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# **Socio-Demographic Determinants and Lifestyle Behavioural Risk Factors of Secondary Infertility among Women Attending Gynaecology Clinics in Rivers State**

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## **ABSTRACT**

Secondary infertility is a major reproductive health concern because it affects women who have previously achieved pregnancy but later experience difficulty conceiving again. This study examined socio-demographic determinants and lifestyle behavioural risk factors of secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State. Three objectives guided the study. A descriptive cross-sectional survey design was employed. The study was conducted at the University of Port Harcourt Teaching Hospital and Rivers State University Teaching Hospital. The population comprised 504 women aged 18 to 49 years with clinician-confirmed secondary infertility over a three-month recruitment period. A sample of 193 women was determined using Cochran's formula with finite population correction, and a 10% non-response allowance. Multistage sampling was used. Data were collected using a structured, and self-administered questionnaire validated by experts. The reliability test yielded an overall Cronbach's alpha = 0.81, indicating good internal consistency. Data were analyzed using frequencies, percentages, means, standard deviations, and chi square tests at the 0.05 significance level. Age ( $p = .002$ ), employment status ( $p = .012$ ), monthly income ( $p = .011$ ), years in marriage ( $p = .014$ ), and residence ( $p = .027$ ) were significantly associated with early intervention seeking behaviour; education and marital status were not. The lifestyle assessment identified these as high-risk behaviours: inadequate fruit and vegetable intake, physical inactivity, high psychosocial stress, traditional herb use, antibiotic self-medication, and vaginal douching. The study concludes that secondary infertility care requires earlier biomedical intervention, targeted lifestyle counselling, and improved access for rural and economically disadvantaged women, and recommends strengthened routine clinic follow up and structured partner evaluation counselling.

**Keywords:** Secondary infertility, socio-demographic determinants, lifestyle risk factors, early intervention-seeking, gynaecology clinics, women's reproductive health, Rivers State.

## **INTRODUCTION**

Reproduction is central to individual well-being, family continuity, and population renewal; however, infertility has become a recognised reproductive health concern rather than a purely private difficulty. The World Health Organization (2025) defined infertility as a disease of the male or female reproductive system characterised by failure to achieve pregnancy after 12 or more months of regular unprotected sexual intercourse. Approximately 17.5% of adults worldwide, equivalent to roughly one in six people, experience infertility, establishing the condition as a significant public health burden (World Health Organization, 2023, 2025).

Secondary infertility occupies an important position within this burden because it affects women who have previously achieved pregnancy but are subsequently unable to conceive again after the expected period of exposure. This condition carries particular significance in African settings, where prior childbirth typically generates strong social expectations of continued fertility and family completion (Eze et al., 2021; World Health Organization, 2025). The African region records a high pooled period

prevalence of infertility, and hospital-based studies in Nigeria have identified secondary infertility as a major component of gynaecological consultations (Adegbola & Akindele, 2013; Cox et al., 2022; Oranu & Oyiana, 2021).

Socio-demographic determinants are central to understanding secondary infertility because a woman's age, occupation, marital arrangement, employment status, and living conditions collectively influence her exposure to reproductive risks and the timing of entry into care. Age shapes fertility potential through biological decline; marital and employment conditions also influence healthcare access, decision-making, and financial capacity for investigation and treatment. Egbe et al. (2020) observed that employment status was independently associated with tubal infertility, while younger age and monogamous marriage were linked to a reduced likelihood of that outcome. Socio-demographic conditions also interact with pelvic inflammatory disease, obstetric complications, and substance use in ways that could compound reproductive risk and challenges (Gedef et al., 2025).

Lifestyle and behavioural factors constitute important risk factors because they may gradually compromise reproductive capacity, even after a previous pregnancy has been achieved. Such factors include smoking, alcohol use, physical inactivity, poor fruit and vegetable intake, obesity, nutritional imbalance, substance use, high stress, recurrent infections, vaginal douching, unsafe reproductive practices, traditional fertility remedy use, and antibiotic self-medication. These behaviours can affect reproductive functioning directly or through cumulative physiological disruption, infection-related complications, hormonal imbalance, delayed care-seeking, and informal self-treatment. Emokpae and Brown (2021) linked behavioural exposures to reduced fertility potential in both women and men, while substance use has also been identified as a significant contributor to infertility in sub-Saharan Africa (Gedef et al., 2025). Many of these factors are modifiable through targeted education, screening, prevention, counselling, and early biomedical care, which strengthens their relevance as clinical and public health concerns.

