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Interprofessional Collaboration in Antenatal Care Services among Adolescents with Unintended Pregnancies: A Scoping Review

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ABSTRACT

Background: Unplanned pregnancies (UP) among adolescents remain a global public health issue associated with physical, psychological, and social risks. Adolescents often delay seeking antenatal care (ANC), which leads to an increased risk of complications. Interprofessional collaboration (IPC) is recognized as a strategic approach to improving the quality of ANC services. This study aims to explore interprofessional collaborative practices in antenatal care services for adolescents with unintended pregnancies, including institutional support, healthcare workforce competencies, interprofessional communication, collaborative work culture, service support systems, service implementation, and their contribution to the quality of antenatal care services.
Method: A scoping review was conducted using the Arksey & O'Malley approach to search the PubMed, ScienceDirect, EBSCO, and Springer databases for relevant articles. The articles were filtered using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart, critically appraised using the Joanna Briggs Institute (JBI) and the Mixed Methods Appraisal Tool (MMAT).
Result: Of the 2,060 articles selected for the review, 9 articles met the inclusion criteria. IPC in ANC is implemented through teamwork, integrated services, and cross-sectoral coordination. Key components include clarity of roles, effective communication, and shared decision-making. Supporting factors include institutional policies, resource availability, and workforce competencies. Barriers include fragmented systems, limited resources, and hierarchical communication challenges.
Conclusion: IPC improves the quality and comprehensiveness of antenatal care services for adolescents with unplanned pregnancies. Strengthening the policy framework, workforce competencies, and integrated service systems is essential for optimizing collaborative practices.

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INTRODUCTION

An unintended pregnancy is an unplanned pregnancy that can have adverse effects on the health of adolescents and babies, as well as on their psychological, social, and economic well-being (Pertiwi et al., 2025). 25–39% of adolescents are reluctant to seek medical care due to these impacts (Khan et al., 2019). In 2022, the United Nations Population Fund (UNFPA) reported that nearly half of all pregnancies worldwide, approximately 121 million, were unplanned (UNFPA, 2023). The World Health Organization (WHO) reports that the global adolescent birth rate has declined from 64.5 births per 1,000 women in 2023. However, the overall number of adolescent births remains high, particularly in Africa (97.9%) and the Caribbean (51.4%) (51,4%) (WHO, 2024). Based on data from the Indonesian Health Survey (2023), the number of adolescent births in Indonesia in 2023 was 857 among teenagers aged 10–19 years. This figure shows a very significant decline compared to 2018, when the number reached 19,211 cases. In nine major cities in Indonesia, there were approximately 37,000 cases of unintended pregnancy (KTD). From the study results, it was found that 12.5% of respondents were junior high or high school students, and around 27% were unmarried couples (Rifatul Aulia et al., 2025)).

The Interprofessional Practice Collaborative (IPC) in antenatal care (ANC), particularly in the care of pregnant adolescents, is not well understood, and its implementation has been suboptimal (Hendrix et al., 2024; Miftahul Fikrah et al., 2024a). Adolescents with unintended pregnancies still face barriers when trying to access ANC services due to social stigma and a lack of specialized services for adolescents, consequently some adolescents avoid seeking care during the first trimester because they are hiding their pregnancies from their families and communities, which can lead to psychological distress, including stress, anxiety, shame, and fear of rejection (Govender et al., 2020; Jumiati et al., 2025). The IPC contributes to improving services, patient safety, and cross-sector collaboration in high-risk pregnancies, particularly among adolescents with unintended pregnancies (Kuipers et al., 2021a; Sigalingging & Sulistyaningsih, 2025; Thirugnanasundralingam et al., 2023).

Previous studies have emphasized the importance of interprofessional collaboration in treating pregnant women with hepatitis B at Imelda General Hospital in Medan (Samosir et al., 2025). However, most studies have focused on the psychosocial impact on adolescents with unintended pregnancies, social stigma, delayed visits, and healthcare workers' perceptions of or evaluations of IPC programs in maternal care and high-risk obstetrics (Hendrix et al., 2024; Jumiati et al., 2025; Miftahul Fikrah et al., 2024a; Sigalingging & Sulistyaningsih, 2025). These studies have not yet used the WHO IPCP framework or the Interprofessional Education Collaborative (IPEC) approach.

Through the Primary Service Integration (ILP) program, the government emphasizes that community health centers (Puskesmas) are the main providers of health services, combining efforts to promote, prevent, cure, and rehabilitate (Palimbo et al., 2021). The program ensures services such as antenatal care (ANC), reproductive counseling, and family planning are integrated so the community receives comprehensive services in one place. This improves access, efficiency, and the quality of primary health services (Kemenkes RI, 2023). ANC services allow health workers to perform preventive screenings, reducing the risk of complications and improving the safety of adolescents with unintended pregnancies (Palimbo et al., 2021).

Therefore, the purpose of this study is to explore interprofessional collaborative practices in antenatal care services for adolescents with unintended pregnancies, including institutional support, healthcare workforce competencies, interprofessional communication, collaborative work culture, service support systems, service implementation, and their contribution to the quality of antenatal care services. Based on the background information provided above regarding the importance of interprofessional collaboration in ANC services, the researcher conducted a study entitled "Interprofessional Collaboration Practices in Antenatal Care Services for Adolescents with Unintended Pregnancies (Scoping Review)".

METHOD

Research Design

The scoping review method is used to explore literature in depth and breadth. It involves collecting information from various sources and research methods relevant to the topic being studied. The method includes five stages (Arksey & O'Malley, 2005).

1. Identifying Scoping Questions

Researchers used the Population, Concept, and Context (PCC) framework to narrow the focus of the review. The PCC framework used is as follows:

Table 1. PCC framework

Population	Concept	Context
Pregnant adolescents with unintended pregnancies (UP)	Interprofessional Collaboration (IPC) practices	Antenatal care (ANC) services in primary health facilities

2. Identifying Relevant Articles

The databases searched for articles in this review were PubMed, Wiley, ScienceDirect, and Springer. Various search strategies were employed during the article search process, including the use of wildcard symbols (*) and Boolean operators (OR, AND). The keywords used in this review included:

Tabel 2. Keyword

Population	Concept	Context
adolescent* OR teen* OR youth OR young mother* AND unintended pregnancy OR unplanned pregnancy OR unwanted pregnancy AND	interprofessional collaborat* OR team-based care AND	antenatal care OR prenatal care OR maternal health service* AND

The inclusion and exclusion criteria for this study are listed in the following table.

