HIV Testing Service Uptake in Finland: A Study on Barriers and Facilitators

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Laurea University of Applied Sciences **Abstract**

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Since the 1970s when the first case of the human immunodeficiency virus was detected, there have been many controversies since the topic is a sensitive one. Since then, it has been classified as a global epidemic having claimed millions of people so far. Globally, at least 75 million people have been infected with the virus and about 32 million people have died due to the epidemic. However, due to advancement in treatment, nowadays HIV has been considered a manageable condition, but if appropriate interventions are not initiated early, it can advance to acquired immunodeficiency syndrome leading to opportunistic diseases, and hence death. Although HIV testing is crucial for prevention and early diagnosis, late diagnosis still remains an area of concern in many countries, Finland being one of them.
The goal of this study was to increase awareness of accessibility and the use of HIV testing service in Finland to reduce late diagnosis. The objective of this study was to seek evidence on factors that contribute to low HIV testing service uptake in Finland, and factors that when put into practice can lead to increased HIV testing service uptake. The research questions for this study were finding out the factors that act as barriers to HIV testing service uptake in Finland, and the factors that when put into practice can lead into increased HIV testing service uptake in Finland.

Integrative literature review was used as a method for this study. Data search was conducted in May 2020 by using four databases. Ten qualitative and quantitative studies with varying designs were included after data evaluation was done. Critical Appraisal Skills Program for qualitative studies and systematic reviews and STROBE for the cross-sectional survey were used to assess the quality of included articles. Evidences from primary articles were extracted and key barriers and facilitators to HIV testing were identified, categorized, summarized, and organized in an evidence table.

Identified barriers included lack of knowledge and awareness of HIV, lack of HIV risk perception, lack of access to HIV testing, providers' time constraints, communication problem, and fear and stigma. In addition, the identified facilitators included increasing knowledge and awareness about HIV, integrating HIV testing services into primary healthcare and normalizing testing, and access to testing.

HIV testing is a crucial step for prevention and early diagnosis of HIV. Therefore, recognizing the key barriers and facilitators to HIV testing is essential to increase population testing uptake capacity. The findings can be used as a tool to facilitate creation of effective strategies, aimed at increasing HIV testing service uptake, and decreasing the number of infected people who are unaware of their status.

Keywords: Human immunodeficiency virus (HIV), testing, barriers, facilitators, integrative literature review

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1 Introduction

Since the 1970s when the first case of the human immunodeficiency virus (HIV) was detected, there have been many controversies since the topic is a sensitive one (AIDS Virus Education Research Trust 2019). Since then, it has been classified as a global epidemic having claimed millions of people so far. Globally, at least 75 million people have been infected with the virus and about 32 million people have died due to the epidemic. (World Health Organization 2018).

However, due to advancement in treatment, nowadays HIV has been considered a manageable condition, but if appropriate interventions are not initiated early, HIV can advance to acquired immunodeficiency syndrome (AIDS) leading to opportunistic diseases, and hence death. HIV testing remains the only means to providing early diagnosis to ensure that appropriate treatments are started early for those found to have been infected with the virus. To add, early and regular HIV testing and early diagnosis will lead to preserving the quality of life of those infected when treatment is started early. Early and frequent HIV testing will also enhance the reduction of the number of undiagnosed cases hence preventing transmission of the HIV virus (Public Health Agency of Canada 2014).

Late diagnosis remains an area of concern in many countries, Finland being one of them. The United Nations' (UN) 90-90-90 target to end HIV epidemic by 2020 aim in achieving 90% of people living with HIV knowing their status, 90% of all people diagnosed with HIV receive treatments, and 90% of all people receiving treatment will be virally suppressed. Therefore, HIV testing is crucial to achieving the first "90" (Joint United Nations Programme on HIV and AIDS 2014). Globally, in 2018 79% of people living with HIV knew their status, among those who knew their status 78% were accessing treatments, and among those accessing treatments 87% were virally suppressed (UNAIDS 2019). By 79% of people living with HIV knowing their status, this shows much has been achieved globally, but still there is a gap remaining to achieving the 90% target.

In Finland, low testing service uptake remains a problem. Finnish Institute for Health and Welfare (Terveyden ja hyvinvoinnin laitos 2018) estimated that, there were about 400 people in Finland living with HIV but are unaware of their infection, with most cases being diagnosed in the late stage when HIV has already progressed to AIDS. Moreover, an expert from Helsinki HIV clinic also confirmed that late diagnosis is an issue of concern in Finland because there is low uptake of HIV testing in Finnish population. This was during a meeting with one of the authors at the beginning of 2018. Therefore, authors decided to conduct a study to find out the

factors that contributes to low HIV testing service uptake in Finland (barriers), and factors that when put into practice can lead to increased HIV testing service uptake (facilitators).

2 Human immunodeficiency virus and acquired immunodeficiency syndrome

Human Immunodeficiency Virus (HIV) is a type of virus that affects immune system of the individuals by destroying and deforming immune cells, thus making infected persons loose ability to fight against infections, hence becoming immunodeficient slowly by slowly. The infection of HIV is determined by measuring CD4 cell count, a typical way of measuring immune function of the body. (WHO 2019). When there are not enough CD4 cells in the bloodstream, the body become more susceptible to microorganisms which it used to fight off easily before, making infections that normally causes mild illnesses a severe problem (Olalla, Reyes and Caylà 2012). There are two species of HIV that infect humans. HIV-1 has many strains and responsible HIV-related diseases and its predominant virus worldwide. HIV-2, which is less transmittable and uncommon, is mainly confined in West Africa but can also be found in other countries with have link to West Africa (AVERT 2019). Over decades, efforts to develop a suitable vaccine for HIV has not been successful due to the reason that, HIV has ability to modify its structure (Olalla et al. 2012). On the other hand, Acquired Immunodeficiency Syndrome (AIDS) is the advanced stage of HIV infection and can take 2-15 years to develop (WHO 2019). AIDS is associated with manifestation of illnesses such as some types of cancer, tuberculosis, candidiasis, pneumonia, and many other opportunistic infections (AVERT 2019).

HIV is transmitted through sexual contacts, infected blood, through breast milk from mother to child, and the virus can be transmitted from mother to child during childbirth (AVERT 2019). Some more common daily contacts such as kissing, hugging, shaking hands, sharing food and water do not pose any risk of being infected with HIV (WHO 2019). Risk factors are unprotected vaginal or anal sex, multiple sex partners, sharing contaminated needles or syringes, having another sexually transmitted disease such as syphilis and chlamydia and accidental needle sticks especially among healthcare workers (WHO 2019).

