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The Role of Resilience in Managing the Psychological Effects of Infertility Stigma: A Mixed-Methods Study

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Abstract

Resilience and coping strategies represent major resources for women experiencing infertility, related stigma, and psychological consequences. This study was to examine how resilience operates in managing psychological distress among women experiencing infertility stigma in evangelical church communities in Zou County, Benin Republic. A convergent mixed-methods design was employed with 384 women, using standardized measures (CD-RISC-10, ISS-SF, DASS-21) alongside focus groups and interviews with 45 church leaders. The quantitative data were analysed using SPSS version 25.0. In a matched mixed-method approach, the qualitative data were converted into quantitative value to enhance analysis. More than a quarter of participants presented with low resilience, the average score on CD-RISC-10 being 24.88 out of 40. ISS-SF significantly predicted DASS-21, infertility stigma accounting for 45% of variance in combined depression, anxiety, and stress. Self-devaluation and social withdrawal revealed primary dimensions. Resilience in moderation analysis yielded significant independent effects on psychological outcomes. It functions as an independent protective factor, providing general psychological resources that improve outcomes regardless of stigma levels, rather than buffering the impact of stigma. Quantitative linear models failed to capture specific context-dependent resilience processes revealed qualitatively. The Stigma-Conscious Framework on Resilience and Posttraumatic Change helped to

reframe resilience with inputs and resources specific to the sample. It highlights the importance of integrating context-specific features in the underlying mechanisms to move resilience beyond the concept of general protective factor. Recommendations for practice include interventions targeting self-devaluation and social withdrawal and strengthening culturally embedded resilience resources.

Keywords: Infertility, resilience, stigma, psychological distress, mixed-methods

Introduction

Infertility affects an estimated 186 million people globally (WHO, 2023), with devastating consequences in pronatalist societies, due to centrality of motherhood to women's social identity and value (Sharma et al., 2025). Cox et al. (2022) noted infertility's unique status among health conditions as essentially the absence of an anticipated life event, that is pregnancy or live birth. Hawkey (2023) extended analysis beyond biomedical frameworks, demonstrating how sociocultural narratives and practices fundamentally shape women's infertility experiences. In this realm, stigma constitutes a central feature of infertility, disproportionately affecting women (Luo et al., 2024). Conceptually, stigma represents a deeply discrediting attribute that distances individuals from socially accepted norms (Goffman, 1963). From Aranda et al. (2023), stigma locates within social interaction dynamics between affected individuals and their communities.

The stigma of infertility generates consequences for women. Temitokpe (2022), examining these consequences in the frame of mental health, synthesized qualitative research across seven African countries – Cameroon, Gambia, Ghana, Mali, Mozambique, Nigeria, and Tanzania. She identified trauma, anxiety, sorrow, isolation, diminished self-esteem, and reduced self-worth as key distress manifestations. Halkola et al.'s (2022) study exposed women's experiences of infertility in terms of coping strategies and the same from Vatanparast et al. (2022) addressed resilience. Both studies suggest importance of personal factors in the women's response to infertility and related stigma. This study is aligning the three features of infertility to investigate the role of resilience in managing the psychological effects of infertility stigma.

The Multidimensional Nature of Infertility Stigma

The stigma surrounding infertility operates through interconnected domains that collectively diminish affected individuals' social standing and psychological wellbeing. The conceptual work by Fu et al. (2015) refined by Li et al. (2025) identified four primary dimensions: self-devaluation, social

withdrawal, public stigma, and family stigma. These dimensions typically intersect, creating comprehensive systems of social control marginalizing women who are unable to fulfil expected reproductive roles.

Self-devaluation

Self-devaluation results from internalization of devaluating societal attitudes making women with infertility integrate defaming beliefs into their self-concept. They self-devaluated under the stress of stigmatization, family humiliation and social disapproval of infertility in the studies of Jing et al. (2021) and Klaus et al. (2023). In the research by Xie et al. (2023) women's perceived stigma engendered self-judgment, shame, and depression. In addition, these women experienced emotional and family violence, all potential sources of their self-devaluation. In a quantitative approach, Yokota et al. (2022) established significant relationships between levels of infertility stigma and the severity of depression, anxiety, and psychological distress. Ultimately, self-devaluation compromise quality of life as shown in three cross-sectional studies (Jing et al., 2021, 2022; Van Rooij et al., 2021).

Social withdrawal

The dimension of social withdrawal gives account of the woman with infertility's reaction to the socially prescribed value of motherhood. Foti et al. (2023) found perceived importance of motherhood positively associated with social withdrawal. With Mohammadi et al. (2024), social withdrawal stemmed from internalized negative labels which generated shame, powerlessness, self-isolation, and diverse forms of psychological distress. Liu et al. (2024) found social withdrawal and self-devaluation negatively associated with fertility quality of life. Social withdrawal potentially participates to the negative impact of infertility on subjective wellbeing, quality of life, and global life satisfaction found in the studies of Bernet et al. (2025) and Nagórska, et al. (2022).

