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Understanding the Drivers of Repeat Induced Abortions among Female University Students in Cameroon: Implications for Reproductive Health Interventions

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Abstract

Introduction: Repeat induced abortions constitute 31.3% of all induced abortions. Three in ten induced abortions are carried out on students. The aim of this study was to identify the factors associated with repeat induced abortions among students at two public universities in Cameroon. **Methods:** A case-control study was conducted. The cases involved students who had undergone two or more induced abortions, while the controls comprised students with one induced abortion. These data were analysed using SPSS software version 23.0. Bivariate analysis was followed by multivariate logistic regression analysis. **Results:** We identified a total of 60 cases and matched them with 60 controls. The significant factors influencing the repetition of induced abortions were: recourse to the previous abortion ≥ 3 years (P = 0.0001; OR 12.65 [5.24 - 30.5]); pressure from the environment (P = 0.032; OR 3.30 [1.11 - 9.99]); unstable situation of the couple (P = 0.012; OR 4.20 [1.37 - 12.91]); and the absence of psychological support after the previous abortion (P = 0.033; OR 3.28 [0.01 - 9.78]). **Conclusion:** A delay of three years or more between two abortions, coupled with a lack of psychological and family support, increases the risk of repeat induced abortion.

Keywords

Repeat Induced Abortions, Cameroon

1. Introduction

Induced abortion remains a significant public health concern. It is defined as the voluntary ending of a pregnancy through medical or non-medical means. When it occurs multiple times in the same woman, it is referred to as a repeat induced abortion. This term applies to having two or more induced abortions before the 28th week of gestation [1].

Each year, approximately 44 million induced abortions occur worldwide, with 45% considered unsafe and 97% in developing countries [2]-[4]. The overall rate of unsafe abortions is estimated at around 14 per 1000 women aged 15 to 44 years [5], and the prevalence of repeated voluntary terminations of pregnancy (VTP) ranges from 16% to 71% [6]. Sub-Saharan Africa has the highest proportion of unsafe abortions, responsible for about 13% of maternal deaths in the region [4]. Additionally, a study conducted in Cameroon by Kamga *et al*. (2017) found that 24.2% of maternal deaths are attributable to VTP [7].

In Cameroon, the legal framework governing abortion is highly restrictive. Voluntary termination of pregnancy is permitted only in cases of rape or when the mother's health is at serious risk, while any abortion performed outside these circumstances is subject to severe legal sanctions. Despite this criminalisation women expose themselves to dangerous practices to terminate their pregnancies [3] [8]. These practices can sometimes lead to infections, secondary sterility, and death [3] [8].

Available data emphasize the severity of the problem. The 2011 EDS-MICS indicated that 7% of sexually active women had already experienced an abortion, with rates reaching 14% in Yaoundé and 8.5% in Douala. Among them, nearly 40% had undergone more than one abortion, highlighting the prevalence of repeat induced abortions [8] [9].

In this context, few studies have specifically investigated the factors influencing the occurrence of repeat induced abortions [7]. Gaining a better understanding of these factors within this population could inform targeted prevention strategies and contribute to reducing related mortality and complications. This study aims to identify the determinants of repeat induced abortions among female students at two public universities in Cameroon.

2. Methodology

2.1. Type and Framework of the Study

This is a cross-sectional, analytical, case-control study carried out over three months, from March to May 2024, at two public universities in Yaoundé, Cameroon: The University of Yaoundé I (UYI) and the University of Yaoundé II (UYII). These

institutions have a diverse student body, providing a suitable environment for investigating sexual and reproductive health issues among young women.

2.2. Study Population

The target population comprised female students aged 15 to 30 enrolled at the two public universities mentioned above.

- **Case**: students who reported having had at least two induced abortions (repeated abortions).
- **Control**: students who reported a single induced abortion.

2.3. Inclusion Criteria

- **Case:** all female student volunteers aged 15 to 30, with a history of at least two induced abortions and having given informed consent.
- **Control:** all student volunteers aged 15 to 30 who had undergone a single induced abortion and had given informed consent.

2.4. Exclusion Criteria

Any student who did not meet the age criteria, did not give consent to participate, or whose data was incomplete.

2.5. Sampling and Sample Size

Non-exhaustive consecutive sampling was employed. The final sample comprised 120 female students, with 60 cases and 60 controls.