Table 3. Article Criteria

Inclusion criteria	Exclusion criteria
Articles from the last 10 years (2016-2025) with free full text.	Studies discussing unintended pregnancies in women with contraceptive failure
Population of adolescents (ages 10-19) who are unmarried or married, health workers in health facilities	
Studies discussing interprofessional collaboration in antenatal care services	
Studies discussing interprofessional collaboration in unintended pregnancies in adolescents	
Articles in Indonesian or English	

3. Article Selection

A search of four databases yielded 3,086 relevant articles: 1,908 from PubMed, 104 from Wiley, 40 from ScienceDirect, and 1,001 from Springer. Next, all articles were imported into Rayyan AI. Of these, 1,026 were duplicates and were deleted, leaving 2,060 articles. The articles were selected based on titles and abstracts related to "Barriers and strategies to improve the accessibility of adolescent reproductive health services." Of these articles, 1,181 were deemed irrelevant and excluded. 42 articles were obtained for selection based on full text and reselected based on the inclusion criteria, resulting in 9 relevant articles. After that, the selection process in

this review used Rayyan AI, and the articles were filtered in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flowchart, and yielding the following results:

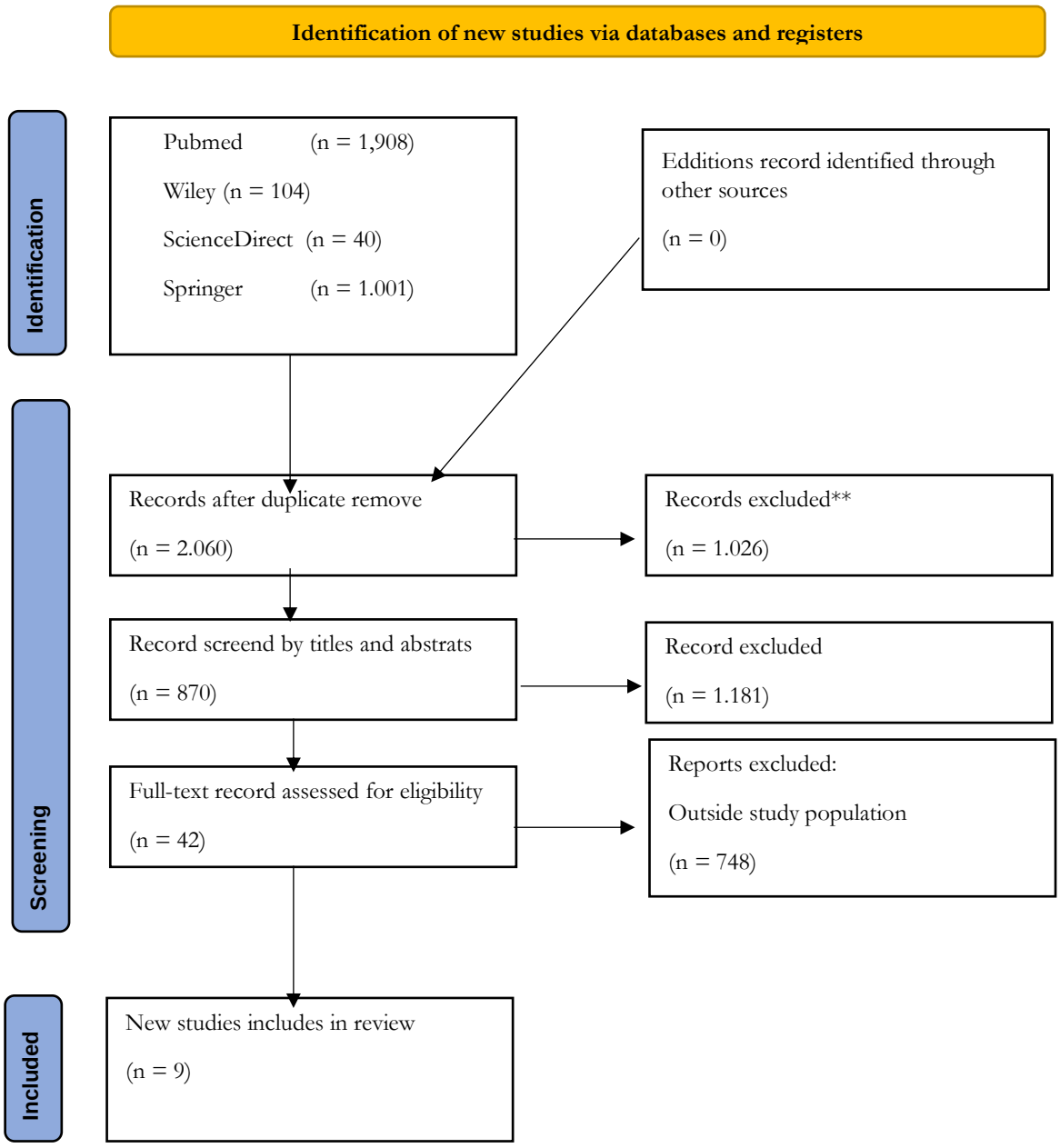

Figure 1. PRISMA Flowchart

4. Data Charting

After selecting the articles, the authors analyzed each one in terms of its title, country, objective, type of research, sample, and results. This analysis is presented in the following table:

Table 4. Charting

No	Researcher/Year	Research Title	Research Objective	Country	Research Method	Research Results
1	(Klode et al., 2025a)	Interprofessional and intersectoral collaboration in the care of vulnerable pregnant women: An interpretive study	To understand interpretations and perceptions of vulnerability during pregnancy, and one's own role and interprofessional and intersectoral collaboration practices in antenatal care for vulnerable pregnant women	Denmark	Qualitative research design with noncategorical inductive reasoning. A purposive sampling technique was used. Data collection was conducted through semi-structured interviews. Sample/respondents: Twenty-three health workers (12 from Hospital A and 11 from Hospital B). Data analysis used thematic analysis.	The study took place in two large hospitals in one of Denmark's five regions, each of which handles approximately 2,000 births per year. The results of the study suggest that interprofessional collaboration in antenatal care (ANC) is influenced by the relationships among health workers and the sectors involved, as well as the available interprofessional and intersectoral work arrangements and structures. The main barriers to collaboration are communication problems, role ambiguity, and limitations in the suboptimal referral system.
2	(Hendrix et al., 2024)	The extent of implementation and perceptions of maternity and social care professionals about two interprofessional programs for care for pregnant women: a mixed methods study	To determine the interprofessional collaboration between maternal care and social professionals to optimize care for pregnant women in vulnerable situations, a program was developed and implemented in the Netherlands	The Netherlands	The research design was mixed methods. Total and purposive sampling techniques were used for the sample. Data were collected using questionnaires and semi-structured interviews. The sample consisted of 88 health professionals. Data analysis employed systematic and thematic approaches.	Findings from the questionnaires (n = 60) and interviews (n = 28) revealed that health workers generally had a positive opinion of the program. However, understanding of and participation in the program were still limited in Groningen. The program's implementation was supported by good communication, personal relationships between professionals, and clear referral