Public stigma

The dimension of public stigma renders the woman with infertility's experiences of discrimination and devaluation from the society. The concept is termed social stigma in some studies such as Adane et al. (2024) who got social stigma along with perceived stigma, self-stigma, and verbal stigma. These findings are similar to those in the study of Taebi et al. (2021) and in the work of F. Zhang et al. (2021) who also named social and perceived stigma in their study. In these studies, women were stigmatized by other women, and some other social challenges associated with public stigma included self- and social isolation, social and family pressure, and marital

issues. An additional source of public stigma for women is the spillover of male infertility stigma (Bornstein, 2023).

Family stigma

In this dimension, stigma is generated in family dynamics. Almost all infertility stigma experiences include family stigma, due to the widespread societal perception. Cultural prescriptions of motherhood as the role of the women engendered important family pressure for Chinese living with infertility, as found in the study of Jiang et al. (2025). In India, the woman was blamed, pitied, excluded from rituals; and she experienced marital tensions and emotional violence (Sharma et al., 2025). The pronatalist social norms were also found in Jordan, where the woman received a lot of pressure from the family-in-law, experienced harsh blame for the childlessness of the couple, marital conflict, emotional abuse, and she was even disinherited (Bawadi et al., 2024). Tensed family relationships, especially with the husband, were experienced by the woman in Ethiopia (Adane et al., 2024) and in Ghana (Annan-Frey et al., 2023).

Family stigma could extend to divorce in several African contexts such as Senegal, in consequence of the marital blame and rejection (Dierickx, 2022), or Nigeria, where it is a permanent threat for the women in infertility, in addition to the alternative of polygamy (Chukwuka, 2025). In Gambia, the family and husband's rejection were strong to the point that the bride price was claimed back (Dierickx et al., 2021). In Uganda, the woman was excluded from decision-making and deprived empathy from family (Asiimwe et al., 2022). In addition to the lack of family support, in Zimbabwe, the woman could even be excluded from the family, be suspected of witchcraft, and mocked for lacking heirs for her assets (Mashaah et al., 2024). In Ghana, the woman with infertility was blamed, excluded from rituals, verbally abused, suspected of dissolute activities or witchcraft, insulted and ridiculed by her husband and other wives (Ofosu-Budu & Hanninen, 2021). More, Kuug et al. (2023) highlighted the stigmatization of infertility beyond death by genital mutilation of the dead man, burial in the wild, and repudiation of his wife.

Psychological Effects

Several studies have addressed associations between infertility stigma and reduced health and quality of life (Jing et al., 2021; Kiani et al., 2022; Luo et al., 2024; Xie et al., 2023). Infertility generates a major life crisis, leading to stressful experiences and diverse psychological conditions (Dourou et al., 2023). From the meta synthesis by Assaysh-Öberg et al. (2023) with a meta-ethnographic analysis design on the basis of 19 qualitative research studies, women with infertility experienced personal

trauma including among others, anxiety, guilt and shame, grief, and stress. From a dyadic perspective, couples faced relationship stability and security problems (Joseph et al., 2024), marital adjustment difficulties (Chamorro et al., 2022), and unfulfilling sexual lives (Boudreau et al., 2024; El Amiri et al., 2023). Despite the harshness of these challenges, women employ various coping strategies and try to mitigate adverse effects (Ofosu-Budu & Hänninen, 2021; Taebi et al., 2021). Resilience in navigating infertility stigma is discussed next.

Resilience in Facing Infertility Stigma Effects

Resilience lacks consensual definition, but shares core characteristics across disciplines. For example, Bowling et al. (2022) proposed a framework grounded in theoretical foundations while allowing resilience concepts to emerge organically from research data. They identified essential resilience components including spirituality, social connections, self-worth, hopefulness, and life purpose. Troy et al. (2023) advanced an affect-regulation model of psychological resilience, premised on adversity being inherent to human experience and individual responses depending substantially on emotional regulation capacities. Their framework incorporated cultural norms, family systems, practices, and values. Despite definitional debates, the fundamental elements of adversity and positive adaptation remain widely accepted, as illustrated by Daniels and Bryan (2021). These resilience factors provide crucial perspective for understanding how women navigate infertility challenges.

Resilience in managing infertility had focused attention in several studies. For Fernandez-Ferrera et al. (2022), resilience translates the ability to maintain a normal functioning, physically and psychologically, by adaptively coping with stress and adversity. They found greater resilience related to lower psychological distress. Zhao et al. (2022) found resilience associated with reduced stigma-related distress and improved social functioning. The study of Santa-Cruz et al.'s (2023) reported resilience in a protective role against stress and anxiety. Across several studies, factors such as social support, coping, post-traumatic growth, and quality of life have been associated with resilience (Khan et al., 2023; Yan et al., 2024a; Yan et al.'s, 2024b). Studies such as X. Zhang et al. (2021) and Ha and Ban (2020) have reported gender differences in resilience, particularly in dyadic coping contexts.