2.6. Data Collection

The collection was conducted anonymously and confidentially, through either a paper-based anonymous questionnaire completed in person during consultations at the University Medical-Social Centre (CMS), or a digital questionnaire, an electronic Google forms for those who felt uncomfortable with the in-person format.

During the study period, we approached a total of 230 female students aged 15 to 30. Those who agreed to participate were 193. Forty-one had not had an abortion, 16 were excluded, due to lack of interest, time constraints or discomfort with the topic. Seventy-six had had more than one abortion, and 60 had only one abortion. In the end, we matched 60 cases with 60 controls, for a total of 120 students who were included in our study.

The questionnaire covered sociodemographic, clinical, relational, psychosocial characteristics, and obstetric and gynaecological history.

2.7. Variables Studied

- Dependent variable: presence or absence of repeat induced abortion (≥2 IVGs).
- Independent variables:
  - Sociodemographic data (age, residence, marital status, etc.).

- Anthropological and relational factors (couple stability, peer pressure, type of sexual relations, etc.). Peer pressure was assessed with the question: "For what reason(s) did you opt for your first abortion?" Response option: "c. Pressure from others/peer pressure" (Yes/No). Unstable relationship: Assessed with the question: "For what reason(s) did you opt for your first abortion?" Response options: "d. Unstable relationship" or "e. Abandonment by partner (husband or boyfriend)" (Yes/No).
- Clinical and therapeutic factors (contraceptive methods used, time between abortions, psychosocial assistance, etc.). Lack of psychological support: Assessed with the question: "Do you think it was necessary to receive assistance from a psychologist?" Response option: Yes (participants who reported needing but not receiving support were coded as lacking psychological support).

2.8. Data Analysis

Data were entered and analysed using SPSS version 26.0 software.

- A descriptive analysis was conducted to summarise the characteristics of the sample (means, standard deviations, frequencies, percentages).
- Bivariate analysis was conducted using simple logistic regression to explore the relationship between independent variables and repeat abortions.
- Significant variables ($P < 0.05$) were then incorporated into a multivariate logistic regression model to identify independent factors associated with iterative induced abortion. The findings were presented as odds ratios (OR) with 95% confidence intervals (95% CI).

2.9. Ethical Considerations

The study was conducted in accordance with the principles of biomedical research ethics.

- Ethical approval was received from the Institutional Ethics Committee of the Faculty of Medicine and Biomedical Sciences at the University of Yaoundé I.
- Administrative authorisations from the rectorates of the University of Yaoundé I and the University of Yaoundé II have also been obtained.
- Participation was voluntary, and informed consent was obtained from all students.
- For participants under 18 years old, parental consent was obtained.
- All participants received information on the study, confidentiality, and the right to withdraw.
- Anonymity and data confidentiality were strictly maintained.

3. Results

A total of 120 students participated in the study, divided into 60 cases (those who had undergone at least two induced abortions) and 60 controls (those who had undergone only one induced abortion).

3.1. Proportion of Voluntary Terminations of Pregnancy

This study found that the prevalence of repeat induced abortions was 39.37% (Figure 1).

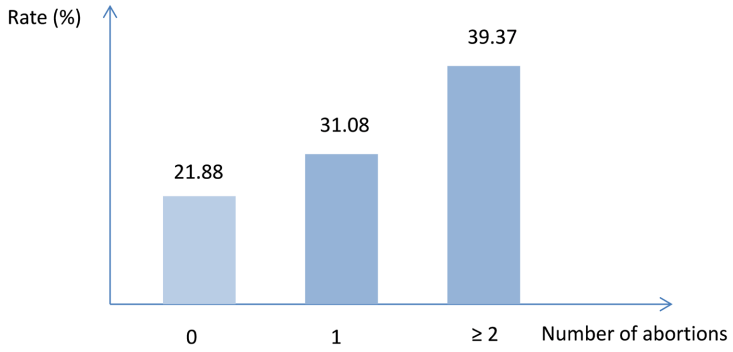

Figure 1. Proportion of voluntary terminations of pregnancy.

3.2. Factors Associated with Repeat Induced Abortions

3.2.1. Sociodemographic Characteristics

Within this sample, regarding sociodemographic variables, only age ≥ 25 is significantly associated (P = 0.006) with repeat induced abortion and increases the risk of having already undergone repeat induced abortion by 2.79 times (1.33 - 5.84) (Table 1).