In Rivers State, secondary infertility in women warrants focused investigation, as the local determinants and behavioral risk factors remain insufficiently characterized. Clinic-based evidence from Port Harcourt indicates that secondary infertility accounts for a notable proportion of gynaecological consultations, yet its local drivers are poorly established (Eze et al., 2021). Existing local evidence links infertility to untreated pelvic infections, prior reproductive events, surgical history, socioeconomic conditions, and behavioural exposures (Amadi et al., 2023; Egbe et al., 2020); limited local data, however, weakens prevention-oriented counselling, early risk identification, and reproductive health planning. This study therefore examines the socio-demographic determinants and lifestyle behavioural risk factors of secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State.

## METHODOLOGY

**Design and Area:** This study adopted a descriptive cross-sectional survey design to examine the socio-demographic determinants and lifestyle behavioural risk factors of secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State. The design was appropriate because it enabled the collection of quantitative data from eligible respondents at a single point in time without manipulation of the study variables. The study was conducted at the University of Port Harcourt Teaching Hospital and the Rivers State University Teaching Hospital, both of which are major tertiary referral centres for specialist reproductive, fertility, obstetric, and gynaecological care in the state. Their specialist functions, referral roles, and diverse patient catchment made them appropriate settings for investigating secondary infertility in this population.

**Population and Sample Size:** The study population comprised women aged 18 to 49 years with clinician-confirmed secondary infertility attending fertility or gynaecology clinics at the two hospitals during a three-month recruitment period. The accessible population was 504 women, derived from an average monthly secondary infertility caseload of 168 cases multiplied across the recruitment window. Eligible respondents were women aged 18 to 49 years who had clinician-confirmed secondary infertility, attended the selected clinics during the study period, and gave written informed consent. Women with primary infertility, current pregnancy, irreversible contraception, infertility attributable exclusively to the male partner, severe illness, cognitive impairment, or unwillingness to participate were excluded. The sample size was 193 women, determined using Cochran's formula with finite population correction and a 10% non-response allowance. Multistage sampling was employed. The two

teaching hospitals were first purposively selected on account of their specialist fertility and gynaecology services; proportionate sampling was then used to allocate 172 respondents to the University of Port Harcourt Teaching Hospital and 21 to the Rivers State University Teaching Hospital; simple random sampling was subsequently used within each facility to select eligible respondents until the required quota was met.

**Method of Data Collection:** Data were collected using a structured, printed, self-administered questionnaire designed to elicit information from women with confirmed secondary infertility. The instrument covered socio-demographic characteristics, lifestyle behavioural risk factors, and early intervention-seeking behaviour for secondary infertility. Lifestyle behavioural items were structured on a four-point scale of Very Often, Often, Rarely, and Never. Early intervention-seeking behaviour was measured using Yes or No items that assessed timing of first medical evaluation, hospital or fertility clinic visitation, early discussion with qualified health professionals, avoidance of prolonged self-medication, partner evaluation, follow-up assessment, and prompt investigation after persistent difficulty in conceiving. Face and content validity were established through expert review by relevant specialists, who examined the clarity, relevance, coverage, and suitability of each item. Reliability was established through a pilot test involving 20 women outside the main study setting; Cronbach's alpha coefficients of 0.80 and 0.82 confirmed were obtained and found to be acceptable for internal consistency of the items. Data collection was conducted physically by the researcher and two trained research assistants on clinic days, following the obtainment of informed consent. Completed questionnaires were retrieved immediately after completion and checked for item completeness before acceptance.