						agreements. The professionals considered identifying vulnerabilities and making appropriate referrals essential to improving the quality of care. Successful implementation also required clear roles, joint training, and adequate time and financial support.
3	(Miftahul Fikrah et al., 2024b)	Enhancing Antenatal Care (ANC) Quality Through Interprofessional Collaboration (IPC) Among Health Workers	To determine the level of health workers' perception of infection prevention and control (IPC) in antenatal care (ANC) services at the Lubuk Buaya Community Health Center	Indonesia	A quantitative cross-sectional study design was used. The total sampling technique was used. Sample/respondents: Thirty health workers. Data were analyzed using a descriptive analysis of the CPAT questionnaire.	One hundred percent of the health workers had a high perception of IPC in KMA and ANC services. Team connection, coordination, role sharing, and common goals were rated very good, while decision-making and conflict management were the weakest components. Dentists had high perceptions of all components, while other professions had one component with moderate perceptions. Overall, collaboration was good, but improvement in decision-making and conflict management was needed.
4	(Schulz & Wirtz, 2025)	Interprofessional Collaboration in Obstetric and Midwifery Care—Multigroup Comparison of Midwives' and Physicians' Perspective	To analyze the similarities and differences in the perspectives of midwives and doctors regarding infection prevention and control (IPC) and equitable communication (EC) in prenatal/postpartum care (PPC) and birth care (BC)	Germany	Quantitative research design with a cross-sectional approach. Convenience sampling technique. Data were collected using the Interprofessional Collaboration Scale-Revised (ICS-R) and the Equitable Communication Scale. Sample/respondents: 293 midwives and 215 doctors. Data were	Significant differences in perception were found between midwives and doctors regarding communication, professional roles, and decision-making. Effective IPC was associated with improved quality of maternal care.

					analyzed using an ANOVA t-test.	
5	(Samosir et al., 2025)	The Implementation of Interprofessional Collaboration in Childbirth Hepatitis B in Indonesia	To explore and understand Interprofessional Collaboration Practices for Mothers Giving Birth with Hepatitis B at Imelda General Hospital Indonesia	Indonesia	Qualitative Research Design with a Single Case Study The purposive sampling technique was used. Data were collected through interviews, observations, and documentation. Sample/respondents: Ten health workers (one obstetrician, one medical laboratory technologist, one pharmacist, and six midwives). Data were analyzed using thematic analysis, matrices, and pattern matching.	The study describes the collaborative process from the obstetrics emergency room to the administration of hepatitis B immunoglobulin serum to infants in the neonatal ward. The service is functioning well, with compliance with PPI and timely administration of the serum. Facility support and interprofessional work ethics are also adequate. However, obstacles remain in the form of a lack of training for midwives and the absence of a specific SOP for childbirth with hepatitis B.
6	(Wakhidah EN, Cahyo K, 2017)	Factors Associated with Antenatal Care Practices among Adolescents with Unintended Pregnancies (Study in the Ponjong 1 Community Health Center, Gunungkidul District)	To determine the factors associated with ANC practices among adolescents with unintended pregnancies	Indonesia	A quantitative cross-sectional study design was used. Total sampling technique. Sample/respondents: Forty-three adolescents aged 15-19 with unintended pregnancies. Data were analyzed using univariate and bivariate statistical tests.	Most of the 43 late adolescent respondents (aged 15–19) were 17 years old (39.5%) and had graduated from junior high school (79.1%). They demonstrated generally good knowledge, attitudes, and practices regarding ANC. Most also received support from their partners, parents, and peers, though many still experienced limitations in access to and the cost of ANC. The analysis showed that knowledge about ANC was the only factor significantly related to ANC practices, while other factors did not show a meaningful relationship.

7	(Seyoum et al., 2021)	Provider perceived benefits and constraints of complete adherence to antenatal care guidelines among public health facilities, Ethiopia: A qualitative study	To explore the benefits and constraints experienced by health service providers regarding the use of ANC guidelines in public health facilities in Gondar	Ethiopia	This study employed a qualitative research design with an explanatory approach. Purposive sampling technique. Semi-structured interviews were used to collect data. Sample/respondents: Nine health service providers (two doctors and seven midwives). Data were analyzed using content analysis in ATLAS.ti.	Reported benefits of following ANC guidelines included reduced workload for service providers, maximized performance, improved safety for pregnant women, and improved service delivery processes. The three main groups of factors hindering full compliance with ANC guidelines by service providers were identified as organizational issues, knowledge, attitudes, and skills possessed by service providers, as well as the availability of training and guidance.
8	(Molenaar et al., 2018)	Needs of parents and professionals to improve shared decision-making in interprofessional maternity care practice: a qualitative Study	To explore the experiences and needs of parents and professionals regarding joint decision-making in interprofessional antenatal, natal, and postnatal care	The Netherlands	Qualitative research design with focus group discussions (FGDs). The purposive sampling technique was used. The FGD sample included 11 groups: parents, primary care midwives, hospital-based midwives, obstetricians, obstetric nurses, and delivery care assistants. Data were analyzed using thematic analysis.	Both parents and professionals understand the steps of shared decision-making (SDM) when introducing and discussing decisions and options. However, most parents are not yet actively involved in discussing and considering options before a final decision is made. The main obstacle is a lack of interprofessional collaboration, though good communication greatly helps the process. In order to improve shared decision-making, it is necessary to increase understanding of roles, communication skills, and collaboration through online, interactive, and practical interventions.

9	(Kuipers et al., 2021b)	The Comparison of the Interpersonal Action Component of Womancentred Care Reported by a Healthy Pregnant Woman in Different Practices in the Netherlands: A cross-sectional study	To examine the perceptions of pregnant women regarding the interpersonal components of midwife-centered care provided by primary care midwives working in practices of varying sizes	The Netherlands	Quantitative cross-sectional study design. Data were collected using the Client-Centered Care Questionnaire (CCCQ), and the consecutive sampling technique was employed. The sample included pregnant women receiving primary care from midwives in small (1–2 midwives), medium (3–4 midwives), and large (4–5 midwives) practices. Data were analyzed using Welch's ANOVA.	A total of 553 questionnaires were collected. The results showed that women rated midwife-centered care highest in small practices, followed by medium practices, and lowest in large practices. These score differences were statistically significant, with large to moderate effect sizes. These findings suggest that smaller midwife practices provide more midwife-centered care than larger ones.

5. Article Quality Assessment Using Critical Appraisal Tools

A critical appraisal was conducted using checklists from the Method Appraisal Tools (MMAT) and the Joanna Briggs Institute (JBI) to determine the quality of the selected articles. Nine relevant articles that aligned with the topic and inclusion criteria were identified through critical appraisal. The research methods had different critical appraisal results. At the quality assessment stage, the researchers applied A, B, C, and D ratings to categorize the articles as: A (Very Good), B (Good), C (Fair), D (Poor). The overall quality of the nine articles was in the A or "Very Good" category.

