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Research Article

Determinants of Family Planning Method Mix in Rural Sub-Saharan Africa: Understanding Barriers, Preferences, and Drivers of Choice

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Abstract

Background: Family Planning (FP) played a crucial role in enhancing reproductive health outcomes, yet significant barriers persisted in accessing a comprehensive method mix in Bayelsa State, Nigeria. Sociocultural norms, economic constraints, and logistical challenges often inhibited individuals' and couples' ability to utilize desired contraceptive methods, leading to high rates of unmet need and unintended pregnancies.

Objective: This study aimed to investigate the determinants of family planning method mix in Bayelsa State, focusing on the barriers, preferences, and drivers of contraceptive choices among individuals and couples.

Methods: A cross-sectional design was employed, utilizing a mixed-methods approach using structured questionnaires. The target population comprised of women of reproductive age (15-49 years) as well as key community stakeholders. Data were collected on sociodemographic characteristics, contraceptive methods used, barriers to access, and preferences for family planning. Statistical analyses, including chi-square tests and logistic regression, were conducted to assess associations and predictors of contraceptive use and satisfaction.

Results: The study surveyed 430 participants, revealing a predominance of short-acting contraceptives (66%) over long-acting methods (34%). Significant barriers to FP uptake included social and cultural factors (27%), time constraints (21%), and limited availability of commodities (11%). Preferences for family planning methods were primarily influenced by effectiveness (22%) and ease of use (19%). Statistical analyses indicated significant associations between marital status, decision-making dynamics, and contraceptive use, with a p-value of 0.0011. Logistic regression highlighted factors influencing users' satisfaction, including the presence of myths and beliefs about FP methods.

Conclusion: The findings underscored the need for targeted interventions that address sociocultural, economic, and logistical barriers to enhance access to a comprehensive family planning method mix. By tailoring programs to the specific preferences and needs of diverse demographic groups, stakeholders could improve reproductive health outcomes and reduce the incidence of unintended pregnancies in Bayelsa State.

Keywords: Barriers; Contraceptive use; Family planning; Method mix; Preferences, Reproductive health

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Introduction

Background

Family Planning (FP) was a central component of global reproductive health, enabling individuals and couples to anticipate and achieve their desired family size, protect maternal and child health, and contribute to broader social and economic development. The global evidence-base consistently showed that access to a comprehensive method mix, high-quality counseling, confidentiality, affordability, and youth-friendly services were fundamental to increasing contraceptive use and reducing unintended pregnancies, which, in turn, were associated with improved maternal and child outcomes, reduced infant mortality, and expanded educational and economic opportunities for women. The demand for FP was shaped by a constellation of factors at the individual, relational, community, and structural levels. Individual knowledge, attitudes toward contraception, perceived risks and benefits, and levels of autonomy in decision-making influenced whether people sought information, initiated use, and sustained their chosen method. Partner dynamics, including communication, negotiation power, and male involvement, could either facilitate or hinder contraceptive uptake, depending on how couples navigated gender norms and their reproductive goals. Social and cultural contexts, such as religious beliefs, community expectations, and broader sociocultural norms around sexuality and fertility, strongly modulated acceptability and use, particularly for adolescents and unmarried individuals who often faced heightened stigma [1-3]. On the supply side, the availability of a full method mix, quality of counseling, confidentiality protections, geographic accessibility, and cost of services collectively determined not only whether people started using contraception but also whether they would continue to use it over time. Stockouts of commodities, stockouts of trained personnel, and supply chain weaknesses undermined trust in services and contributed to discontinuation

or inconsistent use [4]. High-quality FP services were often characterized by respectful, non-coercive counseling that supported informed choice, provided accurate information about side effects and method characteristics, and offered follow-up and management of adverse events. Youth-friendly approaches-ensuring privacy, appropriate clinic hours, confidentiality, and information that was relevant to adolescents' lives-were particularly important for engaging young people who faced unique barriers and risks, including higher rates of unintended pregnancies in many settings. Financing and policy environments profoundly influenced FP uptake. Policy coherence across sectors-health, education, social protection, and gender equality-supported comprehensive strategies that addressed not only access to contraception but also the broader determinants of reproductive health, including empowerment and education. Evidence consistently indicated that demand-generation efforts, when combined with reliable supply and quality care, yielded more substantial and durable increases in modern contraceptive use than isolated components. Programs that emphasized Long-Acting Reversible Contraceptives (LARC) alongside short-acting methods tended to expand choice and reduce discontinuation due to dissatisfaction. However, the distribution of methods had to reflect user preferences and be supported by competent counseling regarding effectiveness, side effects, and suitability for different life stages. Digital health innovations-ranging from mobile information campaigns and appointment reminders to telemedicine-based counseling and e-tools for method selection-offered opportunities to expand reach, particularly for remote populations and adolescents [5]. These technologies could reduce barriers related to distance, stigma, and privacy but required careful attention to digital literacy, data security, and equitable access to avoid widening existing gaps. The global policy landscape emphasized the alignment of FP with universal health coverage and sexual and reproductive health and rights, including the provision of a broad method mix, access to safe abortion where it was legal, and age-appropriate education. Additionally, the global FP conversation supported a holistic, rights-based, and equity-focused approach that combined access to a full method mix, high-quality client-centred care, gender-responsive programming, and health system strengthening to expand reach and sustain improvements. Translating these insights into practice required context-sensitive adaptation, ongoing community engagement, reliable supply chains, and robust data systems to monitor progress and adjust strategies in response to changing population needs. Bayelsa State, Nigeria, offered a subnational lens through which global FP principles could be contextualized. It's environmental, sociocultural, and health system landscapes presented both opportunities and challenges for expanding FP. Bayelsa's population was youthful, with fertility pressures that necessitated accessible services and a broad mix of methods. Geographic dispersion and limited health infrastructure in some local government areas introduced access barriers, making decentralized service delivery and mobile outreach particularly relevant. Supply chain fragility and occasional stockouts highlighted the need for strengthened procurement, inventory management, and predictable funding to ensure the consistent availability of contraception, including LARC. Sociocultural norms surrounding family size, gender roles, and fertility timing influenced client demand and uptake, underscoring the importance of culturally sensitive counseling, community engagement with faith-based and traditional leaders, and strategies that respected local values while promoting voluntary informed choice. Adolescent and youth FP required tailored approaches that addressed privacy, confidentiality, and safety in environments that had heightened stigma while ensuring that education on sexual and reproductive health was age-appropriate and culturally aligned. Data gaps at the state level, such as up-to-date prevalence, method mix by locality, and qualitative insights into decision-making processes, limited precise policy tailoring and program design, emphasizing the need for subnational surveillance, routine data collection, and mixed-methods research to capture the heterogeneity across Bayelsa's urban and rural communities. Furthermore, unintended pregnancies were widely recognized as a crucial indicator of reproductive health and a key outcome affected by the availability, quality, and social context of Family Planning (FP) services; in summation, the global evidence base consistently linked higher levels of FP access, a broad method mix, and high-quality, rights-based counseling with reductions in unintended pregnancies, improved maternal and child health, and broader social and economic gains, while gaps in coverage, affordability, stigma, and sociocultural barriers maintained substantial unmet need across many settings [6]. At the core of this conversation was the recognition that FP was not simply about providing contraception but about enabling voluntary, informed, and sustained reproductive choices within a supportive health system and sociocultural environment. Studies repeatedly showed that when individuals and couples had knowledge of a wide range of methods, clear information about effectiveness and side effects, and access to confidential, youth-friendly, affordable services, contraceptive uptake increased and the likelihood of unintended pregnancies declined, although disparities persisted by age, education, wealth, urbanicity, and geographic location. The demand for FP was shaped by an interplay of individual knowledge, beliefs about fertility and contraception, partner communication, gender norms, and perceived autonomy. Women and adolescents often faced barriers related to stigma, fear of side effects, or anticipated disapproval from partners or family, all of which could influence initiation, continuation, and method switching. These dynamics were frequently reinforced or mitigated by broader sociocultural and religious contexts that either supported or constrained reproductive choices. On the supply side, the availability of a full method mix, quality of counseling, confidentiality of services, and overall user experience-along with practical factors such as costs, wait times, and geographic accessibility-played crucial roles in whether individuals could act on their intentions. Stockouts and supply chain weaknesses undermined trust in FP programs and contributed to unintended pregnancies when feasible options were temporarily unavailable, while well-managed supply chains and client-centered care promoted sustained use and planning. The integration of FP with other health services-most notably maternal and child health, HIV prevention and treatment, and general primary care-emerged as a central strategy to improve access, reduce fragmentation of care, and create multiple touchpoints for counseling and method provision; such integration could normalize FP as part of routine health maintenance rather than a standalone intervention, though it required coordinated governance, compatible data systems, and cross-training of providers to ensure consistent messaging and quality [7]. Equity considerations were central to the conversation, with persistent disparities observed among adolescents, unmarried individuals, people with lower socioeconomic status, rural residents, people with disabilities, and those living in humanitarian or fragile settings. Addressing these inequities often demanded targeted outreach, culturally competent communication, privacy protections, and services that respected rights and autonomy while accommodating diverse needs and life stages. The evidence base also emphasized the importance of addressing gender norms and power dynamics through gender-transformative approaches that involved both women and men in dialogues about shared