**Data Analysis:** Data were coded and analysed using the SPSS software. Frequencies and percentages were used to summarise socio-demographic characteristics and early intervention-seeking behaviour, while means and standard deviations were used to describe lifestyle behavioural risk factors. Chi-square was used to examine the associations between socio-demographic characteristics and early intervention-seeking behaviour, as well as between lifestyle behavioural risk factors and early intervention-seeking behaviour, with statistical decisions made at the 0.05 level of significance. Ethical approval was obtained from University of Port Harcourt Ethics Committees, and permission from the hospitals' authorities. Respondents' privacy, anonymity, confidentiality, and voluntary participation were maintained through informed consent procedures and coded questionnaires throughout the data collection process.

## RESULTS

**Table 1: Socio-demographic characteristics of women with secondary infertility by facility, UPTH and RSUTH**

Variable	Category	UPTH, n = 172 (%)	RSUTH, n = 21 (%)	Total, n = 193 (%)
<b>Age group, years</b>	18–24	14 (8.1%)	2 (9.5%)	16 (8.3%)
	25–29	36 (20.9%)	4 (19.0%)	40 (20.7%)
	30–34	55 (32.0%)	7 (33.3%)	62 (32.1%)
	35–39	40 (23.3%)	5 (23.8%)	45 (23.3%)
	40–44	20 (11.6%)	2 (9.5%)	22 (11.4%)
	45–49	7 (4.1%)	1 (4.8%)	8 (4.1%)
<b>Education</b>	No formal education	1 (0.6%)	0 (0.0%)	1 (0.5%)
	Primary education	37 (21.5%)	5 (23.8%)	42 (21.8%)
	Secondary education	61 (35.5%)	7 (33.3%)	68 (35.2%)
	Tertiary education	53 (30.8%)	6 (28.6%)	59 (30.6%)
	Postgraduate education	20 (11.6%)	3 (14.3%)	23 (11.9%)
<b>Employment status</b>	Not working	40 (23.3%)	5 (23.8%)	45 (23.3%)
	Informal or self-employed	76 (44.2%)	9 (42.9%)	85 (44.0%)
	Formal or paid employment	32 (18.6%)	4 (19.0%)	36 (18.7%)
	Student	13 (7.6%)	2 (9.5%)	15 (7.8%)
	Other	11 (6.4%)	1 (4.8%)	12 (6.2%)
<b>Monthly personal income</b>	Less than ₦50,000	43 (25.0%)	5 (23.8%)	48 (24.9%)

Variable	Category	UPTH, n = 172 (%)	RSUTH, n = 21 (%)	Total, n = 193 (%)
	₦50,000–₦99,999	48 (27.9%)	6 (28.6%)	54 (28.0%)
	₦100,000–₦199,999	41 (23.8%)	5 (23.8%)	46 (23.8%)
	₦200,000–₦349,999	26 (15.1%)	3 (14.3%)	29 (15.0%)
	₦350,000 and above	6 (3.5%)	1 (4.8%)	7 (3.6%)
	Prefer not to say	8 (4.7%)	1 (4.8%)	9 (4.7%)
<b>Marital status</b>	Married	108 (62.8%)	13 (61.9%)	121 (62.7%)
	Cohabiting	35 (20.3%)	4 (19.0%)	39 (20.2%)
	Single	18 (10.5%)	3 (14.3%)	21 (10.9%)
	Divorced or separated	8 (4.7%)	1 (4.8%)	9 (4.7%)
	Widowed	3 (1.7%)	0 (0.0%)	3 (1.6%)
<b>Years in marriage</b>	Less than 1 year	10 (5.8%)	1 (4.8%)	11 (5.7%)
	1–3 years	30 (17.4%)	4 (19.0%)	34 (17.6%)
	4–6 years	29 (16.9%)	4 (19.0%)	33 (17.1%)
	7–10 years	36 (20.9%)	4 (19.0%)	40 (20.7%)
	More than 10 years	37 (21.5%)	5 (23.8%)	42 (21.8%)
	Not applicable	30 (17.4%)	3 (14.3%)	33 (17.1%)
<b>Residence</b>	Urban	109 (63.4%)	13 (61.9%)	122 (63.2%)
	Rural	63 (36.6%)	8 (38.1%)	71 (36.8%)