HIV can be prevented by taking various precautions such as practicing safe sex by for example using condom, seeking treatment early for other sexually transmitted diseases such as syphilis and chlamydia, use of clean needles among healthcare workers as well as following hospital guidelines in case of needle stick, reducing the number of sex partners and abstaining (AVERT 2019). Other methods to prevent HIV transmission are use of Pre-exposure prophylaxis (PrEps) for those who are HIV negative and are at risk of contracting HIV, and post-exposure prophylaxis (PEPS) in case of potential exposure and treatment has to be started within 72 hours of exposure. However, HIV testing remains the main HIV preventive measure since it is the only way to know whether a person is infected or not, and it is very crucial in cutting transmission

chain. Testing provides an opportunity to those who test HIV negative to choose to remain negative, and to those who test HIV positive to start a treatment regime, hence preventing further transmission (Centres for Disease Control and Prevention 2019).

2.1 Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome in global context

Statistics released by Joint United Nations Programme on HIV and AIDS (UNAIDS) 2019, estimated that by the end of 2018, there were 37.9 million people living with HIV worldwide. Of all the victims, 36.2 million were adults and 1.7 million children of under 15 years of age. In the same report, it is outlined that 770 000 people died out of AIDS related complications in only 2018, and 8.1 million people were living with the virus unknowingly. Out of all people living with HIV in 2018, 79% knew their status, 62% had access to treatment and 53% were virally suppressed. The 2018 HIV and AIDS regional statistics are represented in Table 1.

Region	People living with HIV 2018	New HIV infections in 2018	AIDS related death in 2018	People accessing treatment 2018
Eastern and Southern Africa	20.6 million	800 000	310 000	13.8 million
Asia and the Pacific	5.9 million	310 000	200 000	3.6 million
Western and Central Africa	5.0 million	280 000	160 000	2.6 million
Latin America	1.9 million	100 000	35 000	1.2 million
The Caribbean	340 000	16 000	6700	187 000
Middle East and North Africa	240 000	20,000	8400	78 000
Eastern Europe and Asia	1.7 million	150 000	38 000	684 000
Western and Central Europe and North America	2.2 million	68 000	13 000	1.7 million
Global Total	37.9 million	1.7 million	770 000	23.3 million

Table 1: Regional statistics of HIV and AIDS (UNAIDS 2019) modified by authors

2.2 Human immunodeficiency virus and acquired immunodeficiency syndrome in finland

In Finland, first case of HIV was found in 1980 and since then the number of new HIV infections has gradually increased yearly, with the sexual contacts being the most common way of transmitting HIV infections (THL 2013). According to the report of Finnish Institute for Health and Welfare (2013), by 2012 altogether 300 people had died of AIDS in Finland. In the year 2000 to 2011, AIDS related diseases remain the main cause of death in the records of Helsinki HIV clinic, with AIDS related deaths totaling up to 43% of all 83 cases while AIDS malignancies

causing 15% and cardio-vascular diseases 10% of all deaths (Hanttu 2017). In the latest statistics, by 24th of May 2020, 4239 case of HIV infections in total have been reported in Finland since the first case 1980 with 149 cases being reported only in 2018 and 43 cases between 1st of January and 24th of May 2020 (THL 2020).

In Finland, much effort has been put to tackle with HIV/AIDS through prevention and treatment schemes. The Finnish government has made HIV treatment and care for people living with HIV free and HIV screening is free for every citizen. (Hanttu 2017). Free HIV clinics have been established in cities like Helsinki, Oulu, and Tampere. HIV clinics deals with free HIV testing, counselling, and providing support to those affected. Sex educational campaigns have been going on in Finland for years. Since 2007, compulsory sexual reproductive health education has been included in the curriculum of all secondary schools and vocational schools. (Korhonen, Kylmä, Houtsonen, Välimäki & Suominen 2012; European Centre for Disease Prevention and Control 2012). Despite all these efforts Finnish government has made to provided HIV & AIDS preventive and treatments services, late diagnosis remains a great problem in Finland as well as in other European countries and there is increasing number of people living with HIV virus unknowing. According to European Centre for Disease Prevention and Control (2015), 1 in 7 people in EU/EEA are infected with HIV and they do not know they are infected. However, this hinder early diagnosis and treatment of sexually transmitted diseases HIV being one of them and may continue the chain of transmission (Haapa 2018).

Finnish Institute for Health and Welfare (2018) estimated that, there are about 400 people in Finland living with HIV virus but are unaware of infection, with most cases being diagnosed in the late stage when it has progressed to AIDS. At this stage, the body immune system is already weak thus weakening the effectiveness of the treatment and increasing chances of contracting more opportunistic infections (THL 2013). Furthermore, an expert from Helsinki HIV clinic also confirmed that late diagnosis is an issue of concern in Finland because there is low uptake of HIV testing in Finnish population. This was during a meeting with one of the authors at the beginning of 2018. Therefore, authors decided to conduct a study to find out the factors that contributes to low HIV testing service uptake in Finland (barriers), and factors that when put into practice can lead to increased HIV testing service uptake (facilitators).

3 Goals, Objectives, and Research Questions

The goal of this integrative literature review is to increase awareness of accessibility and the use of HIV testing service in Finland to reduce late diagnosis. The objective of this study is to seek evidence on factors that contribute to low HIV testing service uptake in Finland, and factors that when put into practice can lead to increased HIV testing service uptake. The factors

can in turn be used as a tool to facilitate creation of effective strategies aimed at increasing HIV testing service uptake in Finland.

The research questions for the integrative literature review:

1. What are the factors that act as barriers to HIV testing service uptake in Finland?

2. What are the facilitators that when put into practice can lead into increased HIV testing service uptake in Finland?

4 Study method and data search process

4.1 Study method

Integrative literature review was used as a study method. An integrative literature review is a method that provides a broader understanding of a phenomenon or healthcare problem by recapitulating past empirical or theoretical literature (Whittemore & Knafl, 2005). Therefore, the reason for choosing integrative literature review as a method for this study was the presumption that barriers and facilitators to HIV testing service uptake have not been systematically studied in Finland.

An integrative literature review synthesizes knowledge and facts using quantitative and qualitative methods including critical analysis, knowledge synthesis of topic, conceptual and logical reasoning and used as a catalyst research for further study. The integrative review narrates the topic by critically analyzing of the literature. This includes the origin and archive of the particular topic. (Whittemore, Chao, Jang, Minges & Park 2014). The integrative review methodology key prerequisite is a well thought work with a comprehensive detailed, conclusion of which may be a significant contribution to a certain body of knowledge and, consequence, to practice and research. (Russell 2005).

In Addition, an integrative review literature review synthesizes the evidence from numerous qualitative and quantitative studies from a holistic conceptualization and critical analysis, synthesis of the literature to date. Integrative reviews provide and may offers valuable new perspectives for proper new understanding on the topic. (Torraco 2005). The integrative review method is an approach which allows of the diverse formative composition of multiple methodologies which are experimental and non-experimental research studies. (Whittemore & Knafl, 2005).

To rationalize of the approach to acquire peer-reviewed studies which have applied the methodology, Whittemore (2005) conceptualizes the integrative review as occurring in five stages

modified by Cooper's (2008). The stages are (1) problem formulation, (2) data collection or literature search, (3) evaluation of data, (4) data analysis, and (5) interpretation and presentation of results.