The findings in these studies, in addition to the ability to normal functioning, depict resilience as a multidimensional adaptation process, as stated by Hiebel et al. (2021). More, Ungar (2021) advocated multi-systemic resilience, connecting biological, psychological, social and ecological adaptations in the face of adversity. Four principles from Ungar (2011), in

the course of the conceptual debate, give better insight into the importance of environment for resilience. First, the shift of focus from the individuals to their environment; second, the interplay of factors influencing resilience; third, resilience appraisal as processes rather than individual traits; and forth, cultural relativity meaning that resilience is shaped by cultural and context-specific norms. Several conceptual attempts have been made to enhance understanding of resilience, but the consensus is yet to come. From a review of major trends, Pearson et al. (2025) summarized resilience as resulting from a dynamic interaction between individuals and their environments with positive outcomes despite adversity, where resilient individuals display adaptive behaviour and strength under stress.

Methods

Study Setting and Ethics

The Research was conducted in the County of Zou, Benin Republic from October 2025 to January 2026. The study protocol was reviewed and approved by the National Committee for Health Research Ethics in Benin Republic and by the Post Graduate School and Institutional Scientific and Ethics Review Committee (ISERC) of Pan Africa Christian University, Kenya.

Research Design

This article partially reports research addressing the influence of spirituality and resilience on managing infertility stigma. It is a correlational study employing a convergent mixed-methods design, integrating qualitative and quantitative data to achieve comprehensive understanding (Wasti et al., 2022). Both qualitative and quantitative data were collected concurrently, analysed concomitantly, and triangulated (Whitley et al., 2020). The design positioned resilience as the independent variable and infertility stigma and psychological effects as dependent variables.

Sampling and Participants

The survey sample size of 384 participants was computed using Cochran's formula with 95% confidence level, 50% expected prevalence, and 5% margin of error (Ahmed, 2024). A three-stage multiple sampling procedure selected first the Zou County and evangelical church through random and purposive sampling. Next, potential participants meeting the inclusion criteria (women married at least two years, struggling with infertility, and attending church) were randomly selected from list provided by church management followed by snowball sampling within congregations. Finally, specific women and leaders were purposively selected for qualitative follow-up. The final mixed-methods sample size was

429, comprising 384 survey participants (including 8 women age 51 to 60 in a focus group after survey), 15 church leaders in two focus groups, 14 pastors, and 16 women's fellowship leaders who granted individual interviews.

Instruments

Demographic questionnaire

A researcher-designed questionnaire was administered to participating women with infertility. The questions covered age, age of husband, age at marriage, duration of marriage, type of marital relationship (monogamous, polygamous), number of children from other unions, socioeconomic conditions, and infertility treatment status.

Quantitative data

Standardized instruments were used for the quantitative data collection, including the ten-item Connor-Davidson resilience scale (CD-RISC-10), the short form of the Infertility Stigma Scale (ISS-SF), and the short form of the Depression, Anxiety and Stress Scale (DASS21). Permission for use and licensing were obtained from developers of these instruments where applicable.

- **Resilience**

The CD-RISC-10, a unidimensional 10-item scale, was developed by Campbell-Sills & Stein (2007), as a measure of stress coping ability, with Likert-type ratings ranging from 0 (not true at all) to 4 (true nearly all the time). The total score ranges from 0 to 40 and is assessed as per quartile ranges. The scale is influenced by the study region and the nature of the sample (Davidson, 2020).

- **Infertility Stigma**

The ISS-SF (Li et al., 2025) is the short version of the Infertility Stigma Scale developed by Fu et al. (2015). This four-dimensional and 12-item instrument uses a Likert rating scale ranging from 1 (strongly disagree) to 5 (strongly agree).

- **The psychological effects of infertility stigma**

The short form of the Depression, Anxiety and Stress Scale (DASS21) was used. The DASS was designed to measure depression, anxiety, and stress as negative emotional states by Lovibond and Lovibond (1995). The DASS21 is a three-dimensional instrument comprising 7 items per subscale, measurable with a 4-point severity/frequency scale applied as 0 (did not apply to me at all), 1 (applied to me to some degree, or some of the time), 2 (applied to me to a considerable degree, or a good part of time), and 3 (applied to me very much, or most of the time) as experienced over the past week.

Qualitative protocols

Semi-structured interview and focus group guides explored infertility perceptions and stigma experiences, cultural factors of resilience, and church policies regarding infertility management. Protocols were developed from quantitative variable adaptation and were validated through review by experts in the fields of public health, psychology, theology, sociology, and social statistics.

Procedures

Six counselling psychology students proficient in Fon (the primary local language) served as trained research assistants. Following informed consent from participants, data were collected via interviewer-administered methods. Due to limitations in literacy, the surveys were administered orally. Instruments were translated from French or English into Fon and back-translated into French, to check for inconsistencies and make refinements until consensus was achieved. Focus groups and interviews were conducted by the principal researcher, with assistants managing recording and note-taking. The women's focus group with participants aged 51 to 60 was intended to capture longitudinal perspectives of infertility stigma experiences. Church leaders' focus groups explored institutional responses to infertility. Pastoral interviews examined theological frameworks and counselling approaches. Interviews with women's fellowship leaders were designed to assess general community perceptions.

