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Systematic Review

Optimization of Health Workers in The Implementation of Provider Initiated HIV Testing and Counseling (PITC)

Faiqatul Hikmah [1*], Angelina da Costa Fernandes [2], Rinda Nurul Karimah [3], Iwan Abdi Suandana [4], Yoswenita Susindra [5]

[1] Health Promotion – Health Department, Politeknik Negeri Jember, (faiqatul@polije.ac.id)
[2] Obstetrics department, Instituto Superior Cristal, Timor Leste, (angelinafernandes02@yahoo.co.id)
[3] Health Information Management – Health Department, Politeknik Negeri Jember, (rindank6@gmail.com)
[4] Health Promotion – Health Department, Politeknik Negeri Jember, (Iwan@polije.ac.id)
[5] Health Promotion – Health Department, Politeknik Negeri Jember, (yoswenita@polije.ac.id)

Abstract: Background: Provider Initiated HIV Testing and Counseling (PITC) is a service offering HIV testing by health workers to all patients in health facilities1. The quality of PITC services that do not meet standards is still a problem, thus becoming an obstacle to PITC services. This causes PITC user satisfaction to be low. The aim of this research is to determine efforts to optimize health workers in the implementation of provider-initiated HIV testing and counseling (PITC). This systematic research was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method to assess, review and synthesize research. Search through the database by entering the keywords "HIV", "HIV test", "Provider initiated HIV testing and counseling" "PITC", on PubMed, Science Direct, ProQuest. 9 research journals were selected after going through specified stages. Barriers for health workers are high workload, lack of human resources and not all health workers are trained in PITC. Optimizing PITC services in health care settings cannot stand alone, health services that are integrated with other health services require the ability of health workers to be able to offer HIV tests to patients. Optimizing human resources in the health sector can be done by increasing the ability of health workers to carry out PITC through good education and training. The complete implementation of PITC starting from the pretest and posttest will emphasize changes in patient behavior to improve their health status..

Keywords: HIV, HIV testing, Provider initiated HIV testing and counseling, PITC

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1. Introduction

Provider Initiated HIV Testing and Counselling (PITC) is a service offering HIV testing by health workers to all patients in health facilities[1]. PITC is an essential opportunity for early screening for HIV diagnosis, which is fundamental to HIV treatment and prevention.

HIVThe government program for routine HIV tests at health service locations needs to implement PITC. Implementing PITC in healthcare settings can increase the coverage of HIV testing services. [2].

However, the quality of PITC services that do not meet standards is still a problem, causing low PITC user satisfaction. Such as explaining that the HIV examination carried out is confidential, asking for the patient's consent in the form of a signature before the action is carried out, and explaining that the HIV that occurs in a person's body becomes AIDS are things are really needed by patients but are not always provided [3].

Obstacles in implementing PITC that can be found in health service settings include the limited number of human resources available, limitations in reaching patients such as pregnant women who live far from health centers, health workers' knowledge about PITC

still lacking, PITC officers collecting data in were not timely manner resulting The national HIV information system reports delayed, sometimes HIV test results were not the same day, and not all test results are delivered, not all service locations have Information and Education Communication (IEC) Media[4].

PITC services also experienced disruption during the COVID-19 pandemic, which caused a decrease in HIV testing services by 47.6%, resulting in a 63% decrease in HIV diagnosis and a 49.5% decrease in CD4 testing due to the COVID-19 pandemic[5]. This research aims to determine efforts to optimize health workers in the implementation of provider-initiated HIV testing and counseling (PITC).

2. Materials and Methods

Design Studies

The design of this study reflects previous research by collecting information on the implementation of PITC in various health service settings. This systematic research was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to assess, review, and synthesize research.

Eligibility criteria

The study search was carried out using three databases: PubMed, ScienceDirect, and ProQuest. The study search strategy uses keywords in the search engine. The keywords used are "HIV," "HIV test," provider-initiated testing and counseling," and "PITC."