decision-making and respectful partnerships, as coercive or inequitable norms could severely curtail voluntary FP use and elevate the risk of unintended pregnancies; programs that successfully engaged men and fostered supportive environments for women tended to show enhanced uptake and continuity when these strategies were implemented in ways that preserved autonomy and avoided coercion [8]. Adolescent and youth programming remained a critical frontier, with research indicating that comprehensive sexuality education, supportive school and community environments, and confidential clinic access could delay first pregnancies and increase the likelihood of using modern contraception among young people, provided that interventions were developmentally appropriate, evidence-based, and respectful of family and cultural contexts. Policy environments and financing schemes shaped both the supply and demand for FP and thereby influenced unintended pregnancy outcomes; notably, public funding and affordable services were associated with higher contraceptive use and lower unintended pregnancy, whereas user fees, supply interruptions, or restrictive policies could impede access and worsen inequities; accountability mechanisms, performance incentives, and transparent governance for FP programs were critical to sustaining gains and ensuring that services met the needs of marginalized populations [9]. From a methodological standpoint, a growing portion of the conversation advocated for multilevel approaches that considered individual, interpersonal, community, and health system factors, recognizing that decisions about contraception were not made in a vacuum but were embedded within social networks and structural constraints; accordingly, interventions that combined high-quality counseling, a diverse method mix, supportive community norms, and resilient health systems tended to yield the largest and most durable reductions in unintended pregnancy [10]. In synthesizing global insights with local relevance, it was essential to acknowledge that context mattered: subnational variation in culture, governance, health infrastructure, and population dynamics meant that successful FP and unintended pregnancy reduction strategies required tailoring to local realities, including alignment with cultural values, engagement with trusted community leaders, and investment in data systems that could monitor disparities and guide adaptive management. Ultimately, the conversation converged on the conclusion that unintended pregnancies were largely preventable through comprehensive, rights-based, equity-focused FP programs that ensured universal access to a complete method mix, high-quality counseling, respectful and confidential care, and integrated service delivery within strong health systems, with sustained political commitment, predictable financing, and participatory, evidence-informed planning required to translate global lessons into tangible improvements for individuals, families and communities. Unmet need for family planning remained a persistent challenge across diverse settings, representing a gap between individuals' reproductive intentions and their actual contraceptive use. Global evidence consistently showed that unmet need was shaped by a complex interplay of demand-side factors, supply-side barriers, and broader sociopolitical contexts, with far-reaching implications for maternal health, child outcomes, and gender equity. On the demand side, gaps in knowledge about contraception, misperceptions about fertility, fear of side effects, and concerns about privacy or stigma suppressed contraceptive demand even among individuals who wished to space or limit births. These cognitive and perceptual barriers were often intensified by low health literacy, limited exposure to comprehensive sexuality education, and cultural or religious beliefs that valorized larger families or discouraged the use of modern methods. In addition, partner dynamics and gender norms frequently restricted autonomous decision-making, as women depended on male approval or experienced coercive practices that discouraged the facilitation of contraception. Adolescents and unmarried individuals faced heightened barriers due to stigma, family surveillance, or concerns about community judgment, leading to higher unmet needs in these groups. On the supply side, access barriers such as stockouts of commodities, inconvenient clinic hours, geographic inaccessibility, and long wait times impeded the ability to translate intention into use. Quality-related factors-including perceived provider bias, insufficient counseling on method effectiveness and side effects, and lack of youth-friendly, confidential services-contributed to discontinuation or reluctance to initiate contraception, thereby sustaining unmet need. Financial barriers, including user fees or indirect costs (transport, time away from work or school), disproportionately affected rural, low-income, and marginalized populations, compounding existing inequities and limiting equitable access to a full method mix, including Long-Acting Reversible Contraceptives (LARCs), which often had higher upfront costs but lower long-term costs per pregnancy averted [9]. Health system constraints, such as weak supply chains, underdeveloped data systems, and limited integration of family planning with other health services, hampered continuity of care and the ability to reach those with unmet needs through multiple touchpoints. Integrated service delivery, when well-implemented, could reduce barriers by offering family planning within obstetric and postnatal care, HIV services, and primary health care, thereby normalizing use and expanding reach. However, it required coordinated governance, interoperable data, and workforce capacity to maintain quality across settings. Contextual factors, including urban-rural disparities, conflict and displacement, humanitarian crises, and migration patterns, influenced unmet needs by altering access, demand, and priority-setting within health systems, with crises often compounding vulnerabilities and disrupting supply chains while elevating the importance of adaptable, community-based strategies and resilience planning. Equity considerations were central to understanding unmet need, as marginalized groups-adolescents, unmarried women, people with disabilities, those living in poverty, and ethnic or religious minorities-often experienced higher levels of unmet need due to compounded barriers across demand and supply dimensions. Research emphasized the importance of rights-based, non-coercive approaches, community engagement, and targeted outreach to identify and address specific constraints faced by these populations [8]. Policies and financing played crucial roles; when governments committed to family planning as part of universal health coverage, provided subsidized or free services, and implemented supportive procurement and pricing strategies, unmet need tended to decline. In contrast, user fees, restrictive policies, or inconsistent funding perpetuated gaps in access and equity. Behavioural and social science perspectives contributed to understanding unmet need by highlighting how intentions interacted with social networks, cultural norms, and perceived behavioural control, which influenced both the desire to use contraception and the perceived feasibility of doing so. Thus, interventions that aligned with local norms while promoting autonomous choice-such as community mobilization, peer education, and mass media campaigns tailored to language and culture-were more likely to translate demand into sustained use. The role of adolescents and youth was particularly salient, given that early sexual initiation, limited access to confidential services, and school- or work-related constraints elevated unmet needs in younger populations. Comprehensive sexuality education, youth-friendly clinics, and non-judgmental counseling were critical components of strategies designed to reduce unmet needs among this group. Finally, the

translation of evidence into action required robust monitoring and evaluation, participatory planning with communities, and accountability mechanisms to ensure that family planning programs responded to evolving needs, tracked progress toward reducing unmet needs, and addressed persistent inequities. Synthesizing these strands suggested that reducing unmet needs hinged on delivering a full method mix through affordable, accessible, high-quality, rights-based services; integrating family planning with related health and development sectors; implementing culturally sensitive, equity-focused outreach to marginalized populations; and maintaining resilient health systems supported by transparent financing and data-driven, participatory planning-an approach that held promise for minimizing unmet needs and advancing reproductive health and rights globally. Method mix and user preferences in family planning were central to understanding how individuals and couples translated reproductive intentions into actual use. Evidence consistently showed that a broad, well-matched method mix paired with informed, non-coercive counseling enhanced satisfaction, continuation, and overall reproductive health outcomes across diverse settings. At the global level, expanded access to a range of contraceptive options-from Long-Acting Reversible Contraceptives (LARCs) such as intrauterine devices and implants to short-acting methods like pills, injectables, patches, rings, condoms, and fertility-awareness-based approaches-enabled individuals to select methods that aligned with their life stage, health considerations, partner dynamics, and personal preferences, while reducing discontinuation driven by side effects or dissatisfaction [11,12]. Preferences for specific methods were shaped by a constellation of factors including effectiveness, convenience, cost, accessibility, side effect profiles, reversibility, and compatibility with sexual and reproductive life plans. Client-centred counseling that presented unbiased information about benefits, risks, and failure rates supported informed choice, but the quality and depth of counseling significantly influenced perceived and actual method satisfaction, continuation, and eventual switching when circumstances or preferences changed. Demographic and psychosocial factors, such as age, parity, prior contraception experience, education level, cultural norms, and gender dynamics, influenced method preference and uptake, with younger or nulliparous individuals sometimes favouring methods perceived as more discreet or controllable, while older individuals or those with children preferred longer-acting, maintenance-free options. However, preferences were not static and could evolve with life events, relationship changes, and shifts in health status, necessitating ongoing counseling and routine opportunities for method reassessment. The role of health systems in shaping method mix was multifaceted: procurement policies, supply chain reliability, and the affordability of different methods determined what options were realistically available to clients, while provider biases, knowledge gaps, and workload influenced which methods were emphasized during counseling, potentially limiting choice if certain methods were undersold or not offered due to personal beliefs or logistic constraints [13]. Equity considerations were critical when examining method mix; marginalized groups-such as adolescents, unmarried individuals, rural residents, and people with disabilities-faced barriers to accessing a full method mix, either because of cost, stigma, or provider reluctance to discuss certain options in culturally sensitive ways. This underscored the need for youth-friendly services, community outreach, and policies that ensured universal access to a complete range of contraceptives regardless of age, marital status, or geographic location. The conversation also highlighted the importance of method satisfaction and user experience; successful programs reported that when clients were engaged in shared decision-making, received personalized information, and had access to follow-up support for managing side effects or method failures, continuation rates improved and the likelihood of method switching in response to changing needs increased, contributing to more effective fertility planning and better health outcomes. In addition, the integration of family planning with other health services-such as antenatal and postnatal care, HIV services, and primary care-could influence method mix by normalizing contraception within routine care, reducing stigma associated with seeking family planning, and expanding opportunities for provider-initiated counseling and method provision at multiple touchpoints. This integrated approach supported the alignment of method choice with broader health goals and life-course needs. The available literature also recognized the potential and challenges of expanding method mix through innovations like self-care and user-controlled options, digital decision aids, and telehealth-based counseling, which could empower users to explore various methods privately and at their own pace. However, these innovations needed to address concerns about digital literacy, privacy, data security, and equitable access to avoid deepening disparities. Policy and financing structures played a pivotal role in shaping method mix availability; publicly funded procurement, subsidies, and removal of user fees generally correlated with broader method portfolios in use, while restrictive policies, inconsistent funding, or supply interruptions constrained the repertoire offered to clients, limiting autonomy and choice. Method preference increasingly emphasized patient-centered outcomes, including method satisfaction, perceived control, and alignment with life goals, recognizing that preferences were dynamic and culturally contextual. Thus, health services needed to implement routine preference elicitation, offer decision aids, and ensure that providers presented balanced information free from coercive insinuations or gendered expectations. Globally, the trend toward a complete, rights-based, and user-informed method mix aligned with the broader objectives of universal health coverage and reproductive autonomy, suggesting that programs yielding the strongest results were those that coupled a diverse method range with high-quality counseling, affordable access, and systems that supported ongoing client engagement, monitoring, and adaptation to evolving needs. Within subnational contexts, such as Bayelsa State in Nigeria, these principles translated into practical imperatives: ensuring equitable access to a full spectrum of methods across urban and rural facilities, addressing supply chain fragility to prevent stockouts of popular and low-cost options, training providers to competently counsel on all method options with attention to local cultural considerations, and actively engaging communities, youth, and men in conversations about preferences and autonomy to reduce barriers and stigma. The success of such efforts hinged on reliable funding, governance that prioritized reproductive health, and data-driven feedback loops that captured variation in method uptake and satisfaction across different populations, enabling targeted improvements while preserving informed choice. Sociocultural, economic, and logistical barriers and drivers of choices in family planning operated within an interconnected ecosystem, where individuals' reproductive decisions were shaped by beliefs, resources, and access, yielding diverse patterns of uptake, continuation, and satisfaction with services across settings. On the sociocultural front, deeply held norms about fertility, gender roles, and motherhood influenced which contraceptive options were considered acceptable, who made decisions about timing and method choice, and how openly couples discussed family planning; in many contexts, expectations surrounding childbearing, family honor, religious prescriptions, and community surveillance could either constrain autonomy or motivate uptake

