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**HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane,
Queensland**

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Abstract

Timely diagnosis of human immunodeficiency virus (HIV) is important for management and prevention of HIV. In high-income countries (HICs), migrants often have disproportionately high rates of HIV, as compared to the host population, and high rates of late diagnosis of HIV. A small body of evidence exists on the HIV testing behaviour of migrants in HICs; although, there are numerous gaps. This study addresses several gaps in the evidence-base by examining the uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants in Australia (as compared to Australian-born adults; Objective One); quantitatively and qualitatively identifying barriers and facilitators to accessing HIV testing approaches for Vietnamese-born migrants in Australia (Objectives Two and Three, respectively); and assessing selected psychometric properties, i.e. construct validity and internal consistency reliability, of an HIV-related knowledge and HIV-related stigma scale in Vietnamese-born migrants and Australian-born adults (Objective Four).

This study was cross-sectional and used an explanatory sequential mixed methods design across three phases. Phase One was the quantitative data collection (quantitative questionnaire; n=350; Vietnamese-born n=177 and Australian-born n=173) and analysis (HIV testing behaviour: logistic regression; selected psychometric properties: Rasch analysis). Phase Two was the qualitative data collection (qualitative interviews; Vietnamese-born n=10) and analysis (the Framework method). Phase Three was interpretation, where findings from Phases One and Two were presented and synthesised. All phases drew on the Behavioural Model of Healthcare Utilisation (BMHU).

In multivariate analyses, uptake of, and willingness to use/accept, HIV testing approaches was largely not significantly different between Vietnamese-born migrants and Australian-born adults in the quantitative questionnaire (Objective One). Vietnamese-born migrants, however, had significantly lower odds of willingness to use rapid HIV testing, compared with Australian-born adults. In qualitative interviews, provider-initiated testing and counselling (PITC) was suggested to be widely acceptable to Vietnamese-born migrants, in contrast to client-initiated testing and counselling (CITC). Contrary to quantitative questionnaire findings, rapid HIV testing

was largely acceptable to qualitative interview participants. HIV self-testing (HIV ST) was largely acceptable to female participants, but not male participants.

Few significant barriers and facilitators were identified across HIV testing approaches for Vietnamese-born migrants after adjustments (Objective Two). Those identified were marital status, HIV-related knowledge, HIV risk behaviour and finding the cost of healthcare prohibitive. Qualitative interview participants identified numerous barriers and facilitators to HIV testing approaches (Objective Three), including gender, marital status, HIV-related knowledge, internalised HIV-related stigma, cost, convenience, accuracy of HIV testing, perceived HIV risk, HIV risk behaviour and symptoms. Additionally, qualitative interviewees contextualised quantitative findings. HIV risk behaviour was not widely significantly associated with HIV testing approaches in quantitative analyses. Qualitative interviews, however, highlighted that a subset of Vietnamese-born migrants have increased HIV risk, which was likely not well captured in the quantitative questionnaire. Likewise, qualitative interview participants discussed internalised HIV-related stigma as a salient barrier to HIV testing, but only externalised HIV-related stigma was captured in the quantitative questionnaire. Vietnamese-born migrants were also suggested to have insufficient HIV-related knowledge, particularly related to treatment and prognosis, but this was not captured in the Brief HIV Knowledge Questionnaire (HIV-KQ-18).

In Rasch analysis, neither the revised HIV-KQ-18 nor the revised AIDS-Related Stigma Scale (ARSS) were adequate measures of HIV-related knowledge and externalised HIV-related stigma, respectively (Objective Four). The revised HIV-KQ-18, after all appropriate revisions (from 18 to 14 items), did not fit the Rasch model, demonstrating poor construct validity within the study populations (however, internal consistency reliability was adequate). The revised ARSS fit the Rasch model and, therefore, had adequate construct validity in this study. The internal consistency reliability of the revised ARSS was below adequate in the current sample. Additionally, the revised ARSS was significantly reduced (from 9 to 6 items). The inadequacy of these scales in the study populations likely stemmed from multiple reasons, but particularly as both scales were quite dated. HIV-related knowledge and HIV-related stigma are theoretically complex and socially dynamic constructs, and

scales measuring these constructs require regular updating and psychometric assessment.

At least a subset of Vietnamese-born migrants are at HIV risk and, therefore, require ongoing HIV testing. Timely uptake of HIV testing by these Vietnamese-born migrants is required for optimal HIV-related outcomes. Several interventions may facilitate HIV testing. These include increasing HIV-related knowledge and addressing internalised HIV-related stigma. There is also a need for up-to-date scales to measure these constructs. Additional research among migrants on newer HIV testing approaches, i.e. rapid HIV testing and HIV ST, is warranted, as well as research among healthcare providers on increased use of PITC with migrants. Increasing HIV testing is, however, only the first step in ensuring optimal outcomes, and appropriate care pathways are also required.

Declaration by author

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Publications included in this thesis

No publications included.

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Contributions by others to the thesis

No contributions by others.

Statement of parts of the thesis submitted to qualify for the award of another degree

No works submitted towards another degree have been included in this thesis.

Research Involving Human or Animal Subjects

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Abbreviations

A CASI – Audio Computer Assisted Survey Instrument

ABS – Australian Bureau of Statistics

AIDS - Acquired Immunodeficiency Syndrome

AOR – Adjusted Odds Ratio

ARSS – AIDS-Related Stigma Scale

ART – Antiretroviral Treatment

BMHU - Behavioural Model for Healthcare Utilisation

CALD – Culturally and Linguistically Diverse

CBO – Community-Based Organisation

CI – Confidence Interval

CITC – Client-Initiated Testing and Counselling

CTT – Classical Test Theory

DIF – Differential Item Functioning

ECCQ – Ethnic Communities Council of Queensland

EU – European Union

FGD – Focus Group Discussion

FSW – Female Sex Worker

GNI – Gross National Income

GP – General Practitioner

GRID - Gay-Related Immunodeficiency Disease

HBM - Health Belief Model

HDR – Higher Degree by Research

HIC – High-Income Country

HIV - Human Immunodeficiency Virus

HIV-KQ-18 – The Brief HIV Knowledge Questionnaire

HIV ST – HIV Self-Testing

IBM – Integrated Behavioural Model

IDI – In-Depth Interview

IDU - Injecting Drug User

KAP – Knowledge, Attitudes, Practices

KMHCS - Kleinman’s Model of Health Care Systems

LGA – Local Government Area

LMIC – Low- and Middle-Income Country

LTT – Latent Trait Theory

MDG – Millennium Development Goal

MSM - Men who have Sex with Men

NESB – Non-English Speaking Background

NGO – Non-Government Organisation

NHIS – National Health Interview Survey

NISC - National Immigrant Support Centre

OR – Odds Ratio

PhD – Doctor of Philosophy

PCA – Principal Components Analysis

PCYC – Police Citizens Youth Club

PITC – Provider-Initiated Testing and Counselling

PLHA – People Living With HIV/AIDS

PLWH – People Living With HIV

POCT – Point of Care Testing

RDS – Respondent Driven Sampling

SCT – Social Cognitive Theory

SPSS – Statistical Package for the Social Sciences

STI – Sexually Transmitted Infection

SW – Sex Worker

TB – Tuberculosis

TGA – Therapeutic Goods Administration

TPB – Theory of Planned Behaviour

TRA – Theory of Reasoned Action

UK – United Kingdom

UN – United Nations

U=U – Undetectable = Untransmittable

US – United States

WHO – World Health Organisation

VCT – Voluntary Counselling and Testing

VIF - Variance Inflation Factor

Glossary

Accessibility

Accessibility relates to the ability of a person to engage with healthcare services, and may stem from personal and/or healthcare services factors.

Acquired Immunodeficiency Syndrome (AIDS)

AIDS is the last of three clinical stages of HIV. AIDS is characterised by multiple medical conditions, such as Kaposi Sarcoma and invasive cervical cancer.

Advanced Diagnosis

In Australia, an HIV diagnosis is considered advanced when a person is newly diagnosed with HIV and their CD4+ cell count (see below for definition) is <200 cells per microliter.

Antiretroviral Treatment (ART)

ART is a combination of antiretroviral drugs given to people with HIV to limit viral replication and increase CD4+ cell count (see below for definition). ART is associated with reduced HIV morbidity and mortality. Guidelines suggest initiation of ART at diagnosis, regardless of CD4+ cell count.

Behavioural Model of Healthcare Utilisation (BMHU)

The BMHU sees predisposing, enabling and need (illness level) as central to healthcare use. The BMHU has been used to examine healthcare utilisation, access, and delayed presentation.

CD4+ Count

CD4+ cell count is a marker of immunodeficiency, whereby a lower count indicates greater deficiency and is associated with poorer clinical outcomes.

Client-Initiated Testing and Counselling (CITC)

CITC is HIV testing performed at the request of the client.

Concentrated Epidemic

A concentrated epidemic is an epidemic that is largely confined to sub-populations, e.g. men who have sex with men (MSM), sex workers (SWs), injecting drug users (IDUs). This is as opposed to a generalised epidemic, whereby HIV transmission occurs predominantly in the general population (typically >1 per cent) via sexual intercourse.

Culturally and Linguistically Diverse (CALD)

CALD is a broad term, used particularly in the Australian context, and includes those populations who speak English fluently and Australian-born people who do not speak English at home.

Discrimination

Discrimination is the behavioral expression of prejudice.

High-Income Countries (HICs)

According to the World Bank, HICs are those countries with a gross national income (GNI) per capita \geq \$12,236.

Human Immunodeficiency Virus (HIV)

HIV is a retrovirus that impairs an individual's immune system, specifically the CD4+ cells, leading to a reduced capacity of the body to protect itself from infections. In time, HIV can lead to AIDS. HIV is transmitted via blood, bodily fluids and breast milk. Risk factors include unprotected anal or vaginal sex, sharing contaminated injecting equipment, transfusions of infected blood, mother-to-child transfer from an HIV positive woman during pregnancy (intrapartum) or breastfeeding.

HIV Testing

HIV diagnostic tests have been developed over the years to (1) detect HIV infection (clinical properties of the host in response to the virus (antibodies) and the clinical properties of the virus) and, to a lesser extent, (2) determine the length of time of infection, such as the detuned assay. HIV testing involves the collection of a blood, urine or saliva specimen (although, blood is the preferred sample for numerous reasons relating to analysis and storage). HIV is not diagnosed based on

one test, any positive HIV test needs to be confirmed with an additional HIV test. Several approaches to HIV testing have been rolled out, including CITC, provider-initiated testing and counselling (PITC), rapid HIV testing and HIV self-testing (HIV ST).

