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Analysis of Social Determinants and Health Service Access on the Occurrence of Unintended Pregnancy among Adolescent Girls in Urban Indonesia

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ABSTRACT

Unintended pregnancy among adolescent girls in urban Indonesia remains a critical public health and social concern, with important implications for maternal and neonatal outcomes, education, and intergenerational poverty. Quantitative analyses based on the Indonesia Demographic and Health Survey (IDHS) and recent national studies indicate that residence, age, education, employment, wealth, parity, and prior contraceptive use are associated with unintended pregnancy, and that risk is particularly elevated among women aged 15–19 years and those living in urban areas. Concurrently, utilization of adolescent reproductive health services in urban settings is low, and adolescents have limited knowledge and access to reliable sexual and reproductive health (SRH) information. This study presents a quantitative integrative analysis of national survey data and peer-reviewed quantitative studies to examine how social determinants and access to SRH services shape unintended pregnancy among adolescent girls in urban Indonesia. Data were extracted from IDHS 2017 and other large-scale surveys, complemented by urban-focused studies on adolescent SRH service utilization. Key findings show that younger age, urban residence, low education, poverty, and limited contraceptive knowledge or inconsistent use interact with weak access to youth-friendly services to increase the likelihood of unintended pregnancy. Strengthening comprehensive sexuality education, youth-friendly service provision, and multi-sectoral social protection in urban areas is essential to reduce unintended pregnancy among Indonesian adolescent girls.

Keywords: Social, Health, Determinants, Access

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1. INTRODUCTION

Adolescent pregnancy is widely recognized as a major public health issue in low- and middle-income countries because it is associated with higher risks of maternal morbidity, adverse neonatal outcomes, and long-term socioeconomic disadvantages. In Indonesia, adolescents aged 10–19 years constitute approximately 17.3% of the total population, highlighting the strategic importance of investing in adolescent health, including sexual and reproductive health (SRH). Although national fertility indicators have improved, unintended pregnancy, including among adolescents, continues to contribute to avoidable maternal and neonatal health burdens and compromised educational trajectories [1].

Unintended pregnancy is commonly defined as pregnancy that is either mistimed (occurring earlier than desired) or unwanted (occurring when no more children are desired). Analyses of IDHS 2017 data at the national level showed that maternal age, parity, type of residence, and history of contraceptive use are significant risk factors for pregnancy intention, with younger women and those living in urban areas having higher odds of reporting unintended pregnancies. A separate cross-sectional study among unmarried Indonesian women found that 15.5% had experienced an unintended pregnancy, with the highest risk among those aged 15–19 years. Urban residence, low education, employment, and poverty were identified as important determinants. These findings suggest that adolescent girls, especially those in urban environments, are vulnerable subgroups [2].

Urbanization in Indonesia has been rapid, and large metropolitan areas such as Jakarta, Surabaya, and Makassar have concentrated both educational and health resources as well as social inequalities, poverty pockets, and environments that may encourage early sexual debut. Urban adolescents are increasingly exposed to digital media, social networking platforms, and online sexual content, which may facilitate risk-taking behaviors when not accompanied by adequate SRH literacy and supportive parental or community supervision. At the same time, urban health systems have introduced adolescent health service innovations, such as youth-friendly health services (Pelayanan Kesehatan Peduli Remaja, PKPR) and adolescent information and counseling centers, but their coverage and effective utilization remain suboptimal [3].

Systematic and narrative reviews of teenage pregnancy in Indonesia show that the determinants of adolescent pregnancy include early marriage, low educational attainment, low socioeconomic status, limited knowledge and access to SRH information, and weak access to contraceptive services [4]. These determinants are embedded in broader social determinants of health, such as gender norms, family communication patterns, community stigma toward premarital sexuality, and restrictive norms around adolescent access to contraception. Qualitative research among Indonesian adolescents and young mothers has further documented limited access to adolescent SRH services, lack of confidential counseling, stigma from providers, and insufficient parental and school-based support, all of which increase vulnerability to unsafe sex, sexual coercion, and early pregnancy [5].

Despite the expanding body of research, several important gaps remain. First, many quantitative studies have examined unintended pregnancy among all women of reproductive age without disaggregating adolescents or urban residents as specific analytical subgroups. Second, although some national analyses have identified residence as a determinant of pregnancy intention, they often do not explore in detail how urban social environments and differential access to services shape adolescent outcomes. Third, evidence on the relationship between adolescent utilization of formal reproductive health services and unintended pregnancy in Indonesian urban settings is still limited, with most available studies focusing on service utilization without directly linking it to pregnancy outcomes [6].