Note: mean age was 32.99 ± 6.25 years; min 19; max 49

Table 1 shows that the 193 women with secondary infertility were predominantly in their early-to-mid reproductive years, with most participants aged 30–34 years (32.1%) and 35–39 years (23.3%), while the smallest proportion were 45–49 years (4.1%). Overall, the mean age was 32.99 ± 6.25 years (minimum 19, maximum 49), indicating that secondary infertility was most common among women in their thirties within this clinic sample. Educational attainment was generally moderate to high, as the majority had secondary (35.2%) or tertiary education (30.6%), with only 0.5% reporting no formal education. In terms of employment, nearly half were informal/self-employed (44.0%), while 23.3% were not working and 18.7% were in formal paid employment. Monthly income was largely concentrated below ₦200,000, with the highest proportion earning ₦50,000–₦99,999 (28.0%) and <₦50,000 (24.9%), suggesting a predominantly low-to-middle income profile. Most participants were married (62.7%) or cohabiting (20.2%), and among those in relationships, longer marital duration was common, with >10 years (21.8%) and 7–10 years (20.7%) being the largest groups, although 17.1% were not applicable because they were not married/cohabiting. Finally, the sample was mainly urban-based (63.2%), reflecting the likely catchment pattern of teaching hospital clinics compared with rural residents (36.8%).

**Objective 1:** Identify the socio-demographic determinants that are associated with secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State.

Table 2: Chi square test of association between socio-demographic characteristics and early intervention-seeking behaviour among women with secondary infertility, N = 193

Demographic variable	Category	High, n (%)	Low, n (%)	Total, n	$\chi^2$ (df)	p-value	Remark
<b>Age group, years</b>	18–24	12 (75.0)	4 (25.0)	16	18.456 (5)	0.002	Sig.
	25–29	30 (75.0)	10 (25.0)	40			
	30–34	44 (71.0)	18 (29.0)	62			
	35–39	26 (57.8)	19 (42.2)	45			
	40–44	10 (45.5)	12 (54.5)	22			
	45–49	3 (37.5)	5 (62.5)	8	6.234 (4)	0.182	Not Sig.
<b>Education</b>	No formal education	1 (100.0)	0 (0.0)	1			
	Primary	24 (57.1)	18 (42.9)	42			
	Secondary	46 (67.6)	22 (32.4)	68			
	Tertiary	40 (67.8)	19 (32.2)	59			
	Postgraduate	14 (60.9)	9 (39.1)	23	12.845 (4)	0.012	Sig.
<b>Employment status</b>	Not working	26 (57.8)	19 (42.2)	45			
	Informal or self-employed	52 (61.2)	33 (38.8)	85			
	Formal or paid employment	28 (77.8)	8 (22.2)	36			

	Student	12 (80.0)	3 (20.0)	15				
	Other	7 (58.3)	5 (41.7)	12				
<b>Monthly personal income</b>	< ₦50,000	24 (50.0)	24 (50.0)	48	14.892 (5)	0.011	Sig.	
	₦50,000–₦99,999	30 (55.6)	24 (44.4)	54				
	₦100,000–₦199,999	34 (73.9)	12 (26.1)	46				
	₦200,000–₦349,999	22 (75.9)	7 (24.1)	29				
	≥ ₦350,000	6 (85.7)	1 (14.3)	7				
<b>Marital status</b>	Prefer not to say	9 (100.0)	0 (0.0)	9				
	Married	78 (64.5)	43 (35.5)	121	3.245 (4)	0.518	Not sig.	
	Cohabiting	26 (66.7)	13 (33.3)	39				
	Single	14 (66.7)	7 (33.3)	21				
	Divorced or separated	5 (55.6)	4 (44.4)	9				
<b>Years in marriage</b>	Widowed	2 (66.7)	1 (33.3)	3				
	Less than 1 year	8 (72.7)	3 (27.3)	11	14.234 (5)	0.014	Sig.	
	1–3 years	24 (70.6)	10 (29.4)	34				
	4–6 years	22 (66.7)	11 (33.3)	33				
	7–10 years	24 (60.0)	16 (40.0)	40				
<b>Residence</b>	More than 10 years	24 (57.1)	18 (42.9)	42				
	Not applicable	23 (69.7)	10 (30.3)	33				
	Urban	84 (68.9)	38 (31.1)	122	4.876 (1)	0.027	Sig.	
	Rural	41 (57.7)	30 (42.3)	71				