HIV high prevalence countries

HIV high prevalence countries are defined as those with an HIV prevalence of ≥ 1 per cent.

(HIV) Incidence

The number of new cases of HIV in a given period (typically per annum).

Late Diagnosis

In Australia, an HIV diagnosis is considered late when a person is newly diagnosed with HIV and their CD4+ cell count is < 350 cells per microliter.

Low- and Middle-Income Countries (LMICs)

LMICs are those countries with a gross national income (GNI) per capita $< \$12,325$.

Migrant

The term migrant is a broad one, having been categorised in many different ways, including based on reason for migration and legal status etc. For the purpose of this study migrants will be broadly conceptualised as individuals who have left their legal homeland and have crossed international boundaries to reside in a host country. This definition, therefore, includes migrants (generally living in their host country for a shorter-term), immigrants (generally longer-term), refugees, international students and migrant workers, and is consistent with surveillance data, which delineates migrants based solely on country of birth.

Prejudice

Prejudice is a negative emotion or attitude towards people living with HIV (PLWH; e.g. disgust)

(HIV) Prevalence

HIV prevalence is the number of people who are living with HIV at a given time.

Provider-Initiated Testing and Counselling (PITC)

PITC refers to HIV testing which is provider, rather than client, initiated.

(HIV) Risk

Risk refers to the probability that a person may acquire HIV, and is contingent on epidemiology and individual behaviour.

Rapid HIV testing

Rapid HIV testing uses saliva or a drop of blood to screen for HIV. Rapid HIV testing allows HIV testing and results to be delivered in a short space of time, e.g. less than an hour.

(HIV) Self-Testing (HIV ST)

HIV ST refers to HIV testing that occurs in the home, or other private location, after having purchased a kit from a retailer in person, generally at a pharmacy, or via the mail or internet direct from a manufacturer.

Scale

A multi-item instrument designed to quantitatively assess a construct, e.g. HIV-related knowledge and HIV-related stigma.

Stereotypes

Stereotypes are group-based beliefs about PLWH that are often applied to individuals, e.g. SWs, IDUs.

Stigma

Stigma refers to the prejudice, discounting, discrediting, and discrimination directed at people who have (or are perceived to have) HIV and populations at higher risk for HIV.

1 Introduction

Since its identification, millions of people worldwide have contracted human immunodeficiency virus (HIV; 1). Several populations have higher risk for HIV, including migrants in high-income countries (HICs), and particularly those from low- and middle-income countries (LMICs); high HIV prevalence countries (i.e. those with an HIV prevalence ≥ 1 per cent); or countries with higher HIV prevalence than the host country (2, 3). Timely diagnosis of HIV is important for management of HIV and, increasingly, prevention (2, 4). In HICs, despite the benefits of early diagnosis of HIV, migrants often have high rates of late diagnosis of HIV (2, 3, 5).

In Australia, rates of late HIV diagnosis are high among South-East Asian-born migrants. In Australia, between 2013 and 2017, South-East Asian-born migrants had the highest proportion of late diagnosis of HIV after sub-Saharan African migrants, i.e. 48 per cent (5). In Australia in 2017, South-East Asian-born migrants had a significant proportion of undiagnosed HIV, i.e. an estimated 27 per cent (5). This suggests that there are barriers, and/or insufficient facilitators, to South-East Asian-born migrants' access to, and/or use of, HIV testing. Understanding suboptimal HIV testing behaviour is crucial for designing evidence-based interventions to improve HIV testing in this population, with implications for individuals and communities.

Despite the worse HIV outcomes for South-East Asian-born migrants in Australia (5), scant evidence is available in the scientific literature from Australia (or internationally) with South-East Asian-born migrants on HIV testing behaviour (2). Within the evidence-base, most research on the HIV testing behaviour of migrants has examined HIV testing as if there is only one approach (2). Multiple HIV testing approaches are, however, available, including newer technologies such as rapid HIV testing and HIV self-testing (HIV ST). HIV-related knowledge and HIV-related stigma have been identified, among other factors, as key determinants in the HIV epidemic and, specifically, HIV testing (6, 7). Despite this, HIV-related knowledge and HIV-related stigma have been poorly examined in research with migrant populations and HIV testing, i.e. using non-standardised measures (2).

This study addresses the identified issues across the literature on HIV testing in migrants in HICs by examining HIV testing behaviour, including use of newer HIV

testing approaches, i.e. rapid HIV testing and HIV ST, in a subset of the South-East Asian-born migrant population, i.e. Vietnamese-born migrants, in Australia. Additionally, selected psychometric properties, i.e. construct validity and internal consistency reliability, of scales assessing HIV-related knowledge, i.e. the Brief HIV Knowledge Questionnaire (HIV-KQ-18; 8), and externalised HIV-related stigma, i.e. the AIDS-Related Stigma Scale (ARSS; 9), were assessed in the study populations. This study was undertaken with a view to identify areas of significance for policy makers to improve the HIV-related outcomes of Vietnamese-born migrants in greater-Brisbane, Queensland. The findings from this study also have possible implications for other South-East Asian-born migrant populations (due to cultural proximity; 10), and established migrant populations from other world regions.

1.1 Key concepts

1.1.1 HIV

HIV is a retrovirus that reduces the capacity of the body to protect itself from infections (11). Both the virus and infection with HIV are referred to as HIV, and this is the term used in this study. HIV initially starts with an acute primary infection, followed by a latent asymptomatic stage and, finally, a symptomatic stage that is typified by chronic illness or acquired immunodeficiency syndrome (AIDS; 12, 13). There is no vaccine or cure for HIV (14, 15).

HIV is transmitted via blood, bodily fluids and breast milk, and numerous actions may predispose one to possible HIV infection, including sexual intercourse, injecting drug use, blood transfusions, mother-to-child transfer during pregnancy (intrapartum) and breastfeeding (16, 17). The international literature identifies several population sub-groups with higher risk for HIV, including sex workers (SWs); men who have sex with men (MSM); injecting drug users (IDUs); and migrants (15). Risk of contracting HIV stems from individual factors, e.g. biological and behavioural, but also structural factors, e.g. sex differentials, stigma and laws (18-20).

Without an available, effective and accessible vaccine for HIV (21), throughout much of the HIV epidemic, behaviour change has been the cornerstone of HIV prevention (7, 22). Recently, while behaviour change has been supplemented with other interventions, e.g. biomedical interventions that limit infection/infectiousness and structural interventions that change the HIV risk context,

behaviour change remains key to HIV prevention in HICs (20). Behaviour change acts at the individual and social level, and includes delayed sexual debut, condom use, safe use of needles, and use of HIV testing (23). This requires individuals to have knowledge of HIV, including knowledge of HIV risk factors and HIV prevention and management strategies, as well as access to individual and environmental enabling resources to engage in health promotional behaviour (8). These factors, however, are not always in place.

Stigma has surrounded HIV (6). Due to the transmission modes of HIV and the predominantly affected sub-populations, HIV is often associated with poor personal character (24-26). Additionally, especially early in the HIV epidemic, the association of HIV/AIDS with death (due to there being no cure) led to stigma, discrimination and denial (24). Stigma negatively impacts HIV prevention and management (6, 27, 28). For example, people often avoid HIV testing for fear of a positive HIV diagnosis and subsequent social exclusion (29-35). Where a person is diagnosed as HIV positive, fear of discrimination may also prevent disclosure of HIV (27, 29, 30, 36). This may lead to secrecy, withdrawal and reduced self-esteem (6, 37). As a result, people would often rather not test for HIV, and maintain 'plausible deniability', than test for HIV (38).

At the end of 2015, between approximately seventy million and eighty-eight million people worldwide had been infected with HIV since it was isolated in 1983 (1, 21). Worldwide, while HIV incidence declined between 1997 (when incidence peaked) and 2005, since then it has largely remained stable (39). Global trends, however, mask heterogeneity in HIV incidence between and within countries (15). Recently, AIDS-related deaths have, however, declined (1, 40). Advances in treatment and management, including the earlier initiation of antiretroviral treatment (ART), when adhered to, have established HIV as a chronic, rather than a fatal, condition (17). This is especially the case in HICs, such as Australia, where ART is widely available (40).

1.1.2 HIV testing

Engagement with care first requires people living with HIV (PLWH) to test for HIV. There are several HIV testing approaches, including newer approaches such as rapid HIV testing and HIV ST. There are numerous benefits of HIV testing for

individual and population health. Briefly, the significance of HIV testing is attested to by multiple national and international campaigns, including the UNAIDS recent campaign of 90-90-90 to halt the AIDS epidemic, whereby the first '90' refers to 90 per cent of PLWH knowing their HIV status by 2020 (41). For PLWH, where HIV testing, diagnosis and initiation of, and adherence to, ART occurs in a timely manner, a person can expect to live a near normal life expectancy (42). Mortality, however, increases where commencement of treatment occurs late. In addition, ART reduces the viral load of PLWH and behavioural changes e.g. less HIV risk behaviour, made by PLWH following HIV diagnosis may limit onward transmission of HIV (43). HIV testing also has economic (44), health surveillance (15), and potentially normalising benefits (45, 46).

1.1.3 Migrants and HIV

In 2015, according to the United Nations (UN), there were 244 million international migrants (47). Migrants are not an homogeneous population. Migrants may travel for many reasons, including for employment opportunities or escaping conflict, as individuals or families (48). Migrants have been defined in many ways (49-51). For the purpose of this study, migrants are broadly conceptualised as individuals who have left their legal homeland (home country) and have travelled across international borders to reside in a host country (50-53). Approximately three-quarters (71 per cent) of the migrant population move to HICs (47). Note, from this point forward, unless otherwise specified, the term migrant refers to migrants from LMICs and, particularly, those from high prevalence countries (i.e. those with an HIV prevalence ≥ 1 per cent) or countries with higher HIV prevalence than the host country.

Despite being a heterogeneous population, migrants in HICs are often at higher risk for HIV when compared to their host country counterparts (2, 3, 5, 54-56). In Sweden, for example, approximately three quarters of new HIV diagnoses are amongst migrants (56). In Australia, people born in South-East Asia have disproportionately high rates of HIV (as compared to the Australian-born population), as shown in Australian national data (5, 57). In 2017, the highest HIV notification rates were in people born in South-East Asia (14 per 100,000), as compared to the Australian-born population who had an HIV notification rate of 3.2 per 100,000 (5). Additionally, modes of HIV transmission often vary between migrants and host

country populations. Data from HICs show greater heterosexually acquired HIV among migrants (5, 58, 59). In Australia in 2017, for example, 55 per cent of HIV notifications attributed to heterosexual sex were in people born overseas, particularly in sub-Saharan Africa (15 per cent) and Asia (13 per cent; 5).