Tabel 5. Critical Appraisal

Author (Year)	Study Design	Score	Max Score	Grade
Klode et al., (2025b) A1	*Qualitative study Interpretive Description*	39	A (Very Good) = 30-40 B (Good) = 20-29 C (Fair) = 10-19 D (Poor) = 0-9	A
Hendrix et al., (2024) A2	*Mixed-methods study*	14	A = 12 – 14 (Very Good) B = 9 – 11 (Good) C = 6 – 8 (Fair) D = 1 – 5 (Poor)	A
Miftahul Fikrah et al., (2024a) A3	*Quantitative study Descriptive cross-sectional study*	27	A(Very Good) = 25-32 B (Good) = 17-24 C (Fair) = 9-16 D (Poor) = 0-8	A
Schulz & Wirtz, (2025) A4	*Quantitative study Analytical cross-sectional study*	32	A(Very Good)= 25-32 B (Good) = 17-24 C (Fair) = 9-16 D (Poor) = 0-8	A
Samosir et al., (2025) A5	*Qualitative study Embedded single-case study*	34	A (Very Good)= 30-40 B (Good) = 20-29 C (Fair) = 10-19 D (Poor) = 0-9	A
Wakhidah EN, Cahyo K, (2017) A6	*Quantitative study Cross-sectional study*	29	A (Very Good) = 30-40 B (Good) = 20-29 C (Fair) = 10-19 D (Poor) = 0-9	B
Seyoum et al., (2021)	*Qualitative study Exploratory qualitative study*	33	A (Very Good) = 30-40 B (Good) = 20-29	A

Author (Year)	Study Design	Score	Max Score	Grade
A7			C (Fair) = 10-19 D (Poor) = 0-9	
Molenaar et al., 2018) A8	*Qualitative study Focus group study*	40	A (Very Good) = 30-40 B (Good) = 20-29 C (Fair) = 10-19 D (Poor) = 0-9	A
Kuipers et al., (2021a) A9	*Quantitative study Analytical cross-sectional study*	28	A(Very Good) = 25-32 B (Good) = 17-24 C (Fair) = 9-16 D (Poor) = 0-8	A

RESULTS AND DISCUSSION

Results

Based on the search results from four databases using keywords through the PCC framework, the article selection process used Rayyan AI. The article selection process is explained in the Prisma Flow Chart, and 9 relevant articles were obtained and assessed using Critical Appraisal from the Joanna Briggs Institute (JBI) and Method Appraisal Tools (MMAT). The following are the findings from the reviewed articles on interprofessional collaboration in antenatal care among adolescents experiencing unplanned pregnancies.

Article Characteristics

The characteristics of the nine selected articles included the country of origin and the research method.

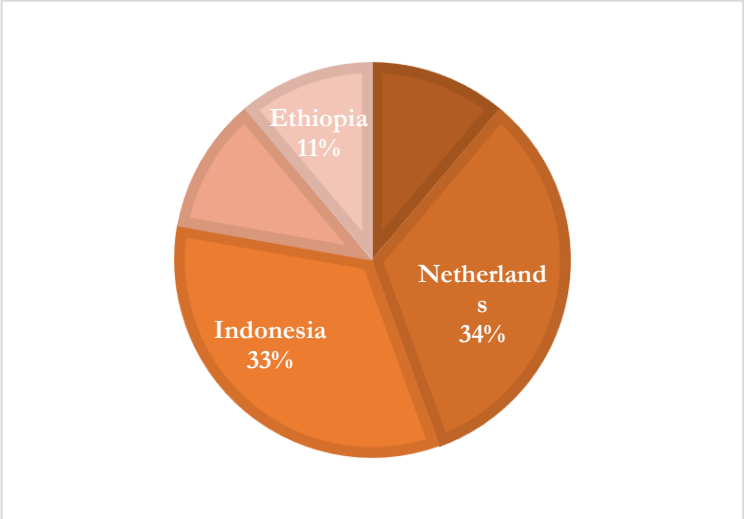

Figure 2. Country Characteristics:

Based on country distribution, the analyzed articles originated from high-income countries such as Denmark, the Netherlands, and Germany, as well as low- and middle-income countries (LMICs) such as Indonesia and Ethiopia, indicating that interprofessional collaborative practices in antenatal care services are implemented across various healthcare system contexts.

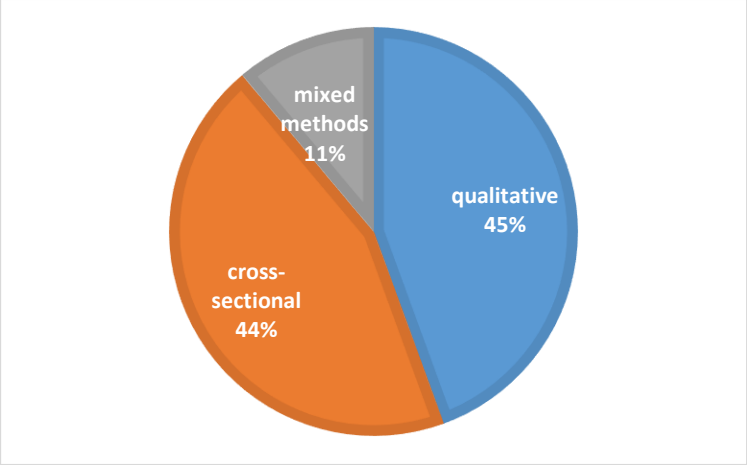

Figure 3. Article Characteristics

The diagram above shows that the articles' characteristics are [4] qualitative methods, [4] cross-sectional methods, and [1] mixed methods.

The following are some of the themes discussed in the coverage study by the researchers:

Table 6. Theme Mapping

Theme	Subtheme	Article
Institutional support in ANC collaboration practices	Policies and regulations supporting in vulnerable adolescent ANC	1, 2, 5, and 7
	Clarity of roles and responsibilities between professions	1, 2, and 4
	Availability of resources (time, funding, human resources)	2 and 7
	Integration of health and social services	1, 2, and 7
Competencies in interprofessional collaboration among health workers in ANC for adolescents with unintended pregnancies	Values and ethics in ANC services for adolescents with unintended pregnancies	1, 4, and 9
	Understanding of roles and boundaries between professions	3, 4, and 7
	Professional responsibility in decision-making	3, 4, and 8
Interprofessional communication and decision-making	Effective communication between professions in ANC services	3, 4, and 8
	Shared decision-making centered on adolescents.	8 and 9
	Communication barriers due to professional hierarchy	1 and 4
A collaborative work culture in ANC services	Working relationships and trust between professions	3 and 4
	Conflict resolution mechanisms within the ANC team	
	Active participation of all professions in care planning	1, 2, and 8
Environment and support systems for collaborative practice	ANC facility design and service flow	2 and 6
	Referral and cross-service coordination systems	
	Technology and information system support	1, 2, and 7
		2 and 7
Implementation of Collaborative ANC for Adolescents with Unintended Pregnancies	Identification of adolescents' biopsychosocial vulnerabilities	1, 6, and 7
	Access to and coverage of ANC services	6 and 7
	Continuous care and post-service follow-up	2 and 8
Impact of interprofessional collaborative practice on ANC quality	Improved quality and safety of ANC services	2, 3, and 7
	Adolescent satisfaction and experience with ANC services	6 and 9
	Optimization of maternal and fetal health outcomes	2 and 7

Discussion

A review of nine articles in accordance with the scope of the study revealed several articles discussing interprofessional collaboration practices in antenatal care (ANC) for adolescents with unintended pregnancies.

