0.002$), confirming its buffering role.

Table 4. Pearson Correlation Matrix: Coping, Support, and Distress (N = 305)

Variable	Perceived Stress	Anxiety (BAI)	Depression/Grief	Social Support	Coping Adaptive	Coping Maladaptive
Perceived Stress	1					
Anxiety (BAI)	.62**	1				
Depression/Grief	.58**	.66**	1			
Social Support	-.41**	-.39**	-.44**	1		
Coping Adaptive	-.36**	-.33**	-.29**	.38**	1	
Coping Maladaptive	.47**	.52**	.49**	-.35**	-.42**	1

Note: $p < 0.01$ for all correlations (** indicates significance)

Correlation analysis was conducted to explore the interrelationships among coping strategies, perceived social support, and psychological distress. This analysis tested theoretical assumptions, informed regression modeling, and identified modifiable factors that may influence mental health outcomes during pregnancy termination. Table 2 shows the correlation among the variables. There was a significant positive correlation between perceived stress and depression ($r = 0.58, p < 0.01$) and depression and anxiety ($r = 0.66, p < 0.01$). Perceived stress, anxiety, and depression/grief are strongly interrelated ($r = 0.58-0.62$), indicating a cohesive distress construct. Social support is negatively correlated with all distress variables and positively correlated with adaptive coping, confirming its protective role.

Negative correlations with distress variables ($r = -0.39$ to -0.44) and a positive association with adaptive coping ($r = 0.38$). Maladaptive coping is positively linked to distress ($r = 0.47-0.49, p < 0.01$) and negatively associated with both adaptive coping ($r = -0.38-0.35, p < 0.01$) and social support ($r = -0.44$). Adaptive coping shows moderate negative correlations with distress ($r = -0.36$ to -0.29).

Discussion

This study aimed to assess psychological outcomes of pregnancy termination among women in Rwanda, focusing on distress, coping mechanisms, and social support across pre-, peri-, and post-termination stages, as well as the predictors of psychological distress in this sample.

Using validated instruments, the study sought to identify stage-specific vulnerabilities and predictors of resilience. Overall, the findings revealed that distress was not confined to the aftermath of termination but emerged across all stages. Anxiety was highest pre-termination, depression and stress peaked post-termination, and self-esteem declined peri-termination. Coping mechanisms weakened progressively, while perceived social support diminished from pre- to post-termination. Regression analyses confirmed perceived stress, maladaptive coping, and low social support as significant predictors of anxiety and depression.

The demographic profile of participants provides critical context for interpreting these findings. The majority of participants were aged 20-29 years, followed by adolescents aged 16-19 years, reflecting the reproductive vulnerability of younger populations. This age distribution is consistent with regional evidence showing elevated rates of unintended pregnancies and limited access to reproductive counseling among youth and young adults.[22] Marital status data indicated that most participants were married, underscoring that pregnancy termination is not limited to single or unsupported women. At the same time, the presence of single, divorced, and widowed participants highlights the diversity of relational contexts in which termination decisions occur. These relational dynamics are important, as they may shape emotional responses, coping strategies, and the availability of perceived social support throughout the termination process.

Furthermore, educational attainment among participants was varied, with representation across secondary, primary, and no formal education. This distribution reflects broader educational disparities in Rwanda and the region, which may influence health literacy, decision-making autonomy, and access to psychosocial resources. The presence of women with tertiary education further demonstrates that termination decisions occur across all educational strata,

challenging assumptions that they are confined to less-educated populations.[23] With respect to the stage of termination, the relatively balanced representation across pre-, peri-, and post-termination groups strengthens the validity of psychological comparisons and supports the interpretation of emotional trajectories over time. These findings suggest that distress and coping mechanisms evolve dynamically, shaped by both clinical experiences and contextual factors. Taken together, these demographic patterns underscore the need for interventions that are age-sensitive, relationship-aware, and education-responsive. They also highlight the compounded stressors faced by women in Sub-Saharan Africa, where stigma, limited autonomy, and restricted access to care intensify psychological vulnerability. [24]

The findings of this study underscore that psychological distress following ToP is not attributable to a single factor but emerges from a multifaceted interplay of psychosocial influences. Perceived stress, coping mechanisms, and social support were identified as central determinants of mental health outcomes. Anxiety was significantly higher pre-termination compared to post-termination. Similar patterns have been reported in studies from Sub-Saharan Africa and Europe, where anticipatory anxiety is heightened during decision-making.[25] This may reflect fear of stigma, uncertainty about medical procedures, and lack of counselling support before termination. Elevated levels of anxiety and depressive symptoms were observed, accompanied by reduced life satisfaction, disrupted self-concept, and diminished self-esteem. The strong interrelationships among perceived stress, anxiety, and depression/grief suggest a shared distress profile, reflecting the cumulative burden of emotional strain. These results are consistent with global and regional literature, which highlights the emotional complexity of ToP and the need for context-sensitive mental health interventions.