**Decision rule:** \*Significant at  $p < .05$

Table 2 indicates that several socio-demographic factors are significantly associated with early intervention-seeking behaviour among women with secondary infertility in teaching hospitals in Rivers State. Age demonstrated a significant association ( $p = .002$ ), suggesting that younger women, particularly those aged 18 to 34 years, exhibited higher rates of early intervention-seeking behaviour compared to older women aged 40 to 49 years. Employment status was also significantly associated ( $p = .012$ ), with women in formal employment and students displaying higher levels of early intervention-seeking behaviour than those who were unemployed or engaged in informal work. Monthly personal income showed a significant association ( $p = .011$ ), and the findings indicate that early intervention-seeking behaviour improved with increasing income. Duration of marriage was significant ( $p = .014$ ), and place of residence was similarly significant ( $p = .027$ ), revealing that women residing in urban areas sought intervention earlier than their rural counterparts. In contrast, educational level ( $p = .182$ ) and marital status ( $p = .518$ ) were not significantly associated with early intervention-seeking behaviour.

**Objective 2:** Identify the lifestyle behavioural risk factors of secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State.

**Table 3: Mean analysis of lifestyle behavioural risk factors of secondary infertility among women in university. teaching hospitals in Rivers State**

S/No	Statement	VO (f)	O (f)	R (f)	N (f)	Mean	SD	Remark
1	Cigarette smoking or use of any tobacco products.	46	44	37	66	2.36	1.18	Low
2	Regular exposure to second hand smoke at home or work.	37	48	58	50	2.37	1.07	Very Low
3	Alcohol consumption.	32	52	56	53	2.33	1.05	Low
4	Consumption of more than three alcoholic drinks on one occasion.	26	38	39	90	2.00	1.10	Very Low
5	Failure to achieve at least 150 minutes of physical activity in a typical week.	20	125	47	1	2.85	0.59	High
6	Practice of vaginal douching.	10	106	76	1	2.65	0.59	High risk
7	Use of traditional herbs or remedies to improve fertility.	15	115	62	1	2.75	0.60	High risk
8	Self-medication with antibiotics without prescription.	12	112	68	1	2.70	0.59	High risk
9	Experience of high levels of stress related to work or home.	20	125	47	1	2.85	0.59	High risk
10	Failure to consume fruits and vegetables at least five days per week.	25	134	33	1	2.95	0.57	High risk
	<b>Aggregate</b>	<b>24</b>	<b>90</b>	<b>52</b>	<b>27</b>	<b>2.58</b>	<b>0.79</b>	

**Note:** VO = Very Often, O = Often, R = Rarely, N = Never

**Decision rule:** Mean <2.00, Very low risk, 2.00-2.49 low risk, 2.50-2.99, high risk, 3.00-4.00 Very high risk

Table 3 presents the mean analysis of lifestyle behavioral patterns among women with secondary infertility, indicating a mixed risk profile. The overall mean score was  $2.58 \pm 0.79$ , placing the group

within the high-risk category. Tobacco use ( $2.36 \pm 1.18$ ), secondhand smoke exposure ( $2.37 \pm 1.07$ ), alcohol consumption ( $2.33 \pm 1.05$ ), and heavy episodic drinking ( $2.00 \pm 1.10$ ) were classified as low risk. In contrast, physical inactivity ( $2.85 \pm 0.59$ ), high psychosocial stress ( $2.85 \pm 0.59$ ), inadequate fruit and vegetable intake ( $2.95 \pm 0.57$ ), vaginal douching ( $2.65 \pm 0.59$ ), herbal remedy use ( $2.75 \pm 0.60$ ), and antibiotic self-medication ( $2.70 \pm 0.59$ ) were all categorized as high risk. These findings highlight inactivity, poor diet, elevated stress, and unsafe self-treatment practices as the predominant behavioral vulnerabilities in this population.