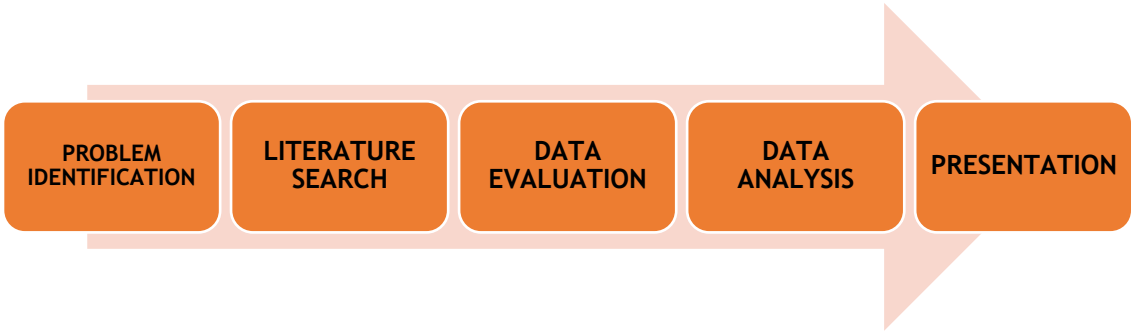

Figure 1: Five stages of integrative literature review from Whittemore (2005) modified by the authors

4.2 Inclusion and exclusion criteria

Defining inclusion and exclusion criteria is crucial in research work. With mutual agreement, the inclusion and exclusion criteria were outlined before the commencement of data search. Data published between 2015 and 2020 were included in the study. The reason for deciding to use literatures published between 2015 and 2020 is because the topic of barriers and facilitators to HIV testing has been continuously studied globally. Therefore, to get the latest and up to date information, the authors saw the need to limit the data search by the year of publication. Peer review literatures published in English language were included in the study. There was no population limit. The inclusion and exclusion criteria table, and study implementation timetable are presented in the Table 2 and 3, respectively.

Inclusion criteria	Exclusion criteria
Literatures published in English	Other languages
Literatures published between 2015-2020	Literatures published before 2015
Peer reviewed journal and articles, original publications, peer reviewed conference publications, guidelines/recommendations on HIV testing service uptake.	Textbooks, pro-gradu thesis, newspapers, narrative literature reviews, case reports
Contents focusing on HIV testing/ HIV testing service uptake/barriers/facilitators	Contents not focusing on HIV testing/ HIV testing service uptake/barriers/facilitators
All population included	

Table 2: Inclusion and exclusion criteria

Stages	Timetable
Planning stage	
Subject choosing and method and presenting the topic to the tutor teacher	November 2019
Thesis plan	November 2019-April 2020
Implementation stage	
Literature review & data collection	April- May 2020
Data evaluation	May 2020
Data analysis, results, and conclusion	May 2020
Final stage	
Thesis presentation	Early June 2020
Publication of thesis	June 2020

Table 3: Timetable

4.3 Data search process and review

Data search was conducted in May 2020. After thorough discussion and guidance from the school librarian, writers searched data published in western countries between 2015 and 2020 using four electronic databases namely, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, ProQuest Central and Cochrane Library. The search terms and databases used in data search process are illustrated in Figure 2.

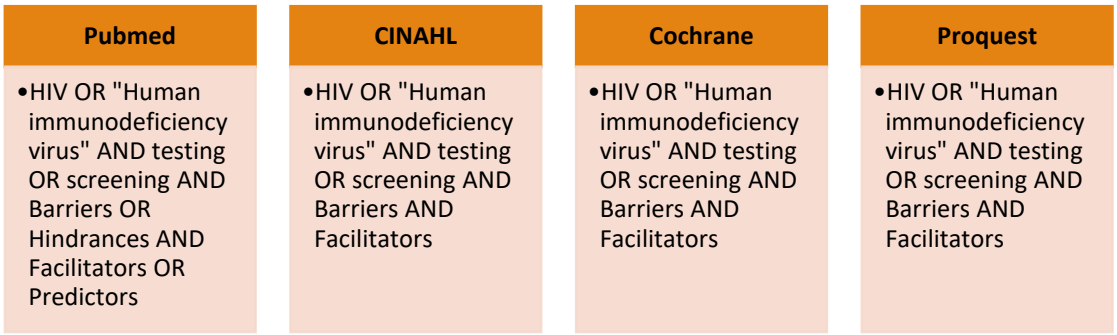

Figure 2: Data search from databases

In electronic data search a total 626 articles were identified. After screening for duplicate, 215 potential references remained. Title and abstract were further screened for relevancy and a total of 117 potential references remained. Next full text was screened narrowing potential articles to 52. Finally, the full text articles were assessed for inclusion and exclusion criteria and quality and a total of 42 articles were excluded, mainly for not fulfilling inclusion and exclusion criteria. The included references in the study were 10 and out of them, four (4)

were qualitative studies, five (5) systematic reviews and one (1) cross-sectional analysis survey. All the included studies were conducted between 2015 and 2020 (n=10). The settings of the studies were all in Western countries: United States of America, (n=6), United Kingdom (n=1), Canada (n=1), Australia (n= 1), Europe (n=1). No study was found from Finland. Included studies were saved into RefWorks. The data search process is represented in Figure 3.