Table 1. Sociodemographic factors associated with Repeat induced abortions.

Variables	Terms and Conditions	Case (N = 60)	Control (N = 60)	P-value	OR (95% CI)
		n(%)	n(%)		
Age (in years)	≥ 25	36 (60.0)	21 (35.0)	**0.006**	2.79 (1.33 - 5.84)
	<25	24 (40.0)	39 (65.0)		
Region of origin	Center	18 (30.0)	15 (25.0)	0.540	1.29 (0.58 - 2.87)
	West	8 (13.3)	11 (18.3)	0.453	0.68 (0.25 - 1.85)
	East	11 (18.3)	9 (15.0)	0.624	1.27 (0.48 - 3.34)
	South	10 (16.7)	11 (18.3)	1.000	1.00 (0.33 - 3.05)
	South/Northwest	7 (11.7)	7 (11.7)	0.717	0.58 (0.13 - 1.53)
	North	6 (10.0)	7 (11.7)	1.000	1.53 (0.25 - 9.48)
Living arrangement	Living with Parents	24 (40.0)	38 (63.3)	0.011	0.39 (0.18 - 0.80)
	Living alone	26 (43.4)	15 (25.0)	0.034	2.9 (1.06 - 4.98)
	Living with Partner	5 (8.3)	4(6.7)	1.000	1.27 (0.32 - 4.99)
Marital status	Casual relationship	30 (50.0)	47 (78.3)	0.001	2.02 (1.24 - 3.29)
	Unmarried couple with separate households	20 (33.4)	8 (13.3)	0.010	3.25 (1.30 - 8.14)
	Cohabiting	5 (8.3)	5 (8.3)	1.000	1.27 (0.32 - 4.99)
Obedience	Catholic	36 (60.0)	33 (55.0)	0.580	1.22 (0.59 - 2.53)
	Protestant	15 (25.0)	15 (25.0)	1.000	1.00 (0.44 - 2.28)
	Pentecostal	5 (8.3)	5 (8.3)	1.000	1.00 (0.28 - 3.65)

3.2.2. Anthropological Determinants

Living with parents significantly reduced the risk of repeat induced abortions with an OR = 0.39 (0.18 - 0.80). On the other hand, living alone increased the risk of repeat induced abortions by 2.29 times (Table 1).

Not being in a committed relationship was significantly (P = 0.001) associated with repeat induced abortions and increased this risk by 2 times (1.24 - 3.29). Being in a couple with separate homes significantly increased (P = 0.01) by 3.25 times (1.30 - 8.14) the risk of resorting to repeat induced abortions. The existence of psychological trauma in childhood did not statistically influence the recourse to repeat induced abortions (Table 1).

3.2.3. Socioeconomic Determinants

The socioeconomic background in which participants grew up was not statistically associated to repeat induced abortions. When financial support came from parents or guardians, it significantly (P = 0.043) reduced the risk of repeat induced abortions by half. Among participants who earned their own pocket money, no association was found with repeat induced abortions. Being employed while studying was significantly (P = 0.011) associated with a higher likelihood of repeat induced abortions by 2.59 times (Table 2).

Table 2. Socioeconomic factors associated to repeated abortions.

Variables	Terms and Conditions	Case (N = 60)	Control (N = 60)	P-value	OR (95% CI)
		n (%)	n (%)		
Childhood Economic status	Precarity (poverty)	23 (38.3)	18 (30.0)	0.442	1.45 (0.68 - 3.10)
	Average standard of living	25 (41.7)	31 (51.7)	0.272	0.67 (0.32 - 1.37)
	High standard of living	12 (20.0)	11 (18.3)	0.817	1.11 (0.45 - 2.77)
Income source	Family	28 (46.7)	39 (65.0)	**0.043**	**0.47 (0.23 - 0.98)**
	Oneself	23 (38.3)	16 (26.7)	0.172	1.71 (0.79 - 3.70)
	Partner	9 (15.0)	5 (8.3)	0.172	1.74 (0.81 - 3.70)
Monthly income (FCFA*)	<50,000	24 (40.0)	31 (51.7)	0.272	0.62 (0.30 - 1.28)
	[50,000; 100,000[	22 (36.7)	18 (30.0)	0.439	1.35 (0.63 - 2.89)
	[100,000; 200,000[	6 (10.0)	8 (13.3)	0.570	0.72 (0.23 - 2.22)
	[200,000; 400,000[	7 (11.6)	1 (1.7)	0.061	7.79 (0.93 - 65.4)
	≥400,000	1 (1.7)	2 (3.3)	1,000	0.49 (0.04 - 5.57)
Engaging in an activity simultaneously	Student with a job	37 (61.7)	23 (38.3)	**0.011**	**2.59 (1.24 - 5.40)**
	Unemployed student	23 (38.3)	37 (61.7)		