when family planning was framed as compatible with social values and provided through trusted community channels. Stigma surrounding adolescent sexuality or unmarried pregnancy often suppressed knowledge-seeking and access to confidential services, while supportive cultural narratives that valued women's health, maternal autonomy, and male involvement in joint decision-making enhanced demand and sustained use [14-16]; social networks, including peers, partners, parents, and religious leaders, frequently served as information conduits and legitimacy sources, shaping perceptions of method safety, reliability, and appropriateness for different life stages. Economic conditions profoundly affected affordability and choices; direct costs such as user fees, transport, and time away from work or caregiving responsibilities interacted with indirect costs to create real or perceived financial barriers, especially for low-income individuals and those in rural or informal sectors; conversely, programs that reduced out-of-pocket expenses, provided subsidies, or integrated family planning with broader social protection or maternal health services expanded access and enabled long-term planning; economic constraints also influenced method preference, as some individuals opted for low-cost, readily available options while others prioritized longer-acting methods that reduced ongoing costs and time commitments, provided they had credible information about efficacy, side effects, and reversibility [17]. Logistical barriers-such as stockouts, supply chain disruptions, clinic hours that did not align with work or school schedules, long travel distances, and wait times-directly impeded the ability to translate intention into action; these constraints were often more acute in rural, conflict-affected, or underserved urban areas, where health facility density was low and transportation infrastructure was weak; health system fragmentation, including lack of integration between family planning and other services, could create cumbersome patient pathways that deterred continued use and diminished opportunities for method switching when needs changed [18,19]. Conversely, drivers of choice emerged from improvements in service delivery quality, accessibility, and relevance; client-centered counseling that presented a full method mix, discussed side effects honestly, and supported shared decision-making enhanced satisfaction, persistence, and alignment with personal life plans; confidentiality and youth-friendly services reduced fears about stigma and inspection, encouraging adolescents and unmarried individuals to seek information and consider contraception discreetly; when family planning was offered through integrated platforms-such as maternal, newborn, and child health services, HIV services, or primary care-clients experienced fewer barriers to access, more touchpoints for information, and a more normalized view of contraception as part of routine health maintenance. The role of information and literacy was pivotal; accurate, comprehensible, and culturally tailored messaging about available methods, effectiveness, and potential adverse effects empowered choices and could counter misinformation, whereas misinformation and myths about fertility, hormonal risks, and long-term health consequences could entrench fears and deter utilization. Digital information channels, mobile reminders, and telehealth counseling held promise for expanding reach and supporting informed choices, although they had to be designed to avoid excluding those with limited digital access or low health literacy. Gender dynamics and power relations consistently appeared as central determinants; women's autonomy to seek, select, and continue contraception was shaped by partner involvement, negotiation capacity, and potential coercive pressures, underscoring the need for gender-transformative approaches that promoted equitable decision-making while safeguarding voluntariness and informed consent; engaging men as supportive partners, promoting shared decision-making within couples, and addressing intimate partner violence proved potent strategies when implemented with sensitivity to context and without reinforcing gender hierarchies. Adolescents and young people constituted a particularly salient subgroup; their needs intersected with legal frameworks, education systems, and family norms, so programs that combined comprehensive sexuality education, confidential youth-friendly services, and safe environments for service utilization tended to improve knowledge, reduce delays in uptake, and support healthier reproductive trajectories, provided adolescents' rights to privacy and informed choice were respected. The social determinants of health-education, employment, housing, and social capital-also shaped family planning choices; higher educational attainment often correlated with greater knowledge and empowerment to negotiate contraception, while precarious employment or unstable housing could constrain consistent access and adherence, highlighting the importance of multi-sectoral policies that integrated family planning with education, economic opportunity, and social protection [1,2,20]. Cultural adaptation proved essential for program effectiveness; interventions that resonated with local beliefs, used credible messengers, and involved community leaders could reduce resistance and build trust, whereas misaligned messaging risked backlash and perceived normative intrusion; thus, participatory planning and ongoing community feedback were critical to align family planning services with values while preserving rights-based principles. Supply-side innovations, including task-shifting, provider training, and commodity security improvements, could expand the feasible method mix and improve counseling quality, particularly in resource-constrained settings; however, sustainable impact required stable funding, accountability, and capacity development to maintain quality and equity over time. Finally, monitoring and evaluation played a crucial role in understanding barriers and drivers across populations; disaggregated data by age, gender, residence, education, and socioeconomic status, along with qualitative investigations into local beliefs and experiences, illuminated how sociocultural, economic, and logistical factors interacted to shape choices and outcomes, enabling policymakers and practitioners to tailor interventions that were respectful, effective, and scalable. In summation, decisions about family planning were seldom determined by several factors; they emerged from the dynamic interplay of sociocultural norms, economic realities, and logistical capabilities, requiring holistic, rights-based, and context-responsive approaches that addressed all three dimensions simultaneously to expand informed choice, reduce unmet need, and strengthen reproductive health and equity across diverse populations [21].

Statement of Problem

In Bayelsa State, the determinants of family planning method mix were marked by a complex interplay of barriers, preferences, and drivers that influenced individuals' and couples' reproductive choices. Despite the acknowledged importance of family planning in improving maternal and child health outcomes, significant challenges persisted. Access to a diverse range of contraceptive methods was hindered by sociocultural norms, economic constraints, and logistical barriers, which collectively contributed to a high level of unmet need for family planning services. Historically, sociocultural factors such as deeply ingrained beliefs about gender roles and family size, as well as stigma surrounding contraceptive use, particularly among adolescents and unmarried individuals, restricted open discussions about family planning. These norms often dictated who had the agency to make decisions regarding reproductive health, thereby limiting

women's autonomy and perpetuating gender inequalities. Economically, many residents faced financial barriers that impeded access to family planning services. User fees, transportation costs, and the indirect expenses associated with seeking care created significant obstacles, particularly for those in rural and underserved areas. The lack of affordable, high-quality family planning services further exacerbated these issues, leaving many individuals unable to act on their reproductive intentions. Logistical challenges, including stockouts of contraceptive supplies, inconvenient clinic hours, and geographic inaccessibility, compounded the difficulties in obtaining desired methods of contraception. The fragmentation of health services and the inadequate integration of family planning into broader health programs further limited opportunities for individuals to access comprehensive care. As a result of these intertwined barriers, preferences for specific family planning methods often remained unfulfilled, leading to inconsistent contraceptive use and ultimately contributing to higher rates of unintended pregnancies in the region. Consequently, understanding the determinants of family planning method mix in Bayelsa State was crucial for developing effective, context-sensitive strategies that could enhance access, satisfaction, and overall reproductive health outcomes for the population.

General Objective

To investigate the determinants of family planning method mix in Bayelsa State, with a focus on understanding the barriers, preferences, and drivers of choices among individuals and couples regarding family planning services.

Specific Objectives

a. To identify and analyze the sociocultural, economic, and logistical barriers that inhibit access to a comprehensive family planning method mix in Bayelsa State.

b. To examine preferences for different family planning methods among diverse demographic groups, including adolescents, married couples, and unmarried individuals, and how these preferences influence their contraceptive choices.

c. To determine the key drivers that influence the decision-making process regarding family planning methods, including individual knowledge, partner dynamics, and community norms.

d. To evaluate the impact of counseling quality, confidentiality, and service accessibility on the uptake and continuation of various family planning methods.

e. To assess the level of knowledge and awareness of family planning methods among different populations and identify gaps that might hinder informed decision-making.

f. To propose evidence-based recommendations for improving family planning service delivery, addressing identified barriers, and enhancing users' satisfaction with the available methods in Bayelsa State.

Significance of the Study

The significance of this study laid in its potential to address critical gaps in knowledge and practice related to family planning within the unique sociocultural and economic context of Bayelsa State. With a youthful and rapidly growing population, Bayelsa faced pressing challenges associated with high fertility rates and unintended pregnancies that could adversely affect maternal and child health outcomes, educational attainment, and economic development. By investigating the specific barriers that individuals and couples encountered when seeking family planning services, as well as their preferences and the factors that drove their choices, this study aimed to provide a nuanced understanding of the local dynamics influencing contraceptive uptake and method satisfaction. Given Bayelsa's diverse cultural landscape, where traditional beliefs and gender norms often intersected with modern family planning practices, this study would significantly contributed to the body of knowledge in the state. The study offered insights into how sociocultural attitudes, economic constraints, and logistical barriers shaped reproductive choices, thereby informing the development of targeted, culturally sensitive interventions that enhanced access to a comprehensive method mix. Furthermore, the findings were instrumental for policymakers, healthcare providers, and community leaders in designing effective family planning programs that responded to the specific needs of Bayelsa's diverse populations, particularly marginalized groups such as adolescents and unmarried individuals, who frequently faced heightened stigma and access challenges. Ultimately, this research advanced academic discourse on family planning in Nigeria and served as a valuable resource for fostering informed decision-making, enhancing service delivery, and promoting reproductive health equity in Bayelsa State.

Scope and Limitation of the Study

Scope of Study: The scope of this study focused on the determinants of the family planning method mix in Bayelsa State, Nigeria. Specifically, it aimed to explore the barriers, preferences, and drivers of choice that influenced contraceptive method selection among women of reproductive age. This study encompassed the following:

Target Population: The research involved current users of family planning methods, including various demographic groups such as adolescents, married, and unmarried women in Bayelsa State.

Data Collection Methods: This study employed a mixed-methods approach, utilizing cross-sectional surveys to gather qualitative data on family planning practices.

Focus Areas

- The current distribution and prevalence of various family planning methods utilized in the state, including long-acting reversible contraceptives (LARCs), short-acting methods, and permanent solutions, were examined.
- Sociodemographic factors that influenced contraceptive choices included age, education level, marital status, and socioeconomic status.
- Identification of barriers to accessing family planning services, including cultural beliefs, stigma, economic challenges, and logistical issues.
- Exploration of personal preferences regarding family planning methods, including perceptions of effectiveness, safety, and convenience.
- The role of healthcare providers and community attitudes in shaping the method mix of family planning options available in Bayelsa State.

Limitations of the Study

While this study aimed to provide valuable insights into the family planning method mix in Bayelsa State, certain limitations affected the outcomes.

Sample Size and Representativeness: The findings were limited by the sample size and participants selection. If the sample was not representative of the broader population, the results might not have accurately reflected the contraceptive preferences and barriers experienced by all women in the state.

Self-Reported Data: The reliance on self-reported data might have introduced biases, as participants might have underreported or overreported their use of family planning methods due to social desirability or stigma associated with certain methods.

Cultural Sensitivity: Given the cultural context of Bayelsa State, sensitive topics such as family planning might have led to reluctance among participants to share their true opinions or experiences, potentially affecting the depth and authenticity of the qualitative data collected.

Temporal Context: Changes in political, economic, or health system dynamics over time might have influenced family planning practices. Therefore, the study's findings might have been limited to the specific time frame of data collection and might not have accounted for future developments or shifts in attitudes.

Healthcare Infrastructure Variability: The availability and accessibility of family planning services might have varied significantly across different locations in Bayelsa State. This variability might have impacted the generalizability of the findings to the entire state.

Focus on Women: While the study primarily targeted women of reproductive age, it might have overlooked the perspectives of male partners and other stakeholders who played a crucial role in family planning decisions.

Resource Constraints: Limited funding and resources might have restricted the breadth of data collection methods or the geographical coverage of the study, potentially affecting the comprehensiveness of the findings. By acknowledging these limitations, this study aimed to provide a nuanced understanding of the family planning method mix in Bayelsa State while recognizing the contextual factors that might have influenced the results.

Methods

Study Design

The study on the determinants of family planning method mix in Bayelsa State employed a cross-sectional design, utilizing quantitative research methods to gather comprehensive data on the barriers, preferences, and drivers of contraceptive choices among women of reproductive age. This approach allowed for a thorough exploration of the factors influencing family planning behaviours within the unique sociocultural context of Bayelsa State.

Cross-Sectional Survey

Target Population: The primary target population comprised women of reproductive age (15-49 years), including current users of family planning methods. The sample was stratified based on key demographic factors, such as age, marital status, education level, and socioeconomic status, to ensure representation across diverse subgroups.

Sample Size: A statistically significant sample size was determined using power analysis, considering the prevalence of contraceptive use and the desired level of precision for the study.

Data Collection Tools: Structured questionnaires were developed, incorporating validated instruments to measure.

- Current contraceptive methods used and the distribution of these methods among current users.
- Sociodemographic factors influencing the method choice.
- Barriers to accessing family planning services, including economic, cultural, and logistical impediments.
- Personal preferences regarding the effectiveness, safety, and convenience of different methods.
- Perceptions of method switching.

Data Analysis: Quantitative data were analyzed using statistical software such as SPSS version 23 and Microsoft Excel XLMiner Analysis ToolPak to perform descriptive and inferential analyses of the data. Frequencies, means, and chi-square tests were conducted to identify significant associations between demographic factors and contraceptive method preferences. Logistic regression was used as predictors of key FP methods outcomes.