Data Analysis

Quantitative data were analysed using SPSS version 25.0. Demographics and scale distribution were represented by descriptive statistics. Scores were computed for each scale and across subscales, then interpreted. Internal consistency of scales was assessed via Cronbach's alpha reliability testing. Linear regression evaluated resilience as a moderator of psychological effects of infertility stigma, and residuals analysis helped to verify assumptions. Relationships between stigma dimensions and psychological distress measures were assessed with Pearson correlation analysis.

For the qualitative data, verbatim transcripts were prepared from audio recordings and field notes. Analysis used Braun and Clarke's (2006) six-phase thematic analysis framework (Ahmed et al., 2025), with initial coding followed by theme generation, review, definition, and naming. Coding used both inductive (data-driven) and deductive (theory-informed) approaches. In addition, in a matched mixed methods approach, participants' responses to the open-ended questions in the survey were first read, sorted, coded, and synthetized before being summarized with frequencies and

percentages. This permitted to quantify the qualitative data and enhance interpretation (Halevi Hochwald et al., 2023). Integration was achieved through joint displays comparing quantitative patterns with qualitative themes, and also through the construction of narratives presenting interconnected findings (Whitley et al., 2020).

Results

Participant Characteristics

The survey included 384 women experiencing infertility. Table 1 displays their demographics and socioeconomic characteristics.

Table 1 : Surveyed Women's Demographics and Socioeconomic Characteristics

Characteristics		Frequency (N=384)	Percentage (%)	Characteristics		Frequency (N=384)	Percentage (%)
Women's Current Age of (years)	18-34	260	67.71	Husband's current age (years)	20-29	98	25.52
	35-50	114	29.69		30-39	156	40.63
	51-60	10	2.60		40-49	100	26.04
					50-70	30	7.81
Woman's age the at marriage (years)	18-34	371	96.61	Husband's Age at Marriage (years)	20-29	266	69.27
	35-45	13	3.39		30-39	93	24.22
					40-49	23	5.99
					50-70	2	0.52
Marriage duration (years)	2-5	200	52.08	Number of other wives	0	246	64.06
	6-10	81	21.10		1	101	26.30
	11-20	75	19.53		2	19	4.95
	21-30	24	6.25		>=3	18	4.69
	31-45	4	1.04				
Marriage order among co-wives	1st	319	83.07	Number of co-wives' children	N/A	246	64.06
	2nd	44	11.46		0	13	3.39
	>=3rd	21	5.47		1	33	8.59
					2	15	3.91
					>=3	77	20.05

Level of education	Frequency (N=384)	Percentage (%)	Employment	Frequency	Percentage (%)
Primary	54	14.06	Civil servant	15	3.91
Secondary	38	9.90	Self-employed	317	82.55
Tertiary	4	1.04	Housewife	52	13.54
Professional training	188	48.96			
Uneducated	100	26.04			

Note. N/A stands for non-applicable in monogamous marriage; as the woman in the survey has primary infertility, there is no child in their marriage.

Age of the women ranged from 18 to 60 years (M = 31.95 years, SD = 8.54). The majority (67.71%) were aged 18–34, reflecting the high fertility window. Most women married between ages 18 and 34 (96.61%). Over half had been married for 2 to 5 years (52.08%). They were in monogamous marriages at 64.06%. The surveyed women, at 26.04%, never had formal education, and 48.96% had primary level professional training. They were self-employed at a high rate (82.55%), and a small proportion (13.54%) identified as housewives.

Table 2 : Characteristics of Infertility Treatment Trial

Characteristic		Surveyed women		Husband of surveyed women	
		Frequency (N=384)	Percentage (%)	Frequency (N=384)	Percentage (%)
		With current husband		-	
Conception trial duration (years)	1-5	215	55.99	-	-
	6-10	84	21.88	-	-
	11-20	68	17.70	-	-
	21+	17	4.43	-	-
Treatment attempts	Yes	384	100	186	48.44
	No	0	0	198	51.56
Treatment duration (years)	1-5	220	57.29	113	29.43
	6-10	80	20.83	39	10.16
	11-20	67	17.45	22	5.73
	21+	17	4.43	12	3.12
	N/A	-	-	198	51.56
Type of treatment (practices)	Indigenous	31	8.07	21	5.47
	Biomedical	6	1.56	23	5.99
	Spiritual	35	9.11	15	3.91
	Spiritual & Biomedical	16	4.17	8	2.08
	Indigenous & Biomedical	20	5.21	13	3.39
	Indigenous & Spiritual	64	16.67	29	7.55
	Indigenous & Biomedical & Spiritual practices	212	55.21	77	20.05
	N/A	-	-	198	51.56

Note. N/A refers to the 198 husbands who did not attempt treatment. They do not have any treatment practice.

Over half of the surveyed women had been attempting conception for 1 to 5 years. Seeking treatment for infertility was common in the sample.