3.2.4. Clinical Factors (Table 3)

Women whose first induced abortion occurred three or more years earlier were significantly more likely to report repeat induced abortions (OR = 12.65, P = 0.0001).

Table 3. Clinical factors associated with repeated abortions.

Variables	Terms and Conditions	Case (N = 60)	Control (N = 60)	P-value	OR (95% CI)
		n (%)	n (%)		
Duration since the previous induced abortion	≥ 3 years	50 (83.3)	17 (28.3)	**<0.0001**	**12.65 (5.24 - 30.5)**
	<3 years	10 (16.7)	43 (71.7)		
Author of the induced abortion	Oneself	16 (26.7)	26 (43.3)	0.056	0.48 (0.22 - 1.02)
	Doctor	13 (21.7)	9 (15.0)	0.345	1.57 (0.61 - 7.00)
	Nurse /Midwife	5 (8.3)	4 (6.7)	1,000	1.27 (0.32 - 4.99)
	Traditional Practitioner	20 (33.3)	11 (8.3)	0.061	2.23 (0.95 - 5.19)
	Friend/Family Member	6 (10.0)	10 (16.7)	0.283	0.55 (0.19 - 1.64)
Location where abortion services were sought	At Home	43 (71.6)	47 (78.3)	0.399	0.70 (0.30 - 1.60)
	District Hospital	10 (16.7)	6 (10.0)	0.283	1.80 (0.61 - 5.31)
	Health Center	6 (10.0)	7 (11.7)	0.769	0.84 (0.26 - 2.67)

3.2.5. Psychosocial Determinants

When the reason for seeking termination was Apprehension regarding family's reaction, it significantly reduced the risk to repeat induced abortion by 2.43 times. Conversely, when an unstable relationship status drove the initial abortion, it markedly increased (P = 0.007) the risk of repeat induced abortion by 3.28 (1.34 - 7.92) times.

At the first induced abortion, feelings of indifference (P = 0.010) and anger (p = 0.018) significantly increased the risk of repeat induced abortion by 2.85 and 3.87 times, respectively. The absence of psychological assistance was very significantly (P < 0.0001) associated with repeat induced abortions and increased the risk by 4.67 times (Table 4).

Table 4. Psychosocial determinants associated with Repeat induced abortions.

Variables	Terms and Conditions	Case (N = 60)	Control (N = 60)	P-value	OR (95% CI)
		n (%)	n (%)		
Motivations for the first induced abortion	Unintended pregnancy	45 (75.0)	36 (60.0)	0.079	2.00 (0.92 - 4.36)
	Social pressure from peers	22 (36.7)	11 (18.3)	**0.025**	**2.56 (1.11 - 5.97)**
	Apprehension regarding family's reaction	23 (38.3)	36 (60.0)	**0.018**	**0.41 (0.20 - 0.86)**
	Unstable relationship status	22 (36.7)	9 (15.0)	**0.007**	**3.28 (1.34 - 7.92)**
	Rape	6 (10.0)	2 (3.3)	0.243	2.64 (0.49 - 14.15)
	Lack of financial resources	24 (40.0)	20 (33.3)	0.449	1.33 (0.63 - 2.88)
Feelings experienced	Guilty	28 (46.7)	32 (53.3)	0.465	0.77 (0.37 - 1.56)
	Shame	36 (60.0)	43 (71.7)	0.178	0.59 (0.28 - 1.27)
	Sadness	13 (21.7)	9 (15.0)	0.345	1.57 (0.61 - 4.00)