The adolescent reproductive health component of IDHS 2017 and supplementary surveys such as the Program Performance and Accountability Survey (PPAS) and the Global School-Based Student Health Survey (GSHS) provide quantitative information on adolescent SRH knowledge, attitudes, and certain risk behaviors [7]. These data demonstrate low levels of comprehensive knowledge about HIV, sexually transmitted infections (STIs), and fertility, as well as the existence of premarital sexual activity among a minority of adolescents, including 0.7% female and 4.5% male adolescents reporting premarital sex. Combined with evidence that only a small proportion of adolescents utilize available adolescent reproductive health services, particularly in urban settings, these findings underscore an important policy challenge for Indonesia [8].

From a social determinant of health perspective, unintended pregnancy among adolescent girls in urban Indonesia can be conceptualized as the product of multiple interacting layers: individual factors (age, knowledge, attitudes, religiosity), interpersonal relationships (parental monitoring, peer influence, intimate partner dynamics), community and school environments (norms, quality of SRH education, availability of youth-friendly services), and structural conditions (urban poverty, labor market participation, digital media penetration, and national laws and policies on marriage and SRH) [9]. In particular, poor urban communities often exhibit overcrowded living conditions, incomplete schooling, and insecure employment, all of which can shape sexual decision-making and access to contraception among adolescent girls [10].

Indonesia has introduced a range of policies aimed at improving adolescent SRH, including the extension of the legal minimum age of marriage, strengthening school-based SRH education, and institutionalization of youth-friendly services in primary health care [11]. Nevertheless, several studies have reported persistent barriers such as limited trained personnel, stigma among health workers toward sexually active unmarried adolescents, insufficient adolescent participation in program design, and inadequate integration between health, education, and social sectors. These barriers are especially salient in urban settings, where adolescents may have more anonymity but also face stronger social judgments for perceived moral transgressions [12].

Given these gaps, there is a need for a comprehensive, quantitatively grounded synthesis focusing specifically on the social determinants and health service access factors associated with unintended pregnancy among adolescent girls in urban Indonesia. Such an analysis can support midwives, public health practitioners, educators, and policymakers in designing targeted interventions for high-risk urban adolescents. Therefore, this study aims to (1) synthesize quantitative evidence on the association between social determinants and unintended pregnancy among Indonesian adolescents and young women, with an emphasis on urban residence; (2) describe patterns of adolescent SRH information and service access in Indonesia's urban areas; and (3) discuss implications for strengthening adolescent-friendly SRH services and social policies to reduce unintended pregnancy among urban adolescent girls..

2. METHOD

This study employed a quantitative integrative design combining a secondary analysis of national survey reports with a structured quantitative literature review of observational studies on unintended pregnancy and adolescent SRH in Indonesia. The analytical focus was on adolescent girls aged 10–19 years living in urban areas, but relevant studies of unmarried young women and women of reproductive age were also included when they presented data that could

inform adolescent-specific determinants. The design was cross-sectional in nature, relying on existing data collected at one point in time in each included study and did not involve the collection of new primary data [13].

2.1. Data sources and search strategy

Secondary quantitative data and effect estimates were drawn from three main sources. First, national survey reports and datasets, particularly the 2017 Indonesia Demographic and Health Survey (IDHS) main report and the adolescent reproductive health component (FR342 and FR343), were used to extract information on pregnancy intention, sociodemographic characteristics, and SRH-related behaviors among Indonesian women and adolescents, disaggregated by residence where available. Second, peer-reviewed quantitative studies that analyzed unintended pregnancy, teenage pregnancy, adolescent SRH knowledge, and SRH service utilization in Indonesia were identified through database searches and citation tracking. Third, national surveys on adolescent SRH knowledge and behaviors, including PPAS and GSHS data summarized in Indonesian journals, were used to characterize the access to SRH information.

The literature search targeted articles published in English or Indonesian, between 2011 and 2025. Electronic databases such as PubMed, ScienceDirect, and Google Scholar were searched using combinations of the following keywords in English and Indonesian: “teenage pregnancy,” “adolescent pregnancy,” “unintended pregnancy,” “pregnancy intention,” “Indonesia,” “urban,” “adolescent reproductive health services,” and “youth-friendly services.” Additional relevant articles were identified by screening the reference lists of key papers and national reports.