The inclusion criteria in this study:

1) Article search period 2014-2024
2) English articles,
3) Published in a peer-reviewed journal.
4) Discuss the implementation of PITC.
5) Carried out at a health service location

The exclusion criteria in this study:

1) systematic review articles.
2) The article does not discuss offering HIV testing

The focus of this observation is efforts to optimize PITC activities that have been recorded.

Synthesis Method

Synthesis was carried out qualitatively and narratively. Meta-analysis was not possible due to the variety of existing studies.

Data analysis

The supplement for results was a manual search that was also performed by browsing the reference lists for the selected studies. The research results were collected through search methods and analyzed through several stages. First, duplicate studies were screened. Then, the first and second authors separately evaluated based on the inclusion and exclusion criteria by considering the title and abstract. An in-depth evaluation using inclusion and exclusion criteria was carried out after reading the article in its entirety. The first and second authors carried out this process independently. The results of the research evaluation will be reported in accordance with PRISMA guidelines.

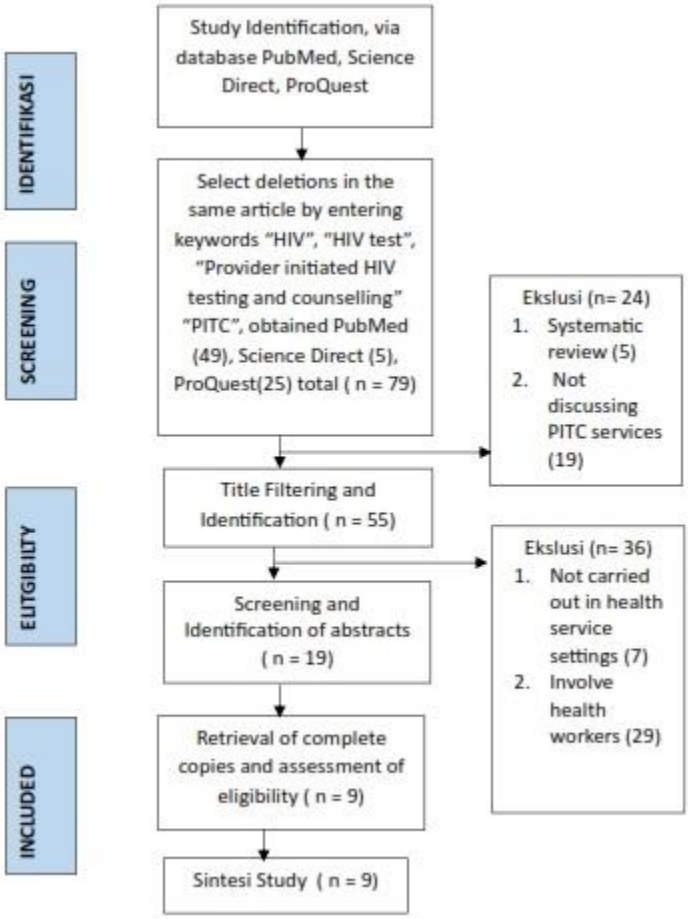

Figure 1. Flow diagram of PRISMA review

3. Results and Discussion

3.1 Results

The selection results of journals based on keywords that have been determined produced 79 articles obtained from PubMed (49), Science Direct (5), and ProQuest (25) for a total of (n = 79) period of the last 10 years (2014 to 2024). Article selection was carried out by applying predetermined inclusion criteria. Identification in the title and abstract is very selective. Journal articles that were not suitable were excluded because they were not relevant, and then relevant journal discussions were filtered to obtain 9 journal articles.

Table 1. Articles discussing PITC Optimization Efforts

NO	Publication Identification	Research purposes	PITC Implementation	PITC Optimization
1	**Title :** *Perceived Barriers Toward Provider-Initiated HIV Testing and Counseling (PITC) in Pediatric Clinics: A Qualitative Study Involving Two*	The research aims to accelerate universal access to HIV prevention, treatment, care, and support services for PLWHA. This	The study findings indicated six barriers, including inadequate training on PITC among healthcare providers, lack of practice in providing PITC, inability to appropriately counsel patients due to little knowledge, poor attitude of	Barriers to the provision of PITC from the perspectives of health care providers, patients, health facilities, and policy are interrelated, although findings may not be generalizable.