Continued

	Indifference	**25 (41.7)**	**12 (20.0)**	**0.010**	**2.85 (1.26 - 6.45)**
	Appeasement	15 (25.0)	10 (16.7)	0.261	1.67 (0.68 - 4.08)
	Anger	13 (21.7)	9 (15.0)	**0.018**	**3.87 (1.18 - 12.7)**
	Fear	32 (53.3)	37 (61.7)	0.356	0.71 (0.34 - 1.47)
Lack of psychological assistance	Yes	42 (70.0)	20 (33.3)	**<0.0001**	**4.67 (2.16 - 10.08)**
	No	18 (30.0)	40 (66.7)		

3.2.6. Post Abortion Management Factors

The use of the pill as a contraceptive method was strongly associated with Repeat induced abortions, with an OR = 3.90 (1.66 - 9.17). Whether or not a woman consulted a doctor after her first abortion did not statistically change the risk of experiencing multiple induced abortions (Table 5).

Table 5. Post abortion management factors associated with repeat induced abortions.

Variables	Terms and Conditions	Case (N = 60)	Control (N = 60)	P-value	OR (95% CI)
		n (%)	n (%)		
Post-abortion consultation	Yes	24 (40.0)	16 (26.7)	0.172	1.71 (0.79 - 3.70)
	No	36 (60.0)	42 (73.3)		
Need for post-abortion contraception	Yes	56 (93.3)	59 (98.3)	0.364	0.24 (0.02 - 2.19)
	No	4 (6.7)	1 (1.7)		
Use of contraception	Yes	48 (80.0)	48 (80.0)	1,000	1.00 (0.41 - 2.45)
	No	12 (20.0)	12 (20.0)		
Choice of contraceptive method	Pill	29 (59.2)	13 (27.1)	**0.001**	**3.90 (1.66 - 9.17)**
	Condoms	7 (14.3)	11 (22.9)	0.274	
	Injections or implants	8 (16.7)	5 (10.4)		
	IUD	2 (4.2)	0 (0)		
	Calendar	10 (20.8)	25 (52.1)		

3.3. Independent Factors of Repeat Induced Abortions (Multivariate Analysis)

After adjustments in multivariate logistic regression, the factors still significantly associated with the occurrence of a repeat induced abortion were (Table 6):

- History of previous induced abortions dating back three or more years (P < 0.0001; adjusted OR = 12.65; 95% CI [5.24 - 30.5]);
- External pressure or influence from the social environment (P= 0.032; ORa = 3.30; 95% CI [1.11 - 9.99]);
- Unstable relationship situation (p= 0.012; ORa = 4.20; 95% CI [1.37 - 12.91]);
- Lack of psychological support following the first abortion (P = 0.033; ORa = 3.28; 95% CI [1.01 - 9.78]).

Table 6. Summary of determinants of repeat induced abortions.

Variables	Case (N = 60) n (%)	Control (N = 60) n (%)	P-value	aOR (95% CI)
Duration since the previous induced abortion				
History of previous induced abortions dating back ≥3 years	50 (83.3)	17 (28.3)	<0.0001	12.65 (5.24 - 30.50)
Relationship patterns				
Peer pressure	22 (36.7)	11 (18.3)	0.032	3.30 (1.11 - 9.99)
Unstable couple situation	22 (36.7)	9 (15.0)	0.012	4.20 (1.37 - 12.91)
Post-abortion support				
Lack of psychological support after the first abortion	42 (70.0)	20 (33.3)	0.033	3.28 (1.01 - 9.78)

4. Discussion

4.1. Prevalence of Repeat Abortions

In this study, 39.37% of students experienced more than two voluntary terminations of pregnancy. In Cameroon, previous studies have documented the high incidence and severe complications of clandestine abortions, reflecting barriers to safe reproductive health services [10] [11]. In Ethiopia, a meta-analysis published in 2023 estimates the prevalence of repeated VTP at approximately 30.9% (95% CI: 28.9 - 32.9), which is lower than our figure [12]. Conversely, in China, a multicentre cross-sectional survey conducted in 2020 in Xi'an reported a proportion of repeat abortions of 56.6% among 3,397 women seeking abortions for unplanned pregnancy, higher than our results [13]. These observed differences may be related to abortion law in those countries and easiest access to abortion services. Repeat induced abortion rate is higher in China, this may be due to the widespread access to abortion services and the legacy of the one-child policy. In contrast, the lower rate in Ethiopia can be explained by the restrictive laws, social stigma, and limited access to safe abortion.