Study Area

Bayelsa State, located in the southern region of Nigeria, was characterized by its unique geographical, cultural, and socio-economic landscape, which played a significant role in shaping the family planning method mix of its residents. Established in 1996, Bayelsa was predominantly inhabited by the Ijaw ethnic group, alongside other ethnic communities, contributing to a rich cultural tapestry that influenced social norms and reproductive health behaviours. Bayelsa State was situated in the Niger Delta region, bordered by the Atlantic Ocean to the south, and was characterized by a network of rivers and wetlands. This geographical setting presented both opportunities and challenges for healthcare delivery, particularly in accessing family planning services. The state's extensive riverine areas often hindered transportation and logistics, complicating the distribution of contraceptive methods and access to health facilities. Consequently, residents, especially in rural areas, faced significant barriers in obtaining family planning services, which led to a reliance on traditional methods and a skewed method mix. The population of Bayelsa State was diverse, with a significant proportion of young people and women of reproductive age. According to recent demographic data, a considerable number of women in this age group expressed a desire to prevent unintended pregnancies, yet many remained underserved due to a lack of access to modern contraceptive options. The demographic characteristics in Bayelsa, including age, education level, marital status, and socioeconomic status, played a crucial role in influencing family planning preferences and choices. Cultural beliefs and practices were deeply entrenched in the social fabric of Bayelsa State. Traditional views regarding family size often equated larger families with status and wealth, which discouraged the acceptance of modern contraceptive methods. Furthermore, gender roles restricted women's autonomy in making decisions about their reproductive health, as societal norms often prioritized male authority in family planning

discussions. Stigma associated with contraceptive use, particularly for methods perceived as invasive, such as Long-Acting Reversible Contraceptives (LARCs), further complicated the acceptance and uptake of family planning services. Economically, Bayelsa State faced challenges typical of many regions in Nigeria, including high poverty rates and limited financial resources. Economic constraints significantly impacted individuals' ability to access family planning services, as the cost of contraceptives, transportation to health facilities, and hidden fees deterred usage. Additionally, in times of economic hardship, families often prioritized immediate survival needs over long-term family planning goals, leading to increased rates of unintended pregnancies. The healthcare infrastructure in Bayelsa State, while improving, presented ongoing challenges for family planning service delivery. Primary healthcare centres served as the main points of access for contraceptive services. However, inconsistencies in the availability of contraceptive supplies, inadequate healthcare provider training, and logistical barriers severely limited the effectiveness of family planning programs. In crisis-affected eras such as the perennial flooding or during periods of social instability, these challenges became even more pronounced, further exacerbating the unmet need for contraception. Understanding the dynamics of Bayelsa State was essential for investigating the determinants of family planning method mix. The interplay of geographical, demographic, socio-cultural, economic, and healthcare infrastructure factors shaped the reproductive health landscape, influencing individuals' choices and access to family planning services. By exploring these dimensions, the study aimed to provide insights that could inform targeted interventions and policies to enhance family planning services, improve contraceptive uptake, and ultimately empower individuals to make informed reproductive choices in Bayelsa State.

Study Population

The study population for this research on the determinants of family planning method mix in Bayelsa State, Nigeria, encompassed a diverse group of individuals, primarily focusing on women of reproductive age, as well as key influencers within the community. Understanding the characteristics and dynamics of this population was essential for capturing a comprehensive view of family planning behaviours, preferences, barriers, and drivers of choice.

Women of Reproductive Age: The primary focus was on women aged 15-49 years, as this group was most directly affected by family planning policies and practices. Within this demographic, the study further segmented participants based on.

Age: Young adults (15-24), adults (25-34), and older women (35-49) to analyze differences in contraceptive preferences and behaviours.

Marital Status: Including single, married, separated, divorced, and widowed women to understand how relationship status influenced family planning choices.

Educational Level: Assessing women with varying levels of education-from no formal education to higher education-to explore how education impacted knowledge, attitudes, and access to family planning methods.

Youth: Young individuals, particularly those aged 15-24, were included as a distinct group to understand their unique perspectives on family planning. This group often had different needs and challenges compared to older demographics, making their input vital for developing targeted interventions.

Healthcare Providers: The study involved healthcare providers, including those working in primary health centres. Their insights into the availability of contraceptive methods, counseling practices, and barriers faced in providing family planning services were essential for understanding the health system's role in shaping the method mix.

Community Leaders: Engaging influential community leaders and local stakeholders was important, as they could influence cultural attitudes and perceptions surrounding family planning. Their involvement provided valuable insights into the social fabric of the community and how it shaped reproductive health behaviours.

Current Users and Non-Users of Family Planning Methods: The study differentiated between individuals who were currently using family planning methods and those who were not. This distinction was crucial for identifying barriers to access and understanding the motivations behind method choices.

The study population for this research was characterized by its diversity, encompassing women of reproductive age, youth, healthcare providers, and community leaders in Bayelsa State. By understanding the unique perspectives and experiences of these groups, the study aimed to provide comprehensive insights into the determinants of family planning method mix, ultimately contributing to more effective family planning interventions tailored to the local context.

Sample Size Determination

To ensure the study on the determinants of family planning method mix in Bayelsa State was adequately powered and representative of the target population, a systematic approach for sample size determination was employed. The following factors were considered in calculating the sample size.

Prevalence Rate: Previous studies in similar contexts indicated varying contraceptive prevalence rates ranging from 4% to 36.8% [22-24]. For the purpose of this calculation, a conservative estimate of a 36.8% prevalence rate was used.

Confidence Level: A confidence level of 95% was commonly used. This corresponds to a Z-value of 1.96.
Margin of Error: A margin of error of 5% was chosen to balance precision with practical considerations of resource availability.

Using the sample size formula for proportions:

$$n = \frac{Z^2 \times p(1-p)}{E^2}$$

Where:

n = required sample size

Z = Z-value (1.96 for 95% confidence)

p = estimated prevalence (0.30)

E = margin of error (0.05)

Substituting the values into the formula:

$$n = \frac{(1.96)^2 \times 0.368\ (1-0.368)}{(0.05)^2}$$

$$n = \frac{(3.842) \times (0.368) \times (0.632)}{0.0025}$$

$$n = \frac{0.894}{0.0025} = 357.6$$

$n = 357.6 \approx 358$

Rounding up the figures, the minimum sample size required was approximately 358 women of reproductive age. To account for potential non-responses and to ensure adequate representation across different demographic segments, a 20% increase was added to the sample size.

Additional sample = 358 + (0.2 x 358) = 358 + 71.6 = 429.6 ≈ 430

Thus, a total sample size of approximately 430 women of reproductive age was targeted for the study.

Sampling Technique

Stratified Sampling: To ensure representation across various demographic groups, stratified sampling was utilized. The population was divided into strata based on age, marital status, education level, and geographic location. This approach allowed for a more nuanced analysis of the factors influencing family planning method mix.

Selection Criteria

Inclusion Criteria

a. Women aged 15-49 years who resided in Bayelsa State during the study period were included in the study.

b. Participants who were current users of family planning methods, including long-acting reversible contraceptives (LARCs), short-acting methods, and permanent solutions, were included.

c. Women who expressed a willingness to provide informed consent to participate in the study were included.

d. Healthcare providers working in primary health centres or family planning services in Bayelsa State who consented to participate were included.

e. Community leaders and local stakeholders who had a significant influence on reproductive health attitudes and practices in the community and were willing to participate were included.

f. Young individuals aged 15-24 years who were willing to share their perspectives on family planning were included.

Exclusion Criteria

a. Women outside the age range of 15-49 years were excluded from the study.

b. Individuals who did not reside in Bayelsa State during the study period were excluded.

c. Participants who were not willing to provide informed consent were excluded.

d. Healthcare providers not actively involved in family planning services or who did not consent to participate were excluded.

e. Community leaders and local stakeholders who were unwilling to share their insights or participate in discussions were excluded.

f. Individuals who had previously participated in pilot studies or preparatory phases for the research were excluded to avoid overlap and bias.

Method of Data Collection

Quantitative Data Collection

Structured Questionnaires: Trained data collectors administered structured questionnaires to participants in the selected strata. The questionnaires encompassed questions on demographic information, contraceptive methods currently in use, barriers to access, and preferences regarding family planning.

Pre-Testing

Validity Test: The validity of the research instrument was assessed prior to its deployment in Bayelsa State. This involved conducting a pre-testing phase in selected communities that were not included in the main study. During this phase, a panel of experts in reproductive health and family planning reviewed the questionnaire to ensure that the items accurately represented the constructs of interest. The experts provided feedback on the clarity, relevance, and comprehensiveness of the questions. Subsequently, the instrument was administered to a small sample of participants from these selected communities to evaluate its content validity. Participants were asked to provide feedback on their understanding of the questions and the relevance of the items to their experiences regarding family planning. The responses were analyzed to identify any ambiguities or inconsistencies in the questions. Adjustments were made based on the feedback received, enhancing the instrument's ability to capture the intended data accurately and effectively.

Reliability Test: To assess the reliability of the instrument, a pilot study was conducted within the same selected communities prior to the main data collection phase. The instrument was administered to a sample of respondents, and the consistency of their responses was evaluated using Cronbach's alpha coefficient. This statistical measure was employed to determine the internal consistency of the items within the questionnaire. The results from the pilot study indicated a Cronbach's alpha value above the acceptable threshold of 0.7, suggesting a high level of reliability for the instrument. To further ensure reliability, the questionnaire was re-administered to the same participants after a two-week interval to test for test-retest reliability. The correlation between the two sets of responses was calculated, confirming that the instrument produced stable and consistent results over time.
Based on the findings from both the validity and reliability tests, the instrument was deemed appropriate for use in the main study in Bayelsa State, ensuring that it effectively captured the determinants of family planning method mix in the target population.

Data Management and Analysis

The data analysis for the study on the determinants of family planning method mix in Bayelsa State employed a mixed-methods approach, integrating quantitative data analyses across different FP users to provide a comprehensive understanding of the barriers, preferences, and drivers of contraceptive choices. The following sections outline the specific methodologies for each component of the analysis:

Quantitative Data Analysis

Descriptive Statistics: Descriptive statistics were calculated to summarize the demographic information of the participants, including age, marital status, education level, and socioeconomic status. Frequencies, means, medians, and standard deviations will be reported as appropriate.

Contraceptive Method Usage: The distribution of various family planning methods utilized by participants were analyzed, including long-acting reversible contraceptives (LARCs), short-acting methods, and permanent solutions.

Inferential Statistics: Chi-square tests were conducted to examine associations between demographic factors (e.g., age, marital status, education) and contraceptive method preferences. This helped in identifying significant relationships that influenced the choices of family planning methods.

T-tests/ANOVA: T-tests or ANOVA were used to compare means between groups (e.g., between users and non-users of specific contraceptive methods) in terms of knowledge, attitudes, and perceived barriers to access.

Logistic Regression Analysis: Logistic regression was deployed to assess the influence of multiple independent variables (sociocultural, economic, and logistical factors) on the likelihood of getting satisfaction on specific family planning methods users. This analysis helped in identifying key predictors of contraceptive usage and preferences.