There is no consensus on the reasons underlying the increased risk of HIV in migrants. The increased risk of HIV in migrants may reflect risks associated with their country of origin, both prior to migrating and upon return visits, and/or risks associated with migratory and settlement processes in the host country (53, 60). Data from HICs support acquisition of HIV both pre- and post-migration (3, 43, 61, 62). In 2015, for example, 60 and 67 per cent of South-East Asian and sub-Saharan African migrants, respectively, who had late diagnosis of HIV had lived in Australia for 5 years or less (43). This indicates HIV acquisition prior to moving to Australia. Post-migration, it is unclear whether new cases of HIV are acquired on return visits to home countries or in the host country (30).

There is some evidence to suggest that migrants living in HICs may be at risk for acquiring HIV when visiting their home countries (63). Risk may be heightened due to a higher HIV prevalence in home countries (14, 20). While HIV has a presence in every country and region worldwide, HIV is primarily found in LMICs (17, 24, 50). Compounding this, migrants often engage in greater HIV risk behaviour in the home country, including unsafe sex with SWs and injecting drug use (64-66). Migrants may also be at higher risk of acquiring HIV in the host country due to significant differences between their home and host country (67). This may be especially so for migrants who enter HICs for humanitarian reasons, where the difference between home and host country is most pronounced. Migration is typified by numerous factors that potentially increase the risk of contracting HIV (48). These include being of low socio-economic status, being isolated and without social support, being undocumented, and having problems accessing and navigating the healthcare system (52, 60, 68-70). The economic, social, cultural and legal factors that increase HIV risk for migrants also limit their use of HIV testing (71), leading to late HIV testing and diagnosis of HIV.

1.2 Study location and population

1.2.1 Australia

Many migrants are required to undergo a health examination prior to coming to Australia, depending on their visa types (72). For example, migrants aged ≥ 15 years who wish to gain permanent residency in Australia, generally require an HIV test. Few HIV positive migrants seeking permanent residency will be allowed entry into Australia, as they are generally denied based on excessive health costs (73). Migrants who test HIV negative as part of the health examination have no ongoing requirements for HIV testing once in Australia.

Australian citizens and permanent residents can access HIV testing for free or at low cost via the Australian healthcare system, which offers universal healthcare coverage through Medicare (74). In two studies with culturally and linguistically diverse (CALD) populations in Australia, Asante et al. found that 79 and 92 per cent of participants had a Medicare card (75). Despite this, in Australia, as above, migrants are often diagnosed with HIV late (5). This is consistent with other research from Australia with migrants, and CALD populations, and other preventative healthcare use, which shows limited uptake of vaccination and screening and greater use of tertiary healthcare (76-79). For example, when matched to Australian-born women ($n=12,143$), Middle Eastern and Asian women ($n=12,541$) had significantly lower odds of cervical cancer screening once in a 3-year period (Adjusted Odds Ratio; AOR: 0.88, 0.81–0.97 and AOR: 0.74, 0.70–0.79, respectively; 79).

1.2.2 Vietnamese-born migrants

Vietnamese-born migrants are a subset of the South-East Asian-born migrant population. In Australia, South-East Asian-born migrants have high rates of late diagnosis and undiagnosed HIV, as above (5). In 2015, Vietnamese-born migrants were the 6th largest overseas born population in Australia and totalled one per cent of the population (80). In 2011, Vietnamese-born migrants were the 8th largest population in Queensland, with a population of 16,269 (81). Vietnamese-born migrants in Australia are a heterogeneous population. A significant number of Vietnamese-born migrants moved to Australia as refugees as a result of the Vietnam War (post-1975) and, since then, to reunite with family, as students and skilled migrants (65, 82).

Vietnamese-born migrants often maintain strong ties with Vietnam, the Vietnamese diaspora and Vietnamese ethnicity (65), and often live in enclaves in urban areas (66). In 2011, of the 1.2 per cent of the Australian population who spoke Vietnamese at home, approximately one-third (39.5 per cent) did not speak English very well (83). A subset of Vietnamese people also travel back to Vietnam regularly. In their study of people of Vietnamese heritage living in Australia, Baldassar et al. 2017 found that approximately one-third (30 per cent) of participants travel back to Vietnam once every one or two years, while only 16 per cent had never travelled to Vietnam since migration (65). In this study, women reported slightly greater regular travel to Vietnam (i.e. every year) and ever having been to Vietnam, as compared to men, which likely stems from different familial roles between Vietnamese women and men related to employment and caring (65). Recently, travel to Vietnam has been enabled by increasing economic, political and legal reforms (84). Research suggests that upon return visits to Vietnam, a subset of Vietnamese-born migrants travelling from Australia engage in potentially high HIV risk behaviour, including injecting drug use and sexual intercourse with SWs (64, 66).

Vietnam has a concentrated HIV epidemic, largely among IDUs, SWs and MSM (85). Increasingly, however, the epidemic is rising in the general population, due to HIV transmission to the partners of IDUs and SWs (86). The prevalence of HIV in Vietnam is higher than in Australia (i.e. in 2016, 0.50 and 0.10, respectively; 57). HIV prevalence is likely to be under-reported, however, due to poor use of HIV testing and treatment and under-reporting of HIV positive cases (87). In keeping with this, research from Vietnam highlights that Vietnamese people are often diagnosed with HIV late (86).

In Vietnam, in recent times, HIV testing has been scaled up in maternal and family planning settings, and for populations at highest HIV risk, e.g. IDUs and SWs, as well as migrants, those in remote locations, those seeking tuberculosis (TB) or sexually transmitted infection (STI) services (86). HIV testing largely occurs in hospital settings, and to a lesser degree private clinics, but not in specialised HIV testing services (86). Provider-initiated testing and counselling (PITC) largely occurs in the context of clinical indicators of possible HIV infection. HIV testing often incurs a fee, including in the antenatal setting (86).

There is little research internationally examining HIV testing behaviour in Vietnamese-born migrants (88). In their study examining HIV testing behaviour in South-East Asians (67.7 per cent foreign-born) in the United States (US), however, Huang et al. found low levels of having ever been tested for HIV (37 per cent) among Vietnamese participants (88). This poor HIV testing behaviour by Vietnamese people is consistent with research in other health domains in Australia and internationally. For example, in Australia, biennial rates of cervical cancer screening were shown to be lower specifically in the Vietnamese population (45 per cent), when compared to the broader population (56 per cent; 89).

Vietnamese-born migrants were, therefore, chosen as the study population in this study for numerous reasons. The South-East Asian-born migrant population have high rates of late and non-diagnosis of HIV, and the Vietnamese-born population are a subset of this population. They are a large population in Australia. In the greater-Brisbane area, where this study was conducted, they are also an accessible population. For example, Inala has a significant Vietnamese-born population and is a noted hub for people of Vietnamese ethnicity (90). Vietnamese-born migrants often travel back to Vietnam, where HIV prevalence is higher, and a subset of these migrants may engage in HIV high risk behaviour. Preventative health behaviour among Vietnamese-born migrants is, however, often limited.

1.3 Significance

Migrants in HICs often have disproportionately high rates of HIV, as compared to the host country population (2, 3, 5). Timely diagnosis of HIV is important for management of HIV and, increasingly, prevention (2, 4). HIV is now largely a chronic, rather than a fatal condition, due to advances in treatment and management, including the earlier initiation of, and adherence to, ART (17). This is especially the case in HICs, such as Australia, where ART is widely available (40). The role of HIV testing in facilitating HIV diagnosis is increasingly acknowledged in national and international campaigns to eradicate HIV, including UNAIDS '90-90-90' campaign (41).

In HICs, despite the benefits of early diagnosis of HIV, migrants often have high rates of late diagnosis of HIV (2, 3, 5). Recently, in Australia, South-East Asian-born migrants have had high rates of late diagnosis of HIV and a significant

proportion of undiagnosed HIV (5). This suggests that there are barriers, and/or insufficient facilitators, to South- East Asian-born migrants' access to, and/or use of, HIV testing.

There is, however, little research on the HIV testing behaviours of South-East Asian-born migrants in Australia and internationally (2). Multiple HIV testing approaches are available, including newer technologies such as rapid HIV testing and HIV ST. There is, however, little research on these newer approaches to HIV testing among migrants (2). HIV-related knowledge and HIV-related stigma have been poorly examined in research with migrant populations and HIV testing, i.e. using non-standardised measures (2). This is despite the important role HIV-related knowledge and HIV-related stigma have, among others, in the HIV epidemic and, specifically, HIV testing. This study aimed to address these gaps in the literature in examining the HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane, Queensland.

1.4 Research aims and objectives

The aims of the study were to examine the uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants in Australia (as compared to Australian-born adults); to identify barriers to and facilitators of accessing HIV testing approaches for Vietnamese-born migrants in Australia; and to assess selected psychometric properties (construct validity and internal consistency reliability) of an HIV-related knowledge and HIV-related stigma scale in Vietnamese-born migrants and Australian-born adults. The specific research objectives identified were to:

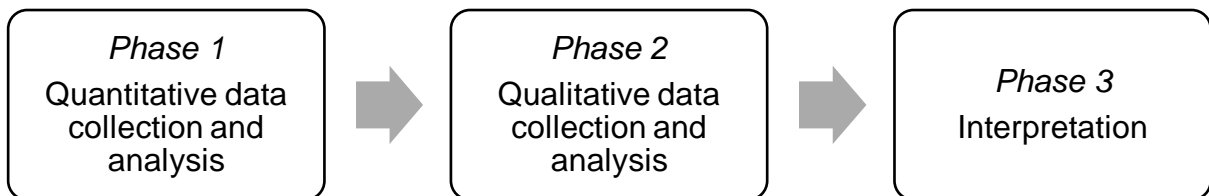
1. Assess self-reported uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants in Australia and compare these to Australian-born adults of non-Vietnamese heritage;
2. Quantify the extent to which specific (self-reported) demographics, HIV-related knowledge, HIV-related stigma, perceived HIV risk and HIV risk behaviour, and healthcare access variables act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia;
3. Qualitatively explore factors that act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia; and

4. Assess selected psychometric properties, i.e. construct validity and internal consistency reliability, of the HIV-KQ-18 (8) and the ARSS (9; originally designed for use in the US and South Africa, respectively) in Vietnamese-born migrants in Australia and Australian-born adults, including people of Vietnamese heritage.