4.2. The Susceptibility of Young Women and Students to Repeated Induced Abortions

This study shows that individuals aged 25 and above, especially those in the 20 - 29-year age group, are significantly susceptible to repeat induced abortions. This finding is consistent with recent data indicating that women in this age group are more prone to short-interval abortions, particularly in urban or academic environments [14]. This is often motivated by the desire to continue their studies, as well as by challenges such as marital instability or insufficient family support [15]. Moreover, socioeconomic vulnerability, particularly financial dependence and unemployment, further exacerbates the risk by limiting women's ability to negotiate safe sexual practices or afford contraceptives [15]. A long the same lines, a study conducted in Kenya among young women aged 12 - 24 found that one in ten women who visited a clinic for an abortion had a history of previous induced abortions [16].

4.3. Psychological Support and Social Pressure: Key Factors

Peer pressure and inadequate psychological support following an abortion are significant factors associated to repeated procedures, with respective ORs of 3.30 and 3.28. This psychosocial aspect is underlined in multiple studies: A recent systematic review of adolescent girls and young women in sub-Saharan Africa documents experiences of stigma, shame, and social isolation following abortion, despite the considerable resilience demonstrated by this population [17]. Women who have already had an abortion sometimes underestimate the risk of recurrence. This also reveals the lack of optimal post-abortion care, characterized by insufficient psychological support, limited access to contraception, and unaddressed perceptions and beliefs regarding contraceptive use [18] [19].

4.4. Temporal Factors and Inadequate Post-Abortion Follow-Up

The powerful association between an interval of at least 3 years and repeat abortion (OR = 12.65) highlights a lack of post-abortion support and inadequate use of effective contraceptive methods, particularly in a context where modern contraception remains underutilised [18]. Regional data show that a significant proportion of repeat abortions is associated to a prolonged period without access to modern contraception, a pattern that fosters unintended pregnancies and repeated resort to abortion [18]. In Ethiopia, a study found that appropriate post-abortion support, including counselling and direct access to contraception, markedly increases contraceptive use upon returning home (AOR ≈ 25.47) [19].

4.5. Academic and Social Challenges Faced by Students

In this study after adjustment, external pressure or influence from the social environment (ORa = 3.30) and unstable relationship situation (ORa = 4.20) were strongly associated with repeat induced abortion. The fact that female students are particularly vulnerable to repeat induced abortions can be explained by various factors: family pressure, marital instability, inadequate medical or psychological support, and the desire to continue their studies [20] [21]. In urban Cameroon, nearly 34% of abortions are motivated by the pursuit of education, and 22% by the fact of not being married [20]. As well, Okyere *et al.* (2024) show that induced abortion among adolescent girls in Ghana is influenced by urban residence, marital status and limited access to contraception. In addition, several international studies confirm that the immediate provision of modern contraceptives (particularly long-acting methods—LARC) after an abortion significantly reduces recurrences [21] [22]. In Europe, a Portuguese study demonstrated that among LARC users, the rate of repeat abortion was very low (0.8% to 1.5%) compared to pill users (5.8%) [22]. This highlights the importance of targeted support to prevent both unwanted pregnancies and repeat abortions in this population.

4.6. Limitations of the Study

This work depends on a modest sample size (120 participants), which may con-

strain its generalizability. Nevertheless, a sample of 60 cases and 60 controls provides adequate statistical precision to detect the reported effect size with approximately 75% - 80% power at a 5% significance level. Additionally, abortion is a sensitive issues and the data are self-reported, which exposes them to recall or social desirability bias. Some of the participants may under-report past abortion due to fear of stigma. There is a risk of differential misclassification of sensitive variables Variable such as peer pressure, unstable relationships. These variables may also be influenced by social desirability or recall bias.

5. Conclusion

This study identified several factors associated to repeat induced abortions among female students at Cameroonian public universities. Age of 25 years and above, residing alone, lacking a committed relationship, facing marital instability, peer pressure, and feelings such as anger or indifference appear to be significant risk factors to repeat induced abortions. Clinically, having at least three years between two abortions and using the contraceptive pill were associated with repeat induced abortions. Lastly, the absence of psychological support after a first abortion emerged as a key determinant. In a restrictive legal environment where abortion remains essentially criminalized and access to modern contraception is limited, these findings highlight the importance of strengthening psychosocial support, family and institutional backing, and preventing unwanted pregnancies through strategies tailored to the local legal and cultural context.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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