Timeline for the study

Research Planning and Proposal: The research planning and proposal phase commenced in June 2025. During this period, the study objectives, methodology, and research instruments were developed and finalized. By the end of June, the proposal was prepared for submission.

Ethical Approval: In July 2025, the team submitted the proposal to the relevant ethics committee for approval. Following the submission, the research team addressed any feedback and queries from the committee. Ethical approval was successfully obtained by mid-July.

Data Collection Preparation: In August 2025, preparations for data collection were undertaken. This involved training data collectors, finalizing data collection tools, and establishing partnerships with local healthcare providers and community leaders to facilitate access to participants.

Data Collection: The actual data collection phase took place from September to October 2025. During this period, surveys and interviews were conducted across various demographic groups in Bayelsa State, ensuring comprehensive coverage of the target population.

Report Writing and Publication: In November 2025, the research team focused on report writing. The analysis of the collected data was completed, and the findings were compiled into a comprehensive report. The final report was prepared for publication by the end of November.

Ethical Considerations

Institutional Consent: Ethical approval for the study was obtained from the Ethics Committee, Bayelsa State Primary Healthcare Board with the approval number "PHCB/AD/126/Vol.1/p.34." This ensured that the research adhered to ethical standards and guidelines for conducting studies involving human participants.

Community Consent: Before commencing the research, community consent was sought through engagement with local leaders and stakeholders. Informational sessions were held to discuss the study's objectives, significance, and potential benefits to the community. This approach fostered trust and transparency, allowing community members to voice their concerns and opinions regarding the research. The community's endorsement was essential to ensure cultural sensitivity and appropriateness in the implementation of the study.

Individual Consent: Individual consent was obtained from all participants prior to their involvement in the study. Participants were provided with comprehensive information about the purpose of the research, the nature of their participation, and their rights, including the right to withdraw at any time without consequence. Consent forms were distributed, and participants confirmed their understanding of the study's implications before signing. This process respected participants' autonomy and ensured that their involvement was entirely voluntary.

Results

In table 1, the study had the demographic characteristics of respondents, a total of 430 individuals participated, providing a diverse representation across various demographic variables. The age distribution revealed that the majority of respondents were aged 25-34 years, constituting 37% of the sample, followed by those aged 35-44 years at 30%. A smaller proportion of respondents fell into the younger 15-24 years (25%) and older 45-49 years (8%) age brackets. Regarding marital status, a significant majority of the respondents were married, accounting for 232 (54%) of the sample, while 100 (23%) identified as single. Cohabiting individuals made up 63 (15%), and those who were separated or divorced and widowed comprised 21 (5%) and 14 (3%) respectively. The educational attainment of respondents indicated a predominance of secondary education, with 245 (57%) having completed this level. Tertiary education was reported by 123 (29%) of the respondents, whereas only 18 (4%) had no formal education or had only completed primary school. In terms of occupation, the majority of respondents were either unemployed 166 (39%) or self-employed 194 (45%), with only 70 (16%) being gainfully employed. The religious affiliation of the respondents was predominantly Christian, representing 376 (88%), while Muslims and practitioners of traditional religions constituted only 23 (5%) and 21 (5%) respectively. Housing conditions showed that 243 (57%) of respondents lived in rented apartments, while 187 (43%) owned their homes. The type of toilet facilities revealed that nearly half 207 (48%) utilized flush toilets, while 68 (16%) resorted to open defecation. Water sources varied, with the majority relying on boreholes 211 (45%) and a minority using piped water at home 73 (16%). The source of electricity was largely absent, with 299 (70%) of respondents reported to have no access to electricity, while only 19 (4%) utilized solar power. The presence of household assets indicated that mobile phones were the most common asset owned 78 (44%), whereas television ownership was considerably lower at 50 (29%), and only 2 (1%) possessed a washing machine. Overall, these results highlighted significant socio-economic challenges faced by the respondents, particularly in terms of employment, access to utilities, and educational attainment.

In table 2, the barriers to Family Planning (FP) method uptake, various challenges were identified among users. The results indicated that a significant proportion of participants faced social and cultural factors, which emerged as the most prevalent barrier, affecting 130 (27%) of the respondents. This was followed by time constraints associated with the procedure, reported by 103 (21%) of participants, highlighting the importance of convenience in accessing FP services. Furthermore, the availability of FP commodities was noted as a

Variable		Frequency (n=430)	Percentage (%)
Age	15-24 Yrs	106	25%
	25-34 Yrs	159	37%
	35-44 Yrs	130	30%
	45-49 Yrs	35	8%
Marital Status	Single	100	23%
	Married	232	54%
	Cohabiting	63	15%
	Separated/Divorce	21	5%
	Widow	14	3%
Educational Level	No Formal Education	18	4%
	Primary	44	10%
	Secondary	245	57%
	Tertiary	123	29%
Occupation	Gainfully Employed	70	16%
	Unemployed	166	39%
	Self-Employed	194	45%
Religion	Christianity	376	88%
	Islam	23	5%
	Traditional Religion	21	5%
	Other Form of Religions	10	2%
Apartment Type	Live In Rented Apartment	243	57%
	Live in Personal Owned Apartment	187	43%
Number of Children in Each Age Group		Cumulative Children	
	15-24 Yrs	43	13%
	25-34 Yrs	126	38%
	35-44 Yrs	95	29%
	45-49 Yrs	67	20%
Toilet Type	Flush Toilet	207	48%
	Pour-Flush Toilet	123	29%
	Pit Latrine	32	7%
	Open Defecation	68	16%
Water Source	Piped Water at Home	73	16%
	Public Tap/Stand Pipe	56	12%
	Borehole	211	45%
	River Water	92	20%
	Well Water	31	7%
Electricity Source	Solar Power Supply	19	4%
	National Grid	73	17%
	Generator	39	9%
	None	299	70%
Household Assets	Television	50	29%
	Radio	45	26%
	Mobile Phone	78	44%
	Washing Machine	2	1%

Table 1: Demographic characteristics of respondents.

barrier by 53 (11%) of the respondents, suggesting that stock shortages might hinder users from accessing necessary resources. Lack of information on alternative FP methods was also a concern for 45 (9%) of participants, indicating that educational outreach might be essential for improving method uptake. Geographical accessibility posed a challenge for 44 (9%) of users, who reported that FP clinics were located far from their residences. Additionally, religious factors influenced 72 (15%) of the respondents, reflecting the role of belief systems in shaping attitudes towards family planning. The study also found that provider attitudes or biases affected 12 (3%) of participants, suggesting that healthcare provider training might be necessary to foster a more supportive environment for FP method users. Finally, the cost involved in the procedure was cited as a barrier by 22 (5%) of respondents, underscoring the financial implications of accessing family planning services. Overall, these findings underscore the multifaceted barriers to family planning method adoption, emphasizing the need for targeted interventions to address social, cultural, and logistical challenges in order to enhance access and utilization of family planning services.

Challenges Experience with FP Method	Frequency	Percentage (%)
Cost involved in the procedure	22	5%
FP commodities are not always available	53	11%
Providers attitude or bias	12	3%
Lack of information on other FP method	45	9%
FP clinic is far from where I live	44	9%
Time involved in the procedure	103	21%
Social and cultural factors	130	27%
Religious factors	72	15%

Table 2: Barriers to FP method uptake.

In table 3, participants were surveyed regarding their preferences for Family Planning (FP) methods, with a focus on the reasons for switching their chosen FP method. The results, summarized in table 3, highlighted several key motivations behind these decisions. The most common reason for switching FP methods was child spacing, with 41 (36%) respondents indicating that this was their primary motivation. This suggests that a significant portion of the population prioritizes managing the timing in their reproductive lifecycle to ensuring adequate spacing between children. Additionally, a smaller group of respondents 7 (6%) participants reported that they switched methods to limit the number of births. This finding points to a less prevalent but important consideration among some individuals who might be seeking to control their family size more strictly. A notable number of respondents 12 (11%) indicated that the prevention of Sexually Transmitted Infections (STIs) was a motivating factor for their choice of FP methods. This reflects an awareness of the dual benefits of certain FP methods beyond fertility control. Furthermore, 26 (23%) respondents stated that the number of children they currently had influenced their decision to switch FP methods. This implies that existing family size plays a crucial role in determining future family planning preferences. The provision of additional benefits such as menstrual regulation and alleviation of menstrual cramps was cited by 6 (5%) respondents indicating that non-contraceptive health benefits also play a role in the decision-making process for some individuals. Lastly, 22 (19%) participants expressed that the protective nature of their chosen FP method, which offers long-term contraception, influenced their switch. This finding underscores the importance of long-term efficacy in the selection of family planning methods. Overall, the study's results demonstrated a diversity of motivations behind the preferences for family

planning methods among respondents, highlighting the complexity of individual decisions in reproductive health in the studied population.

Purpose for FP Method Switching	Frequency	Percentage (%)
Child spacing	41	36%
Limiting births	7	6%
Prevention of STIs	12	11%
The number of children I have now made me to consider FP method	26	23%
It provides additional benefits such as menstrual regulation, cramps	6	5%
FP method protects me from for long period	22	19%

Table 3: Family planning preferences amongst respondents.

In table 4, the researchers aimed to identify the factors that influenced family planning choices among respondents. The data were collected and analyzed, revealing several key factors that impacted the selection of family planning methods. The most significant factor identified was the effectiveness of the method, with 180 (22%) respondents indicating it as a primary consideration. This was followed closely by the ease of use, which was cited by 153 (19%) respondents. Notably, the reversibility of the method was also an important factor for another 151 (19%) respondents, highlighting the preference for methods that could be discontinued easily if desired. Mild side effects were a concern for 109 (14%) respondents, suggesting that the tolerability of side effects played a role in the decision-making process. The acceptable duration of time covered by the method was also mentioned by 103 (13%) respondents, indicating that the length of effectiveness was a relevant consideration for some individuals. Conversely, factors such as high cost and stigmatization were rated as negligible influences, with only 3 (0%) respondents citing high cost as a concern and just 1 (0%) respondent mentioning stigmatization. Affordability was a consideration for 50 (6%) respondents, and spouse or partner support was noted by 53 (7%) respondents, indicating that financial considerations and interpersonal support had a lesser impact on family planning choices in this population. In summary, the study highlighted that the effectiveness and ease of use of family planning methods were the predominant factors influencing choices, while cost, stigmatization, and support from partners were comparatively less significant. These findings provide valuable insights for healthcare providers and policymakers aiming to improve family planning services and education.

Factors that Influence FP Method Choices	Frequency	Percentage (%)
Ease of use	153	19%
Effectiveness	180	22%
Mild side effects	109	14%
High cost	3	0%
Low cost and affordability	50	6%
Spouse/partner support	53	7%
Easily reversible	151	19%
Stigmatization	1	0%
Acceptable period of time covered by the method	103	13%

Table 4: Factors that influences family planning choices.

In figure 1, the study examined contraceptive use among a sample of 430 individuals and the researchers categorized the types of contraceptives utilized by the participants. The findings revealed that a significant majority of the users, accounting for 94 (66%), opted for short-acting contraceptives. In contrast, only 49 (34%) of the sample, employed long-acting contraceptives such as Intrauterine Devices (IUDs) and implants. Notably, the study found no participants utilizing permanent contraceptive methods, resulting in a percentage of 0 (0%). These results highlight a predominant preference for short-acting contraceptives within the studied population.