Theme 1: Institutional Support in ANC Collaboration Practices

Policies and Regulations Supporting IPC in ANC for Vulnerable Adolescents

Article [1] explains that clear policies and regulations help health workers collaborate more effectively in providing ANC services to vulnerable adolescents, including those with unintended pregnancies (Klode et al., 2025b). Article [2] states that programs supported by official policies facilitate collaboration between health and social services in addressing complex pregnancy issues (Hendrix et al., 2024). Article [5] states that clear policies and regulations help health workers collaborate in a focused manner when providing ANC services, particularly in cases of high-risk pregnancies, such as those involving adolescents with unintended pregnancies (Samosir et al., 2025). Article [7] states that the lack of strong operational policies makes it difficult to implement collaborative practices consistently in the field (Seyoum et al., 2021).

Programs supported by official policies facilitate cooperation between health services and social services in dealing with complex pregnancy issues (Hendrix et al., 2024). According to Samosir et al., (2025), clear policies and regulations help health workers collaborate in a focused manner in providing ANC services, especially in cases of high-risk pregnancies, such as adolescents with unintended pregnancies. Interprofessional collaboration can work better if it is supported by an organizational structure and mutually agreed-upon work rules (Smith et al., 2019). The lack of strong operational policies makes collaborative practices difficult to implement consistently in the field (Seyoum et al., 2021). In line with Samosir et al., (2025), who state that the absence of specific SOPs and operational guidelines makes collaborative practices difficult to implement consistently in health services.

The implementation of interprofessional collaboration in antenatal care services in Indonesia has begun to develop through the Primary Care Integration Program (ILP) and integrated maternal services, particularly at primary healthcare facilities (Samosir & Sulistyaningsih, 2023). However, the implementation of such collaboration is still not uniformly supported by national policies, operational standards, and technical guidelines that specifically regulate collaborative ANC services for adolescents with unintended pregnancies (Sulistyaningsih et al., 2020). According to Wakhidah EN, Cahyo K, (2017), more specific policy strengthening, including the development of adolescent-friendly ANC regulations, is highly necessary to ensure more consistent and sustainable collaborative services.

Clarity of Roles and Responsibilities among Professions

Article [1] explains that a clear division of roles helps each health worker understand their duties in ANC services (Klode et al., 2025b). Article 2 states that an agreement on roles between professions makes service coordination more structured and efficient (Hendrix et al., 2024). Article [4] states that differences in the understanding of roles between professions, particularly between midwives and doctors, are often still found and can hinder teamwork (Schulz & Wirtz, 2025).

A clear division of roles helps each health worker understand their duties in ANC services. Agreement on roles between professions makes service coordination more structured and efficient (Hendrix et al., 2024). According to Smith et al., (2019), interprofessional collaboration risks causing conflict and role imbalance if roles and responsibilities are not well understood. Differences in the understanding of roles between professions, particularly between midwives and doctors, are commonly found and can hinder teamwork (Schulz & Wirtz, 2025). Xyrichis et al., (2025) state that a clear understanding of each profession's tasks makes collaboration in ANC

services easier for health workers. Using joint work protocols can clarify roles and improve coordination between professions (Alenazi & Alenazi, 2025).

Availability of Resources (Time, Funding, Human Resources)

Article [2] states that the availability of organizational resources, including service time and the number of health workers, affects the success of implementing interprofessional collaboration in ANC (Hendrix et al., 2024). Article [7] explains that funding constraints and high workloads hinder health workers from carrying out interprofessional coordination and communication optimally. Organizational resources and support have been shown to improve team performance and compliance with service guidelines (Seyoum et al., 2021).

In line with the research by Samosir et al., (2025), the availability of organizational resources, including service time and the number of health workers, affects the successful implementation of interprofessional collaboration in ANC (Hendrix et al., 2024). Limited funding and high workloads hinder health workers from carrying out optimal interprofessional coordination and communication. However, organizational resources and support improve team performance and compliance with service guidelines (Seyoum et al., 2021). A lack of resources and training can hinder communication and interprofessional collaboration (Manurung et al., 2023). The limited number of healthcare workers, high workloads, and lack of training in infection prevention and control (IPC) remain major obstacles in Indonesia to the implementation of collaborative care (Samosir & Sulistyaningsih, 2023). Therefore, collaborative practices require ongoing organizational support, including time and specialized training for health workers (Xyrichis et al., 2025).

The Integration of Health and Social Services

Article [1] explains that the integration of health and social services enables comprehensive management of pregnancy (Klode et al., 2025b). Article [2] states that cross-sector collaboration facilitates the referral process, coordination, and follow-up of antenatal care for women and adolescents with complex needs, such as unintended pregnancies (Hendrix et al., 2024). Article [7] explains that the lack of integration in the pregnancy care service system has resulted in fragmentation and a lack of sustainability (Seyoum et al., 2021).

Integrating health and social services enables comprehensive pregnancy care. Cross-sector collaboration facilitates referral processes, coordination, and follow-up for antenatal care of women and adolescents with complex needs, such as unintended pregnancies (Hendrix et al., 2024). In line with Smith et al., (2019), cross-sector collaboration is essential because the needs of pregnant women are too complex for one profession to address alone. The lack of integration of maternity care services results in fragmented, unsustainable care (Seyoum et al., 2021). da Veiga et al., (2023) found that integrated antenatal care (ANC) services address pregnancy issues comprehensively, considering medical, social, and psychological perspectives. Cross-sectoral coordination in Indonesia is still not functioning optimally, so the psychological and social needs of adolescents have not been fully met (Wakhidah EN, Cahyo K, 2017).

The findings from Theme 1 show that interprofessional collaboration is greatly influenced by policies, role sharing, resource availability, and service integration. These findings align with the IPCP Framework (WHO, 2010), which is a concept that underpins the implementation of interprofessional education and collaborative practice (IPEC) worldwide. The goal of IPEC is to improve public health. As illustrated in Figure 2.3 below, the IPCP Framework explains that collaboration can only function effectively if supported by clear organizational systems and policies.

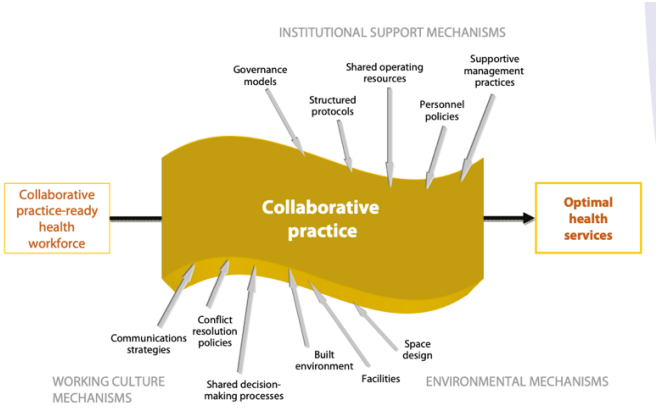

Figure 5. Framework IPCP (WHO, 2010)

Thus, the findings of this study confirm that implementing consistent collaborative antenatal care (ANC) services for adolescents with sexually transmitted diseases (STDs) requires strong institutional support.