NO	Publication Identification	Research purposes	PITC Implementation	PITC Optimization
	Regional Hospitals in Dar-Es-Salaam, Tanzania[6]. **Research location:** Tanzania **Method :** Exploratory cross-sectional study. In-depth interviews were used to collect data from informants at Mwananyamala and Temeke District Hospitals in Dar-es-Salaam**Partisipan**: 19 health workers	study aimed to explore perceived barriers to the provision of PITC in pediatric clinics	healthcare providers in providing PITC, shortage of healthcare providers, and little motivation and incentives among health care providers. Patient barriers include little understanding of PITC among parents/guardians of children and its importance in terms of their children's health, parental absence, overcrowding in clinics, HIV/AIDS stigma, lack of privacy in clinics, and harsh language from some healthcare providers. Health facility barriers include inadequate space to provide PITC and a shortage of medical equipment and medical supplies for HIV testing. Policy-related barriers include the absence of PITC guidelines in every consultation room.	Recommendations that can be given include that the government, together with policymakers and managers, overcome the barriers identified in this study to encourage the provision of PITC and further improve PITC services.
2	**Title:** *Practices and Obstacles to Provider-Initiated HIV Testing and Counseling (PITC) Among Healthcare Providers in Côte d'Ivoire*[7]. **Research location**: Côte d'Ivoire (West Africa) **Method:** A cross-sectional survey was conducted between February and November 2018 by telephone among midwives, nurses and doctors throughout Côte d'Ivoire	This survey aimed to identify PITC practices and barriers among healthcare professionals in Côte d'Ivoire.	Although environmental opportunities (such as dedicated staff or services) influence PITC, ability and motivation influence the initiation of HIV testing, but these effects vary by medical profession. For midwives, routine integration of proposed HIV testing as part of standard care appears to be an essential element for systematic HIV testing. However, gaps remain, and the informed consent process could be further simplified and aligned with other screening processes. For nurses, improving their skills and exceptionally specialized HIV testing training can lead to better testing. For	PITC practices and barriers vary by profession. In addition to improving environmental opportunities such as dedicated staff or services, strengthening the motivation and ability of healthcare professionals to propose testing may increase PITC coverage. Each profession has its obstacles in implementing PITC. Solid motivation is needed so that all professions can apply for PITC in the same way.

NO	Publication Identification	Research purposes	PITC Implementation	PITC Optimization
	Partisipan: 425 midwives, 425 nurses, 600 doctors.		physicians, the motivations and perceptions associated with PITC practice suggest a need for action to increase their awareness of PITC and more precise recommendations about when to offer HIV testing.	
3	Title : *How providers influence the implementation of provider-initiated HIV testing and counseling in Botswana: a qualitative study*[8]. Research location: Botswana(South Africa) **Method** : A qualitative study with in-depth interviews **Participants:** 45 health workers at 15 healthcare facilities in 3 districts	This study explores how provider attitudes and behavior influence the implementation of provider-initiated HIV interventions, testing, and counseling in primary healthcare settings in Botswana.	We found that nurses across facilities and districts largely refused to offer and provide provider-initiated HIV testing and counselling (PITC) for three reasons: (1) they felt overworked and did not have time, (2) they felt that is not their job, and (3) they are afraid to counsel patients, especially fearing a positive HIV test result. These factors are primarily related to health system constraints that affect providers' capacity to do their work. An essential underlying point emerged: lay nurses and counsellors were dissatisfied with their salaries and career prospects, making them unmotivated to work. Variations were seen in urban and rural areas: nurses in urban areas generally felt overworked, and PITC was seen as contributing to workload. While nurses in rural areas did not feel overworked, they felt that PITC was not their job, and they were unmotivated due to general unhappiness with their rural posts.	Service provider attitudes and behaviours are obstacles that are essential in determining PITC implementation in Botswana. Service provider factors should be considered in improving existing PITC programs and designing new ones. Addressing service providers' obstacles would be better than simply recruiting more health workers.
4	Title : *Lost opportunities to identify and treat HIV-positive patients: results from a baseline assessment*	To assess the implementation of provider-initiated health care testing and counselling	Various models of PITC currently exist at Ministry of Health facilities in Malawi. Only antenatal and maternity clinics demonstrate high rates of	PITC implementation will have good coverage if HIV testing is carried out routinely, such as offering tests at