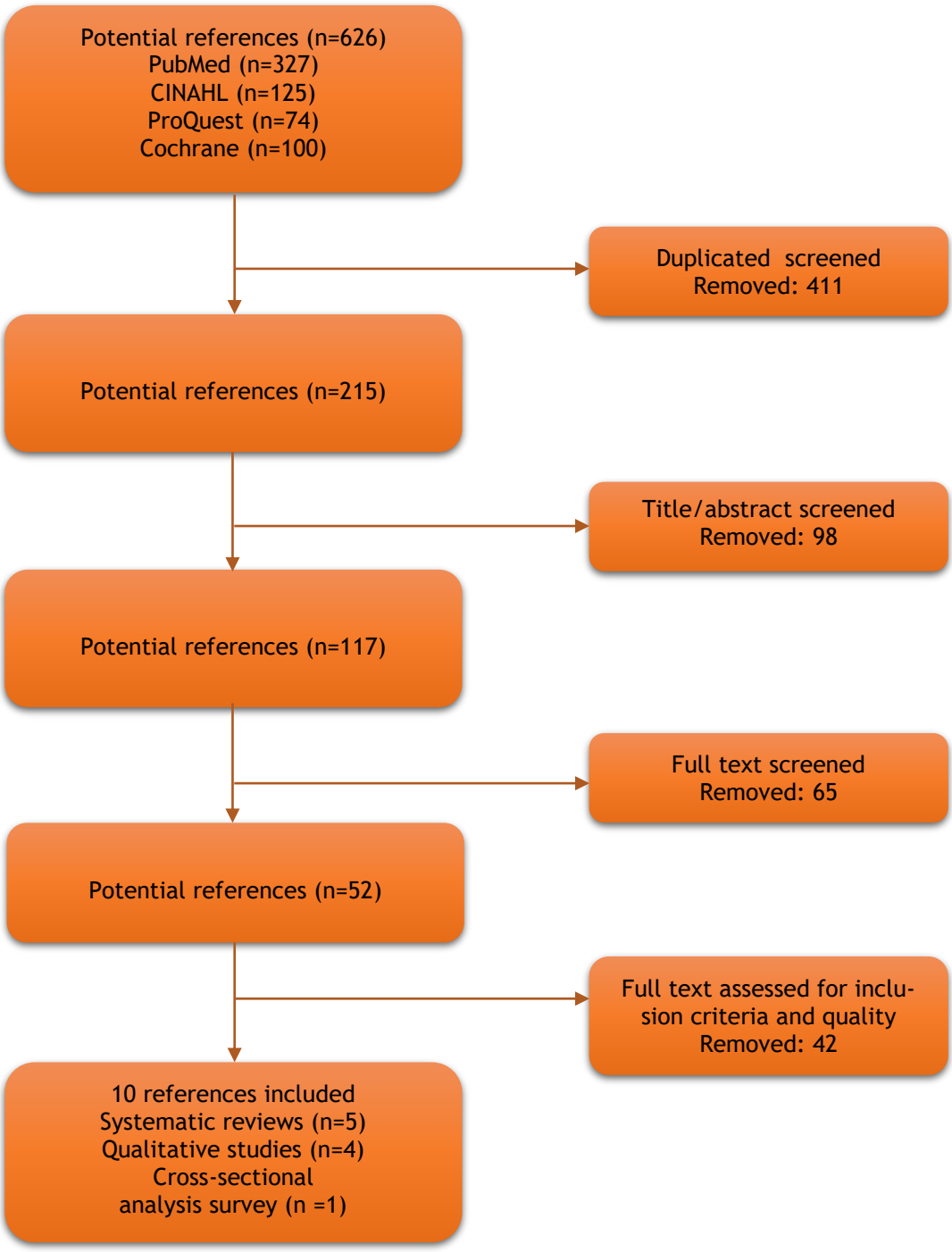

Figure 3: Identification, retrieval, and inclusion of relevant studies (PRISMA 2015)

4.4 Quality assessment

It is obvious for integrative reviews to have multiple study designs which can make data evaluation process difficult (Whittemore & Knafl, 2005). Therefore, to carefully assess the quality of the studies, appropriate data assessment tools are needed. To assess the quality of the included studies, the authors used two quality assessment tools. To assess the quality of qualitative studies and systematic reviews, Critical Appraisal Skill Programme (CASP) checklist was used. CASP provide a variety of checklists for different study designs which help to systematically assess the trustworthiness, relevance, and results of primary data and were originally developed to be used as educational pedagogical tools, as part of a workshop setting (CASP 2018). To assess the quality of quantitative study STROBE which is a tool developed for improving and strengthening the reporting of observational studies in epidemiology was used (Vandenbroucke et al. 2014).

Checklist (A) adapted from CASP was used to assess the quality of qualitative studies (appendix 1). Checklist (B) applied from CASP was used to assess the quality of systematic reviews (appendix 2). Checklist (C) applied from STROBE was used to assess quality of cross-sectional analysis survey (appendix 3). Questions were answered as 'Yes', 'Partially', 'No' and the authors also assigned numerical numbers to each answer as 'Yes=2', 'Partially=1', 'No=0' to have uniformity in the quality assessment of the included studies. The assessment checklist forms for systematic and qualitative studies contained 10 questions respectively, while the assessment checklist form for cross-sectional analysis survey contained 22 questions.

In assessment of the quality of the studies, scoring is usually used. For qualitative and systematic reviews, total scores of 20 were calculated for each paper and were graded as high quality (score=16-20), moderate quality (score=10–15) or low quality (score=1–9). For Cross-sectional analysis survey total scores of 44 were also graded as high quality(score=32-44), moderate quality (score=20-31) and low quality (score=1-19). The quality of systematic reviews (n=5), was high, scoring from 16 to 20 out of total score of 20 (appendix 3). The quality of qualitative studies (n=4), three were of high-quality scoring from 18 to 20 out of 20 and one was of moderate quality scoring 14 out of 20 (appendix 2). The cross-sectional analysis survey (n=1), was of high-quality scoring 40 out of 44 (appendix 4).

4.5 Data analysis

In this study, data analysis was carried out using the methodology applied from Whittemore and Knafl (2005). The methodology entails four stages which are data display, data comparison, data reduction and finally drawing conclusion and verification. The Figure 4. below represent stages of data analysis process.

Figure 4: Integrative data analysis process from Whittemore and Knafl (2005) modified by authors.

Firstly, data was retrieved from primary articles where authors read the articles both individually and together and outlined and noted down the sentences that answered research questions which are, 'What are the factors that act as barriers to HIV testing service uptake in Finland ?' and 'What are the facilitators that when put into practice can lead into increased HIV testing service uptake in Finland ?'. The characteristic of the studies included were compiled into a table (appendix 1). Data reduction was then done by reading the articles again and again to identify the key barriers and facilitators in each study. The identified key barriers and facilitators were reviewed and categorized, and the key findings were summarized and organized in an evidence Table 4. to ease interpretation of the results and drawing the conclusion.

5 Results

Overall, 10 studies on barriers and facilitators to HIV testing were identified and included for the review. The majority of these were American, while smaller number were from European countries, Canada, and Australia. No literatures were found from Finland. After reviewing the included literatures, numerous barriers and facilitators to HIV testing were identified. The studies assessed, focused mostly on patients/clients, providers, and/or organizational barriers and/or facilitators to HIV screening/testing.

Barriers	Explanation
Lack of HIV risk perception	• Patient believe not having risk of contracting HIV infection, because he/she is not engaging in HIV risk behaviours or believe residing in a low prevalence HIV country prevent risk of contracting the infection • Providers' assume/believe risk of acquiring HIV among his/her patients is low or do not exist or assume since HIV prevalence in his/her region of practice is low, then his/her patients have no/low risk.
Lack of knowledge and awareness of HIV	• Patient lacking information about HIV or are not aware of how and where to get testing services.