Importantly, the study revealed several concerning outcomes among women and girls in Rwanda: more than one-third reported low life satisfaction, and nearly 30% exhibited low self-esteem. These findings align with prior evidence showing that dissatisfaction with life and diminished self-worth are significantly associated with inadequate psychological or social support following ToP, reinforcing the importance of integrated psychosocial care across all stages of the termination process.[26] Strengthening pre-termination counselling could reduce anticipatory anxiety and improve emotional preparedness.

Depression was significantly higher post-termination compared to peri-termination. Anxiety and depression/grief scores were elevated in a subset of participants, particularly during the peri-termination phase. This stage was characterized by emotional volatility and uncertainty, with several participants scoring in the clinically concerning range for both outcomes. Consistent with findings from South Africa and the US, grief and depressive symptoms intensify after the procedure.[27,28] The statistically significant differences observed between the pre- and post-termination stages indicate a subtle yet measurable shift in psychological distress over time. The upward trend in distress from peri-to post-termination may reflect a rebound effect, whereby the temporary emotional stabilization experienced during the clinical or decision-making phase begins to deteriorate. This decline could be attributed to the gradual exhaustion or ineffectiveness of initial coping strategies, leaving participants increasingly vulnerable. Alternatively, it may signal the reactivation of external stressors, such as social stigma, relational tensions, or unresolved grief, that were momentarily subdued during the peri-termination period. Post-termination distress may be compounded by stigma, isolation, and limited follow-up care. These findings are consistent with prior studies,[29] which document the emotional intensity of the peri-termination phase, and with regional evidence[6]

emphasizing the need for targeted psychosocial support during this critical stage. Integrating post-termination psychosocial support into reproductive health services is critical.

Stress peaked post-termination compared to pre-termination. This aligns with evidence from Ghana and Nigeria, where stress escalates after discharge due to community stigma and lack of support.[30,31] Perceived stress emerged as the strongest positive predictor of both anxiety and depression/grief, underscoring its central role in emotional distress. This finding is consistent with prior literature, which has shown that women seeking first-trimester abortion services often report perceived stress as significantly correlated with depressive symptoms.[24] Low social support further intensified this relationship, reinforcing stress as a key vulnerability factor within the termination context. In contrast, adaptive coping demonstrated significant negative associations with both anxiety and depression/grief, confirming its protective function. The absence of structured follow-up care and fear of disclosure likely exacerbate stress. Community-based interventions and stigma reduction campaigns could mitigate post-termination stress.

Coping scores declined across stages, though not significantly. Study [16] highlight the value of adaptive coping strategies, such as problem-solving, emotional regulation, and seeking support, in mitigating psychological distress. Taken together, these findings emphasize the dual importance of reducing stressors and strengthening adaptive coping mechanisms to buffer against adverse mental health outcomes during pregnancy termination. Reduced coping may reflect cumulative emotional burden and limited access to supportive networks. Training providers to strengthen adaptive coping strategies could enhance resilience.

On the other hand, maladaptive coping was positively associated with psychological distress, highlighting its detrimental impact on emotional regulation.

This finding is consistent with prior research on maladaptive coping and emotional dysregulation, which demonstrated that strategies such as avoidance, denial, and rumination are consistently linked to elevated anxiety and depressive symptoms among pregnant and postpartum women. [32] Similarly, studies of women who have undergone abortion show that reliance on maladaptive coping mechanisms is associated with higher levels of depression and perceived stress, particularly in contexts of low social support. [33] Taken together, this literature underscores the harmful effects of ineffective coping on emotional recovery. The present study reinforces these conclusions, demonstrating that maladaptive coping exacerbates vulnerability during pregnancy termination. [34] These findings highlight the urgent need for coping-focused interventions in reproductive health settings, particularly during emotionally vulnerable periods such as the peri- and post-termination phases, where distress is most pronounced. [35]