Theme 2: Competence in Interprofessional Collaboration Among Health Workers in ANC Services for Adolescents with Unintended Pregnancies

Values and Ethics in ANC Services for Adolescents with Unintended Pregnancies

Article [1] explains that professional attitudes and values influence how health workers treat adolescents with STIs (Klode et al., 2025b). Article [4] states that differences in ethical views between professions can affect cooperation in ANC services (Schulz & Wirtz, 2025). Article [9] explains that services that respect the experiences and conditions of adolescents improve interactions between health workers and clients (Kuipers et al., 2021a).

Professional attitudes and values influence how health workers treat adolescents with STIs. Differences in ethical views between professions can affect cooperation in ANC services (Schulz & Wirtz, 2025). Samosir et al., (2025) argue that professional values and ethics influence how health workers respect each other and protect patients' rights in collaborative practice. Services that respect the experiences and conditions of adolescents improve interactions between health workers and clients (Kuipers et al., 2021a). In line with Smith et al., (2019), trust and mutual respect are essential for interprofessional collaboration.

Understanding the Roles and Boundaries among Professions

Article [3] explains that a good understanding of each profession's duties helps the team work smoothly (Miftahul Fikrah et al., 2024a). Article [4] states that a lack of understanding of roles can reinforce positions and hinder interprofessional collaboration (Schulz & Wirtz, 2025). Article [7] explains that limited interprofessional training affects health workers' ability to collaborate (Seyoum et al., 2021).

A good understanding of each profession's tasks helps the team work smoothly. A lack of understanding of roles can reinforce a position and hinder interprofessional collaboration (Schulz & Wirtz, 2025). According to Xyrichis et al., (2025), understanding the boundaries of each profession's authority helps prevent overlapping tasks. Unclear role boundaries can confuse and hinder teamwork (Alenazi & Alenazi, 2025). Limited interprofessional training can also affect health workers' ability to collaborate (Seyoum et al., 2021). Samosir et al., (2025) found that interprofessional training and communication improve understanding of roles in ANC services.

Professional Responsibility in Decision-Making

Article [4] states that clinical decisions in ANC are often influenced by professional position and title (Schulz & Wirtz, 2025). Article [3] explains that a collaborative approach to decision-making allows for a more comprehensive exchange of clinical perspectives (Miftahul Fikrah et al., 2024a). Article 8 states that interprofessional involvement in decision-making has been shown to support the safety and quality of antenatal care (Molenaar et al., 2018).

Clinical decisions in ANC are often influenced by professional positions and roles (Schulz & Wirtz, 2025). Sulistyaningsih et al., (2020) state that clinical decision-making involving various professions can improve patient safety. A collaborative approach to decision-making enables a more thorough exchange of clinical perspectives (Miftahul Fikrah et al., 2024a). Joint decisions promote a shared sense of responsibility among professions (Smith et al., 2019). Studies have shown that interprofessional involvement in decision-making supports the safety and quality of antenatal care (Molenaar et al., 2018).

The discussion in Theme 2 shows that values, ethics, role understanding, and professional responsibilities greatly influence the quality of interprofessional collaboration. These findings align with those of IPEC, (2023), which emphasizes the implementation of interprofessional education and collaborative practice worldwide, including in Indonesia. Figure 2.4 below emphasizes that interprofessional collaboration depends on the competencies of individual health workers, especially their ability to respect the roles of other professions.

Figure 6. IPEC Competencies for IPCP (IPEC, 2023)

Thus, these findings suggest that enhancing interprofessional competencies is crucial for strengthening collaborative antenatal care (ANC) services.

Theme 3: Interprofessional Communication and Decision Making

Effective Communication among Professions in ANC Services

Article [3] explains that open communication helps health workers share information more effectively (Miftahul Fikrah et al., 2024a). Article [4] states that differences in communication styles between professions remain a daily practice challenge (Schulz & Wirtz, 2025). Article [8] states that good communication supports coordination and more focused service decisions (Molenaar et al., 2018).

Manurung et al., (2023) state that a lack of communication skills is one of the main reasons why collaboration does not run optimally. Open communication helps health workers share information more effectively. Differences in communication styles between professions remain a challenge in daily practice (Schulz & Wirtz, 2025). Good communication supports coordination

and more targeted service decisions (Molenaar et al., 2018). In line with Xyrichis et al., (2025), effective communication between professions is crucial for preventing errors in health services.

Shared Decision-making Centered on Adolescents

Article [8] states that shared decision-making helps adolescents become more involved in their pregnancy care (Molenaar et al., 2018). Article [9] explains that the quality of communication between health workers and adolescents greatly affects the success of shared decision-making (Kuipers et al., 2021a).

Shared decision-making helps adolescents become more involved in their pregnancy care. In line with (Smith et al., 2019), shared decision-making increases adolescent involvement in their pregnancy care. The quality of communication between health workers and adolescents greatly affects the success of shared decision-making (Kuipers et al., 2021a). The active involvement of pregnant women in antenatal care (ANC) improves their experience and satisfaction with the service (Alenazi & Alenazi, 2025).

The implementation of shared decision-making in antenatal care (ANC) services for adolescents with unintended pregnancies in Indonesia remains suboptimal, as services tend to focus more on medical conditions than on adolescents' psychosocial needs (Wakhidah EN, Cahyo K, 2017). Social stigma causes some adolescents to feel ashamed and afraid to open up during ANC visits (Jumiati et al., 2025). ANC services need to adopt a more adolescent-friendly approach through supportive, non-judgmental communication and by involving adolescents in the service decision-making process (Kuipers et al., 2021a). Improving interprofessional communication skills is also crucial to support ANC services that are more responsive to the needs of adolescents with unintended pregnancies (Miftahul Fikrah et al., 2024a).

Communication Barriers Due to Professional Hierarchy

Article [1] explains that differences in position and power between professions affect communication within teams (Klode et al., 2025b) Article [4] states that more dominant professions can limit the contributions of other professions in clinical discussions (Schulz & Wirtz, 2025).

These differences affect the ease of communication within teams. Xyrichis et al., (2025) state that differences in power between professions can hinder open communication within healthcare teams. More dominant professions can limit the contributions of other professions in clinical discussions (Schulz & Wirtz, 2025). An overly strong hierarchy makes it difficult for collaboration to develop in a balanced manner (Smith et al., 2019).

The findings on theme 3 show that ineffective communication and professional hierarchies still impede collaboration. These findings align with IPEC, (2023), as illustrated in Figure 6, which emphasizes the importance of open communication and equal teamwork between professions. Thus, these findings confirm that good interprofessional communication is essential for supporting joint decision-making centered on adolescents.