	• Provider lacking experience on delivering test results. Also not knowing consent procedure and recommendation for HIV testing.
Communication problems	• Patient feeling uncomfortable discussing openly about sexual health issues or may not know how to initiate a conversation about their sexuality with healthcare providers. • Provider feeling uncomfortable discussing sexuality of patient and may lack communication skills on how to initiate discussion on sexual practices with their patients.
Fear and stigma	• Patient fear of positive result, discrimination/abandonment by the family and community. • Fear of being stigmatized.
lack of access to testing	• Inconvenient testing location & testing hours of operation may hinder people going for testing. • Having to buy self-testing kit can hinder from self-testing. • Language barriers, or an inability to access a variety of testing services that are typically available.
Providers time constraints	• Due to competing priorities healthcare providers may lack time for HIV testing and pre counselling.
Facilitators	**Explanation**
Increasing knowledge and awareness	• Providing patient-centred education through public campaigns to increase population HIV awareness, streamline HIV discussions and counselling using for example popular public tv stations, providing educational materials written in simple understandable language. • Provision of provider-centred specific training and practical tools need to calculate HIV risk score. Improved provider-patient communication skills
Integrating HIV services and normalizing testing	• Integrating HIV testing service into primary healthcare and making test a routine clinical activity to reduce stigma and fear associated with HIV. • Providing and administering HIV test unless patient declines
Access to testing	• Favourable location of service point and accessible. Flexible testing hours • Providing self-testing kit for free/at low cost, with clear usage guideline

Figure 5: Description of barriers and facilitators

5.1 Barriers

5.1.1 Lack of HIV risk perception

Lack of HIV risk perception emerged as a common barrier to HIV screening. Four studies out of ten outlined lack of HIV risk perception as a barrier (Tan & Black 2018; Traversy, Austin, Ha, Timmerman & Gale-Rowe 2018; Leblanc, Flores & Barroso 2016; Youssef, Cooper, Delpech, Davies & Wright 2017). Factors such as patients/clients not engaging in HIV risk behaviours or believing residing in a low prevalence HIV region exempt them from risk of

contracting HIV infection were outlined in one study (Traversy et al. 2018). A qualitative meta-synthesis study conducted in USA outlined that lack of HIV risk perception was found to have connection with fear of screening (Leblanc et al. 2016). In the systematic review conducted by Youssef et al. (2017), among people aged 50 years and above, out all included studies, five pointed HIV was perceived as a young person's disease and not feeling being part of a high-risk group. Healthcare Providers assuming or believing risk of acquiring HIV among his/her patients is low or do not exist acted as barrier to recommending HIV test to their patients/clients (Leblanc et al. 2016; Tan & Black 2018; Traversy et al. 2018).

5.1.2 Lack of knowledge and awareness of HIV

Lack of knowledge and awareness about HIV evolved in almost all included studies. Patient lacking information about HIV or not aware of how and where to get testing services was mentioned in seven studies (Beach, Greene, Lindeman, Johnson, Adames, Thomann, Washington & Philips 2018; Pharr, Lough & Ezeanolue 2015; Mathews, Ferley, Conserve, Knight, Le'Marus, Blumberg, Rennie & Tucker 2020; Tan & Black 2018; Traversy et al. 2018; Leblanc et al. 2016; Youssef et al. 2017). Also lack of knowledge on usage of self-testing kit or not aware of availability was associated with low testing late (Mathews et al. 2020). Several barriers to routine HIV screening related to healthcare providers' knowledge were identified in most of the included studies. For instance, lack of knowledge about HIV testing recommendations and guidelines, difficulties in using HIV risk indictor tools or not aware of the tools, lack of experience in delivering test results and unaware of consent procedure (Deblonde, Dominique, Loos, Boffin, Sasse, Nöstlinger & Supervie 2018; Beach et al. 2018; Pharr et al. 2015; Tan & Black 2018; Mathews et al. 2020; Traversy et al. 2018; Leblanc et al. 2016; Youssef et al. 2017).

5.1.3 Discomfort and Communication problems

Most of included studies identified, lack of comfort discussing about sexual health issues as a barrier to routine testing in both patients and providers (Pharr et al. 2015; Tan & Black 2018; Deblonde et al. 2018; Mathews et al. 2020; Traversy et al. 2018; Leblanc et al. 2016; Youssef et al. 2017). Patient feeling uncomfortable discussing openly about sexual behaviours/ health issues or not knowing how to initiate discussion about their sexual issues and concerns with healthcare providers act as a barrier to HIV testing (Traversy et al. 2018). Providers feeling uncomfortable discussing sexual behaviours/health issues with their patients, lack of interpersonal communication skills on how to initiate discussion on sexual practices with their patients, lack of skill on how to deliver the test result may alter their proactiveness in offering HIV test (Tan & Black 2018; Leblanc et al. 2016; Youssef et al. 2017; Deblonde et al. 2018). Language barrier and lack of cultural-sensitive sexual counselling skills can deter provider from offering HIV test (Deblonde et al. 2018).

5.1.4 Fear and stigma

In a study conducted in Canada (Traversy et al. 2018), found that patient fear of potential positive result and concern of confidentiality/not trusting provider may hinder them from seeking HIV test. Similarly, a study done in USA (Pharr et al. 2015) to identify the barriers and facilitators to HIV testing experienced by young men having sex with men (MSM), fear of positive result and rejection from family members/community was mentioned by many participants as a hindrance to HIV testing. HIV related stigma and discrimination may prevent people from seeking HIV testing and healthcare providers from suggesting HIV test to their patients. In Pharr et al. (2015) study, stigmatizing and discriminative beliefs like HIV is a gay disease, was mentioned by study participants as a hindrance to seeking HIV testing and related services.

5.1.5 Lack of access to HIV testing

Inconvenient and limited testing locations, where testing centres are in hidden locations making it hard to locate or being in extremely open places may rise confidentiality issues, thus hindering people from going for HIV testing. Inconvenient testing hours of operation may hinder people from going for testing too. (Traversy et al. 2015; Leblanc et al. 2016). Converging HIV testing service only in particular centres like HIV clinics or sexual health clinics can hinder people from seeking testing service for fear of being recognized and facing discrimination (Tan & Black 2018). Therefore, Tan & Black (2018) recommends integration of HIV testing into primary healthcare routine general activities. Parental consent for under 18 years was outlined in one study as a factor that can hinder timely and frequent access to HIV testing (Pharr et al. 2015). Having to buy self-testing kit can hinder people from self-testing (Pharr et al. 2015). Language barriers can create inability to access variety of testing services that are typically available (Traversy et al. 2015).

5.1.6 Providers time constraints

Lack of time and competing priorities were frequently mentioned by health care providers as a reason for them not testing (Traversy et al. 2015; Deblonde et al. 2018; Youssef et al. 2017; Tan & Black 2018.). Unfamiliarity with consent procedure, pre-counselling, or post-counselling procedure, HIV testing local guidelines may make provider feel procedure being more time consuming thus opting not to offer HIV test (Traversy et al. 2015; Youssef et al. 2017). Lack of enough health care providers leading to overburdening number of tasks, may deter offering routine HIV testing (Deblonde et al. 2018).

5.2 Facilitators

5.2.1 Increasing knowledge and awareness

Providing patient-centred education through public campaigns to increase population HIV awareness, streamline HIV discussions and counselling using for example, popular public tv stations, interactive HIV education program and providing educational materials written in simple understandable language about benefits of testing and services for HIV, may lead to improved HIV testing uptake (Aung, Blondell & Durham 2017; Traversy et al. 2015; Leblanc et al. 2016). Provision of provider-centred specific training (trainings that equip providers with skill to engage clients in discussions about sexual health and skills to encourage and reinforce the importance of knowing own's HIV status), will not only encourage providers to proactively offer testing, but it will also build their confidence (Deblonde et al. 2018; Leblanc et al. 2016; Traversy et al. 2015). Educating providers on how to use practical tools needed to calculate HIV risk score has been outlined as an important HIV testing facilitator (Deblonde et al. 2018; Leblanc et al. 2016). Increased knowledge and awareness about HIV, was associated with decrease in fear, stigma and discrimination in a qualitative study conducted among young MSM by Beach et al. (2018).