Resilience Levels and Resources

Resilience scores averaged 24.88 out of 40 possible points, with a standard deviation of 7.69, indicating substantial variation in coping capacity. The mean scores were 15.18, 22.46, 27.90, and 33.97, respectively,

for the first, the second, the third, and the fourth quartiles. Coping with infertility stigma posed the greatest challenge for women in the first quartile, with a maximum score of 20. The second and third quartiles had scores from 20 to 25 and 25 to 30, respectively, while the highest quartile scored 30 and above, indicating the strongest resilience. These scores were notably lower and the ranges larger in comparison to those in the sample studied by Campbell-Sills et al. (2009), and the four quartile ranges were 0–29, 30–32, 33–36 and 37–40, in a community sample of 764. This difference likely reflects the harshness of the specific stressors of infertility in the high-stigma contexts of this study. The resilience scale demonstrated excellent internal consistency, with a Cronbach's alpha of 0.91.

Qualitative analysis revealed multiple resilience resources. Women identified physical health (27.08%), mental health (21.88%), financial autonomy (8.54%), social support (9.64%), and combinations thereof as supportive factors. Over three-fifths (61.72%) believed their husband's support was crucial for resilience, while over one-third (38.28%) emphasized occupational engagement diverting attention away from home. Success stories and testimonies from women who conceived after infertility were cited by two-thirds (66.41%) as resilience-promoting. These findings resonate with the variables mediating resilience and mental health across different socioeconomic contexts in Heinz et al.' (2025) study.

Culturally embedded resilience mechanisms emerged prominently. The traditional "speech of advice" from family elders when women enter matrimonial homes, informing them that a deity or ancestor brought them and should be addressed regarding marital issues, provided invisible spiritual resources. In church contexts, this translated into prayer, by which women freely refer to God for inner needs. Older women in the focus group emphasized that secure sharing about their condition and hope, inside or outside the church, represented a key resilience factor. Female leaders stated that resilience was rooted in faith, with resilient women described as those who knew the Lord, suggesting that faith-based counselling should nurture faith and hope.

Occupational engagement emerged as particularly significant. Women described keeping busy with income-generating activities as a distraction from worry:

> "It's mainly keeping busy with something. If you do something that makes you money, you worry less" (29-year-old woman).

Another respondent, age 36, stated,

> "If you have an activity and you focus on it, you somewhat forget about your situation and what people are saying around you."

This pattern suggests deliberate redirecting of attention as a coping strategy. Whether this represents adaptive coping or avoidance represents a complex feature of the sample that merit further exploration.

In sum, faith, prayer, support, focus shifting in work, represent some resilience mechanisms in this sample. The low levels of CD-RISC-10 score values translate that the high-stigma context inhibited support which was the weighted resource claimed by surveyed women to promote resilience.

Dimensions of Infertility Stigma

Infertility stigma scale scores averaged 39.49 out of 60 possible points, with substantial variation indicating diverse stigma experiences. Dimension wise, the values were: mean 12.14 out of 20 for self-devaluation, mean 10.83 out of 15 for social withdrawal, mean 8.50 out of 15 for family stigma, and mean 8.03 out of 10 for public stigma. The scale demonstrated excellent reliability with Cronbach's alpha of 0.90.

From qualitative accounts, forms of infertility-related stigmatization described in participant interviews included mockery, name calling, insults, contempt, humiliation and shame inflicted, judgement, slander, abuse by in-laws, stress from the community, domestic and intimate partner violence, rejection of society, and distancing from children. These results align with previous findings (e.g. Islam & Sharmin, 2024).

More qualitative results align with the findings on the ISS-SF. Self-devaluation expresses profound identity disruption. Women described feeling "incomplete," "unfinished," and "incapable" of the existential duty assigned female human beings. A 30-year-old woman explained,

> "My husband is the biggest problem, especially since he has other wives who have children and I don't; I feel like I have no value before him."

A 35-year-old woman reported pressure from in-laws:

> "Above all, my in-laws. They say that even though we got married in the church, after 12 years there's still nothing … that this marriage is a failure for their son."

Social withdrawal functioned as self-protection against harshness. A 46-year-old woman said,

> "I don't respond, I don't have any friends, I often stay alone to avoid everything."

This withdrawal pattern, while protecting against immediate stigma exposure, simultaneously increases isolation and rumination risk.

The church appeared producing stigma, and this proved particularly concerning. While offering spiritual resources, church communities simultaneously inflicted stigma-related harm. Fellow members believed women deserved their condition due to hidden sin or lack of faith, even

accusing them of resisting and failing their husband in matrimonial duties. Notably, stigma was openly attributed outside the church while camouflaged within, as one focus group participant acknowledged:

"We all stigmatize in a way or another."

Stigma was also unintentional. Examples include specific practices like calling childless women to the front for praying for them during church service, or requiring a childless pastor's wife to participate in baby dedication ceremonies, carrying the baby while dancing joyfully and walking the parents towards the front, create unique psychological burdens and self-stigmatization triggers.

Cultural and religious interpretations in this study converged in constructing infertility as a metaphysical condition. Society perceived infertility as abnormal, resulting from a curse or perhaps from behavioural or sexual misconduct. Some Church leaders interpreted infertility as God's will, which appeared to reinforce stigmatizing attitudes. Children were seen as sacred and as a central blessing of marriage according to cultural perspectives and evangelical interpretations, based on biblical passages commanding multiplication and promising absence of sterility. (Psalm 127 where children are gift from God; Genesis 1, 28 where God ordered to multiply; Deuteronomy 7, 14 where blessings is extended to the absence of sterility in the house of the blessed one). Consequently, childlessness resembled a curse, with non-multiplying women perceived as outside God's will.