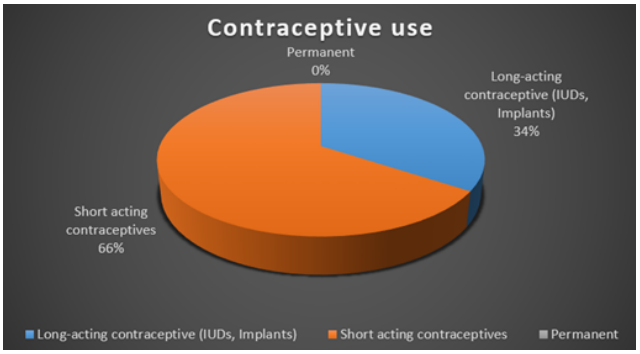

Figure 1: Contraceptive uptake.

In table 5, the researchers aimed to investigate the sources of information usage regarding Family Planning (FP) methods among a sample of respondents. A total of 430 participants were surveyed to determine who influenced their choices concerning FP methods. The findings revealed that health care providers were the most significant source of information, with 199 (46%) of respondents indicating they relied on these professionals for guidance. Spouses or partners also played a crucial role, with 115 (26%) of respondents citing them as a source of information. Friends accounted for 69 (16%) of the influences, highlighting the importance of social networks in disseminating knowledge about FP methods. Family members contributed to 40 (9%) of the responses, while community members and religious leaders were the least influential, with only 8 (2%) and 3 (1%) of respondents, respectively, reporting them as sources of information. Overall, the results of the study underscored the pivotal role of health care providers in educating individuals about family planning options, while also illustrating the varying degrees of influence from other social circles.

Persons Who Influence the Choice of FP Methods	Frequency (n=430)	Percentage (%)
Spouse/partner	115	26%
Family members	40	9%
Health care providers	199	46%
Friends	69	16%
Religious members	3	1%
Community member	8	2%

Table 5: Source of information on FP methods usage.

Inferential Statistics

In table 6, a chi-square test was conducted to examine the relationship between marital status and the use of contraceptive methods. The analysis revealed a significant association between these two categorical variables, as indicated by a p-value of 0.0011. This p-value suggested that the observed distribution of contraceptive use among different marital statuses was unlikely to have occurred by

chance. Specifically, the data indicated that individuals in different marital categories-cohabiting, married, separated/divorced, single, and widowed-demonstrated varied patterns of contraceptive use. For instance, the expected frequencies of contraceptive use among these groups were calculated, revealing that the actual use deviated significantly from what would be expected if there were no association between marital status and contraceptive use. Overall, the findings provided strong evidence to reject the null hypothesis, supporting the conclusion that marital status had a statistically significant effect on the likelihood of using contraceptive methods. This insight could have important implications for public health initiatives and family planning programs, highlighting the need to consider marital context when addressing contraceptive education and accessibility this studied population.

Variable	Marital Status						P-value
Observed							
Use of contraceptive methods	Cohabiting	Married	Separated/ Divorce	Single	Widow	Grand Total	
No	5	29	7	9	5	55	
Yes	58	203	14	91	8	374	
	63	232	21	100	13	429	
Expected							
	Cohabiting	Married	Separated/ Divorce	Single	Widow	Grand Total	
No	8.08	29.74	2.69	12.82	1.67	55	
Yes	54.92	202.26	18.31	87.18	11.33	374	0.0011

Table 6: Chi-square test of independence for marital status.

Note: p-value = 0.0011

In table 7, a chi-square test was conducted to examine the relationship between the use of Family Planning (FP) methods and the decision maker for these methods. The analysis revealed a p-value of 0.0067, indicating a statistically significant association between the two categorical variables. The observed frequencies of individuals who used FP methods were compared against the expected frequencies calculated under the assumption of independence between the decision maker and the use of FP methods. The results showed that the distribution of FP method use varied significantly depending on the decision maker. Specifically, the data indicated that joint decision-making with a partner and personal decision-making were correlated with distinct patterns of FP method usage. The chi-square statistic suggested that the null hypothesis, which posited no association between the decision maker and the use of FP methods, could be rejected at conventional significance levels. Thus, it was concluded that the decision-making process regarding family planning was significantly related to the choice of family planning methods used.

Chi-Square Test of Independence

In table 8, a chi-square test was conducted to examine the relationship between religion and reasons for not using Family Planning (FP) methods. The analysis revealed a p-value of 0.0078, indicating a statistically significant association between the two categorical

Observed			
	Use of FP Method		
Decision Maker for FP Method	**No**	**Yes**	**Grand Total**
Joint decision with my partner	32	50	82
My spouse/partner	42	26	68
Myself	116	86	202
Grand Total	190	162	352
Expected			
	No	**Yes**	
Joint decision with my partner	44.26	37.74	82
My spouse/partner	36.70	31.30	68
Myself	109.03	92.97	202

Table 7: Chi-square test of independence for decision makers for FP methods.

Note: p-value = 0.0067

variables. The observed frequencies showed that individuals from different religious backgrounds reported varying reasons for not utilizing FP methods. For instance, a notable number of Christians expressed concerns related to fear of side effects and opposition from their partners. In contrast, the responses from individuals identifying with Islam and other religions displayed different patterns, particularly in the reasons related to religious beliefs and lack of information. The expected frequencies, calculated under the null hypothesis of independence between religion and reasons for not using FP methods, illustrated how the observed counts deviated from what would be expected if there were no association. Given the low p-value, the researchers rejected the null hypothesis, concluding that there was a significant relationship between the reasons for not using FP methods and the individuals' religious affiliations. This finding underscored the importance of considering cultural and religious factors in understanding attitudes towards family planning.

Observed					
	Religion				
Reasons for not using FP methods	**Christianity**	**Islam**	**Others**	**Traditional religion**	**Grand Total**
Fear of side effects	18		2	1	21
It causes infertility	4	1			5
It is against my religion	3	3		2	8
Lack of information on FP method			1		1
My partner is opposed to FP methods	11		1	2	14
Social and cultural factors	1			2	3
The distance to FP point	1	1	2		4
Grand Total	38	5	6	7	56

Expected					
	Religion				
Reasons for not using FP methods	Christianity	Islam	Others	Traditional religion	Grand Total
Fear of side effects	14.25	1.875	2.25	2.625	21
It causes infertility	3.392857143	0.44643	0.53571	0.625	5
It is against my religion	5.428571429	0.71429	0.85714	1	8
Lack of information on FP method	0.678571429	0.08929	0.10714	0.125	1
My partner is opposed to FP methods	9.5	1.25	1.5	1.75	14
Social and cultural factors	2.035714286	0.26786	0.32143	0.375	3
the distance to FP point	2.714285714	0.35714	0.42857	0.5	4
Grand Total	38	5	6	7	56

Table 8: Reasons for not using FP methods.

Note: p-value = 0.0078

Summary						
Groups	Count	Sum	Average	Variance		
Injectables	430	466	1.083721	0.076891		
Oral pills	430	436	1.013953	0.013791		
Implants	430	453	1.053488	0.050745		
IUDs	430	430	1	0		
Diaphragm or cervical cap	430	430	1	0		
Condom	430	434	1.009302	0.009237		
Traditional methods	430	430	1	0		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2.783389	6	0.463898	21.55316	6.37×10^{-25}	2.101602
Within Groups	64.63488	3003	0.021523			
Total	67.41827	3009				

Table 9: FP methods use and uptake.

ANOVA Test

In table 9, an Analysis of Variance (ANOVA) test was performed to compare the means of various family planning methods, including injectables, oral pills, implants, Intrauterine Devices (IUDs), diaphragms, condoms, and traditional methods. The analysis aimed to determine whether there were statistically significant differences in the effectiveness of these methods. The results demonstrated a substantial F statistic of 21.55316, indicating a strong variation among the group means. The critical F value at a significance level of 0.05 was 2.101602. Given that the computed F statistic exceeded the critical value, the null hypothesis-which posited that there were no differences in means among the different family planning methods-was rejected. Furthermore, the p-value calculated for the test was 6.37×10^{-25}, which is significantly lower than the conventional alpha level of 0.05. This result provided strong evidence against the null hypothesis, suggesting that at least one family planning method showed a statistically significant difference in effectiveness compared to the others. In conclusion, the ANOVA test indicated that the means of the different family planning methods were not equal, highlighting the importance of considering method-specific effectiveness in family planning discussions.

In table 10, a Bonferroni post-hoc correction test was conducted to evaluate the differences in means among various family planning methods, including injectables, oral pills, implants, Intrauterine Devices (IUDs), diaphragms, condoms, and traditional methods. A total of 430 participants were included in each group, leading to a comprehensive analysis of the effectiveness of these contraceptive methods. The analysis began with an ANOVA, which indicated significant variation between the groups F=21.55316, p-value=6.37×10^{-25}, alpha=0.05. Following this, the Bonferroni post-hoc correction was applied to control for Type I error, resulting in a correction factor of 0.0025. This stringent threshold allowed for a more accurate determination of significant differences among the contraceptive methods. The results revealed several significant differences. Notably, the comparison between injectables and oral pills yielded a p-value of 1.83277×10^{-6}, indicating a highly significant difference. Additionally, injectables were found to be significantly different from IUDs (p=6.04545×10^{-10}), diaphragms (p=6.04545×10^{-10}), condoms (p=1.83689×10^{-7}), and traditional methods (p=6.04545×10^{-10}), all of which were well below the Bonferroni-adjusted significance level. Conversely, no significant differences were identified between injectables and implants (p=0.07965). Among the oral pills, comparisons to implants (p=0.00130) were significant, whereas comparisons to IUDs (p=0.01394), diaphragms (p=0.01394), condoms (p=0.52522), and traditional methods (p=0.01394) did not reach the adjusted significance threshold. The analysis also highlighted significant differences between implants and IUDs (p=1.01833×10^{-6}), diaphragms (p=1.01833×10^{-6}), condoms (p=0.000195), and traditional methods (p=1.01833×10^{-6}). However, comparisons among IUDs, diaphragms, condoms, and traditional methods revealed no significant differences, with p-values exceeding the threshold (IUDs vs. diaphragms, p=0.43460; IUDs vs. condoms, p=0.04506; IUDs vs. traditional methods, p=0.58263; diaphragms vs. condoms, p=0.02253; diaphragms vs. traditional methods, p=0.59715; condoms vs. traditional methods, p=0.04506). In conclusion, the Bonferroni post-hoc test identified significant differences in effectiveness among various family planning methods, particularly highlighting the superiority of injectables and implants over other modalities, except for oral pills in some comparisons. These findings contribute valuable insights into the relative efficacy of contraceptive methods, emphasizing the importance of tailored family planning strategies.