5.2.2 Integrating HIV services and normalizing testing

Integrating HIV testing service into primary healthcare and making screening a routine clinical activity to reduce stigma and fear associated with HIV was encouraged in various included studies (Deblonde et al. 2018; Leblanc et al. 2016; Traversy et al. 2015). Healthcare providers offering and administering HIV test unless patient declines (opt-out testing). The studies conducted by Youssef et al. (2017) and Traversy et al. (2015), indicates that when health care providers suggested HIV test to their patients, they were likely willing to be tested. Similarly, up-to date and clear flexible policies may ease providers' fear of testing (Youssef et al. 2017).

5.2.3 Access to testing

Favourable and accessible testing service point widely distributed in various locations and convenient testing hours in testing centres may encourage uptake of HIV testing service (Traversy et al. 2015; Leblanc et al. 2016). Decentralizing testing beyond facility-based sites (not only in HIV clinic and sexual health clinic, but in all healthcare settings) may eliminate fear of being recognized and facing discrimination (Tan & Black 2018). Therefore, Tan and Black (2018) recommends integration of HIV testing into primary healthcare routine general activities to ease the burden and fear of seeking testing service. Regular use of healthcare services was associated with likelihood of testing (Ford, Godette, Malatu & Gaines 2015; Youssef et al. 2017). No need of parental consent for under 18 years and provision of free

self-testing kit was outlined in one study as factor that can facilitate timely and frequent access to HIV testing among youths (Pharr et al. 2015).

6 Discussion

The objective of this study was to seek evidence on factors that contributes to low HIV testing service uptake in Finland, and factors that when put into practice can lead to increased HIV testing service uptake. Reviewed literatures confirmed that, there are numerous factors that facilitate or act a barrier to HIV testing service uptake. The most common barriers identified from reviewed studies are lack of perceived HIV risk, lack of knowledge and awareness, lack of access to testing, discomfort and communication problem, providers' time constraint, and stigma and fear. Respectively, common identified facilitators are: Integrating HIV services and normalizing testing, increasing knowledge and awareness and access to testing.

Lack of perceived risk to HIV and lack of knowledge and awareness emerged the most discussed barriers in the reviewed articles (Tan & Black 2018; Traversy et al. 2018; Leblanc et al. 2016; Youssef et al. 2017; Beach et al. 2018; Pharr et al. 2015; Mathews et al. 2020; Youssef et al. 2017). Lack of perceived risk to HIV was associated with patients/providers attitude. Patient perceived that, not engaging in HIV risk behaviours, or believing residing in a low prevalence HIV region exempt them from risk of contracting HIV infection (Leblanc et al. 2016). Healthcare providers assumptions like, risk of acquiring HIV among his/her patients is low or do not exist may act as barrier to recommending HIV test to their patients/clients (Leblanc et al. 2016; Tan & Black 2018; Traversy et al. 2018). Lack of knowledge and awareness about HIV and getting testing for HIV are the greatest barriers to HIV screening.

Lacking knowledge about HIV or unaware of how, when, and where to seek testing services has a likelihood of leading to a missed/late diagnosis (Mathews et al. 2020; Traversy et al. 2018). However, providing patient-centred education through different medium to increase HIV awareness, may lead improved HIV testing uptake (Tan & Black 2018). Providers lack of knowledge about HIV testing recommendations and guidelines, difficulties in using HIV risk indictor tools or not aware of the tools, lack of experience in delivering test results and unaware of consent procedure can be associated with low HIV testing uptake (Beach et al. 2018; Pharr et al. 2015; Tan & Black 2018; Deblonde et al. 2018; Mathews et al. 2020; Traversy et al. 2018; Leblanc et al. 2016; Youssef et al. 2017). However, providing provider-centred training to equip them with skills to engage clients in discussions about sexual health and skills to encourage and reinforce the importance of knowing own's HIV status is recommended (Deblonde et al. 2018; Leblanc et al. 2016; Traversy et al. 2015).

Providers' time constraint and competing priorities were frequently mentioned by health care providers as a reason for them not testing. Lack of enough workforce, unfamiliarity with HIV testing related procedures may deter offering routine HIV testing (Deblonde et al. 2018; Traversy et al. 2015; Youssef et al. 2017; Tan & Black 2018). However, providing enough workforce and training health care provider on HIV testing related procedures may facilitate them to proactively offer HIV test (Traversy et al. 2015). Inconvenient and limited testing locations, centralizing testing only in HIV clinics, having to buy HIV self-testing kits and parental consent for under 18 years may act as barrier to accessing testing services (Traversy et al. 2015; Leblanc et al. 2016). However, providing favourable and accessible testing service point, decentralizing testing services beyond HIV clinics, offering HIV self-testing kits for free/subsidized price, no parental consent requirement for under 18 years may encourage patients/clients to seek HIV testing (Traversy et al. 2015; Leblanc et al. 2016; Tan & Black 2018).

Fear and stigma are found to be common barriers to testing. Fear of potential positive result, concern of confidentiality/lack of trust for providers, fear of being stigmatized and discriminated may hinder people from HIV screening (Pharr et al. 2015; Beach et al. 2018). Integrating HIV testing service into primary healthcare and making screening a routine clinical activity may reduce stigma and fear associated with HIV. Also, up-to date and clear flexible policies may ease provider reluctancy in offering test (Youssef et al. 2017).

6.1 Strength and Limitation

The strength of this study is that it present broad overview of barrier and facilitators to HIV testing. Many studies on topic of HIV have been conducted in Finland, but authors did not find any study conducted in English focusing entirely on barriers and facilitators to HIV testing service uptake in Finland. Therefore, this makes the study the first one of its kind. Articles published between 2015 and 2020 were used, thus making the findings of the study more up to date. Data from several types of study designs was combined hence increasing the strengths of this review. However, only articles published in English language were included in the study leading to publication bias. The publication bias may have excluded some evidence which may have enhanced the reliability of this study.

6.2 Ethical consideration

Since the study was a theoretical one, no ethical approval was required. However, this did not exempt the authors from adhering to certain responsibilities crucial when conducting an ethical literature review. When conducting and reporting literature reviews, it is most essential to maintain transparency, maintain accuracy during data extraction, outline potential conflict of interest and funding sources, avoid redundant publications and plagiarized materials. (Wager & Wiffen 2011, 130-134). The authors declare no conflict of interest in this study.

Since the study was conducted through reviewing past literatures, no funding sources were used. To maintain transparency and accuracy during data extraction and reporting, all articles included were read thoroughly both individually and together to avoid bias in data collection and reporting. The references of this study were included to avoid plagiarism. Arising disagreements were solved through discussion.