NO	Publication Identification	Research purposes	PITC Implementation	PITC Optimization
	of provider-initiated HIV testing and counselling (PITC) in Malawi[9]. Research location: *Malawi* **Method** : The quantitative method with a cross-sectional study **Participants:** 71 health workers	(PITC) for HIV in Malawi.	routine opt-out testing (ROOT) form of PITC as recommended by WHO. A low ratio of facility visits that include HIV testing indicates missed opportunities for HIV testing. However, the high proportion of TB and antenatal clinic patients with known HIV status suggests that routine testing may be warranted. These results emphasize the need to develop transparent and standardized PITC policies and protocols and to overcome the constraints of limited health commodities, infrastructure and human resources.	antenatal clinics and TB polyclinics, which will include more HIV tests.
5	Title : *Determinants of HIV Testing and Counseling Utilization among Trainee Nurses and Midwives in Central Region of Ghana*[10]. **Method** : Cross-sectional descriptive research **Participants:** perawat dan bidan trainee	Studi ini meneliti determinan penggunaan (HIV Testing & Conseling) HTC di antara perawat dan bidan magang di keperawatan publik dan perguruan tinggi pelatihan kebidanan di Wilayah Tengah Ghana.	Various factors influence the student nurse/midwife's decision to utilise HTC services. The positive attitude of trainee nurses/midwives towards utilising HTC is an expression of confidence in HTC services as a gateway to primary and secondary modes of prevention. This may enhance their ability to suggest HTC services to clients in future employment settings. Findings provide more support for ongoing health education programs that promote positive attitudinal behaviour toward HTC, especially among men, and those who are single may underestimate the use of HTC services.	Knowledge, attitudes and behaviour influence a person's ability to carry out an HIV test. This research discusses the willingness of intern nurses and midwives to offer HIV testing. Judging from knowledge, attitudes and behaviour.
6	Title : *Impact Of An Educational Intervention On*	This study investigated the determinants of HTC (HIV	Study participants included public health professionals (50%), dentists (16.7%) and clinical professionals	Health education interventions are a powerful tool for increasing the

NO	Publication Identification	Research purposes	PITC Implementation	PITC Optimization
	Knowledgeof Health Care Professionals Regarding HIV-AIDS In Lahore, Pakistan[11]. Research location: Pakistan **Method** : Educational intervention studies **Participants:** Health Profesional	Testing and Counseling) use among trainee nurses and midwives in public nursing and midwifery training colleges in the Central Region of Ghana.	(33.3%). Significant differences were observed in the knowledge of healthcare professionals after the intervention considering essential reasons such as worsening moral values (p = 0.045) for the HIV epidemic in Pakistan, HIV/AIDS prevalence status (p = 0.046), awareness about free voluntary counselling and centres/services testing (VCT) (p = 0.019), interactions with HIV positive people (p = 0.01), discriminatory attitudes due to family members (p = 0.032) and availability of services for people living with HIV in Pakistan.	awareness of healthcare professionals
7	Title : *Evaluation of intensified provider initiated testing and counselling program in Harare City, 2017–2018* [11]. Research location: Harare City, Zimbabwe **Method** : cross-sectional descriptive study **Participants:** health workers and patient	This study aims to evaluate interventions to increase effectiveness and provide input into decision-making regarding universal access to HIV testing programs.	A total of (n-45) health workers and (n = 70) clients were interviewed, with response rates of (92%) and (84%) respectively. The median client age was 31 years (Q1 = 24; Q3 = 38), and the median length of service for health workers was 2 (Q1 = 1; Q3 = 26). Of the 133,899 clients eligible for testing after screening, 98,587 (74%) received testing, leaving a gap of 35,312 (26%). However, 21/45 (47%) health workers stated high workload in the morning as the leading cause of leaks. In addition, 25/70 (36%) clients stated long waiting times as a reason for not taking an HIV test.	HIV testing coverage for eligible clients is not optimal; 26% choose not to take the test. We recommend strengthening health facility systems such as reviewing patient flow, reallocating staff during busy HIV testing times and increasing the use of HIV self-testing kits for clients concerned about waiting times to increase HIV testing coverage.
8	Title : *Facilitators and barriers to implementing provider-initiated*	Identifying key obstacles to normalizing PICT implementation in 10 Ekurhuleni	Clinicians and other Lay counsellors clearly understand the PICT policy—recognizing its purpose and value. An	Using the normalization process theory (NPT) helps identify barriers that hinder the