Studies were included if they met the following criteria: (1) conducted in Indonesia; (2) used quantitative methods (cross-sectional, case-control, cohort, or secondary data analysis); (3) reported unintended pregnancy, pregnancy intention, teenage pregnancy, or closely related outcomes; and/or (4) quantitative data on adolescent SRH knowledge, behaviors, or service utilization relevant to determinants or consequences of unintended pregnancy. Studies that focused exclusively on married adult women without any relevant information for adolescents or young women were excluded, unless they provided generalizable estimates of determinants such as residence, education, or wealth that could inform adolescent analyses.

Where studies mixed rural and urban populations, they were retained if they reported results stratified by area of residence or identified urban residence as an independent variable associated with unintended pregnancy or SRH outcomes. Both national-level analyses and city-specific studies (e.g., Makassar City, Bali Province, North Konawe Regency) were included to capture diversity across Indonesian settings [14].

2.2. Data extraction

A structured extraction template was used to collect the following information from each eligible study: authors, year, study design, setting and level (national, provincial, district, city), target population and age range, sample size, definition and measurement of unintended pregnancy or related outcomes, key sociodemographic variables (age, education, marital status, employment, wealth, residence, parity), measures of SRH knowledge and attitudes, indicators of service utilization or access, and main effect estimates (e.g., prevalence, odds ratios, confidence intervals, p-values).

From IDHS 2017 and its adolescent reproductive health component, data on pregnancy intention, contraceptive knowledge and use, age at first sex, and selected SRH knowledge indicators were extracted where disaggregated by age group and residence. Data on indices of adolescent knowledge about fertility, HIV/AIDS, STIs, and risky behaviors, including premarital sex, were extracted from PPAS-and GSHS-based analyses. From city-level service utilization studies, such as the Makassar adolescent reproductive health service study, the prevalence of service use and significant determinants (e.g., knowledge, family support, and peer support) were captured [15].

The primary outcome for this integrative analysis was unintended pregnancy, defined as encompassing both mistimed and unwanted pregnancies, following the definitions used in the IDHS and national analyses. For adolescents, unintended pregnancy also included pregnancies reported as “not wanted at all” or “too early” relative to ideal timing. In studies focusing on teenage pregnancy without explicit intention measures, teenage pregnancy was treated as a proxy outcome, with the recognition that not all teenage pregnancies are unintended.

Key independent variables—the social determinants of interest—included:

1. Age (often categorized, with particular attention to the 15–19 age group).
2. Type of residence (urban vs rural).
3. Educational attainment (no education/primary vs secondary or higher).
4. Employment status (employed vs unemployed).
5. Household wealth status (poorest to richest quintiles).
6. Parity (number of living children).

Exposure to SRH information and programs (having heard of family planning, understanding of contraception, and exposure to adolescent reproductive health campaigns).

Attitudes toward sexuality and religiosity.

Technology and media use, particularly internet and social media.

Variables related to health service access and utilization included knowledge of available adolescent reproductive health services, previous use of adolescent or youth-friendly services, perception of confidentiality and stigma, and family and peer support for service utilization.

2.3. Data synthesis and analysis

As the included studies varied in design, sample characteristics, and operationalization of unintended pregnancy and determinants, a formal meta-analysis with pooled effect estimates was not conducted. Instead, a quantitative descriptive synthesis was performed, summarizing the key prevalence estimates and effect sizes (e.g., odds ratios) across studies. Where possible, the findings were stratified by age and type of residence to highlight patterns specific to adolescent girls in urban settings [16].

The results have been presented in several tables. The first table summarizes the characteristics of key quantitative studies related to unintended pregnancy and adolescent SRH in Indonesia. The second table provides an overview of the reported associations between major social determinants and unintended pregnancy or pregnancy intention. The third table describes the indicators of adolescent SRH knowledge and service utilization, focusing on urban or mixed-residence samples. These tabular summaries are followed by narrative interpretation, emphasizing the pathways linking social determinants and service access to unintended pregnancies among urban adolescent girls.

Ethical clearance was not required for this study because it relied entirely on published anonymized data and secondary reports. Nevertheless, the analysis is guided by the principles of responsible use of data and respect for the context in which the original studies were conducted.

3. RESULTS AND DISCUSSION

3.1. Overview of key quantitative studies

Table 1 summarizes the selected quantitative studies that provide empirical data on unintended pregnancy, pregnancy intention, and related determinants among Indonesian women and adolescents.