1.5 Study design and methods

This study was cross-sectional and used an explanatory sequential mixed methods design across three phases, i.e. Phase One: Quantitative data collection and analysis; Phase Two: Qualitative data collection and analysis; and Phase Three: Interpretation, see Figure 1-1 below. Ethics approval was obtained from The University of Queensland Behavioural and Social Sciences Ethical Review Committee prior to commencement of the Pre-Pilot (Approval number 2014001398; see Appendix 1 for Ethics approvals).

Figure 1-1 Flow diagram of study phases in this study



1.5.1 Theoretical framework

This study applied the Behavioural Model of Healthcare Utilisation (BMHU), i.e. quantitative questionnaire variable inclusion and the qualitative interview guide drew on BMHU components (91). The BMHU considers healthcare utilisation as a product of predisposing (demographic, knowledge, attitude), enabling (access) and need factors (risk behaviour). This model has been widely applied to different types of healthcare use, including preventative, emergency and curative (92).

1.6 Thesis structure

This Thesis is comprised of five Chapters. Chapter One presents an overview of key concepts central to this study, related to the topic (HIV and HIV testing) and the study population and location (migrants, Vietnamese-born migrants and Australia). Together, this overview provides support for the timeliness and

significance of this study. The specific research aims and objectives, and the theoretical and methodological approaches used in this study are then described briefly.

The purpose of Chapter Two is to provide a detailed literature review of HIV testing in migrants. This Chapter provides a rationale for further research to understand HIV testing behaviour in migrants and methodological approaches used in this study. The specific objectives of the review are to (1) provide an overview of the importance of HIV testing for prevention and management of HIV and the different HIV testing approaches; (2) examine uptake of HIV testing and late HIV diagnosis among migrants; (3) explore the barriers and facilitators to migrants engaging with HIV testing; (4) provide a rationale for undertaking selected psychometric analyses (construct validity and internal consistency reliability) of the HIV-KQ-18 (8) and the ARSS (9) in this study; (5) provide a rationale for the theoretical framework and methodology used in this study.

Chapter Three presents the specific objectives, research questions and hypotheses of this study. This is followed by a discussion of the study design, i.e. a cross-sectional, explanatory sequential mixed methods design, across three Phases, and research methods. This Chapter addresses Phases One and Two of the study, (Quantitative data collection and analysis and Qualitative data collection and analysis, respectively). The study design and research methods adopted in this study were informed by the literature review, as presented in Chapter Two. Additionally, discussions with a key informant working in the migrant/sexual health sector ensured the study design and methods employed were appropriate for the study population (specifically, Vietnamese-born migrants).

Chapter Four contributes to addressing Phase Three of the study (Interpretation). This Chapter addresses the objectives of this study. Specifically, it identifies uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants and Australian-born adults (Objective One). It also identifies, quantitatively and qualitatively, barriers and facilitators to HIV testing approaches for Vietnamese-born migrants (Objective Two and Objective Three, respectively). Additionally, selected psychometric analyses (construct validity and

internal consistency reliability) of the HIV-KQ-18 (8) and ARSS (9) in Vietnamese-born migrants and Australian-born adults are presented (Objective Four).

Chapter Five addresses, in part, Phase Three of the study (Interpretation). This Chapter discusses the findings from this study considering broader research into migrants and HIV testing and other relevant research. Based on the findings (as presented in Chapter Four), and with considerations of the strengths and limitations of this study, recommendations for researchers and policy makers are presented. Through adoption of these recommendations, HIV testing may be facilitated and, therefore, HIV outcomes optimised for Vietnamese-born migrants. Recommendations have possible relevance for other migrant populations, as well.

2 Literature Review

Recently, the prognosis for people living with HIV (PLWH) has improved, as a result of the effectiveness of antiretroviral treatment (ART; when taken as prescribed) in controlling HIV (17). HIV testing facilitates improved outcomes for PLWH, but also for prevention (2, 4). Migrants in high-income countries (HICs), however, often have higher rates of HIV, as compared to the host population, and high rates of late HIV diagnosis (2, 3, 5). It is important to understand uptake of, and willingness to use/accept, as well as barriers and facilitators to, HIV testing approaches in this population to address these disparities and improve HIV-related outcomes.

As outlined in the previous Chapter (Chapter One), in Australia, migrants from South-East Asia have disproportionately high rates of HIV, as compared to the Australian-born population, and high rates of late diagnosis of HIV (5). There is, however, limited research on the HIV testing behaviour of South-East Asian-born migrants in Australia and internationally (2). In starting to address this gap, this study draws on the evidence-base of HIV testing behaviour among migrants in HICs, more broadly. Findings from other migrant populations and in other HICs provide a starting point for understanding HIV testing behaviour in a subset of South-East Asian-born migrants (Vietnamese-born migrants) in Australia. In this Chapter (Chapter Two) literature from Australia or with South-East Asian migrants and, specifically, Vietnamese-born migrants is presented, where available.

The purpose of this Chapter is to provide a detailed literature review of HIV testing in migrants. The specific objectives of the review are to:

1. Provide an overview of the importance of HIV testing for prevention and management of HIV and the different HIV testing approaches;
2. Examine uptake of HIV testing and late HIV diagnosis among migrants;
3. Explore the barriers and facilitators to migrants engaging with HIV testing;
4. Provide a rationale for undertaking selected psychometric analyses, i.e. construct validity and internal consistency reliability, of the Brief HIV Knowledge Questionnaire (HIV-KQ-18; 8) and AIDS-Related Stigma Scale (ARSS; 9) in this study; and

5. Provide a rationale for the theoretical framework and methodology used in this study.

2.1 The importance of HIV testing

HIV testing is increasingly recognised as critical to the management, but also prevention, of HIV (2, 4). Several global and national initiatives aim to prevent and eradicate HIV, with HIV testing as the starting point. These campaigns are ambitious, and achieving these has been, and will be, challenging. For example, two Millennium Development Goals (MDGs) addressed HIV, namely:

- MDG 3: to provide universal access to treatment for those who need it by 2015 (largely not achieved); and
- MDG 6: to end the HIV epidemic by 2030 (39).

While the MDGs have focused predominantly on low- and middle-income countries (LMICs; 93), HICs also have gains to be made towards reducing and eliminating HIV. UNAIDS also has a campaign that aims to halt the HIV epidemic globally, as proposed in their 90-90-90 campaign (41). This campaign centres on meeting targets across the HIV treatment cascade - from HIV testing to viral suppression, namely:

- 90 per cent of PLWH knowing their HIV status by 2020;
- 90 per cent of PLWH who know their status will receive sustained ART; and
- 90 per cent of PLWH on ART will have viral suppression.

Likewise, in HICs, national HIV policies and guidelines present strategies and targets for improving HIV-related outcomes (94), e.g. Australia's "National HIV Strategy" (95) and "National HIV Testing Policy" (96). In Australia, the 2018-2020 National HIV Strategy endorses and links HIV-related outcomes to the UNAIDS 90-90-90 campaign (97).

Through the detection of HIV, facilitated by HIV testing, the quality of life and health outcomes of PLWH can be improved. PLWH can be provided with ART (37). For PLWH, where HIV testing, diagnosis and initiation of, and adherence to, ART occurs in a timely manner, a person can expect to live a near normal life expectancy (comparable to those with poor health behaviours, e.g. smoking, or with other chronic conditions, e.g. diabetes; 42). Mortality, however, increases where

commencement of treatment occurs late. For example, May et al., 2011 found a reduction in life expectancy of >10 years for those PLWH starting ART with CD4 <200 cells (or having Acquired Immunodeficiency Syndrome; AIDS; 98), as compared with 200-350 cells (42).

HIV testing may also reduce the risk of onward transmission of HIV by encouraging PLWH awareness of their status and subsequent viral changes that may occur through use of, and adherence to, ART. Adherence to ART can reduce the HIV viral load to a rate that is undetectable. A reduced viral load greatly reduces the probability of onward HIV transmission (43). In a systematic review of the risk of sexual transmission of HIV with ART and viral suppression (<200 copies/mL), LeMessurier et al. 2018 found that risk of HIV transmission was negligible (0 transmissions/100 person-years; 99). Such findings have led to phrases such as 'Undetectable = Untransmittable' (U=U; 100).

HIV testing may alter people's behaviour (whether HIV positive or HIV negative). Post-test counselling lowers HIV risk behaviour of PLWH (101). In their meta-analysis of research from the United States (US), Marks et al. found unprotected vaginal or anal intercourse after an HIV positive diagnosis, after adjustment for self-reported sexual behaviour with a partner (regardless of HIV status), decreased by 68 per cent (95% Confidence Interval; 95% CI: 59 – 76 per cent; 102). Similarly, another study by Marks et al. estimated the sexual transmission of HIV from persons aware and unaware they had HIV in the US (103). They found that the proportion of sexually transmitted HIV from the HIV positive unaware group was 3.5 times that of the HIV aware group, after appropriate population size adjustments between groups. Information provided through HIV testing may also positively influence those who are HIV negative, through improved risk knowledge; although this has not been consistently reported in the literature (104, 105).

Ensuring those at risk of HIV infection are tested for HIV has economic benefits for the community. HIV late diagnoses cost societies more than those who present with HIV earlier (106). For example, in a study from Canada, the average cost for healthcare in the year post-HIV diagnosis was in excess of double for late presenters, when compared to non-late presenters (\$18557 and \$8455, respectively; 44). While late presenters differed in demographic characteristics, these

demographic differences did not account for the differences in cost. Higher costs for late presenters resulted from greater HIV-related hospital care costs and ART.

HIV testing may also enable the gathering of more accurate data on incidence and prevalence of HIV infection and late stage HIV. In Australia, since 1984, HIV/AIDS diagnoses have required notification (107). Epidemiological surveillance of new HIV infections is carried out by state and territory health authorities (107). Since 2002, Australian national surveillance data has routinely collected 'country of birth' data and, since 2004, 'language spoken at home', to track trends in the culturally and linguistically diverse (CALD) population (108). Based on this data, prevention campaigns can, therefore, be better informed and tracked (15, 39).

People who present for HIV testing once may be more likely to test for HIV again in the future by normalising this behaviour (45, 46). HIV testing may be especially normalised where HIV care is available and accessible and there is a supportive environment for PLWH (46). It also seems possible, however, that by HIV testing once people may be complacent about future HIV testing. Populations who test for HIV compulsorily, such as migrants who test for HIV for immigration requirements, may be especially at risk for complacency and, therefore, late diagnosis of HIV. This may be particularly the case for migrants who do not consider themselves at risk for HIV in their host country (despite potentially still being at HIV risk), as has been found in previous research with Thai migrants in the United Kingdom (UK) and migrants of mixed origin in Europe (56, 109).