NO	Publication Identification	Research purposes	PITC Implementation	PITC Optimization
	HIV counselling and testing at the clinic-level in Ekurhuleni District, South Africa[11]. Research location: South Africa **Method** : Qualitative Research with in-depth interviews **Participants:** health workers	District health facilities in South Africa.	identified barrier to the normalization of PICT among physicians is offering HIV testing based on suspicion of HIV despite an understanding that PICT involves offering testing to all clients. In addition, physicians considered PICT incompatible with their clinical roles and considered it a lay counselor's responsibility. The primary facilitator is the participation of all health service workers, especially the presence of lay counsellors, even though they also face obstacles such as lack of workspace and low appreciation for health services.	normalization of PITC and its integration into routine patient care. These barriers can be modified with low-cost interventions that promote the fit of PICT to the clinician role and integrate the lay counsellor role in the inpatient flow at the facility.
9	Title : *Strengthening provider-initiated testing and counselling in Zimbabwe by deploying supplemental providers: a time series analysis*[12]. Research location: Zimbabwe **Method** : a time series analysis **Participants:** health workers	Evaluate whether the deployment of additional PITC providers in public facilities in Zimbabwe is associated with an increase in the number of people tested and diagnosed with HIV.	Additional PITC providers performed an average of 62 (SD = 52) HIV tests per week and diagnosed 4.4 (SD = 4.9) people with HIV per week. However, using facility reports from the same period, we found that each person-week of PITC provider placement in a facility was associated with an additional 16.7 (95% CI, 12.2–21.1) individuals tested and an additional 0.9 (95% CI, 0.5–1.2) individuals diagnosed with HIV. the study found that staffing in clinics was associated with a more significant increase in HIV testing than staffing in polyclinics or hospitals (24.0 vs 9.8; $p < 0.001$).	This program increased the number of people tested and diagnosed with HIV. The difference between the average weekly HIV testing performed by additional PITC providers (62) and the increase in facility-level HIV testing associated with one week of PITC provider deployment (16.7) suggests that additional PITC providers are replacing existing staff who may have been assigned to fulfil other duties at the facility.

3.2 Discussion

Overall, nine articles were reviewed regarding optimizing health workers in implementing PITC as a tool to increase patient coverage for confirming HIV diagnoses.

So that prevention and treatment can be carried out as early as possible. These studies are not always representative of the application of PITC. Some studies are limited to specific regions or countries, which may affect the generalizability of the findings. Required a more comprehensive understanding of the effectiveness of PITC implementation, it is essential to involve various PITC implementation studies in a more diverse range of regions or countries.

PITC Implementation Barriers

This research found various barriers to implementing PITC. A broad understanding of the PITC's purpose and its benefits is required. Apart from that, it was also found that almost half of the health workers interviewed reported that high workload was the main reason for not meeting the HIV testing target for all patients who were eligible for PITC. Workload challenges are primarily experienced in the morning when a high number of patients arrive at health service facilities[13]. Lack of human resources and staff transfers are unavoidable in PITC implemented[12].

Another contributing factor is that not all health workers are trained to offer HIV testing[13,4]. Sometimes they feel that offering an HIV test is not a responsibility that must be carried out[7]. Lack of knowledge from health workers about PITC results in the inability of health workers to carry out pretest and post-test counselling. Other health workers are also afraid to counsel patients, especially if the HIV test result is positive[8].

Other research shows that one-third of managers or leaders in healthcare settings must have good knowledge of the PITC program so they can improve the system. Leaders in health service settings must ensure the availability of human and material resources capable of preventing PITC service disruption [13].