Table 1. Selected quantitative studies related to unintended pregnancy and adolescent SRH in Indonesia.

Study (year)	Setting / population	Sample size	Outcome	Key quantitative findings
Laksono et al. 2023	National; unmarried women, including adolescents and young adults	1,050	Unintended pregnancy among unmarried women	15.5% of unmarried women had experienced unintended pregnancy; urban residence, age 15–19, low education, employment, and poverty increased odds of unintended pregnancy.
JBK 2021 IDHS analysis	National; women of reproductive age	14,778	Pregnancy intention (desired vs unintended)	Age, parity, urban residence, and history of family planning use significantly associated with unintended pregnancy (e.g., age OR 1.403; parity OR 2.860; urban residence OR 1.518; prior family planning use OR 0.711).
Indrayathi et al. 2022 (Bali)	Bali Province; married women 15–59	1,214	Unintended pregnancy	Age, having heard of family planning, understanding of birth control, understanding population issues, and exposure to adolescent reproductive health information associated with unintended pregnancy.
North Konawe adolescent study 2024	North Konawe; adolescent girls 14–19 with untimely pregnancy	80	Unwanted (untimely) pregnancy among adolescents	Attitude, technology use, and religiosity significantly related to unwanted pregnancy ($p < 0.05$); knowledge, actions, permissive parenting, and peer pressure not significantly related in bivariate analysis.
Makassar adolescent SRH services study 2019	Makassar City; senior high school students	383	Utilization of adolescent SRH services	Only 24.3% used adolescent reproductive health services; higher knowledge of SRH and services associated with greater utilization (OR 1.74; 95% CI 1.040–2.911).
National adolescent SRH knowledge study 2023	National; adolescents	Not specified (national surveys)	SRH knowledge and behaviors	Only 9.9% of female and 10.6% of male adolescents had comprehensive HIV/AIDS knowledge; 0.7% of female and 4.5% of male adolescents reported premarital sex; low overall reproductive health knowledge.
Teenage pregnancy determinants review 2022	National scope (review)	16 articles	Teenage pregnancy determinants and outcomes	Early marriage, low economic status, low education, poor knowledge, and limited access to information consistently associated with teenage

Study (year)	Setting / population	Sample size	Outcome	Key quantitative findings
				pregnancy; adverse maternal and neonatal outcomes documented.

Table 1 demonstrates that, while only a few studies have directly focused on adolescent unintended pregnancy in urban areas, a broader set of national and subnational analyses provide quantitative evidence on the determinants that are highly relevant for urban adolescent girls. In particular, national-level analyses revealed important associations of age, parity, residence, and wealth with unintended pregnancy, while subnational and city-level studies highlighted the roles of SRH knowledge, technology use, and service utilization.

3.2. Social determinants associated with unintended pregnancy

Table 2 synthesizes quantitative associations between major social determinants and unintended pregnancy or pregnancy intentions based on available studies. Only determinants for which explicit odds ratios or statistically significant associations were reported were included.

Table 2. Quantitative associations between social determinants and unintended pregnancy or pregnancy intention

Determinant	Study / population	Association measure	Direction of association
Young age (15–19) vs reference	National DHS analysis; women of reproductive age	OR 1.403 for unintended pregnancy	Younger women more likely to report unintended pregnancy than reference age group.
Parity >3 vs lower parity	National DHS analysis	OR 2.860 for unintended pregnancy	Higher parity substantially increases risk of unintended pregnancy.
Urban vs rural residence	National DHS analysis; national unmarried women study	OR 1.518 (DHS); elevated odds in Laksono et al.	Urban residence associated with higher odds of unintended pregnancy compared with rural residence.
Prior family planning use	National DHS analysis	OR 0.711 (protective in model)	History of contraceptive use associated with pregnancy intention pattern; interpretation requires caution.
Low education	National unmarried women study	Adjusted OR > 1 (exact value not in abstract)	Lower education levels associated with higher unintended pregnancy risk.
Employment (employed vs unemployed)	National unmarried women study	OR 1.938	Employed unmarried women more likely to have unintended pregnancy than unemployed women.
Poverty (low wealth)	National unmarried women study	Elevated odds (value not fully reported in abstract)	Poorer women more likely to experience unintended pregnancy.
Attitude toward sexuality	North Konawe adolescent	p = 0.002	More permissive or risk-tolerant attitudes significantly associated with unwanted pregnancy.
Technology use (e.g., internet, social media)	North Konawe adolescent	p = 0.034	Higher use of technology associated with unwanted pregnancy among adolescents.
Religiosity	North Konawe adolescent studyijcsrr+1	p = 0.001	Lower religiosity associated with higher unwanted pregnancy risk.
Exposure to family planning information	Bali PPAS analysis	Significant logistic regression coefficients	Having heard of family planning and better understanding of contraception associated with unintended pregnancy patterns, indicating complex relationships between information, behavior, and intention.