The core conception of infertility as a metaphysical condition explains the identity disruption and shows in the dimensions of infertility stigma as rendered by ISS-SF: In the face of massive public stigma, women react by a strong social withdrawal; In addition, due to family – the most natural place of support – stigma, they self-devaluate. In a person-centred perspective, self-devaluation and social withdrawal are the primary dimensions of the stigma of infertility in this sample.

Psychological Effects of Infertility Stigma

The scores of the DASS21 are displayed in table 3.

Table 3 : DASS21 - Measures of Central Tendency and Dispersion

Scale	Mean	Std. Dev.	Min	Max	Range
DASS21	43.05	35.97	.00	126.00	126.00
Depression	14.39	12.32	.00	42.00	42.00
Anxiety	12.69	11.94	.00	42.00	42.00
Stress	15.97	12.56	.00	42.00	42.00

Note. Mean values and the standard deviation of the scale and subscales

Psychological distress scores averaged 43.05 out of 126 possible points on the DASS-21, with the three subscales showing a depression mean

of 14.39, anxiety mean of 12.69, and stress mean of 15.97. The scale demonstrated excellent reliability, with a Cronbach's alpha of 0.98 for the total scale and 0.93 to 0.95 for the subscales. The Stress subscale ranked first, followed by depression, then anxiety. Outputs of severity analysis on the basis of conventional cut-off scores are shown in table 4.

Table 4 : The DASS21 Severity Label Scores

DASS21 - Severity label		Range	Frequency	Percentage (%)
Depression	Normal	0-9	165	42.97
	Mild	10-13	41	10.68
	Moderate	14-20	58	15.10
	Severe	21-27	44	11.46
	Extremely Severe	28+	76	19.79
	Total	-	384	100
Anxiety	Normal	0-7	163	42.45
	Mild	8-9	25	6.51
	Moderate	10-14	66	17.19
	Severe	15-19	29	7.55
	Extremely Severe	20+	101	26.30
	Total	-	384	100
Stress	Normal	0-14	220	57.59
	Mild	15-18	26	6.81
	Moderate	19-25	27	7.07
	Severe	26-33	70	18.32
	Extremely Severe	34+	39	10.21
	Total	-	382	100

Note. Conventional cut-off scores with the concordant severity label.

The analysis yielded in normal ranges: 42.97% for depression, 42.45% for anxiety, and 57.59% for stress. Meanwhile, substantial minorities were affected at extremely severe levels: 19.79% for depression, 26.30% for anxiety, and 10.21% for stress. These women were probably experiencing clinical-level mental health issues requiring intervention.

Qualitative data revealed profound psychological effects of infertility stigma on women. Some described the loneliness attached to their condition, and explained being "alone with their thoughts." Such disposition made them easily develop psychological impairments. They showed excessively wary and developed problematic social relationships, suspecting everyone of gossiping about them. Negative thoughts, suicidal ideation, endless tears, sadness, rumination, mood changes, constant stress, and anorexia were reported. One woman would talk to fruit trees in her garden about their fortune in bearing fruit annually, showing them her womb while expressing her incapacity for such achievement. These women see themselves as capable of nothing and eventually lose their self-confidence. These accounts reveal profound self-devaluation extending to basic identity and purpose.

These findings resonate with results in previous studies (e.g. Arhin et al., 2023; Hess et al., 2018; Kyei, 2022).

The qualitative data enlightens the results of DASS21. In this sample, infertility appears partially normalized as a life stressor, and specifically threatening mood and worry processes.

Relationship Between Stigma and Psychological Distress

Regression analysis proved significant (β = 1.06, p < .000); and infertility stigma accounted for approximately 45.20% of variance in depression, anxiety, and stress combined, indicating substantial but not exhaustive influence. Infertility itself as a silent struggle generating in addition to stress, anxiety, depression, loss of control, loss of self-confidence, loss of self-esteem, isolation, and other psychological discomfort (Rooney & Domar, 2018; Sharma & Shrivastava, 2022), may partially account for the remaining variations.

Correlation analysis revealed positive associations between all stigma dimensions and psychological distress measures. Moderate positive relationships existed between overall infertility stigma and depression (r = 0.67, p = .000), anxiety (r = 0.64; p = .000), and stress (r = 0.66; p = .000). As for specific dimensions, self-devaluation and social withdrawal showed moderate relationships with all three psychological states (correlations ranging from 0.54 to 0.65 with a p value of .000), while public stigma and family stigma showed weaker though still significant relationships (correlations from 0.41 to 0.49 with a p value of .000).

These results reveal self-devaluation and social withdrawal as primary determinants of psychological distress before external stigma sources. This finding show stigma generating psychological impairments through cognitive and behavioural pathways. It resonates with Hatzenbuehler's (2009) psychological mediation model where stigma affects three psychological processes (affective, cognitive, and interpersonal) that are associated with mental health. Consequently, interventions in the sociocultural context of this study, targeting social isolation and internalized stigma are likely to be more effective than those addressing social stigma.