Optimizing PITC Implementation

Integrating PICT services into existing services, such as offering and providing PICT in General, Dental, KIA, and TB clinics or optimizing patient waiting rooms to initiate PITC, can optimize the implementation of PITC by minimizing the budget[14]. PITC services that are integrated with other services will further increase their coverage[15].

The PITC provision services improvement for confirming an HIV diagnosis by adding more health service personnel so that they can serve PITC with more extensive coverage and numerous. Human resource interventions should be designed to limit the impact of healthcare worker turnover and expand patient targeting[12].

Optimization of all health workers at health service settings by training focusing on the importance of PITC, optimizing the workflow of health workers, recording equipment used for PITC, and providing PITC SOPs that are appropriate for health service settings. Hold orientation for new health workers regarding PITC and mentoring in the workplace[16].

Increase PITC service time not only in effective hours by arranging appropriate scheduling. PITC services that are easily accessible to all groups will result in more people being caught in the HIV test, this means more people will know their HIV status.

Providing PITC services in accordance with standards where patients receive a pretest and posttest will help patients increase their understanding of HIV tests. Other research states that PITC services for pregnant women have proven effective in improving the knowledge and attitudes of pregnant women[17].

Increasing knowledge in patients during the pre-test must be supported by the presence of IEC media so that patients will understand more easily. Other research states that the choice of IEC media in health promotion at PITC services shows that the use of audiovisual media in pregnant women's classes is more effective than flip sheets in increasing the knowledge and attitudes of pregnant women in preventing complications of pregnancy and childbirth. The health promotion media needed for PITC services is audiovisual media delivered via social media. The use of audiovisual media in the form of WhatsApp videos has proven effective in increasing healthcare workers' knowledge about surface disinfection[17].

The HIV testing process must be closed by reading the HIV test results, known as post-test counseling. Post-test counseling or post-test is an essential part of PITC because it provides an opportunity for clients to learn about prevention, treatment, care, and support services related to HIV[18]. Post-test counseling must be carried out in-depth on PITC so that the service provider is adequately trained in basic client-centered counseling, or a trained counselor must manage the pre-and post-test counseling sessions[19].

Competent health workers are really needed in PITC services both in terms of the quantity of human resources and the quality of PITC services. Of course, this can be improved by carrying out good PITC training, as well as the need to evaluate the PITC services that have been provided so that quality improvements can be carried out periodically[16].

4. Conclusions

Optimizing PITC services in the healthcare environment cannot be freestanding. Integrated health services require health workers to be able to offer HIV tests to patients. Optimizing human resources in the health sector can be done by increasing the ability of health workers to carry out PITC through sound education and training. The complete implementation of PITC, starting from the pretest and posttest, will emphasize changes in patient behavior to improve their health status.

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References

1. Atlaw D, Sahiledengle B, Degno S, et al. Utilization of provider-initiated HIV testing and counselling in Ethiopia: a systematic review and meta-analysis. Trop Med Health. 2022;50(1). doi:10.1186/s41182-022-00420-9
2. Puspasari D. Triple Elimination of Mother-to-Child Transmission of HIV, Syphilis, and Hepatitis B in Indonesia Towards Universal Coverage: Progress and Challenges. Vrije Univ Amsterdam. Published online 2019.
3. Hikmah F, Notobroto HB, Devy SR, Triyono EA. Patient satisfaction in HIV counseling and testing services with the importance- performance analysis (IPA) and customer satisfaction index (CSI) method. NeuroQuantology |. 2023;21(1):564-572. doi:10.48047/nq.2023.21.01.NQ20044
4. Hikmah F, Notobroto HB, Devy SR, Triyono EA, Rokhmah D. Strengths , weaknesses , opportunities , and threats (SWOT) Analysis of Provider Initiated HIV Testing and Counseling (PITC) Implementation of Patients During the Covid-19 Pandemic at Primary Health Centers (Puskesmas) Indonesia. 2019;22(01):1331-1341.
5. Kurniawati ND, Irvana TR, ... Upaya peningkatan layanan tes HIV selama pandemi Covid-19: Tinjauan sistematis. … dan Pemikir Ilm …. 2023;8(2):143-148. http://jurnal.unissula.ac.id/index.php/jnm/article/view/30004%0Ahttp://jurnal.unissula.ac.id/index.php/jnm/article/download/30004/8079
6. Marwa R, Anaeli A. Perceived barriers toward provider-initiated hiv testing and counseling (Pitc) in pediatric clinics: A qualitative study involving two regional hospitals in dar-es-salaam, tanzania. HIV/AIDS - Res Palliat Care. 2020;12:141-150. doi:10.2147/HIV.S235818
7. Inghels M, Kouassi AK, Niangoran S, et al. Practices and Obstacles to Provider-Initiated HIV Testing and Counseling (PITC) Among Healthcare Providers in Côte d'Ivoire. AIDS Behav. 2020;24(5). doi:10.1007/s10461-020-02923-0