6.3 Authors' contribution and acknowledgement

This integrative literature review was performed as part of the authors' Master studies in Laurea University of Applied Sciences and both authors contributed equally during the entire study process. Both authors were equally responsible for writing the theoretical background of the study, where work was divided according to topics. During data search, data review and data analysis, both authors contributed equally. Finally, writing results and discussion involved continuous mutual reasoning between both authors and participated equally.

7 Conclusion and recommendations

HIV testing is crucial step for prevention and early detection of infection to improve the prognosis of treatment and prevent further transmission. It remains the only means to providing early diagnosis to ensure that appropriate treatments are started early for those found to have been infected with the virus. This integrative review was conducted to seek evidence on barriers and facilitators to HIV testing service uptake in Finland. Therefore, recognizing the key barriers and facilitators to HIV testing is essential to increase population testing uptake capacity. The findings can be used as a tool to facilitate creation of effective strategies, aimed at increasing HIV testing serve uptake and decreasing the number of infected people who are unaware of their status. However, there is lack of evidence to what extent the findings are applicable to Finnish setting and therefore more research is needed to verify these findings.

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Figures

Tables

Appendices

Appendix 1: Characteristics of included studies

References	Country	Purpose/ aim / objectives of the study	Design and study sample	Data and methods	Results	Quality assessment
Beach et al. 2018. Barriers and Facilitators to Seeking HIV Services in Chicago Among Young Men Who Have Sex with Men: Perspectives of HIV Service Providers	United States of America	To study barriers and facilitators HIV service providers in Chicago identified as affecting whether YMSM utilized HIV treatment and/or prevention services housed within their organization.	A qualitative study Participants: 34 HIV service providers from 20 different HIV prevention projects within 15 organizations in Chicago city.	21 Semi-structured interviews administered to 34 HIV service providers	Five main conceptual themes cut across multiple themes were interpreted, and the following barriers and facilitators were found: **Barriers:** -lack of comprehensive wraparound services -lack of trust of providers -Not knowing how to seek HIV services -lack of knowledge of HIV service -providers, intersectional and structural concerns (e.g. not thinking the site's services were for YMSM), -location and distance to clinic -HIV stigma. **Facilitators:** - presence of comprehensive wraparound services - high trust in providers -A clinic's willingness to serve uninsured patients -Engaging the community -Word-of-mouth recommendations from lesbian, gay, bisexual, and transgender (LGBT) friends -Offering LGBT-tailored services -Favourable location of service points and accessible. -lack of HIV stigma.	18/20

Ford et al. 2015. Recent HIV Testing Prevalence, Determinants, and Disparities Among US Older Adult Respondents to the Behavioural Risk Factor Surveillance System	United States of America	To identify the factors associated with HIV testing in the past 12 months (i.e., recent HIV testing) among US adults.	Cross-sectional analysis from survey data Participants: 143,247 adults aged between 50-64 years	Cross-sectional, secondary analysis of publicly available 2010 BRFSS data from all US states and the District of Columbia	The findings: -low testing rate i.e., 3% had tested for HIV in the previous 12 months -Saw doctor in the last year -high reported risk behaviours	40/44
Pharr et al.2015. Barriers to HIV Testing Among Young Men Who Have Sex with Men (MSM): Experiences from Clark County, Nevada	United states of America	To identify barriers and facilitators to HIV testing experienced by young MSM in Clark County, Nevada	A qualitative study Participant: 11 young MSM	A semi-structured focus group discussion conducted in March 2015. Purposive sampling method was used to recruit participants. Outcomes were accessed using Thematic content analysis. Themes were coded either within the person or within the environment.	**Barriers:** 1.factors within the person -lack of awareness or knowledge -fear of positive result, rejection from families/community, disclosure to family. -lack of self-esteem or confidence. 2.within the environment -*Access:* cost of testing, lack transportation, lack of phone, wait time for the result, parental consent for under 18. -*Stigma:* HIV is a gay disease; gay people lack support from community -Unfriendly test environments attributed to care providers. **Facilitator:** 1.factors within person -Fear of having contracted HIV may result into testing 2. within the environment -Ability to call information and get location of testing centres	20/20

					-Ads on local gay publication sites indicating testing locations and cost -Mobile testing -Availability of rapid HIV testing -Friendly test environments	
Tan & Black 2018. **A Systematic Review of Health Care Provider-Perceived Barriers and Facilitators to Routine HIV Testing in Primary Care Settings in the South-eastern United States**	United states of America	To describe health care providers' perceived barriers and facilitators to testing for HIV at poorly used/novel testing sites in the south eastern United States	Systematic review Research included 12 studies that were conducted in south eastern USA and published between January 2006- April 2017.	3 electronic databases (Embase, Medline and CINAHL) were searched for Peer reviewed studies of providers' perceived barriers and facilitators to routine HIV testing from January 2006 to April 2017 in accordance to PRISMA statement.	Barriers and facilitators noted were group into 3 level: **Barriers:** -*societal level* included lack of financial support, stigma, unclear policies, lack of resources like testing kits and education materials, population characteristics like low perceived HIV risk state, poor information flow in health care. -*Organizational level* included clinical characteristics such time constraint, lack of inconsistent or unaware of guidelines, inconvenient referral process, administrative/staff problems like lack of compliance to guidelines -*Individual level* included 1. providers' attitude and prioritization, discomfort talking about sexual practices, lack of knowledge, 2. Patients' misconceptions about risks for HIV, attitude like fear of positive results, and lack of education. **Facilitators:** -*Societal factors* included adequate funding for HIV programmes, stigma reduction through social marketing, up-to date and clear flexible policies, enough resources for education and testing purposes, public campaigns to increase	19/20

					population HIV awareness, streamline HIV counselling. -*Organizational factors* included allocating enough time, integrating HIV services into routine clinical activities, Improved internal and external referral networks, Improvement in administration. -*Individual factors* included 1. Providers' positive attitude and prioritization of HIV service care, harmonious relationship with patients, Sufficient training, and knowledge on HIV. 2. Individuals risk awareness of HIV, positive attitude towards HIV and willingness to seek services, education on HIV.	
Aung et al. 2017. Interventions for Increasing HIV Testing Uptake in Migrants: A Systematic Review of Evidence	Australia	To review and evaluate interventions that aim to increase HIV testing uptake in migrant populations	Systematic review. Research included 10 studies on international migrants, conducted in USA, Australia, Europe, and other high-income countries.	Five databases (PubMed, Web of Science, Embase, CINAHL, and PsycInfo) were searched for studies published between January 1985 and 31 December 2016.	The outcomes were grouped in three categories: 1.Exposure to HIV preventions messages such as importance of condom use and getting HIV test through media platform. 2.Interactive HIV education program 3.Direct offer of HIV testing	20/20
Deblonde et al. 2018. HIV testing within general practices in	Europe	To synthesis and diffuse existing evidence to further promote HIV testing in primary care	Mixed method systematic review. Research included 29 studies on HIV testing on	In May 2017 three databases (PubMed, Scopus and Embase) were searched for studies	**Barriers:** -Poor communication skills on sexual health. -lack of knowledge about HIV testing recommendations -Lack of time	20/20