Theme 4: Collaborative Work Culture in ANC Services

Working Relationships and Trust Between Professions

Article [1] explains that trusting working relationships facilitate collaboration between professions (Klode et al., 2025b). Article [3] explains that good cooperation improves the coordination and effectiveness of ANC services (Miftahul Fikrah et al., 2024a). Article [4] states that a lack of trust can hinder teamwork and collaboration (Schulz & Wirtz, 2025).

Trusting working relationships facilitate interprofessional collaboration. Doornebosch et al., (2024) state that good working relationships between professions help create more effective collaboration in ANC services. Good cooperation improves the coordination and effectiveness of ANC services (Miftahul Fikrah et al., 2024a). Trust between professions facilitates information

exchange and coordination within the health team (Xyrichis et al., 2025). A lack of trust can hinder teamwork and collaboration (Schulz & Wirtz, 2025). Xyrichis et al., (2025) found that a lack of mutual trust can cause communication barriers and weaken teamwork.

Conflict Resolution Mechanisms in ANC Teams

Article [3] explains that the absence of a clear conflict resolution system can disrupt teamwork (Miftahul Fikrah et al., 2024a). Article [4] states that improperly handled conflicts can hinder communication between professions (Schulz & Wirtz, 2025).

The absence of a clear conflict resolution system can disrupt teamwork. Xyrichis et al., (2025) state that conflicts within healthcare teams can arise if there is no clear problem-solving mechanism. Conflicts that are not handled properly can hinder communication between professions (Schulz & Wirtz, 2025). Manurung et al., (2023) state that conflicts that are not managed properly can disrupt communication and reduce the quality of collaboration. A collaborative approach and open communication help teams resolve differences constructively (Xyrichis et al., 2025).

The active participation of all professions in ANC planning is essential

Article [1] explains that involving all professions in ANC care planning makes it more comprehensive (Klode et al., 2025b). Article [2] states that interprofessional collaboration helps integrate various perspectives into ANC services (Hendrix et al., 2024). Joint participation supports collaborative decision-making (Molenaar et al., 2018). According to Doornebosch et al., (2024), interprofessional participation enables health workers to contribute based on their areas of expertise.

Findings on Theme 4 demonstrate that working relationships, trust, and conflict resolution methods influence the development of a collaborative culture. These findings align with the IPCP framework (WHO, 2010), as depicted in Figure 6, which emphasizes that work culture is an integral component of an organizational environment that fosters collaboration. These findings are also related to the IPEC, which emphasizes the importance of the active participation of all professions in teamwork. Thus, a collaborative work culture is formed from a combination of supportive systems and professional attitudes.

Theme 5: Environment and Systems that Support Collaborative Practices

Facility Design and ANC Service Flow

Article [2] states that comfortable and accessible facilities encourage adolescents to utilize ANC services (Hendrix et al., 2024). Article [6] explains that an unsupportive service environment can hinder adolescents from accessing ANC services (Wakhidah EN, Cahyo K, 2017).

Comfortable and easily accessible facilities encourage adolescents to utilize ANC services (Hendrix et al., 2024). In line with da Veiga et al., (2023), comfortable, adolescent-friendly health facilities facilitate access to ANC services. However, an unsupportive service environment can hinder adolescents from accessing ANC services (Wakhidah EN, Cahyo K, 2017). According to da Veiga et al., (2023) an unsupportive service environment can prevent adolescents from making optimal use of ANC services.

Referral Systems and Cross-Service Coordination

Article [1] explains that coordinated referral systems help maintain the continuity of ANC services (Klode et al., 2025b). Article [2] states that cross-service cooperation speeds up the referral and follow-up process (Hendrix et al., 2024). Article [7] explains that a lack of coordination can reduce the quality of pregnancy services (Seyoum et al., 2021).

A coordinated referral system helps maintain continuity of ANC services (Klode et al., 2025b). Cross-service cooperation speeds up the referral and follow-up process (Hendrix et al.,

2024). In line with Smith et al., (2019), cross-service coordination speeds up the handling of high-risk pregnancy cases. Lack of coordination can reduce the quality of pregnancy services (Seyoum et al., 2021). In line with Manurung et al., (2023), the lack of referral coordination can cause services to be interrupted and less effective.

The maternal referral system in Indonesia has supported interprofessional collaboration through cooperation between primary health care facilities and referral hospitals (Kemenkes RI, 2023). The integration of health services with social and psychological services for adolescents with unintended pregnancies remains suboptimal, resulting in services that are not yet fully comprehensive (Wakhidah EN, Cahyo K, 2017). Cross-sectoral coordination in some health facilities remains inconsistent due to resource constraints and the absence of a standardized collaborative service system (Samosir et al., 2025). Strengthening cross-sectoral coordination and a more integrated referral system is needed to support ANC services for adolescents with unintended pregnancies (Seyoum et al., 2021).

Technology and Information Systems Support

Article [2] states that using information systems helps with recording and coordinating ANC services (Hendrix et al., 2024). Article [7] explains that technological limitations are a barrier to interprofessional collaboration (Seyoum et al., 2021).

The use of information systems facilitates the recording and coordination of ANC services (Hendrix et al., 2024). According to (Alenazi & Alenazi, 2025), health information systems facilitate data recording and exchange between professions. Technology improves accountability and coordination in collaborative practice. Technological limitations are one of the barriers to interprofessional collaboration (Seyoum et al., 2021).

The findings in Theme 5 demonstrate that facilities, referral systems, and information technology play a significant role in supporting interprofessional collaboration. These findings align with the IPCP framework by (WHO, 2010), as illustrated in Figure 5, which emphasizes that the physical environment and support systems influence the effectiveness of teamwork. Thus, collaborative ANC services will be more effective if supported by an adequate work environment and service system.

Theme 6: Implementation of Collaborative ANC for Adolescents with Unintended Pregnancies

Biopsychosocial Vulnerability of Adolescents

Article [1] explains that identifying the health, psychological, and social problems of adolescents is the first step in ANC planning. Article 6 explains that adolescents with UP often experience problems impacting their social and psychological well-being, requiring interprofessional collaboration (Wakhidah EN, Cahyo K, 2017). Article [7] explains that cross-sector collaboration helps address adolescent problems more comprehensively (Seyoum et al., 2021).

Identifying adolescents' health, psychological, and social problems is the first step in ANC planning. According to (da Veiga et al., 2023), this identification is also the first step in providing collaborative ANC services. Adolescents with STIs often experience social and psychological problems that require interprofessional cooperation (Wakhidah EN, Cahyo K, 2017). Cross-sector collaboration helps address adolescent issues more comprehensively (Seyoum et al., 2021). In line with Smith et al., (2019), interprofessional collaboration helps health workers better understand the needs of adolescents.