8. Ahmed S, Bärnighausen T, Daniels N, Marlink R, Roberts MJ. How providers influence the implementation of provider-initiated HIV testing and counseling in Botswana: A qualitative study. Implement Sci. 2016;11(1):1-13. doi:10.1186/s13012-015-0361-7
9. Ahmed S, Schwarz M, Flick RJ, et al. Lost opportunities to identify and treat HIV-positive patients: Results from a baseline assessment of provider-initiated HIV testing and counselling (PITC) in Malawi. Trop Med Int Heal. 2016;21(4):479-485. doi:10.1111/tmi.12671
10. Sambah F, Hormenu T, Ahinkorah B. Determinants of HIV Testing and Counseling Utilization among Trainee Nurses and Midwives in Central Region of Ghana. 2019;(July):0-10.
11. Manzoor I, Khan F, Navied U, Abbas SM. Impact Of An Educational Intervention On Knowledge Of Health Care Professionals Regarding Hiv-Aids In Lahore, Pakistan. J Ayub Med Coll Abbottabad. 2019;31(3):372-378.
12. Bochner AF, Tippett Barr BA, Makunike B, et al. Strengthening provider-initiated testing and counselling in Zimbabwe by deploying supplemental providers: A time series analysis. BMC Health Serv Res. 2019;19(1):1-8. doi:10.1186/s12913-019-4169-z
13. Mandere E, Mungati M, Gonese G, et al. Evaluation of intensified provider initiated testing and counselling program in Harare City, 2017–2018. BMC Public Health. 2021;21(1):1-7. doi:10.1186/s12889-021-10485-6
14. Mshweshwe-Pakela N, Mabuto T, Ntombela N, et al. Facilitators and barriers to implementing provider-initiated HIV counselling and testing at the clinic-level in Ekurhuleni District, South Africa. Implement Sci Commun. 2022;3(1):1-9. doi:10.1186/s43058-022-00269-3
15. Hensen B, Baggaley R, Wong VJ, et al. Universal voluntary HIV testing in antenatal care settings: A review of the contribution of provider-initiated testing & counselling. Trop Med Int Heal. 2012;17(1):59-70. doi:10.1111/j.1365-3156.2011.02893.x
16. Kassa G, Dougherty G, Matson MC, et al. Improving inpatient provider-initiated HIV testing and counseling in Sierra Leone. PLoS One. 2020;311:1-11. doi:10.1371/journal.pone.0236358
17. Dongoran N. Analisis Penggunaan Media Promosi Kesehatan Layanan (Pitc) Provider Initiated Testing Counseling Pada Ibu HamiL. J Kesehat. 2023;1(1):88-100.
18. Colebunders R, Beelaert G, Wellens R. HIV testing in developing countries [20]. Lancet. 1997;349(9060):1258. doi:10.1016/S0140-6736(05)62460-9
19. Kennedy CE, Fonner VA, Sweat MDF, Okero A, Baggaley R, O'Reilly KR. Provider-Initiated HIV Testing and Counseling in Low- and Middle-Income Countries: A Systematic Review. AIDS Behav. 2013;17(5):1571-1590. doi:10.1007/s10461-012-0241-y.Provider-Initiated