Logistic Regression

In table 11, a logistic regression analysis was performed to examine the factors influencing users' satisfaction with Family Planning (FP) methods. The dependent variable was the satisfaction of users with FP methods, while the independent variables included reasons for switching FP methods, factors that influence FP method choices, myths and beliefs about FP methods, apartment type, marital status, and age. The results indicated a significant overall model fit, as

Summary		
Groups	Count	Sum
Injectables	430	466
Oral pills	430	436
Implants	430	453
IUDs	430	430
Diaphragm or cervical cap	430	430
Condom	430	434
Traditional methods	430	430
ANOVA		
Source of Variation	SS	df
Between Groups	2.783388704	6
Within Groups	64.63488372	3003
Total	67.41827243	3009
Alpha	0.05	
Bonferroni correction factor	0.0025	
	p-value (T-test)	significant
Injectables vs Oral pills	1.83277×10^{-6}	Yes
Injectables vs Implants	0.079653873	No
Injectables vs IUDs	6.04545×10^{-10}	Yes
Injectables vs Diaphragm or cervical cap	6.04545×10^{-10}	Yes
Injectables vs Condom	1.83689×10^{-7}	Yes
Injectables vs Traditional methods	6.04545×10^{-10}	Yes
Oral pills vs Implants	0.001297924	Yes
Oral pills vs IUDs	0.013938969	No
Oral pills vs Diaphragm or cervical cap	0.013938969	No
Oral pills vs Condom	0.525223342	No
Oral pills vs Traditional methods	0.013938969	No
Implants vs IUDs	1.01833×10^{-6}	Yes
Implants vs Diaphragm or cervical cap	1.01833×10^{-6}	Yes
Implants vs Condom	0.000195351	Yes
Implants vs Traditional methods	1.01833×10^{-6}	Yes
IUDs vs Diaphragm or cervical cap	0.434597226	No
IUDs vs Condom	0.045059735	No
IUDs vs Traditional methods	0.582636894	No
Diaphragm or cervical caps vs Condom	0.022529867	No
Diaphragm or cervical caps vs Traditional methods	0.597149215	No
Condom vs Traditional methods	0.045059735	No

Table 10: Bonferroni post-hoc correction.

evidenced by an F-statistic of 11.376 and a p-value of 2.8308×10^{-63}, which strongly suggested that at least one of the independent variables was a significant predictor of satisfaction with FP methods. The significance level of $8.43 \times 10^{-12}2$ further confirmed the robustness of the model. Among the independent variables, several showed statistically significant coefficients. The variable "reasons for switching FP methods" had a positive coefficient of 0.0278, with a p-value of 0.0238, indicating that as the reasons for switching increased, user satisfaction also increased. Conversely, "myths and beliefs" about FP methods had a negative coefficient of -0.0631 and a highly significant p-value of 6.96524×10^{-6}, suggesting that the presence of myths and beliefs negatively impacted users' satisfaction. Additional significant predictors included "apartment type" with a coefficient of -0.07715 (p=0.0148), "marital status" with a coefficient of -0.04602 (p=0.0106), and "age" with a coefficient of -0.06693 (p=0.00019). These findings indicated that users living in certain apartment types, as well as those with specific marital statuses and age groups, reported lower satisfaction levels with FP methods. Overall, the logistic regression analysis provided valuable insights into the factors affecting users' satisfaction with FP methods, highlighting the importance of addressing myths and beliefs, as well as considering demographic factors such as apartment type, marital status, and age in future interventions aimed at improving users' experiences with family planning services.

ANOVA					
	df	**SS**	**MS**	**F**	**Significance F**
Regression	6	7.072801	1.1788	11.37603038	8.43×10^{-12}
Residual	423	43.83185	0.103621		
Total	429	50.90465			
	Coefficients	**Standard Error**	**t Stat**	**P-value**	**Lower 95%**
Intercept	1.246193	0.062201	20.03488	2.8308×10^{-63}	1.123931
Reasons for switching FP method	0.027813	0.012261	2.268365	0.023810258	0.003712
Factors that influence FP methods choices	0.015765	0.014546	1.083849	0.279048968	-0.01283
Myths and beliefs	-0.06313	0.013869	-4.5517	6.96524×10^{-6}	-0.09039
Apartment type	-0.07715	0.031534	-2.44654	0.014829497	-0.13913
Marital status	-0.04602	0.017934	-2.56637	0.010620077	-0.08127
Age	-0.06693	0.017805	-3.7592	0.000194418	-0.10193

Table 11: FP methods users' satisfaction.

Discussion

Demographic Characteristics of Respondents

In this study, the demographic characteristics of Family Planning (FP) methods users were examined through the participation of 430 individuals, providing a diverse representation across various demographic variables. The analysis revealed several noteworthy findings regarding the age distribution of respondents, marital status, educational attainment, occupation, religious affiliation, housing conditions, access to utilities, and ownership of household assets. The majority of the respondents were aged between 25 to 34 years, accounting for 37% of the sample. This age group is often considered a critical period for family planning decisions, as individuals in this demographic are likely to be starting families or planning for future children. Following this, 30% of respondents fell into the 35 to 44 years age bracket, while younger respondents aged 15 to 24 years represented 25%, and those aged 45 to 49 years made up the smallest group at 8%. This age distribution indicated a significant focus on reproductive health among younger adults, suggesting an opportunity for targeted family planning education and services within this demographic. In terms

of marital status, a significant majority of respondents were married (54%), followed by single individuals (23%) and cohabiting individuals (15%). A small fraction of respondents reported being separated or divorced (5%) or widowed (3%). This high percentage of married individuals likely reflects an increased likelihood of family planning method uptake, as marital status is often associated with a greater need for reproductive health services. Educational attainment among respondents showed that a substantial proportion had completed secondary education (57%), while 29% had attained tertiary education. Only a small segment (4%) had no formal education or had only completed primary school. The educational background of respondents may influence their understanding and utilization of family planning methods, suggesting that educational outreach could enhance awareness and acceptance of these services. Occupationally, the study revealed that a large percentage of respondents were unemployed (39%) or self-employed (45%), with only 16% being gainfully employed. This high rate of unemployment and underemployment highlights significant socio-economic challenges faced by the respondents, which could directly impact their access to family planning services and resources. Furthermore, the religious affiliation of respondents was predominantly Christian (88%), with Muslims and practitioners of traditional religions representing only 5% each. This religious predominance may play a role in shaping attitudes toward family planning, potentially influencing method uptake and preferences based on cultural beliefs. Housing conditions indicated that 57% of respondents lived in rented apartments, while 43% owned their homes, reflecting varying levels of economic stability. The study also noted significant challenges in access to utilities, with 70% of respondents lacking electricity and a considerable number relying on boreholes for water. These infrastructural deficiencies could pose barriers to accessing family planning services, as adequate utilities are often essential for supporting health-related needs. The study further examined barriers to family planning method uptake, revealing that social and cultural factors were the most significant challenges faced by respondents, affecting 27% of participants. Time constraints and the availability of FP commodities were also notable barriers, indicating a need for more convenient and accessible services. Additionally, religious beliefs influenced some respondents' attitudes towards family planning, illustrating the complex interplay between cultural and personal beliefs in reproductive health decisions. When investigating preferences for family planning methods, the study identified child spacing as the primary motivation for switching methods among 36% of respondents. This suggests a strong desire for effective family planning to manage reproductive timing. Other motivations included limiting the number of births and preventing sexually transmitted infections, highlighting the multifaceted reasons behind individuals' choices. Factors influencing family planning decisions revealed that effectiveness and ease of use were the predominant considerations for respondents when selecting FP methods. The study found that mild side effects and the reversibility of methods also played significant roles in decision-making. However, cost and stigmatization were rated as negligible influences, suggesting that for this population, practical considerations of method efficacy and usability took precedence over financial or social concerns. In summary, this study presented a comprehensive overview of the demographic characteristics of family planning methods users, highlighting significant socio-economic challenges, barriers to access, and the complexities of individual preferences in reproductive health. The findings underscored the necessity for targeted interventions and educational outreach to improve access to family planning services and enhance the overall reproductive health of the population studied. Furthermore, the researchers sought to understand the sources of information that influenced respondents' choices regarding Family Planning (FP) methods. The findings indicated that health care providers emerged as the most significant source of information, with nearly half of the participants (46%) relying on these professionals for guidance. This result underscored the critical role that health care providers play in educating individuals about FP options, highlighting their influence in promoting informed decision-making among the population. The study also revealed that spouses or partners constituted a substantial source of information, with 26% of respondents indicating that they consulted with their significant others when considering FP methods. This finding suggested that personal relationships are pivotal in shaping individuals' choices about family planning, as partners often share information and support each other's decisions. Additionally, friends were identified as a source of information by 16% of the respondents, which emphasized the importance of social networks in disseminating knowledge about FP methods. This finding aligned with existing literature that highlights how peer discussions can impact health-related decisions. Family members contributed to the information sources as well, with 9% of respondents citing them as influences. However, community members and religious leaders were found to be the least influential, with only 2% and 1% of respondents, respectively, reporting them as sources of information. This result pointed to a potential gap in the engagement of these groups in family planning discussions, suggesting that their roles could be further explored to enhance community education initiatives. Overall, the results of the study highlighted the pivotal role of health care providers in family planning education while illustrating the varying degrees of influence from other social circles. The findings called for a more integrated approach to family planning outreach, which could involve strengthening the role of partners and friends in disseminating information and considering how community and religious leaders could be better engaged in these discussions.

Inferential Statistics

In this study, a series of chi-square tests were conducted to explore the relationships among various categorical variables related to Family Planning (FP) methods. The first analysis (Table 6) focused on the association between marital status and the use of contraceptive methods. The results revealed a significant relationship, with a p-value of 0.0011, indicating that the distribution of contraceptive use varied significantly across different marital categories. This finding suggested that marital status played a crucial role in influencing individuals' choices regarding contraceptive methods. The study highlighted distinct patterns of contraceptive use among cohabiting, married, separated/divorced, single, and widowed individuals, underscoring the importance of considering marital context in public health initiatives and family planning programs. Table 7 presented a chi-square test that examined the relationship between the decision maker for family planning methods and the actual use of those methods. The analysis yielded a p-value of 0.0067, further supporting the notion that decision-making processes significantly impacted the choice of FP methods. The findings indicated that both joint decision-making with a partner and personal decision-making were associated with different patterns of FP method usage. This highlighted the need for family planning programs to consider the dynamics of decision-making in order to enhance the effectiveness of their interventions. Table 8 presented a chi-square test that investigated the relationship between religion and the reasons for not using family planning methods. The results showed a statistically significant association with a p-value of