Perceived social support was significantly higher pre-termination compared to post-termination. Social support is widely recognized as a buffer against psychological distress, especially in reproductive and perinatal contexts. This mirrors findings from Ethiopia and Tanzania, where women report declining support after termination due to stigma. [36,37] This mirrors findings from Ethiopia and Tanzania, where women report declining support after termination due to stigma. The findings of the present study found that social support emerged as a modest but statistically significant protective factor, inversely related to both anxiety and depression/grief. These findings suggest a shared vulnerability pathway, where stress and maladaptive coping elevate distress, while adaptive coping and social support buffer against it. These findings echo previous research showing that maladaptive coping significantly increased the odds of perinatal depression and anxiety, while adaptive strategies buffered against emotional deterioration. [38]

In Rwanda, where mental health literacy remains low and stigma around emotional expression persists, promoting adaptive coping through culturally sensitive psychoeducation could be transformative, [39] supports the earlier findings and reinforces the need for interventions that promote adaptive coping and strengthen social support networks.

The regression findings align with regional and global evidence on post-termination psychological outcomes. Elevated depression and stress in the post-termination stage mirror results from Rwanda, where women reported heightened emotional vulnerability and grief following termination, particularly when social support was limited. [34,33] Similar patterns have been observed in broader African contexts, where stigma and inadequate provider communication exacerbate distress and reduce resilience (3). Globally, meta-analytic evidence confirms that post-abortion depression affects up to one-third of women, underscoring the universality of these findings. [22,19]

Declines in self-esteem and social support resonate with studies highlighting the erosion of protective factors across stages. In Rwanda, qualitative accounts emphasize that women often feel abandoned by partners and communities, intensifying vulnerability. [33] Internationally, research shows that diminished coping and perceived support are consistent predictors of poor emotional recovery, particularly in settings where abortion remains stigmatized. [33]

Although reductions in life satisfaction and coping did not reach statistical significance, the observed trends are consistent with integrative reviews noting ambivalence, relief mixed with grief, as a common trajectory (8). These findings reinforce the psychological interventions' emphasis on cumulative vulnerability when adaptive resources are compromised.

Taken together, the results demonstrate that distress is not confined to the procedure itself but extends into the recovery phase,

where resilience depends on both internal coping and external support. Comparative evidence strengthens the argument for culturally sensitive interventions that integrate empathetic provider communication with community-based support to counter stigma, rebuild self-esteem, and promote recovery. In Rwanda's maternal health context, such strategies would not only humanize abortion care but also align with global calls for equitable, stage-specific psychological support. Importantly, when combined with the stage-specific logistic regressions, a more nuanced picture emerges: stress and depression peak post-termination, self-esteem dips peri-termination, and social support declines post-termination. This dual evidence highlights that women's psychological vulnerabilities are not static but evolve across the termination process, underscoring the need for stage-sensitive interventions. Such findings align with global literature emphasizing the role of stress and coping in shaping post-abortion mental health trajectories, while also situating Rwanda's experience within a broader call for culturally sensitive psychosocial care.

Global vs. Rwanda Context of Limited Support

Limited access to psychological and social support during pregnancy termination is not unique to Rwanda; it is a global issue documented across both high-income and low- and middle-income countries. Studies from Europe and North America show that while clinical abortion services are widely available, integration of psychosocial care remains inconsistent, often treated as optional rather than essential.[40] In Sub-Saharan Africa, including Rwanda, this gap is compounded by structural barriers such as limited mental health infrastructure, a shortage of trained providers, and pervasive stigma surrounding abortion. Stigma operates at multiple levels: community, familial, and institutional, leading many women to conceal their experiences and avoid seeking emotional support.[41]

Additional reasons for lack of support include inadequate training of health professionals in empathetic counseling, resource constraints within district hospitals, and cultural norms discouraging open discussion of reproductive loss.[42] Together, these factors explain why women frequently rely on maladaptive coping strategies and why distress persists across the termination process. Addressing these barriers requires both global advocacy for integrating psychosocial care into reproductive health services and locally tailored interventions in Rwanda that reduce stigma, expand HCPs' training, and strengthen community-based support networks.

Contextualizing Within Rwanda's Health Landscape

In Rwanda, where reproductive health services are evolving within a complex socio-legal framework, these findings carry significant implications. Married women as well as single women, who showed the highest distress levels, often face compounded vulnerabilities due to stigma, limited autonomy, and restricted access to care.[43] Integrating mental health screening into reproductive services, training midwives in psychosocial first aid, and expanding community-based support are urgent priorities.