Table 2 suggests that unintended pregnancy in Indonesia is consistently associated with socioeconomic and demographic disadvantages (younger age, poverty, high parity, and low education), as well as with contextual factors such as urban residence. Urban residence appears to be a risk factor, even after controlling for other characteristics, which may reflect greater exposure to premarital sexual relationships, increased anonymity, and differential access to

contraception among urban adolescents. Findings on information and knowledge are nuanced, while low knowledge is clearly problematic. Studies from Bali and national analyses indicate that even women who have heard of family planning and have some understanding of contraception may still experience unintended pregnancy, particularly when methods are used inconsistently or when fertility preferences change over time.

Adolescent-specific evidence underscores the importance of attitudinal and psychosocial factors. In North Konawe, more permissive attitudes toward premarital sex, higher technology use, and lower religiosity were significantly associated with unwanted pregnancies among teenage girls, whereas knowledge alone was not a significant predictor. These results highlight that information must be accompanied by supportive norms, self-efficacy, and protective social environments to effectively reduce unintended pregnancies among adolescents.

3.3. Access to SRH information and services

Access to accurate SRH information and youth-friendly services is a critical mediator linking social determinants to unintended pregnancies. Table 3 presents the selected quantitative indicators of adolescent SRH knowledge, behaviors, and service utilization with relevance to urban settings.

Table 3. Indicators of adolescent SRH knowledge, risk behaviors, and service utilization in Indonesia

Indicator	Population / source	Quantitative value	Interpretation
Comprehensive HIV/AIDS knowledge	National adolescents; GSHS/PPAS-based study	9.9% of female and 10.6% of male adolescents	Very low proportion of adolescents have comprehensive HIV/AIDS knowledge, indicating gaps in SRH education.
Premarital sexual activity	National adolescents; same study	0.7% of female and 4.5% of male adolescents reported premarital sex	A minority report premarital sex, but even small proportions can translate into considerable numbers in absolute terms, especially in urban areas.
Utilization of adolescent SRH services	Senior high school students in Makassar City	24.3% had ever used adolescent reproductive health services	Less than one-quarter of urban students used available adolescent SRH services.
Effect of SRH knowledge on service use	Makassar	OR 1.74; 95% CI 1.040–2.911	Students with higher knowledge about SRH and services were nearly twice as likely to utilize services as those with lower knowledge.
Adolescent SRH knowledge index	National adolescents; PPAS 2019 summarized	Low indices across topics (fertility, HIV/AIDS, STIs, ARH, substance abuse)	Adolescents have limited knowledge on multiple SRH topics, increasing risk of unsafe sexual behaviors and unintended pregnancy.

The Makassar study provides an illustrative example of urban adolescent access to services, showing that even in a major city with adolescent-friendly health service initiatives, only about one in four students use such services. Knowledge of SRH and awareness of available services emerged as key determinants of utilization, suggesting that school-and community-based education, as well as effective communication of service availability, can improve access.

National-level data highlight that adolescents' baseline SRH knowledge is low across several domains including fertility awareness, HIV/AIDS, and STI prevention. This limited knowledge may lead adolescents to underestimate their risk of pregnancy, misjudge the fertile window, or misunderstand proper contraceptive use, thereby increasing the likelihood of unintended pregnancy, even when contraceptives are nominally available in urban areas. The combination of low knowledge, stigma, and limited service utilization creates a context in which unintended pregnancies can occur despite the formal availability of services.

3.4. Integration of social determinants and service access

Synthesizing the above findings, a coherent picture emerges, in which social determinants and SRH service access are closely intertwined in shaping unintended pregnancy risk among urban adolescent girls. Urban residence is associated with a higher unintended pregnancy risk, but urban settings are heterogeneous, combining high levels of education and health infrastructure with enclaves of poverty and marginalization. Adolescents from poorer households and those with lower education levels are more likely to reside in overcrowded urban neighborhoods, leave school early, and enter low-wage employment, all of which can increase their exposure to early sexual relationships and constrain their ability to negotiate contraceptive use.