2.2 HIV testing approaches

In HICs, HIV testing has been available since 1985 (24). At the time of its introduction, however, HIV was not comprehensively understood by the general population, no ART was available, and fear and stigma were heightened, due to the predominantly affected populations, transmission modes and outcomes (24, 110, 111). Some people, therefore, felt there was little benefit to HIV testing (111). Given these factors, in addition to employing clinical HIV testing, counselling was incorporated into the HIV testing process, i.e. HIV voluntary counselling and testing (VCT), to mitigate potentially negative impacts from a positive diagnosis or to provide health promotional information (110, 111).

New HIV testing approaches continue to be implemented; however, older HIV testing approaches remain in use. HIV testing approaches include client-initiated testing and counselling (CITC), provider-initiated testing and counselling (PITC), rapid HIV testing and HIV self-testing (ST), see Table 2-1. These HIV testing approaches are aimed to complement one another (112). The availability of, and accessibility to, multiple HIV testing approaches is important, as different HIV testing approaches have different strengths and weaknesses which will appeal to different populations (113). This is especially important as the scope of HIV testing has broadened from a diagnostic, to also a preventative, tool (see Section 2.1; 4). The principles underlying the original approach, i.e. confidential and voluntary testing, informed consent and counselling, have continued to underpin later HIV testing approaches (114). This approach to HIV testing means HIV diagnosis has been, and is, treated differently from diagnoses of other diseases, such as hepatitis or diabetes, where healthcare providers may discuss, but do not necessarily require explicit consent or perform counselling, prior to testing (46, 111, 115). All HIV tests, regardless of the approach, are considered as screening tests and, therefore, positive results require a subsequent confirmatory HIV test (116).

Table 2-1 Description of HIV testing approaches

HIV testing approach	Description
CITC	CITC is HIV testing that is initially requested by the client and performed with counselling (117).
PITC	PITC is HIV testing that is initiated by the healthcare provider and performed with counselling (although this may be a shortened counselling component; 116, 118).
Rapid HIV testing	Rapid HIV testing can be CITC or PITC and performed with counselling. It allows the results of the HIV testing to be available to the client within a short period of time, usually within an hour (17, 116). This type of HIV testing may be conducted in traditional healthcare setting e.g. a GP clinic, or in community-based settings (116). It is

sometimes referred to as Point-of-Care Testing (POCT), because the results are available at the point of care.

HIV ST

HIV ST refers to rapid HIV testing that is initiated and performed by the client themselves. This is often done in the home, or other private location, after having purchased a kit from a retailer in person or via the mail direct from a manufacturer (105, 119). Usually the client has not received face-to-face counseling, only information about HIV testing included with the test and potentially from other sources (105, 120).

CITC: Client-Initiated Testing and Counselling; GP: General Practitioner; HIV ST: HIV Self-Testing; PITC: Provider-Initiated Testing and Counselling; POCT: Point-of-Care Testing

2.2.1 CITC and PITC

Traditionally, HIV testing has occurred when a client proactively asks a healthcare provider for an HIV test and has been called CITC, traditional VCT or client-initiated VCT (117). Asking for an HIV test requires people to have knowledge of HIV and perceived HIV risk. People's HIV-related knowledge and HIV risk assessment is, however, often inaccurate (116). For example, in a study with Latin American migrants in Spain and native Spaniards, approximately half (46.5 per cent) of all participants who were at high risk for HIV (based on self-reported behaviour) had low HIV risk perception (121). Migrants often do not initiate HIV testing (34). In their study with foreign-born migrants in Amsterdam, Stolte et al. found that only 10.7 per cent of their sample had self-reportedly used CITC (59). Significant rates of HIV late diagnosis, including in migrants, using only CITC led to the recommendation by the World Health Organisation (WHO) for more routine HIV testing, specifically PITC (113, 116, 122).

PITC refers to HIV testing which is provider-, rather than client-, initiated (118). Under the PITC approach, whole populations (universal approach) or specific population groups (targeted approach) are offered HIV testing because they are considered to be at higher risk of HIV or because the diagnosis of HIV has significant consequences for that individual, such as pregnant women (123-125). Several HICs,

including the US, the UK and France, have adopted PITC for use in the general population; however, targeted PITC for migrants remains controversial, with fears it may be perceived as a racist and discriminatory practice (125).

A small, but growing, body of literature shows that PITC is, however, largely acceptable to migrants (34, 56, 59, 125-127). For example, Stolte et al. found that of those migrants of mixed origin who had previously tested for HIV, the majority had tested by PITC (71 per cent; PITC reasons related to pregnancy, blood donation, medical complaints, research, travelling or imprisonment; 59). In a sample of never-tested Latino men in the US (n=255), Fernandez et al. 2003 found that 86 per cent of participants would test if offered by a doctor, and the strongest predictor of intention to test for HIV in multivariate analysis was willingness to accept a physician-endorsed HIV test (126). In a later study with migrant Latino farmworkers in the US, Fernandez et al. found that, for migrants who had not been tested for HIV, approximately 81 per cent had not previously been offered an HIV, but approximately 70 per cent would accept PITC (127). Likewise, female Thai migrants in Sweden held positive attitudes towards HIV testing, to identify and stop the spread of disease, and reported that they would test for HIV if offered (56).

Both CITC and PITC have largely been clinic-based, and have required a blood test to be sent away to a laboratory for HIV testing (113). In some settings, clinic-based HIV testing has been associated with concerns over confidentiality, discrimination and collection of results (113). Newer HIV testing approaches, such as rapid HIV testing and HIV ST, allow HIV testing in a broader range of settings and without the need to send a blood sample to a laboratory for initial HIV screening (128). These newer HIV testing approaches may be more accessible to marginalised populations, such as migrants (129).

2.2.2 Rapid HIV testing

Rapid HIV testing uses saliva or a drop of blood to screen for HIV (128). Rapid HIV testing allows HIV testing and results to be delivered in a short space of time, i.e. less than an hour (17, 116). The short reactivity of the rapid HIV test may, therefore, reduce return visits, ensuring people learn the results of their HIV test (130). Rapid HIV testing can be used in clinical and community settings (128). Rapid HIV testing availability has differed across HICs. For example, in the US the first

rapid HIV test was approved for use in 2002, with multiple rapid HIV tests subsequently approved (131). In Australia, rapid HIV testing is relatively new. In their study, Chan et al. 2015 noted only one rapid HIV test approved for use by the Therapeutic Goods Administration (TGA) at the time of writing their paper (129).

A small body of evidence internationally and across migrant groups highlights that rapid HIV testing is largely acceptable for use in clinical and community settings (127, 130, 132, 133). For example, in a recent qualitative study from Australia with migrants of mixed origin, including South-East Asian, participants noted rapid HIV testing would largely facilitate HIV testing (134). Likewise, in a study with Latinos in the US, nearly all participants supported the use of rapid HIV testing in the community (98 percent), rapid HIV testing over traditional HIV testing (92 per cent) and three-quarters (75.4 per cent) consented to rapid HIV testing as part of the study (130). Importantly, participants who had not previously tested for HIV had greater odds of consenting to undergo rapid HIV testing than those who had previously tested (Adjusted Odds Ratio; AOR: 2.5, 1.1-5.6). Rapid HIV testing may, therefore, reach populations not previously reached by traditional HIV testing approaches.

2.2.3 HIV ST

HIV ST uses a rapid HIV test, and refers to HIV testing that occurs in the home or other private location after having purchased an HIV ST kit (105, 119). HIV ST has been endorsed by multiple HICs, including the US, UK and Australia (120, 135). Government endorsement or approval, however, does not necessarily equate to widespread availability and accessibility of this product. HIV ST has been available in the US since mid-2012 (136). In Australia, supply restrictions were lifted in 2014; however, no HIV ST kits that met TGA guidelines were available for sale until the approval of the Atomo HIV Self Test in late 2018 (137). Over that time, HIV ST kits could be, and were, ordered online privately from overseas suppliers (135, 137). HIV ST is, therefore, an emerging approach to HIV testing.

Internationally, few studies have investigated the acceptability of HIV ST to migrant populations; although, results look positive (134). For example, a recent qualitative study from Australia showed that HIV ST was largely acceptable to migrants from Sub-Saharan Africa, South-East Asia and North-East Asia (134, 138). Research from Spain found that non-Latin American migrants were more likely to have heard of and used HIV ST (purchased online), when compared to Spaniards or

Latin American migrants (138). Non-Latin American migrants likely have more barriers to traditional HIV testing, due to language and cultural differences, when compared with Latin American migrants. This highlights the potential of HIV ST to overcome barriers to HIV testing for migrants, particularly where there are significant differences between the host and sending country culture.

2.3 Uptake of HIV testing

There is limited population level data on HIV testing behaviour among migrants in HICs, including the US and Portugal (52, 139). As compared to early in the HIV epidemic, however, among at least some migrant populations in the US, HIV testing has increased (140). Despite this, many studies on migrants' HIV testing behaviour report low rates of HIV testing, e.g. approximately ≤ 50 per cent having ever tested for HIV (52, 75, 88, 127, 130, 139, 141), tested for HIV in the previous year (54, 71) or five years (142), or tested for HIV in the host country (56). Several studies have, however, reported significantly higher rates of ever having tested for HIV (54, 121, 143, 144). Rates of HIV testing among migrants are often higher than among the host country population (142). Caution is, however, advised in interpreting results from these studies, which often have small and unrepresentative samples (54, 141). Across studies, it is also evident that HIV testing behaviour among migrants in HICs has largely been examined in a limited manner, i.e. ever or recent HIV testing, despite the multiple approaches to HIV testing (see Section 2.2; 2).

In a study from Australia, Asante et al. reported that approximately 50 per cent of people of unknown HIV status from CALD backgrounds in their sample (n=286) had ever tested for HIV (75). This is compared to 36 per cent of males and 37 per cent of females (aged 16-69 years) in another large Australian study with a population-representative sample (n=20,904; 145). In their study examining HIV testing behaviour in South-East Asians in the US (predominantly foreign-born), Huang et al. found low levels of having ever been tested for HIV, namely 30.8 per cent across the whole sample, as compared to the median HIV testing rate in the US adult population, the general HIV testing rate in Washington (the study city); and previous research with the Asian and Pacific Islander men who have sex with men (MSM) population (88). There were, however, HIV testing variations by ethnicity, with

Vietnamese participants reporting greater previous HIV testing than Loatians (37 and 22.3 per cent, respectively). In their study from Spain, however, Hoyos et al. found that 70 per cent of Latin American migrants had ever tested for HIV, as compared to 55 per cent of Spaniards (121). Their sample did, however, include a significant number of MSM which may have inflated HIV testing rates, as MSM report higher rates of ever having tested for HIV.