Europe: a mixed-methods systematic Review		settings, to design new interventions and to increase the utility of the available research	general practices in Europe.	published between 2006-2017 on HIV testing in general practices in Europe	-Difficulties with using the complete list of clinical HIV indicator diseases -lack of experience in delivering test results **Facilitators:** -provision of specific training -Availability of practical tools to calculate HIV risk score -promotion programmes	
Leblanc et al. 2016. Facilitators and Barriers to HIV Screening: A Qualitative Meta-Synthesis	United states of America	To identify qualitative studies that addressed what influences people to screen for HIV infection and receive their results?	A Qualitative Meta-Synthesis. Research included 128 qualitative studies conducted globally.	Three databases (CINAHL, MEDLINE and PsycINFO) were searched between January 2008- December 2013 on HIV screening and receipt of results	**Barriers:** **-**Fear of positive result -Lack of knowledge of where to get tested -Lack of awareness -Lack of risk perception -Being in a long relationship -providers lack communication and interpersonal skills -Inconvenient testing locations **Facilitators:** -Improved strategies to test -Choice of services -Integrating HIV testing in primary healthcare -Alleviate fear of positive result through community-based support groups which address HIV stigma issues - Education on HIV -Increase healthcare provider capacity - Holistic targeting of services	14/20
Mathews et al. 2020. Meet people where they	United states of America	To identify community-based strategies to increase testing	Qualitative study Participants: 52 men and women between	A community-based participatory research principle,	**Barriers:** -Concerns on confidentiality **-**Unpleasant treatments by care providers	20/20

are": a qualitative study of community barriers and facilitators to HIV testing and HIV self-testing among African Americans in urban and rural areas in North Carolina		among African Americans in both urban and rural areas	15 to 60 years old living in urban (n=41) and rural (n=11) areas of North Carolina.	conducted using focus group discussions among highly affected (i.e., PLWH, MSM, PWID, low-income, teens and young adults) populations from African American communities in North Carolina.	-Lack of knowledge on self-testing kit usage. -Lack of post-test support **Facilitators** -partnering with community leaders. -decentralizing testing beyond facility-based sites. -protecting confidentiality	
Traversy et al. 2015 **An overview of recent evidence on barriers and facilitators to HIV testing**	Canada	To summarize the most recent evidence regarding barriers and facilitators to HIV testing, to expand upon the research conducted for the HIV Screening and Testing Guide.	A literature reviews. Research included 34 studies and reports from Canada, the United States, Europe, Australia, and New Zealand, published between 2010 and 2014.	Data was extracted from Scopus, PubMed (MEDLINE) databases and websites of CDC, the ECDC, the Australian Department of Health, and the New Zealand Ministry of Health.	**Barriers:** -Fear, stigma, and discrimination -lack of perceived risk of HIV -Lack of knowledge about HIV and lack comfort discussing about HIV - Healthcare providers lack time - A lack of ability to access testing -Financial and human resources constraints **Facilitators:** -Increasing knowledge and awareness -Opt-out testing -Normalizing HIV testing	16/20
Youssef et al. 2017. **Barriers and facilitators to HIV testing in people age 50 and above: a systematic review**	United Kingdom	To identify patient and clinician-related barriers/facilitators to HIV testing in people aged ≥50 years	systematic review Research included 17 studies conducted within USA (n=14), UK (n=1), Brazil (n=1) and Uganda (n=1)	Data was searched from MEDLINE, Embase, PsychINFO, CINAHL and the Cochrane library databases on 7th April	**Barriers:** -Low perceived risk -Clinicians preconception about older people (e.g. have minimal risk). -stigma -Being asymptomatic or symptoms not associated with HIV -Fear of positive result - Physicians' time constraint	20/20

				2017. Relevant conference abstracts were also included. Data was thematically analysed	-Healthcare providers not suggesting HIV test to the patients. - Clinician uncomfortable discussing Sexuality of older patients **Facilitators** - regular use of healthcare services -Being offered/encouraged to test by a healthcare provider -Previous HIV test -Including HIV testing in general routine check-up. - High actual/perceived risk	

Appendix 2: Quality assessment of qualitative studies applied from CASP(A)

References	1	2	3	4	5	6	7	8	9	10	Score Max = 20
Beach et al. 2018	2	2	2	2	2	2	0	2	2	2	18/20
Pharr et al.2015.	2	2	2	2	2	2	2	2	2	2	20/20
Leblanc et al.2016.	2	2	2	0	2	0	1	1	2	2	14/20
Mathews et al. 2020.	2	2	2	2	2	2	2	2	2	2	20/20

1. Aim of the study are clearly stated
2. Qualitative methodology is appropriate
3. Research design is appropriate to address the aims of the research
4. Recruitment strategy is appropriate to the aims of the research
5. The data is collected in a way that it addresses the research issue
6. The relationship between researcher and participants are adequately considered
7. Ethical issues have been taken into consideration
8. The data analysis is sufficiently rigorous
9. The findings are clearly stated
10. The value of the research is discussed

Scores: 0 = No, 1= Partially, 2= Yes

Appendix 3: Quality assessment of systematic reviews studies applied from CASP(B)

References	1	2	3	4	5	6	7	8	9	10	Score Max = 20
Tan & Black 2018.	2	2	2	1	2	2	2	2	2	2	19/20
Aung et al. 2017.	2	2	2	2	2	2	2	2	2	2	20/20
Deblonde et al. 2018.	2	2	2	2	2	2	2	2	2	2	20/20
Traversy et al. 2015.	2	1	2	0	2	2	2	1	2	2	16/20
Youssef et al. 2017.	2	2	2	2	2	2	2	2	2	2	20/20

1. The review addressed a clear focused question
2. The author chose the right type of papers
3. All the important relevant studies were included
4. The review's authors did enough to assess the quality of included studies
5. It was reasonable to combine the results of the review (in case are combined).
6. The overall results of the review
7. Results are precise
8. Results can be applied to local population
9. Important outcomes were considered
10. Benefits are worthy the harms and costs

Scores: 0 = No, 1= Partially, 2= Yes

Appendix 4: Quality assessment of cross-sectional analysis survey applied from STROBE statement (C)

Reference	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Score Max=44
Ford et al. 2015.	2	2	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	2	2	2	2	0	40/44

1. Study design, title and abstract are defined
2. Background of the study is explained
3. Objectives are stated
4. Study design key elements are presented
5. Study settings are described
6. Eligibility criteria of the participants are described
7. Variables are defined
8. Data sources/measurement are defined
9. Bias are portrayed
10. Study size is explained
11. Quantitative variables are explained
12. Statistical methods are described
13. Number of participants is well explained and reported
14. Descriptive data is explained
15. Outcome data is reported
16. Main results are reported
17. Other analyses are reported
18. Key results are summarised
19. Study limitations are discussed
20. Interpretation is explained
21. Generalisability is discussed
22. Funding is reported

Scores: 0 = No, 1= Partially, 2= Yes