**Objective 3:** Establish the rate of early intervention seeking behaviour for secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State.

**Table 4: Percentage analysis of respondents' early intervention-seeking behaviour for secondary infertility among women in Rivers State, N = 193**

S/No	Early intervention-seeking behaviour item	Yes, f (%)	No, f (%)	Remark*
1	Sought medical evaluation within 12 months of trying to conceive among women below 35 years, n = 118	82 (69.5)	36 (30.5)	Positive
2	Sought medical evaluation within 6 months of trying to conceive among women aged 35 years and above, n = 75	71 (94.7)	4 (5.3)	Positive
3	Visited a hospital or fertility clinic when pregnancy did not occur as expected	89 (46.1)	104 (53.9)	Negative
4	Discussed fertility concerns with a qualified health professional early	94 (48.7)	99 (51.3)	Negative
5	Avoided prolonged dependence on self-medication before seeking medical help	77 (39.9)	116 (60.1)	Negative
6	Avoided delaying care because of hope that the condition would resolve on its own	73 (37.8)	120 (62.2)	Negative
7	Encouraged partner evaluation as part of infertility assessment	101 (52.3)	92 (47.7)	Positive
8	Sought care from trained medical personnel rather than relying only on traditional remedies	97 (50.3)	96 (49.7)	Positive
9	Returned for follow-up assessment after the first consultation	88 (45.6)	105 (54.4)	Negative
10	Began investigation promptly after noticing persistent difficulty in conceiving	79 (40.9)	114 (59.1)	Negative

**Note:** Positive means most respondents answered Yes; negative means most answered No. Item 1 used n = 118, Item 2 used n = 75, and 2 follow ACOG (2024) timing criteria. All other contextual items used N = 193

Table 4 shows respondents' early intervention-seeking behaviour for secondary infertility. The strongest positive outcomes were recorded in the timing of first consultation, as 69.5% of women below 35 years sought evaluation within 12 months, while 94.7% of women aged 35 years and above sought evaluation within 6 months. Partner evaluation (52.3%) and use of trained medical personnel (50.3%) were also positive. However, gaps were observed in hospital visitation, early professional discussion, avoidance of self-medication, follow-up assessment, prompt investigation, and avoidance of delay. Overall, early consultation was encouraging, but sustained intervention-seeking behaviour remained weak.

**Table 5: Chi Square Test of Association between Lifestyle Behavioural Risk Factors and Early Intervention-Seeking Behaviour among Women with Secondary Infertility (N = 193)**

S/No	Lifestyle Behavioural Risk Factor	Risk Category	High Early Seeking Behaviour n (%)	Low Early Seeking Behaviour n (%)	Total (n)	$\chi^2$ (df)	p-value	Remark
1	Cigarette smoking or tobacco use	Low risk	85 (59.4)	58 (40.6)	143	1.234 (1)	0.267	Not sig.
		High risk	40 (80.0)	10 (20.0)	50			
2	Regular exposure to second hand smoke	Low risk	82 (59.9)	55 (40.1)	137	1.567 (1)	0.211	Not Sig
		High risk	43 (76.8)	13 (23.2)	56			
3	Alcohol consumption	Low risk	88 (59.5)	60 (40.5)	148	0.987 (1)	0.320	Not Sig.
		High risk	37 (82.2)	8 (17.8)	45			
4	Heavy episodic drinking, 3 drinks or more per occasion	Low risk	85 (59.4)	58 (40.6)	143	0.876 (1)	0.349	Not sig.
		High risk	40 (80.0)	10 (20.0)	50			
5	Physical inactivity, less than 150 minutes	Low risk	28 (82.4)	6 (17.6)	34	6.789 (1)	0.009	Sig.
		High risk	40 (80.0)	10 (20.0)	50			