Migrants often have greater risk for HIV, as evidenced by disproportionate rates of HIV (as compared to the general population; see Section 1.1.3; 2, 3, 5). While HIV testing is often higher among migrants than non-migrants, when compared with other high risk populations, e.g. MSM, HIV testing is lower in migrants (142). In Australia, MSM is the population with the highest prevalence of HIV (146). In 2016, the Gay Community Periodic Survey in Sydney, Australia found that 87.2 per cent of men reported ever having tested for HIV and 78.4 per cent of HIV negative MSM reported HIV testing in the previous year (147). Historically, the focus of HIV interventions has been on the MSM population, so there is likely a greater awareness of HIV and, therefore, HIV testing among MSM (148). Such high rates of HIV testing may also be due to national HIV testing guidelines for the MSM community and community awareness of HIV risk, whereby at least annual HIV testing is recommended (146).

2.3.1 Late diagnosis of HIV in migrants

How late HIV diagnosis/testing is defined varies across studies/regions (106). Late diagnosis has been defined as having either a CD4+ cell count less than 200 in the absence of a seroconversion illness, or an AIDS-defining illness at, or within three months of, HIV diagnosis (54, 149). In Australia, an HIV diagnosis is defined as late when a person is newly diagnosed with HIV and their CD4+ cell count is <350 cells per microliter, or advanced when a person is newly diagnosed with HIV and their CD4+ cell count is <200 cells per microlitre (43). Advanced diagnosis is synonymous with having AIDS (98). To contextualise these figures, for people without HIV, a CD4+ cell count is generally above 500 and, for PLWH not on treatment, the CD4+ cell count lowers between 50-100 on average, per annum (43). A person presenting with an advanced HIV diagnosis has, therefore, had HIV for a significant number of years.

In HICs, there are often a lack of health guidelines, including relating to HIV testing, for migrants post-migration (31, 54). In Australia, while there are guidelines that include HIV testing for some migrant populations, such as immigration and refugee health guidelines, these guidelines do not specify ongoing HIV testing for migrants (150). Similarly, in Europe, there is limited guidance on the frequency of HIV testing for migrants and/or ethnic minorities. Only three countries (Denmark, France and the UK) specify these details, despite wider acknowledgement in the region of migrants and/or ethnic minorities at increased risk for HIV (94). Of these three countries, France is the only one that recommends ongoing routine HIV screening (once per year) of a subset of migrants considered at higher risk for HIV (those from sub-Saharan Africa and Caribbean with multiple partners). HIV testing, therefore, often occurs when migrants are unwell, and with later stage HIV disease (75).

In Australia, higher rates of late HIV diagnosis are a problem in migrants and people from CALD backgrounds (57, 110). In Australia, between 2013 and 2017, South-East Asian-born migrants had the highest proportion of late diagnosis of HIV after sub-Saharan African-born migrants, i.e. 48 per cent (5). Additionally, in 2017, people born in South-East Asia had high rates (27 per cent) of undiagnosed HIV (5). A significant number of studies from other HICs mirror the trends witnessed in Australia (106). Data from the UK, Europe and the US have identified migrants from LMICs as testing late for HIV (2, 3, 30, 34, 106, 151, 152). For example, in a European setting, Manirankunda et al. 2009 report, that in the period from 2001-2006, 38 per cent of African HIV cases were detected late, with CD4+ cell counts of <200 and, therefore, diagnosed concurrently with AIDS (34).

2.3.2 Summary

Among migrants, uptake of HIV testing is often lower, as compared to other high risk populations, and late diagnosis of HIV is often high (2, 3, 5). Uptake of HIV testing has largely been assessed via questions relating to ever and recent HIV testing without further delineation of the HIV testing approach (2). There are, however, numerous HIV testing approaches, each with strengths and weaknesses (see Section 2.2). It is, therefore, important to get a more nuanced understanding of HIV testing uptake among migrants, with a view to reducing late diagnosis of HIV among this population. As a result, this study examined ever tested for HIV, tested

for HIV in the previous year, previously offered HIV testing, willingness to use CITC, willingness to accept PITC, willingness to use rapid HIV testing and willingness to use HIV ST.

2.4 Barriers and facilitators to HIV testing

HIV testing is readily available in most HICs, through multiple service provision strategies, using different HIV testing approaches (153-155). Availability, however, does not automatically equal accessibility. Engagement (or not) with HIV testing may be a function of (perceived) barriers and facilitators to access. These barriers and facilitators to HIV testing are not necessarily unique only to migrants (54, 121). Across studies, there are several consistent findings, regardless of birth country. For example, in their study with Spaniards and Latin American migrants in Spain, Hoyos et al. identified low perceived HIV risk as the most salient barrier to previous HIV testing regardless of birth country (121). There are, however, other barriers and facilitators to HIV testing that are not experienced by non-migrants, e.g. language and legal issues (3).

The following Section (Section 2.4) gives an overview of theoretical frameworks and, specifically, the Behavioural Model of Healthcare Utilisation (BMHU) which was applied in this study. Barriers and facilitators to HIV testing in migrants in HICs are then explored, see Table 2-2. Findings from the evidence-base on barriers and facilitators to HIV testing are presented according to BMHU components, i.e. predisposing, enabling and need, to be consistent with later Chapters. Note, within the BMHU, variable placement is often interchangeable between components. Previous HIV testing, for example, may be considered as an enabling variable, as to have previously tested for HIV implies the person likely has a set of skills or resources to draw on (140); however, it may also be considered as a need variable, especially where CITC is the norm and where routine HIV testing is excluded, as a person likely tested for HIV due to engaging in HIV risk behaviour or due to perceived HIV risk. Additionally, each variable, e.g. age and HIV-related knowledge, may act as both a barrier and facilitator. For example, younger age may act as barrier to HIV testing, while older age may act as a facilitator. The findings from this Section are largely drawn from a systematic review conducted by the author and colleagues (2).

Table 2-2 Barriers and facilitators to HIV testing across the evidence-base by BMHU component

Component	Barriers/facilitators
Predisposing	Age, education, gender, pregnancy, sexual orientation, marital status, employment, birth country, acculturation, HIV-related knowledge, and HIV-related stigma
Enabling	Income, social support, health insurance, healthcare use, healthcare provider relationship, healthcare resources, legal status, and HIV policy
Need	Symptoms and preventative healthcare, HIV risk perception, and HIV risk behaviour

2.4.1 Theoretical frameworks

There is a small evidence-base of studies that has examined factors that act as barriers or facilitate HIV testing in migrants in HICs (see Sections 2.4.2, 2.4.3 and 2.4.4; 2). Studies, however, have largely not been (explicitly) guided by theory, with a few exceptions (56, 156). Theoretical frameworks provide an important base for designing, analysing and interpreting research (157). Theories provide a basis for systematically understanding (health) behaviour by presenting sets “of inter-related concepts, definitions, and propositions that explain or predict events or situations by specifying relations among variables” (157, p. 401). Research suggests that public health interventions based on theory are more effective than those that do not draw on theory (158, 159).

Investigators have many theories from which to choose, including socio-cognitive and ecological theories (157). Socio-cognitive theories have arisen from the field of psychology and include the Health Belief Model (HBM), Social Cognitive Theory (SCT) and the Theory of Reasoned Action (TRA; 157). These socio-cognitive

theories focus mainly on individual behaviours (160, 161). Historically, the approach to HIV has been from a socio-cognitive perspective, as HIV risk is derived from individual behaviours, e.g. unprotected sexual intercourse (162). Increasingly, however, the socio-cognitive approach to HIV is viewed as insufficient (160).

HIV transmission also occurs within a social/cultural/political context (23). Individual behaviours may, therefore, be facilitated or constrained by external factors independent of the individual (160). In the case of HIV testing, while people may know that they are at risk for HIV, they may not test for HIV due to concerns of being stigmatised by the wider community (161). Health behaviour is not determined by one individual factor, e.g. knowledge or attitudes, or one level of factors, e.g. individual or structural, but by multiple factors at multiple levels (157). Ecological theories are, therefore, identified as the best models for use in public health and health promotional interventions, for their ability to account for 'real world' factors that impact health behaviour (157). They may be particularly useful in research with migrants from collectivist cultures (160).

There are two broad approaches to culture, i.e. individualistic or collectivist (25). Individualistic cultures see the individual as autonomous and independent. In contrast, collectivist cultures see the individual as interdependent and as one part of a social relationship (25). In Western societies, such as Australia, the focus is on the individual; however, other societies, such as Asian and African, focus on the collective (161, 163-166). Migrants, however, likely sit on a continuum between collectivism and individualism, depending on their level of acculturation (25). In conducting research with migrants, however, a theory which is centred largely on the individual is unlikely to fully capture all aspects of a phenomenon (48, 160). The degree to which socio-cognitive theories are useful in HIV testing utilisation specifically within certain migrant populations is, therefore, questionable (160, 161).

Both socio-cognitive and ecological theories have been used in studies of HIV testing behaviour among migrants. For example, Westmaas et al. drew on the HBM and other 'socio-cognitive models', i.e. Theory of Planned Behaviour (TPB) and SCT, in examining intention to test for HIV among Surinamese and Dutch-Antillean migrants in the Netherlands (156). In multivariate analysis, they found subjective norms, i.e. "My (parents, family, friends, community) find it important that I have

myself tested frequently”, to be the greatest predictor of intention to test for HIV for both migrant populations. Their findings highlight the role of community and contextual, rather than individual, factors in HIV testing behaviour. Akerman drew on the BMHU, an ecological theory, in their qualitative study of healthcare-seeking behaviour in relation to the sexual and reproductive health of female Thai migrants in Sweden (56). In line with the BMHU, their study demonstrated barriers and facilitators to HIV testing across the components of predisposing, enabling and need, which operate at the individual, social and environmental levels.

2.4.1.1 Behavioural model of healthcare utilisation (BMHU)

Several theoretical frameworks were examined for possible use in this study (see Appendix 2). This study applied the BMHU, i.e. quantitative questionnaire variable inclusion and the qualitative interview guide drew on BMHU components. The BMHU was chosen for use in this study for several reasons. It offers an example of an ecological model, which incorporates individual and societal level factors in understanding healthcare utilisation (167). It is a flexible model, i.e. it does not specify specific variables to be included in the model, that was able to incorporate elements from previous studies, and to address the research questions (92). The BMHU is a well-established model. In their 1998 paper, Phillips et al. identified in excess of 100 papers that explicitly used the BMHU (92), and it continues to be used (56, 168). The BMHU has been widely applied across different fields to examine healthcare utilisation, access, and delayed presentation in the general population (92). In previous research, the BMHU has been used with migrants (164), and specifically with migrants and HIV testing (56). The BMHU has also been extended for use specifically with vulnerable populations, e.g. homeless people, i.e. the Gelberg-Andersen Behavioural Model for Vulnerable Populations (169, 170). Due to the lack of previous research into the HIV testing behaviours of Vietnamese-born migrants, this study used the traditional, not extended, BMHU.