Access to and Coverage of ANC Services

Article [6] explains that cost and access issues remain barriers to adolescents utilizing ANC services (Wakhidah EN, Cahyo K, 2017). Article [7] explains that the social and economic

conditions of adolescents reinforce the importance of a collaborative approach to ANC services (Seyoum et al., 2021).

Cost and access issues continue to be barriers for adolescents utilizing ANC services (Wakhidah EN, Cahyo K, 2017). According to da Veiga et al., (2023), cost and geographical access barriers continue to affect adolescents' utilization of ANC services. The socioeconomic conditions of adolescents reinforce the importance of a collaborative approach to ANC services (Seyoum et al., 2021). In line with Smith et al., (2019), a collaborative approach helps reduce access barriers through cross-service coordination.

Adolescents with UP in Indonesia still face various barriers to accessing ANC services, such as social stigma, financial constraints, and fear of rejection by their community (Wakhidah EN, Cahyo K, 2017). This situation leads some adolescents to delay prenatal check-ups, putting them at risk of delayed management of pregnancy complications (Jumiati et al., 2025). Adolescent-friendly ANC services still need to be improved, particularly in terms of ensuring accessibility, maintaining privacy, and eliminating stigma (Sulistyaningsih et al., 2020).

Continuous Care and Post-Service Follow-up

Article [2] states that continuous ANC services require interprofessional coordination (Hendrix et al., 2024). Article [8] states that interprofessional collaboration ensures follow-up care during and after pregnancy (Molenaar et al., 2018). Sustainable ANC services require interprofessional coordination (Hendrix et al., 2024). Sulistyaningsih et al. (2020) state that continuous care requires good interprofessional collaboration and improves the quality of ANC services. Interprofessional collaboration ensures follow-up care during and after pregnancy (Molenaar et al., 2018).

The discussion indicates that the identification of vulnerability, accessibility, and continuity of care requires cross-professional and cross-sectoral collaboration. This finding is consistent with the World Health Organization Interprofessional Collaborative Practice (IPCP) framework, as illustrated in Figure 5, which emphasizes that collaboration must be explicitly manifested in daily service practice. Therefore, the results of this study demonstrate that interprofessional collaboration plays a critical role in ensuring the continuity of antenatal care (ANC) services for adolescents.

Theme 7: The Impact of Interprofessional Collaborative Practice on the Quality of ANC Services

Improvement of the quality and safety of ANC services

Article [2] states that interprofessional collaboration improves the quality and safety of ANC services (Hendrix et al., 2024). Article [3] explains that collaboration enables healthcare providers to adhere more consistently to established service guidelines (Miftahul Fikrah et al., 2024a). Article [7] indicates that effective teamwork enhances the overall performance of pregnancy care services (Seyoum et al., 2021).

Interprofessional collaboration has been shown to improve the quality and safety of ANC services (Hendrix et al., 2024). In line with Sulistyaningsih et al., (2020), Interprofessional collaboration has been demonstrated to enhance both the quality and safety of ANC provision. Collaboration supports healthcare professionals in delivering care in accordance with clinical guidelines (Miftahul Fikrah et al., 2024a). Effective teamwork contributes to improves overall performance in pregnancy care services (Seyoum et al., 2021). According to Xyrichis et al., (2025), strong teamwork helps prevent errors and enhances patient safety.

Adolescent Satisfaction and Experiences in ANC Services

Article [6] explains that adolescents' experiences in ANC are influenced by the manner in which healthcare providers interact with and support them (Wakhidah EN, Cahyo K, 2017).

Article [9] states that a needs-based approach tailored to adolescents increases satisfaction with ANC services (Kuipers et al., 2021a).

Adolescents' experiences in ANC are shaped by the quality of interaction and support provided by healthcare professionals (Wakhidah EN, Cahyo K, 2017). According to (da Veiga et al., 2023), these experiences are influenced by the quality of provider-patient interactions, and interprofessional collaboration contributes to creating a more positive care experience. A care approach that focuses on adolescents' specific needs increases satisfaction with ANC services (Kuipers et al., 2021a). Similarly, Smith et al., (2019) report that client-centered care enhances adolescents' comfort and satisfaction.

Optimization of Maternal and Fetal Health Outcomes

Article [2] reports that interprofessional collaboration contributes to improved maternal and fetal health outcomes (Hendrix et al., 2024). Article [7] explains that an integrated service approach helps prevent pregnancy-related complications and that well-implemented collaboration contributes to improved maternal and perinatal outcomes (Seyoum et al., 2021).

Interprofessional collaboration supports improvements in maternal and fetal health (Hendrix et al., 2024). Samosir et al., (2025) similarly report that collaborative approaches contribute to better maternal and fetal health outcomes. Integrated service delivery helps prevent pregnancy complications, and effective implementation of collaborative practice is associated with improved maternal and perinatal outcomes (Seyoum et al., 2021)

CONCLUSION

Interprofessional collaborative practice in ANC services for adolescents with unintended pregnancies is influenced by multiple factors at the system, organizational, and provider levels. Interprofessional collaboration plays a crucial role in delivering comprehensive ANC services that address both the medical and psychosocial needs of adolescents with unintended pregnancies. The findings of this literature synthesis indicate that institutional support such as enabling policies, role clarity among healthcare professionals, adequate resource availability, and integration of health and social services is fundamental to successful collaboration.

In addition, healthcare professionals' competencies particularly in relation to values and ethics, role understanding, communication, and shared decision making represent key determinants in the implementation of interprofessional collaboration. The findings also suggest that workplace culture and interprofessional communication significantly influence the quality of collaboration. Trust-based professional relationships and active engagement of all professions support effective teamwork, whereas professional hierarchies and inequitable communication remain persistent barriers. From an environmental perspective, referral systems, service facilities, and technological support play important roles in maintaining coordination and continuity of care.

Various barriers to interprofessional collaborative practice remain evident at the institutional level, within workplace culture, across support systems, and in relation to the specific conditions of adolescents with unintended pregnancies, including stigma and psychosocial vulnerability. Nevertheless, interprofessional collaborative practice contributes to more coordinated ANC services, improved communication, and a more comprehensive care approach for adolescents experiencing unintended pregnancies.

Overall, optimizing interprofessional collaborative practice in ANC services for adolescents with unintended pregnancies requires strengthened policy frameworks, enhanced healthcare workforce competencies, improved support systems, and a more adolescent-sensitive approach to service delivery.

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AUTHOR CONTRIBUTION STATEMENT

MI was responsible for the overall research process, including study conceptualization and design, data collection, analysis and interpretation, manuscript drafting, and final revision. Viana Bari Umaroh contributed to conceptualization, methodology development, data curation, and preparation of the original manuscript draft. Sulistyaningsih participated in literature searching, article selection, quality appraisal, data analysis, interpretation of findings, and manuscript review and editing. Andari Wuri Astuti provided academic supervision, methodological validation, data verification, visualization review, and project administration. All authors contributed to the critical revision of the manuscript, approved the final version for publication, and agreed to be accountable for all aspects of the work.

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