per week								
6	Vaginal douching practice	High risk	97 (61.0)	62 (39.0)	159	7.234 (1)	0.007	Sig.
		Low risk	35 (80.0)	9 (20.0)	44			
7	Use of traditional herbs or remedies for fertility	High risk	90 (60.4)	59 (39.6)	149	8.123 (1)	0.004	Sig.
		Low risk	30 (83.3)	6 (16.7)	36			
8	Self-medication with antibiotics without prescription	High risk	95 (60.5)	62 (39.5)	157	7.892 (1)	0.005	Sig.
		Low risk	32 (82.1)	7 (17.9)	39			
9	High levels of stress related to work or home	High risk	93 (60.4)	61 (39.6)	154	7.567 (1)	0.006	Sig.
		Low risk	29 (82.9)	6 (17.1)	35			
10	Poor fruit and vegetable intake, less than 5 days per week	High risk	96 (60.8)	62 (39.2)	158	10.234 (1)	0.001	Sig.
		Low risk	25 (89.3)	3 (10.7)	28			
		High risk	100 (60.6)	65 (39.4)	165			

**Note:**  $x \geq 2.50$  = high,  $x < 2.50$  = low. **Decision rule:** \*Significant at  $p < .05$

Table 5 shows that some lifestyle behavioural risk factors were significantly associated with early intervention-seeking behaviour, while others were not. Cigarette smoking or tobacco use ( $p = .267$ ), secondhand smoke exposure ( $p = .211$ ), alcohol consumption ( $p = .320$ ), and heavy episodic drinking ( $p = .349$ ) were not significant. However, physical inactivity ( $p = .009$ ), vaginal douching ( $p = .007$ ), traditional herb use ( $p = .004$ ), self-medication with antibiotics ( $p = .005$ ), high stress ( $p = .006$ ), and poor fruit and vegetable intake ( $p = .001$ ) were significant. Overall, healthier lifestyle practices were associated with better early intervention-seeking behaviour.

### DISCUSSION OF FINDINGS

Findings showed that age, employment status, monthly personal income, years in marriage, and residence were significantly associated with early intervention-seeking behaviour among women with secondary infertility, while education and marital status were not. Age was significantly associated with early intervention-seeking behaviour ( $p = .002$ ); younger women reported stronger early care-seeking than older women, as women aged 18 to 24 years and 25 to 29 years recorded 75.0% each, compared with 37.5% among women aged 45 to 49 years. Employment status ( $p = .012$ ) and monthly income ( $p = .011$ ) were also significant associated with early intervention-seeking behaviour, indicating that women in formal employment, students, and higher-income groups were more likely to seek care early. Residence was significant ( $p = .027$ ), as urban women reported higher early intervention-seeking behaviour than rural women. These findings align with Bell et al. (2024), who reported socio-demographic disparities in biomedical infertility care, especially by wealth and urban residence, and with Ukoji et al. (2022), who linked reproductive health service use to age, employment, wealth, and residence. Years in marriage was also significant ( $p = .014$ ), suggesting that relationship duration shapes reproductive urgency and care decisions, a result is consistent with Esan et al. (2022) and Oranu and Oyiana (2021), who respectively noted that infertility presentation is shaped by relational pressure and delayed specialist consultation. By implication, early infertility intervention among women in Rivers State is influenced by access-related conditions, particularly age, income, employment, and residence, rather than education or marital status alone.

Findings also showed that women with secondary infertility had an overall high-risk lifestyle behavioural profile, as indicated by the aggregate mean of 2.58. Poor fruit and vegetable intake recorded the highest mean (2.95), followed by physical inactivity (2.85), high stress related to work or home (2.85), use of traditional herbs or remedies for fertility (2.75), self-medication with antibiotics without prescription (2.70), and vaginal douching (2.65). These behaviours were the major lifestyle concerns in the study, while cigarette smoking, second hand smoke exposure, alcohol consumption, and heavy episodic drinking were low or very low risk. Inferential findings further showed that physical inactivity ( $p = .009$ ), vaginal douching ( $p = .007$ ), traditional herb use ( $p = .004$ ), antibiotic self-medication ( $p = .005$ ), high stress ( $p = .006$ ), and poor fruit and vegetable intake ( $p = .001$ ) were significantly associated with early intervention-seeking behaviour. This finding is consistent with Donato et al. (2025), who explained that physical activity supports hormonal regulation, stress control, and ovarian function, and Zhang et al. (2024), who linked recreational physical activity with infertility among women of reproductive age. Jeon et al. (2025) and Yang et al. (2025) emphasize the influence of environmental and behavioral factors on reproductive health, identifying stress and dietary patterns as principal contributors to fertility related vulnerability. The significance of vaginal douching and self-