The BMHU was first developed by Andersen et al. in the 1960's (171). Since the initial BMHU, numerous versions have been published (171). Iterations of the BMHU are all largely consistent, seeing several patient characteristics (and, in later models, environmental factors) as central to healthcare use (171). According to the BMHU, healthcare use is contingent on (1) people's predisposition to using

healthcare; (2) the means they have available to utilise healthcare; and (3) their (perceived) level of illness (167), see Table 2-3.

Table 2-3 Behavioural Model of Healthcare Utilisation (BMHU) components

Component	Description
Patient characteristics	
Predisposing	Individual attributes, e.g. age, gender, education, knowledge and attitudes, which affect healthcare use indirectly.
Enabling	Factors, e.g. income and health insurance, that (dis)allow healthcare use.
Need	(Perceived) Illness

Patient characteristics relate to predisposing, enabling and need factors. Predisposing factors are those individual attributes that underlie healthcare services use, but do not directly impact use. These factors exist prior to (perceived) illness and are predictors of one's likelihood (or not) of utilising healthcare (167, 172). They have also been characterised as factors that are intrinsic to the patient (168). Factors considered to be predisposing are demographic, including gender and age, social-structural, including education level and ethnicity, and attitudinal and behavioural, regarding medical care and disease (91). Enabling (or disabling) factors are those conditions, tools or resources which allow (or disallow) a person to (from) obtain(ing) healthcare (91, 168). Enabling factors can be at the individual, social and structural level. Enabling factors in the evidence-base include income, insurance status, healthcare access and provider attributes, and local norms (173). Lastly, illness, or the perception of illness (need), impacts healthcare use (171). Health need (or perceived need) has been considered the most salient factor in healthcare utilisation (174). Included in the model can be both subjective, including self-reported health assessment, and more objective, clinical measures of need, from an examination (91). Patient characteristics, i.e. predisposing, enabling and need factors, impact healthcare use differentially depending on the healthcare type (167). Preventative healthcare, for example, is more likely to be a product of predisposing and enabling

factors, where there may be no symptoms (or need). In contrast, emergency healthcare is more likely to be a function of predisposing and need factors (171).

While all these patient characteristic components generally appear across studies employing the BMHU, variables are often categorised in different ways. For example, in one study health beliefs were a variable within need (175), whereas in another study health beliefs were a variable within predisposing (169). The variability in variable placement limits the comparability of findings. There are multiple publications relating to the conceptualisation of the BMHU and its revisions (91, 167, 171, 172), but also a significant number of studies employing the BMHU, to some degree (see below). It may be that investigators are not, or are insufficiently, consulting the seminal publications relating to the BMHU when devising their studies, which provide definitions and examples of variables to be included under each component, leading to increased variability across studies. The BMHU is, however, also flexible and variables are often interchangeable between components. Differences between studies may, therefore, reflect purposeful changes. There is, therefore, a need for investigators who use the BMHU to explicitly provide details of how variables were categorised and, where these deviate, an explanation of variable categorisation.

In addition to variability in the categorisation of variables, studies also vary in the way they use the BMHU to guide or analyse their results (92). For example, some studies explicitly delineate variables according to the BMHU in their methods and conduct specific analyses using the BMHU, e.g. hierarchical entry of variables by component (i.e. predisposing variables entered, followed by enabling variables, then need variables; 174, 176). In contrast, others specify using the BMHU, but this is in a more limited manner. This is not unique to research using the BMHU. In their review of health behaviour theories generally, Painter et al. (177) identified four uses of theory, namely:

- Informed by theory, whereby investigators identify a theoretical framework or theoretical construct, however, there is no (or limited) further application of the stated theoretical framework or theoretical construct in the components of the study;

- Applied theory, whereby investigators identify a theoretical framework and up to half of the theoretical constructs are applied in components of the study;
- Testing theory, whereby investigators specify a theoretical framework and >half of the theoretical constructs are measured and explicitly tested;
- Building or creating theory, whereby investigators develop new theoretical frameworks or revise or expand pre-existing theoretical frameworks and theoretical constructs are specified, measured and analysed in the study.

The variability in use of theory, particularly where studies are only informed by theory, potentially limits current, and restricts advancements in, understanding and health behaviour change (177). Despite this, previous studies employing the BMHU provide an important starting point for this study, particularly those related to HIV (175, 178), refugees in an Australian context (164), and HIV testing and migrants (56).

Doshi et al. 2013 qualitatively examined factors influencing general healthcare and HIV/STI testing among Black, predominantly heterosexual, men of unknown or HIV negative status in the US (178). Interview data were coded according to (an extended version of) the BMHU. They found participant characteristics; environmental factors, i.e. healthcare and external environment; health behaviour, i.e. personal health practices and health services use; and outcomes, i.e. consumer satisfaction, to be implicated in HIV testing. Participant characteristics that were particularly salient in HIV testing were health beliefs (predisposing) and enabling factors, which is in line with preventative healthcare use expectations.

In their quantitative study of the therapeutic implications of timely linkage and early retention in HIV care, Ulett et al. formulated a conceptual framework adapted from an extended version of the BMHU (175). This conceptual framework included environmental factors, patient characteristics, health behaviour and outcomes. Despite this, in their study they only examined patient characteristics. Additionally, despite being informed by the BMHU, the methods and findings were not presented according to the BMHU. There was, therefore, insufficient information to assess whether the components of the BMHU were sufficiently measured and how variables that were measured fit with the BMHU. While the study included several socio-demographic and clinical variables, several patient characteristics identified in their

conceptual framework as potentially associated with outcomes were not measured, including HIV-related stigma.

In their quantitative study informed by the BMHU, Drummond et al. 2011 examined healthcare services access among West African refugees and Australian-born women (164). They found, for refugee women, that predisposing and need factors were the most important in accessing healthcare initially. Enabling factors, however, became more of an issue for those refugee women who had resided in Australia for longer. Similar to the study by Ulett et al., Drummond et al. did not provide details of what constituted predisposing, enabling and need factors.

Akerman et al. employed the BMHU in their qualitative study of the sexual and reproductive healthcare seeking, including HIV testing, of Thai female migrants in Sweden (56). They found several predisposing, e.g. ethnicity and gender, and enabling, e.g. family and community, factors that affected healthcare use. Additionally, a lack of perceived risk (or need) prevented use of HIV testing. They also identified several environmental factors that affect healthcare use. Specifically, this related to a preference for healthcare use in Thailand, rather than Sweden. It was, however, unclear how the BMHU informed the methods.

2.4.1.2 Summary

Ecological approaches are arguably the most appropriate in understanding health behaviours, including HIV testing, particularly among migrant populations who come from collectivist cultures. While some variables taken from an ecological-type model are included in the current evidence-base on the HIV testing behaviour of migrants in HICS (see Sections 2.4.2, 2.4.3. and 2.4.4), the lack of theoretical underpinnings (or explicit theoretical underpinnings) makes inclusion of variables often seem incomplete. This study, therefore, drew on the BMHU. The BMHU has been widely used to examine healthcare utilisation, and specifically research related to HIV and migrants. The BMHU offers a flexible model through which to examine HIV testing behaviour in the study populations.

2.4.2 Predisposing

Predisposing factors are those individual attributes that underlie healthcare services use, but do not directly impact use (167).

2.4.2.1 Age

Across studies, age has shown inconsistent results with HIV testing. Several studies have found older age to be associated with greater HIV testing and younger age to be associated with less HIV testing (52, 59, 139, 141, 143). For example, in their study of migrants of mixed origin in Portugal, Dias et al. found older age (≥ 25 years) to be associated with greater odds of having been tested for HIV (AOR: 2.51, 1.81–3.48; 141). Likewise, in a study of predominantly foreign-born Hispanic young adults (79.3 per cent born overseas) in the US, those aged 18-29 years had decreased odds of having ever tested for HIV (AOR: 0.57, 0.42–0.77), when compared to those aged 30-39 years (143). Several studies, however, have also shown older age to be associated with decreased HIV testing and younger age with increased HIV testing (54, 140). In another study from the US with Hispanic migrants, for example, those aged >48 years old had significantly greater odds of having not previously tested for HIV (AOR: 2.76, 2.1–3.7; 140). These findings may reflect greater exposure to HIV among older adults; although, greater exposure does not necessarily equate to greater engagement with HIV testing.

2.4.2.2 Education

In previous research, education has generally impacted HIV testing in migrants consistently, whereby higher education has facilitated HIV testing and lower education has acted as a barrier to HIV testing (59, 139-141). For example, in their study of sub-Saharan African migrants in Portugal, Gama et al. found increasing education (as compared to <5 years) facilitated ever having tested for HIV (5–9 years AOR: 5.10, 2.09–12.47; ≥ 10 years AOR: 3.26, 1.32–8.08; 139). Similarly, among Latino migrants in the US, having <13 years of education was a barrier to previous HIV testing (140). This study, however, found that those with 9-12 years of education had lower odds of negative future HIV testing intentions (AOR: 0.66, 0.50–0.88), as compared to ≥ 13 years. These findings, generally, suggest that more educated migrants have a greater perception of HIV as being a danger to them, having serious consequences and, thus, the need to engage with HIV prevention and services, including HIV testing (141).

2.4.2.3 Gender

Gender has largely had a consistent relationship with HIV testing among migrants, whereby females have greater, and males lesser, HIV testing (127, 141, 179, 180). For example, Dias et al. found that being female increased the odds of having ever tested for HIV in migrants of mixed origin in Portugal (Odds Ratio; OR: 1.40, 1.12–1.74; 141). Conversely, being a male Latino reduced the odds of HIV testing (AOR: 0.66, 0.49–0.89; 143). These findings are largely consistent with healthcare usage in general, whereby females often have greater engagement with healthcare (181). In their study with Latinos in the US, however, Fernandez et al. 2005 found that females had lower odds than males to intend to accept a free HIV test if offered on the day of the interview (OR: 0.52, 0.27-0.99; 127). This may be as a result of this free HIV test not being offered by a healthcare provider in a clinical, and particularly antenatal, setting (see Section 2.4.2.4). It is also possible that females may need to consult with their partner before intending to test for HIV, as was found among several (n=2) foreign-born females in another study in the antenatal setting in the US (182).