0.0078. Different religious backgrounds were linked to varied reasons for non-usage, with Christians expressing concerns about side effects and partner opposition, while individuals identifying with Islam and other religions cited factors such as religious beliefs and lack of information. This finding emphasized the importance of cultural and religious considerations in understanding attitudes towards family planning, suggesting that tailored communication strategies could better address the specific concerns of diverse religious groups. Overall, the chi-square tests provided compelling evidence for significant associations among marital status, decision-making, religion, and the use of family planning methods. These insights offered valuable implications for public health initiatives and family planning programs, indicating the necessity of incorporating sociocultural factors into the development of effective contraceptive education and accessibility strategies. The results underscored the complexity of family planning choices and the critical need for comprehensive approaches that address the varied influences shaping individuals' decisions regarding contraceptive use. Table 9, presented an Analysis of Variance (ANOVA) test that was conducted to evaluate the effectiveness of various family planning methods among users, including injectables, oral pills, implants, Intrauterine Devices (IUDs), diaphragms, condoms, and traditional methods. The primary objective was to determine whether there were statistically significant differences in the means of effectiveness across these different contraceptive methods. The results of the ANOVA indicated a substantial F statistic of 21.55316, which suggested a strong variation among the means of the different family planning methods. The critical F value at a significance level of 0.05 was established at 2.101602. Since the computed F statistic exceeded the critical value, the null hypothesis-which proposed that there were no differences in means among the various family planning methods-was rejected. In addition, the p-value obtained for the test was 6.37×10^{-25}, which was significantly lower than the conventional alpha level of 0.05. This result provided compelling evidence against the null hypothesis, indicating that at least one family planning method demonstrated a statistically significant difference in effectiveness compared to the others. Following the ANOVA, a Bonferroni post-hoc correction test (Table 10) was employed to further investigate the specific differences in means among the family planning methods. A total of 430 participants were included in each group, allowing for a comprehensive analysis of the effectiveness of these contraceptive methods. The post-hoc correction was necessary to control for Type I error and was applied with a correction factor of 0.0025, which established a more stringent threshold for determining significant differences. The findings from the Bonferroni post-hoc test revealed several noteworthy significant differences. For instance, the comparison between injectables and oral pills yielded a p-value of 1.83277×10^{-6}, indicating a highly significant difference in effectiveness. Additionally, injectables were also found to be significantly different from IUDs ($p=6.04545 \times 10^{-10}$), diaphragms ($p=6.04545 \times 10^{-10}$), condoms ($p=1.83689 \times 10^{-7}$), and traditional methods ($p=6.04545 \times 10^{-10}$), all of which were well below the adjusted significance threshold. However, it was noted that there were no significant differences between injectables and implants (p=0.07965). Among oral pills, significant differences were observed in comparisons with implants (p=0.00130), while comparisons with IUDs (p=0.01394), diaphragms (p=0.01394), condoms (p=0.52522), and traditional methods (p=0.01394) did not meet the adjusted significance threshold. Furthermore, the analysis highlighted significant differences between implants and IUDs ($p=1.01833 \times 10^{-6}$), diaphragms ($p=1.01833 \times 10^{-6}$), condoms (p=0.000195), and traditional methods ($p=1.01833 \times 10^{-6}$). However, among the comparisons of IUDs, diaphragms, condoms, and traditional methods, no significant differences were identified, as the p-values exceeded the threshold (IUDs vs. diaphragms, p=0.43460; IUDs vs. condoms, p=0.04506; IUDs vs. traditional methods, p=0.58263; diaphragms vs. condoms, p=0.02253; diaphragms vs. traditional methods, p=0.59715; condoms vs. traditional methods, p=0.04506). In table 10, a comprehensive analysis was conducted to examine the factors influencing users' satisfaction with Family Planning (FP) methods through the application of both ANOVA and logistic regression tests. The primary objective was to identify the significant predictors that contributed to users' satisfaction and to understand how various demographic and contextual factors played a role in shaping these experiences. In table 11, the logistic regression analysis revealed a significant overall model fit, as indicated by an F-statistic of 11.376 and a p-value of 2.8308×10^{-63}. This strong statistical evidence suggested that at least one of the independent variables was a significant predictor of satisfaction with FP methods, reinforcing the necessity of exploring these relationships further. The robustness of the model was further confirmed by a significance level of 8.43×10^{-12}, which underscored the reliability of the findings. Among the independent variables analyzed, "reasons for switching FP methods" emerged as a notable positive predictor of users' satisfaction, with a coefficient of 0.0278 and a p-value of 0.0238. This finding indicated that as users articulated more reasons for switching methods, their satisfaction levels correspondingly increased. This could suggest that users who felt empowered to make informed choices regarding their FP methods were more likely to report greater satisfaction. Conversely, the analysis highlighted that "myths and beliefs" regarding FP methods had a detrimental impact on user satisfaction, as evidenced by a negative coefficient of -0.0631 and a highly significant p-value of 6.96524×10^{-6}. This finding pointed to the pervasive influence of misconceptions and negative beliefs that may hinder users from fully appreciating the benefits of FP methods, thereby reducing their overall satisfaction. Demographic factors also played a crucial role in influencing satisfaction levels. The variable "apartment type" demonstrated a negative association with users' satisfaction, with a coefficient of -0.07715 and a p-value of 0.0148. This suggested that users residing in certain types of apartments may face unique challenges or limitations that affect their satisfaction with FP services. Similarly, "marital status" and "age" were significant predictors, with coefficients of -0.04602 (p=0.0106) and -0.06693 (p=0.00019), respectively. These results indicated that specific marital statuses and age groups were linked to lower satisfaction levels, highlighting the importance of tailoring family planning services to meet the diverse needs of different demographic segments. Overall, the logistic regression analysis provided valuable insights into the multifaceted factors affecting users' satisfaction with FP methods. The findings underscored the critical need to address myths and beliefs surrounding family planning, as well as to consider demographic factors such as apartment type, marital status, and age in the design of future interventions. By understanding and addressing these elements, stakeholders can enhance users' experiences with family planning services and ultimately improve satisfaction levels among users. This study has laid the groundwork for further exploration into the complexities surrounding users' satisfaction in family planning, emphasizing the importance of informed decision-making and targeted strategies to mitigate the impact of misconceptions.

Conclusion

In conclusion, this study provided valuable insights into the determinants of family planning method mix in Bayelsa State, Nigeria,

highlighting the complex interplay of sociocultural, economic, and logistical factors that influenced individuals' and couples' reproductive choices. The findings revealed that sociocultural norms, particularly related to gender roles and family size, significantly constrained women's autonomy and limited access to a diverse range of contraceptive methods. Economic barriers, such as user fees and transportation costs, further exacerbated these challenges, particularly for those in rural and underserved areas. The study identified key preferences among respondents for family planning methods, with a notable inclination towards short-acting contraceptives, while highlighting the importance of factors such as method effectiveness, ease of use, and mild side effects in decision-making processes. Additionally, the significant associations found between marital status, decision-making dynamics, and contraceptive use underscored the necessity of considering relational contexts in family planning programs. Moreover, the analysis revealed that myths and misconceptions about family planning adversely affected users' satisfaction, indicating a pressing need for targeted educational interventions to dispel misinformation and enhance knowledge about available options. The study's mixed-methods approach, combining cutting across different strata of FP methods users, enriched the understanding of barriers and drivers influencing contraceptive choices, providing a comprehensive view of the reproductive health landscape in Bayelsa State. Ultimately, the findings emphasized the need for context-sensitive strategies that address the unique challenges faced by different demographic groups, particularly marginalized populations such as adolescents and unmarried individuals. The evidence-based recommendations derived from this study aimed to inform policymakers, healthcare providers, and community leaders in designing effective family planning programs that enhance access to a comprehensive method mix, improve user satisfaction, and ultimately contribute to better reproductive health outcomes in Bayelsa State.

Recommendations

Based on the findings of the study on the determinants of family planning method mix in Bayelsa State, the following recommendations are proposed to enhance access to family planning services, improve user satisfaction, and address the identified barriers and preferences among individuals and couples:

Culturally Sensitive Education and Outreach: Implement community-based education programs that address sociocultural norms and beliefs about family planning. Engage local leaders, religious figures, and community influencers to promote positive attitudes towards contraception and reduce stigma, particularly among adolescents and unmarried individuals. Develop tailored informational campaigns that provide comprehensive knowledge about various family planning methods, their effectiveness, and potential side effects, to empower individuals to make informed choices.

Improving Service Accessibility: Expand the availability of family planning services in both urban and rural areas to ensure geographical accessibility. This can include mobile clinics and outreach programs that bring services directly to underserved communities. Collaborate with local health facilities to ensure a consistent supply of a diverse range of contraceptive methods to prevent stockouts and improve user trust in the health system.

Enhancing Counseling Quality: Train healthcare providers in client-centered counseling techniques that respect individual autonomy and promote shared decision-making. This training should emphasize the importance of providing unbiased information about all contraceptive options and addressing users' concerns and preferences. Establish mechanisms for ongoing training and support for healthcare providers to ensure they remain knowledgeable about family planning methods and effective counseling practices.

Addressing Economic Barriers: Advocate for policies that eliminate user fees for family planning services, particularly for low-income and marginalized populations. Consider implementing subsidized or free services to improve affordability and accessibility. Explore partnerships with local NGOs and community organizations to provide financial support for transportation and associated costs related to accessing family planning services.

Integrating Family Planning with Other Health Services: Promote the integration of family planning services with maternal and child health, HIV prevention and treatment, and other relevant health services. This integration can normalize the use of contraceptives and create more touchpoints for counseling and method provision. Develop referral systems that facilitate access to additional health services for individuals seeking family planning, ensuring a holistic approach to reproductive health.

Strengthening Data Collection and Monitoring: Establish a robust data collection and monitoring system to track family planning service utilization, user satisfaction, and contraceptive method mix over time. This data should be disaggregated by key demographic factors to identify disparities and inform targeted interventions. Encourage community participation in the data collection process to capture local insights and ensure that programs are responsive to the evolving needs of the population.

Fostering Male Involvement: Develop programs that actively engage men in family planning discussions and decision-making. This can help to challenge harmful gender norms and promote shared responsibility for reproductive health. Create male-friendly spaces in health facilities where men can access information and services related to family planning without stigma or judgment.

Addressing Myths and Misconceptions: Conduct targeted interventions to dispel common myths and misconceptions about family planning methods through community dialogues, social media campaigns, and educational materials that resonate with local beliefs. Collaborate with local influencers and healthcare providers to create credible messaging that counters misinformation and highlights the benefits of family planning.

Tailoring Programs for Adolescents and Young People: Develop youth-friendly services that ensure confidentiality and privacy, making it easier for adolescents to seek family planning information and services without fear of stigma. Implement comprehensive sexuality education programs in schools that equip young people with knowledge about reproductive health and family planning, emphasizing the importance of informed decision-making.

By implementing these recommendations, stakeholders in Bayelsa State can create a more supportive environment for family planning services, enhance user satisfaction, and ultimately improve reproductive health outcomes for individuals and couples in the region.

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Author's Contribution

Ebiakpor Bainkpo Agbedi conceptualized the research ideas, designed the study, conducted the data analysis, and led the report writing process. His comprehensive understanding of the determinants of family planning method mix in Bayelsa State informed the study's objectives and methodology, ensuring a robust approach to addressing the research questions.

Mordecai Oweibia served as the curator of the study, assisting in various aspects of the research work. He played a pivotal role in report writing, ensuring that the findings were effectively communicated and presented in a coherent manner. His contributions also included providing valuable insights throughout the research process, facilitating collaboration between team members, and supporting the overall execution of the study. Together, their collaborative efforts resulted in a comprehensive exploration of the determinants of family planning method mix in Bayelsa State, contributing significantly to the understanding of barriers, preferences, and drivers of choice in reproductive health.

Conflict of Interest Statement

The authors of this study declared that there were no conflicts of interest related to the research on the determinants of family planning method mix in Bayelsa State, Nigeria. The research was conducted independently, and the findings presented in this study were based solely on the data collected and analyzed without any external influence or financial support that could have impacted the objectivity or integrity of the research. All authors had disclosed any potential conflicts of interest and had adhered to ethical standards throughout the research process.

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