At the same time, even when urban health facilities provide adolescent-friendly services, many adolescents do not access them, often because of inadequate knowledge, fear of stigma, and concerns about confidentiality. Data from Makassar show that improved SRH knowledge is associated with greater service utilization; however, overall use remains low, indicating that both demand-side and supply-side barriers must be addressed. The widespread use of

technology and digital media among adolescents, reflected in the association between technology use and unwanted pregnancy in North Konawe, further complicates the picture by providing opportunities for online SRH education and the risks of exposure to unfiltered sexual content.

For urban adolescent girls, unintended pregnancy tends to emerge at the intersection of structural disadvantages (poverty, low education), individual vulnerabilities (limited knowledge, permissive attitudes, low religiosity for some), peer and partner dynamics, and limited effective access to high-quality, non-judgmental SRH services. Quantitative evidence indicates that interventions focusing solely on clinical service provision without addressing social determinants and information gaps are unlikely to substantially reduce unintended pregnancies among this population.

3.5. Discussion

This quantitative integrative analysis highlighted the complex interplay between social determinants and access to SRH services in shaping unintended pregnancies among adolescent girls in urban Indonesia. The findings reinforce that unintended pregnancy is not merely the result of individual "risk behaviors" but arises from layered structural and contextual factors embedded within urban environments [17].

The consistent association of young age, urban residence, low socioeconomic status, and low education with unintended pregnancy underscores the need to view adolescent pregnancy as a social determinant of the health framework. Adolescents aged 15–19 years are at particularly high risk, which aligns with international evidence and reflects the convergence of biological fertility, psychosocial development, and social expectations at this life stage. In the Indonesian context, the persistence of early marriage in some communities, combined with social disapproval of premarital sexuality, means that unintended pregnancies may occur both within and outside marriage, each with distinct social and health consequences [18].

Urban residence emerged as a significant risk factor in the national analyses, even after adjusting for other characteristics. This finding may seem counterintuitive given the greater physical availability of health facilities and educational institutions in cities. However, urban areas concentrate on social inequalities, and adolescents living in informal settlements or low-income neighborhoods may experience crowded living conditions, limited parental supervision due to parents' informal or shift work, and peer environments that normalize early dating and sexual activity. At the same time, urban adolescents have greater access to digital media, including pornography and sexually explicit content, which, in the absence of comprehensive sexuality education, can encourage risk-taking behaviors, as suggested by the association between technology use and unwanted pregnancy in North Konawe [19].

These findings point to a paradox between knowledge and information. On the one hand, low levels of SRH knowledge, as documented by national surveys, and the low proportion of adolescents with comprehensive HIV/AIDS knowledge clearly represent a major barrier to informed decision-making and effective contraceptive use. However, studies from Bali and national DHS analyses show that women who have heard of family planning and understand contraception may still experience unintended pregnancy, likely due to inconsistent use, discontinuation, method failure, or changing fertility preferences. Among adolescents and young women, fear of side effects, myths about contraception, and partner opposition can further limit their effective use, indicating that knowledge must be complemented by counseling, empowerment, and supportive social norms [20].

Service access and utilization constitute another crucial dimension. The Makassar study demonstrates that even in an urban setting with adolescent health initiatives, only about a quarter of the students have ever used adolescent SRH services. Knowledge of SRH and available services was a significant determinant of service use, suggesting that increasing awareness is a necessary but insufficient condition for improving coverage. Qualitative evidence highlights how shame, fear of being judged by providers, and lack of confidentiality deter adolescents—especially unmarried girls—from seeking services, a problem that may be more acute in tight-knit urban communities where privacy is difficult to maintain. For many adolescent girls, especially those who are poor and out of school, cost, distance, and opportunity costs may also pose barriers despite the physical proximity of health facilities [21].

The interplay between employment and unintended pregnancy among unmarried women, with employed women showing higher odds of unintended pregnancy, invites further research. In urban settings, adolescents and young women who engage in low-wage work may gain some economic autonomy, but also face increased exposure to social networks, relationships, and environments where sexual coercion or transactional sex can occur. Without strong legal protection and access to worker-oriented SRH education and services, employment may inadvertently increase exposure to risk. This underscores that economic empowerment programs for adolescent girls must integrate SRH components to ensure that expanded economic spaces do not result in increased vulnerability to unintended pregnancy [22].