Resilience as an Independent Predictor Rather Than Moderator

Two regression models were tested to examine whether resilience moderates the relationship between infertility stigma and psychological distress or if it operates independently. While the first model involved resilience and stigma independently, the second model in addition, considered their interaction term.

In the first model, resilience (β = -.208, $p < 0.019$) and infertility stigma (β = 1.048, $p < 0.000$) had significant effects on psychological outcomes of infertility stigma.

In the second model, the effects of resilience (β = -.214, $p < 0.016$) and infertility stigma (β = 1.057, $p < 0.000$) remained significant but their interaction term (β = -.009, $p < 0.213$) failed to significantly predict psychological outcomes of infertility stigma.

This finding indicates that resilience did not moderate the relationship between infertility stigma and its psychological effects, but acted as an independent variable in an influencing role for the relationship. Resilience appears to provide general psychological resources improving outcomes across stigma levels, rather than specifically protecting against high stigma. This conceptualizes resilience in a risk and protection model, suggesting that universal resilience-building interventions may benefit all women experiencing infertility, not only those facing high stigma.

Discussion

The findings show complex interactions between stigma and context specifics, individual resilience resources, and mental health outcomes.

Resilience as General Resource in High-Stigma Context

Resilience found functioning as an independent predictor rather than a stigma moderator suggests that it provides general psychological resources rather than specific stigma buffering. This finding contrasts with some previous research such as Li et al.'s (2019) identifying in their specific context, resilience in a moderating role. This highlights potential cultural variation in resilience mechanisms. Quantitative findings of independent effects coexisting with qualitative data suggests more complex, contextually embedded protective processes. Women described specific resilience resources (faith, support, occupation) that appeared to help in managing particular stigma challenges. Quantitative linear models failed to capture these specific, context-dependent resilience processes revealed qualitatively. In other words, the mixed-methods integration suggests that the actual operation of resilience may involve person–environment interactions that are more complex than standard linear models assume. It offers a context-specific model indicating that buffering effects collapse, while resilience functions as a baseline form of psychological capital in a high-stigma context.

What might explain the supposed collapse of the expected buffering effects of resilience is found in the research work by King et al. (2024) arguing that stigmatization shapes resilience, and working on the how and why in considering stigma simultaneously at multiple levels and multiple

resilience process stages. In their model – the Stigma-Conscious Framework on Resilience and Posttraumatic Change – inputs and mechanisms operate through three levels: structural, interpersonal, and individual. Regarding input in this research, the unanimous recrimination of infertility is an important structural factor. This creates prejudice to the woman in interactional dynamics, which represents an interpersonal factor. In these dynamics, the woman experiences all forms of stigma – culturally shaped – as personal factors.

For the corresponding mechanisms and resources, at structural level, women have limited education and financial resources as seen in their demographics. At interpersonal level, they lack of social support even in the church. Accordingly, at personal level, they suffer identity disruption, lack of self-esteem, and their psychological distress partially include self-devaluation and loneliness and rumination due to social withdrawal. In consequence, inputs and resources from the context hinder the robustness of resilience, according to this model. This conceptualization of resilience resonates with Heinz et al.'s (2025) stance highlighting the importance of integrating context-specific features in the underlying mechanisms to move resilience beyond the concept of general protective factor. Likewise, it aligns with the model set by Ungar (2021), stating of the importance of environment including context and culture in navigating adversity, by negotiating personal resources needed to develop prosocial coping behaviours

Stigma Dimension Intervention Targets

Self-devaluation and social withdrawal being the primary dimensions of the stigma of infertility in this sample required priority for internalized stigma components in psychological intervention. Cognitive-behavioural approaches targeting internalized beliefs about womanhood and motherhood may reduce depression and anxiety. Specifically, social withdrawal requires attention, as its buffering effects on immediate stigma exposure, goes with risks of isolation and rumination which are established depression predictors. Peer support programs may help women to benefit shared experiences while countering self-isolation. Family and public stigma reflect the extended family's central role in the context of Zou County. The intense pressure from in-laws and husbands found in qualitative accounts, suggests that family-level interventions may be necessary. Meanwhile, the finding that over 60% of women identified husband support as a crucial resilience factor indicates potential for dyadic interventions – culturally embedded – strengthening couple communication and mutual support.

The Church's Double-Edged Role

The simultaneous provision by the church of spiritual resources and the infliction of stigma-related harm raises particular concerns

The church's simultaneous provision of spiritual resources and infliction of stigma-related harm raises particular concerns. The concealment of stigmatization through the religious language of sin, faith, and divine will can be more psychologically harmful than overt community stigmatization, because it creates confusion between legitimate spiritual concerns and harmful statements. Faith-based counselling must address interpersonal as well as institutional stigma sources – traumatizing practices – while preserving genuine spiritual resources that women find meaningful. Training religious leaders to recognize and counter stigma, rather than inadvertently perpetuating it, represents an important intervention need.