Moreover, these results contribute to the growing body of evidence advocating for emotionally informed reproductive policies. Recognizing the psychological dimensions of ToP is essential not only for clinical care but also for policy reform that respects emotional rights and reproductive justice. [44] In summary, the study demonstrates that psychological distress emerges across all stages of termination, with distinct vulnerabilities at each phase. Comparisons with regional and global literature confirm that anticipatory anxiety, peri-termination declines in self-esteem, and post-termination peaks in stress and depression are consistent patterns. These findings underscore the need for stage-specific, culturally sensitive interventions that integrate counseling, coping support, and community stigma

reduction into Rwanda's reproductive health framework.

Study implications

These findings underscore the urgent need for integrated psychosocial care within Rwanda's reproductive health services. Screening for emotional distress, strengthening adaptive coping, and enhancing social support, especially for adolescents and single women, should be prioritized. Community-based interventions and culturally sensitive counseling may offer scalable solutions to mitigate these risks.

Strengths and limitations of the study

The present study employed a robust sample size and diversity of participants in collecting data, spanning varied age groups, marital statuses, education levels, and stages of termination. This context offers a rich and representative women's population for understanding emotional trajectories in reproductive contexts. Stage-specific analysis, including participants across pre-, peri-, and post-termination phases, the study captures dynamic psychological shifts and allows for nuanced comparisons across time points. The use of multiple regression models enables the identification of independent contributions of key psychosocial predictors, perceived stress, coping styles, and social support, in relation to anxiety, depression, life satisfaction, and self-esteem, enhancing the interpretive depth of findings. Conducted within a Sub-Saharan African setting, the study addresses a critical gap in global reproductive mental health literature, offering culturally grounded insights that can inform local policy and practice. However, the cross-sectional design used limits causal inference. While associations are statistically significant, longitudinal data would be needed to confirm temporal relationships and emotional trajectories. Relying on self-reported data may introduce bias due to social desirability, stigma, or emotional suppression, particularly in sensitive contexts like pregnancy termination.

Factors such as prior mental health history, partner dynamics, or exposure to trauma were not controlled for and may influence psychological outcomes. While the sample is diverse within its context, findings may not fully generalize to other cultural or healthcare settings without adaptation.

Conclusion

This study provides stage-specific evidence on psychological outcomes among women undergoing pregnancy termination in Rwanda. Analyses revealed that the post-termination stage was consistently associated with heightened emotional distress, including elevated depression and perceived stress, alongside reduced social support. The peri-termination stage was marked by diminished self-esteem, reflecting vulnerability during the procedure itself. Although life satisfaction and coping showed declining trends across stages, these did not reach statistical significance, yet they highlight areas for further exploration. Importantly, regression models adjusted for age, marital status, and education confirmed that stage of termination remained a significant predictor of distress outcomes, strengthening the evidence for stage-specific vulnerabilities. These findings underscore that women's psychological needs evolve across the termination process: distress intensifies post-termination, while peri-termination presents challenges for self-esteem.

Together, the results highlight the necessity of integrated, culturally sensitive psychosocial interventions that address both distress and protective factors across all stages of termination. Embedding empathetic provider communication, strengthening coping resources, and enhancing social support networks are critical to mitigating vulnerability. By situating these findings within Rwanda's maternal health strategy, the study contributes to global efforts to humanize abortion care and provides empirical justification for the development of interventions for stage-specific psychological support.

To enhance emotional well-being during and after termination of pregnancy (ToP), mental health screening should be integrated into reproductive services through routine use of validated tools such as PHQ-9, GAD-7, and PSS to enable early identification of psychological distress. Confidential, women-friendly counseling services must be developed to support autonomy and reduce stigma, particularly for adolescents aged 15-19 years old. Midwives and frontline health workers should be trained in psychosocial first aid to recognize emotional distress and provide immediate support or appropriate referrals. Access to community-based coping and support programs should be expanded by promoting peer-led groups and digital interventions that build resilience. Finally, policy reform is needed to protect emotional rights during ToP by advocating for guidelines that prioritize mental health, informed consent, and respect for women's decisions.

Authors' contribution

The primary author, SM, developed the study framework, objective, and theoretical grounding. Designed the data collection tools and analytic strategy, including regression modeling. Conducted statistical analyses and interpreted regression outputs. Created demographic charts and visual summaries of psychological outcomes. Produced the original draft of the manuscript, including introduction, methods, results, and discussion.

Co-authors:

1. MKA provided academic oversight and mentorship throughout the research process, contributed to the manuscript refinement, ensuring clarity and coherence. Reviewed statistical outputs and supported the interpretation of findings.
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Conflict of interest declaration

The authors declare that they have no conflict of interest in this study.

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