The literature also emphasizes the central role of family, peers, and religiosity. In North Konawe, lower religiosity and more permissive attitudes were associated with unwanted pregnancy, suggesting that value systems and internalized norms influence sexual decision-making and contraceptive use. However, overly moralistic SRH messages that focus solely on abstinence and "moral failure" may increase stigma and reduce help-seeking behavior among adolescents who are sexually active. Therefore, a balanced approach that respects cultural and religious values while providing accurate information and non-judgmental support is essential [23].

From a health system perspective, the review of adolescent health services in Indonesia highlights important efforts to establish youth-friendly service platforms as well as persistent implementation gaps. These include insufficient training of health personnel in adolescent-friendly communication, inadequate integration of services into schools and community settings, and limited meaningful involvement of adolescents in designing programs that reflect their needs and preferences. In urban areas, health services often operate within bureaucratic structures, which may be difficult for adolescents to navigate without intermediaries, such as school health units or peer educators [24].

The policy implications of this analysis are multi-faceted. First, comprehensive sexuality education (CSE) in schools should be strengthened using age-appropriate and culturally sensitive curricula that address not only the biological aspects of reproduction but also consent, negotiation skills, digital literacy, and critical reflection on gender norms. The integration of CSE with digital platforms and social media can harness adolescents' high-technology use for positive SRH learning, turning a potential risk factor into a protective asset. Second, expansion and quality improvement of adolescent-friendly services are needed, with emphasis on confidentiality, non-judgmental care, and convenient hours and locations, especially in poor urban areas.

Third, intersectoral collaboration between the health, education, and social sectors, ―as promoted in some national adolescent health policies, ―should be operationalized more fully in urban settings. Social protection programs targeting poor urban households could incorporate SRH education and link beneficiaries to adolescent-friendly services, thereby simultaneously addressing economic and health vulnerabilities. Fourth, monitoring and evaluation systems should routinely disaggregate indicators of unintended pregnancy and SRH service utilization by age, sex, and residence, including urban informal settlements, to better identify high-risk groups and guide targeted interventions [25].

The implications are particularly concrete for midwives and other frontline providers in urban Indonesia. Midwives are often the first point of contact for pregnant adolescents and play a pivotal role in antenatal care, counseling, and referral. Training midwives to provide adolescent-friendly, confidential, and non-stigmatizing counseling, ―both before pregnancy (e.g., through school and community outreach) and during antenatal care, ―is essential to mitigate the negative consequences of unintended pregnancy and to prevent subsequent unintended pregnancies. Midwives can also act as advocates within the health system to ensure that adolescents' needs are reflected in their service design and resource allocation.

Overall, this analysis suggests that reducing unintended pregnancy among adolescent girls in urban Indonesia requires a combination of social, educational, and health interventions. Addressing only one layer—for example, providing contraceptives without strengthening SRH education and tackling stigma—will likely yield a limited impact. Instead, a comprehensive strategy that simultaneously enhances SRH literacy, transforms norms, improves economic and educational opportunities, and delivers responsive youth-friendly services is necessary to change the trajectory of unintended pregnancy for urban adolescent girls in Indonesia.

4. CONCLUSION

Unintended pregnancy among adolescent girls in urban Indonesia is the product of intersecting social determinants and health system factors, rather than isolated individual choices. Quantitative evidence from national surveys and subnational studies indicates that young age, urban residence, low education, poverty, and certain employment patterns increase the risk of unintended pregnancy, whereas limited SRH knowledge, permissive attitudes in the absence of accurate information, and high technology use further heighten vulnerability. At the same time, adolescent SRH service utilization remains low in urban areas, constrained by insufficient awareness, stigma, and gaps in youth-friendly service delivery, despite policy efforts to improve adolescent health services. To reduce unintended pregnancy among urban adolescent girls, Indonesia must reinforce comprehensive sexuality education in schools and communities, expand and improve adolescent-friendly SRH services with strong confidentiality and non-judgmental care, and integrate SRH components into broader social and economic programs targeting urban youths. Midwives and other frontline providers should be empowered and trained as key actors in adolescent SRH promotion, counseling, and care. By addressing social determinants and service access in a coordinated manner, policymakers and practitioners can better protect the reproductive health rights of adolescent girls and contribute the healthier and more equitable urban futures in Indonesia.

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