The finding that the reaction to infertility in the church was worse than outside the church suggests that religious identity does not protect against participation in stigmatization and may even intensify it through additional moral condemnation. This tendency challenges assumptions that faith communities automatically provide supportive environments for members facing reproductive challenges. Church community education appears a central intervention need.

Psychological Distress Patterns and Clinical Needs

The substantial proportions exhibiting extremely severe depression (19.79%), anxiety (26.30%), and stress (10.21%) indicate significant unmet mental health needs requiring clinical attention. The pattern that over half showed normal stress levels while higher proportions showed clinical depression and anxiety suggests that infertility may specifically threaten mood and worry processes beyond general stress reactions. Psychoeducation and cognitive behavioural family therapy aimed at breaking the repetitive negative thinking habit by targeting beliefs on womanhood and motherhood might remove the threat.

The qualitative accounts of profound self-devaluation in which women describe themselves as incapable of "such a great achievement" as fruit trees' annual bearing, reveal existential identity disruption extending beyond typical adjustment difficulties. Such cases may require interventions addressing core identity and meaning-making, beyond symptom reduction.

The stronger pattern correlation between self-devaluation/social withdrawal and psychological distress, compared to public and family stigma, requires psychological interventions addressing self-concept and social engagement as stated previously.

Theoretical Integration and Model Development

psychological mediation model where stigma affects three psychological processes (affective, cognitive, and interpersonal) that are associated with mental health.

The findings support an integrated theoretical model positioning infertility stigma as a multi-dimensional stressor operating through cognitive (self-devaluation), behavioural (social withdrawal), and social (family/public stigma) pathways to produce psychological distress. Resilience represents a partially independent resource pool comprising health, support, spiritual, and occupational elements, influencing psychological outcomes regardless of stigma levels.

This model extends existing theory by specifying stigma dimensions as pathways to psychological distress in this cultural context; identifying resilience's independent rather than moderating role; documenting religious communities' complex role as both resource and stressor sources; and highlighting culturally specific resilience mechanisms.

The finding of independent effects of resilience does not exclude more complex, contextually responsive resilience processes as suggested by qualitative data. Resilience may engage mechanisms and situation-specific resource not captured by general linear moderation tests. Future research employing intensive longitudinal methods may reveal resilience processes concealed in cross-sectional designs.

Limitations and Future Directions

The cross-sectional design precludes causal inference; longitudinal research might establish temporal relationships and potential bidirectional influences. The study sample, gathered in one county, within evangelical church limits generalizability to other regional, cultural or religious contexts.

The resilience's non-moderating role may reflect measurement limitations. The CD-RISC-10 rather assesses the general capacity for resilience. Domain-specific measures might yield different patterns. In addition, opposite to linear relationships assumed by moderation tests, resilience in this sample may operate non-linearly or through threshold effects.

Future research should examine resilience's dynamic operation through intensive longitudinal designs, develop culturally specific infertility resilience measures, test adapted intervention approaches targeting identified mechanisms, and extend the investigation to male partners and other religious and cultural contexts.

Practice and Policy Implications

For practice, the findings suggest several intervention avenues: Cognitive-behavioural approaches targeting self-devaluation, structured social engagement programs to counter social withdrawal's isolation effects, and faith-based counselling integrating spiritual resources with psychological techniques to address church-based stigma and leverage identified resilience factors.

Policy implications include promotion of professional counselling and family therapy practices, mental health screening in infertility treatment settings, integration of resilience-building components into reproductive health programs, and culturally sensitive stigma reduction interventions addressing family and community-level attitudes. The existence of a substantial low-resilience subgroup (more than 25%) suggests targeted intervention needs for this vulnerable population.

Couple-based interventions show some potential, given women's identification of husband support as an important resilience factor, and the dyadic resilience effects observed in some previous research works (Péloquin et al., 2024; X. Zhang et al., 2021). Strengthening couple communication and mutual support may leverage natural resilience resources while addressing relationship instability as a common consequence of infertility.

Conclusion

This convergent mixed-methods study examined resilience's role in managing infertility stigma's psychological effects among women in Zou County Benin Republic evangelical Church communities. The stigmatization of infertility significantly predicted psychological distress, accounting for 45% of the combined variance of depression, anxiety, and stress, with self-devaluation and social withdrawal as the main dimensions. Resilience has shown significant independent effects on psychological outcomes, and moderation analysis revealed that it functions as an independent protective factor rather than as a buffer of the impact of stigma

The findings in this high-stigma context, present resilience as providing general psychological resources that improve outcomes across stigma levels rather than a specific buffer against high stigma exposure. Integration of quantitative and qualitative data exposes complex interactions between cultural-religious factors, individual resources, and mental health outcomes.

The church's simultaneous provision of spiritual resources and infliction of stigma-related harm raises particular concern, requiring carefully considered intervention.

Intervention implications centre on targeting self-devaluation and social withdrawal as the most proximal distress determinants, while strengthening culturally embedded resilience resources including faith, social support, and occupational engagement. The substantial proportion of respondents exhibiting clinical-level distress indicates the urgent need for integrated mental health services within infertility care.

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