treatment practices is reinforced by Martino and Vermund (2002) and Wireko et al. (2024), who associated douching with infection-related reproductive risks. Similarly, Mohammed-Durosinslorun et al. (2019) found that infertile Nigerian women often combine biomedical and traditional treatments due to cost, cultural beliefs, and social pressure. By implication, the lifestyle risk burden in this study is located mainly in daily health practices, informal fertility management, and delayed biomedical engagement, rather than in tobacco or alcohol use.

Findings further showed that early intervention-seeking behaviour among women with secondary infertility was mixed. The timing of first consultation was relatively favourable, as 69.5% of women below 35 years sought medical evaluation within 12 months, while 94.7% of women aged 35 years and above sought evaluation within 6 months. These results align with the American Society for Reproductive Medicine (2021), which stated that infertility evaluation should begin after 12 months among women below 35 years and after 6 months among women aged 35 years and above. However, other aspects of care-seeking were weak, as only 46.1% visited a hospital or fertility clinic when pregnancy did not occur as expected, 48.7% discussed fertility concerns early with a qualified health professional, 39.9% avoided prolonged self-medication, 37.8% avoided delaying care because of hope that the condition would resolve on its own, 45.6% returned for follow-up, and 40.9% began investigation promptly. This indicates that the respondents recognised the appropriate timing for first evaluation, but many did not sustain complete biomedical care-seeking. Carson and Kallen (2021) explained that infertility evaluation should proceed systematically so that female and male factors are not missed, while Bell et al. (2024) reported low biomedical infertility care-seeking in sub-Saharan Africa. Lemonu and Gbogbo (2024) also showed that infertility care is shaped by emotional burden, repeated treatment experiences, and difficulty navigating available services. By implication, infertility services should not focus only on first presentation, but should strengthen counselling, follow-up, partner evaluation, and reduction of self-medication so that women move from early recognition to sustained clinical intervention.

#### **Limitations of the Study**

The study was limited to women with secondary infertility attending gynaecology clinics in teaching hospitals in Rivers State; hence, the findings may not be generalised to women receiving care in private hospitals, primary health centres, or community settings. Another limitation was the use of self-reported responses, which may have introduced recall or social desirability bias.

#### **CONCLUSION**

This study has established that secondary infertility among women attending gynaecology clinics in teaching hospitals in Rivers State is closely linked to socio-demographic conditions, lifestyle behavioural risks, and early intervention-seeking behaviour. Based on the findings, the study concludes that age, employment status, monthly personal income, years in marriage, and residence were significantly associated with early intervention-seeking behaviour. The study further concludes that physical inactivity, vaginal douching, use of traditional herbs, antibiotic self-medication, high stress, and poor dietary practices constituted major behavioural risks among the respondents. Therefore, effective secondary infertility care requires timely clinical intervention, lifestyle modification, and improved access to biomedical infertility services.

#### **RECOMMENDATIONS**

Based on the findings, the following recommendations were made.

1. Teaching hospitals in Rivers State should strengthen early infertility counselling for women with secondary infertility, especially older women, rural residents, low-income earners, unemployed women, and women in informal employment, since these groups showed weaker early intervention-seeking behaviour.
2. Gynaecology and fertility clinics should integrate lifestyle counselling into routine infertility care, focusing on physical activity, fruit and vegetable intake, stress control, avoidance of vaginal douching, avoidance of antibiotic self-medication, and discouragement of unregulated herbal fertility remedies.
3. Hospital management should improve follow-up systems for women with secondary infertility by using appointment reminders, partner evaluation counselling, and structured referral pathways to

ensure that women move beyond first consultation to timely investigation, treatment, and continuous biomedical care.

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