2.4.2.4 Pregnancy

Across studies, pregnancy has facilitated HIV testing (31, 127, 144, 183). In a study with Latinos in the US, for example, among those participants who had previously tested for HIV, HIV testing had largely been undertaken by females in the antenatal setting (127). In another study with Latinos in the US, Latina females who were not currently pregnant had greater odds of never having been tested for HIV (OR 2.89, 1.7–4.9; 140). HIV testing is undertaken (via PITC) in HICs, including Australia, the UK, Canada and the US, in the antenatal setting (127, 153). PITC in the antenatal setting likely reduces stigma and increases the acceptability of HIV testing in this setting (127). Highlighting the efficacy of PITC in this setting, a recent systematic review of PITC in antenatal settings showed that, after the introduction of PITC, HIV testing rates rose between approximately 10 and 65 per cent (114).

2.4.2.5 Sexual orientation

Sexual orientation has not been widely associated with HIV testing in studies with migrants. In their study with migrants of mixed origin in the US, self-identifying as homosexual, as compared to heterosexual, acted as a facilitator to HIV testing (AOR: 3.81, 2.28–6.37; 52). In several HICs, including Australia, MSM are the most

affected by HIV (57). Greater HIV testing among this population may reflect greater awareness of HIV among MSM, stemming from health promotional campaigns and clinical HIV testing guidelines targeting this population (146).

2.4.2.6 Marital status

Previous studies have largely found consistent results on the association between marital status and HIV testing, whereby being in a relationship acted as a barrier to HIV testing (140, 182). For example, in their study with Latinos in the US, Lopez-Quintero found married participants had significantly greater odds of not intending to test for HIV (AOR: 1.49 1.15–1.92; 140). In another study with predominantly overseas born Latinos in the US, however, being unmarried acted as a barrier to HIV testing (AOR: 0.57, 0.41–0.78; 143). Migrants in a monogamous relationship or who are married may feel that they are at reduced risk for HIV and/or may fear the ramifications of disclosing their HIV status, should they test HIV positive (182).

2.4.2.7 Employment

Limited significant associations between HIV testing and employment, i.e. hours worked (130) or employment status, e.g. part-time or fulltime (141), have been reported across studies. In their study with Latinos in the US, however, Sena et al. found work hours were the third most cited reason (14.6 per cent) given for no previous HIV testing (130). HIV testing approaches that are more flexible, e.g. rapid HIV testing and HIV ST, may overcome this barrier.

2.4.2.8 Birth country and ethnicity

Studies have highlighted that birth country differentially impacts HIV testing between regions (52, 59, 141). For example, as compared to migrants from Eastern Europe, those from Africa and Latin America had greater odds of ever having been tested for HIV (AOR 2.53, 1.72–3.72 and AOR 2.78, 1.94–4.00; 141). Studies have also shown that birth country differentially impacts HIV testing between migrants from different birth countries even within the same region (88, 140, 143, 144). For example, in their study from the US with South-East Asians, Huang et al. found that, as compared to Vietnamese, Laotians had significantly lower odds of previously testing for HIV (OR: 0.50, 0.30-0.70; 88). Differences among migrants from the same world regions may result from differing HIV patterns, predominant transmission modes, responses, information and access to HIV testing across countries even

within one world region (22, 52, 144). This finding highlights the heterogeneity among migrants, even from within a world region, and the need to understand the HIV testing behaviour of migrants based on country of birth, not region.

2.4.2.9 Acculturation

Acculturation has largely consistently impacted HIV testing, whereby less acculturation has acted as a barrier to HIV testing (22, 31, 52, 140). For example, less-acculturated Latino participants, based on primary language spoken and number of years living in the US, had greater odds of not having tested for HIV (AOR: 1.25, 1.02–1.55; 140). Ojikutu et al., however, found lower odds of having ever tested for HIV among those migrants of mixed origin with a greater length of time in the US >5 years (AOR: 0.56, 0.36–0.87; 54). Differences in findings across studies may be as a result of different operationalisation of acculturation, e.g. based on language and residency length. Migrants who are less acculturated may have reduced HIV testing due to linguistic barriers that limit their ability to gain information and engage with the healthcare system; environmental factors, e.g. lack of culturally appropriate services; and maintenance of norms from the home country, e.g. male Latino migrants may maintain traditional machismo beliefs (i.e. to be masculine is to have proven courage, fearlessness and strength; 140, 184). While more acculturated migrants have overcome these factors, they may feel less at risk for HIV in their home country (109).

2.4.2.10 HIV-related knowledge

In HICs, both migrant and host country populations have reported high awareness of HIV (34, 185). For example, in their two studies with people from CALD and Anglo-Australian backgrounds in Australia (i.e. CALD periodic survey and barriers to HIV testing study), Asante et al. found that between 92 (n=263) and 100 (n=53) per cent of people had heard about HIV (185). They also found that 96 per cent of participants (n=274) in the CALD periodic survey were able to correctly identify a mode of HIV transmission (185). This is in line with other research from the US showing that, since the 1980s most people have some knowledge of the major HIV transmission routes, i.e. sexual intercourse and injecting drug use (186).

Despite this, across several studies, migrants have shown deficits in HIV-related knowledge, including related to HIV transmission and outcomes (33, 34, 152, 180). Research with South-East Asians in the US found that, of seven true-false

questions related to HIV prevention, 17 per cent of participants failed to answer any correctly, while 53 per cent only answered between one and three correctly (88). Similarly, in their study with predominantly foreign-born Latinos in the US, for example, Chen et al. 2012 found that approximately one-fifth of their sample identified at least one incorrect mode of HIV transmission, i.e. casual transmission, e.g. kissing or sharing utensils with PLWH (180). This suggests that while migrants generally have some awareness and knowledge of HIV, it is not always comprehensive.

Across the HIV epidemic, accurate HIV-related knowledge has been hampered by miscommunication, the reinforcement of negative perceptions of HIV, and misplaced emphasis in HIV risk reduction strategies, particularly in LMICs. For example, in South Africa, several influential politicians questioned the progression from HIV to AIDS (187). In 1985, US president Ronald Reagan implied that HIV could potentially be spread by casual contact, which was contrary to the medical evidence at the time (162). Even where communications were not incorrect, the language and images used to portray PLWH often reinforced negative perceptions of HIV, or presented part of the story only. Connotations of moral offences were emphasised and intrinsically linked to HIV, and is best highlighted by HIV once being termed 'gay-related immunodeficiency disease' (GRID; 24, 162). Likewise, in Vietnam, HIV was linked to the 'Social Evils' campaign that associated HIV with sex workers (SWs), injecting drug users (IDUs) and MSM (87). Additionally, science fiction and war-like terms were used to dramatise and invoke fear of HIV (188). In Australia, for example, an HIV public health campaign featured the Grim Reaper (129). Images, too, from sub-Saharan Africa portraying visibly ill PLWH proliferated, and acted to reinforce the negative mood/feelings around HIV/AIDS (24). In the US, there was a reluctance to put forth safe sex campaigns and, instead, abstinence was the central tenet of health promotional messaging around HIV; this contrasted with many European countries who, in essence, encouraged the population to use condoms (188).

Recently, while treatment and outcomes for PLWH have improved, people's understanding and knowledge of HIV may not be up-to-date (35). Migrants, specifically, may bring with them knowledge and experiences of HIV that are significantly different from those of the host country, which continue to impact their

HIV-related outcomes (either positively or negatively), including HIV testing. For example, in their study with Ethiopian and Eritrean migrants in Sweden, Lindkvist et al. found that migrants' perceptions of HIV derived from their home countries, i.e. lack of ART, people dying of AIDS and social exclusion, were maintained in the host country, and would result in people not engaging with HIV information and/or services (35). These perceptions of HIV also have implications for HIV-related stigma (see Section 2.4.2.11).

In Australia, the response to the HIV epidemic was world renowned (189). Since early in the epidemic, the Australian government worked in partnership with the most affected groups and key stakeholders to instil effective legislation, education and interventions, such as needle and syringe programs, peer-based community organisations and blood donation screening (43, 189). This is in stark contrast to the HIV response in Vietnam, where the Social Evils campaign, as above, induced widespread stigma towards HIV and PLWH. Consequently, Vietnamese-born migrants in Australia may have differing HIV experiences and knowledge levels from Australian-born adults, depending on their exposure to HIV and HIV information in Vietnam and Australia.

Since early in the HIV epidemic, although not always achieved, imparting accurate HIV-related knowledge was recognised as central to preventing the spread of HIV (162). There is a need to understand all facets of HIV-related knowledge, i.e. transmission, prevention, treatment, services, prognosis and myths, due to the impact these factors have on preventing and managing HIV (54). HIV-related knowledge is linked to HIV risk behaviour (7). For example, accurate HIV-related knowledge can allow people to better mitigate HIV risk (162). Items on HIV-related knowledge often appear in questionnaires; however, the comprehensiveness of these items assessing HIV-related knowledge vary. HIV-related knowledge has been assessed via scales, e.g. the Brief HIV-related knowledge Questionnaire (HIV-KQ-18; 8), or individual items, and often incorporated into questionnaires such as population surveys that assess Knowledge, Attitudes and Practices (KAP; 28). Where HIV-related knowledge scales have been used, often few psychometric properties have been reported (generally only Cronbach's alpha, a reliability coefficient; 190). The degree to which such items/scales accurately reflect HIV-

related knowledge is, therefore, questionable and may lead to incorrect findings/conclusions (190).

Quantitative studies have generally found that greater HIV-related knowledge, i.e. transmission, prevention, prognosis and awareness of services, facilitated HIV testing (88, 180), while poorer knowledge acted as a barrier to HIV testing (180). Dias et al. found that 10 per cent of foreign-born migrants in their study did not know where to go for HIV-related services in Portugal, which limited HIV testing (141). Research from the US showed that male and female Latino migrants who knew that an HIV-infected person can look, feel and act healthy increased the odds of HIV testing (AOR: 3.51, 1.49-8.26 and AOR: 3.24, 1.38-7.62, respectively; 180). Males who knew ≥ 2 correct methods of HIV transmission (via an open ended question; correct responses were: via unprotected sexual intercourse, blood, mother-to-child, and injection drug use) had greater odds of HIV testing (AOR: 4.37, 1.45-13.18); while females with incorrect knowledge of HIV transmission had decreased odds of HIV testing (AOR: 0.36, 0.13-0.97). In their study with South-East Asians in the US, Huang et al. 2008 included an HIV-related knowledge scale consisting of seven questions (true or false) relating to HIV prevention, that were then summed (one point per correct answer; 88). They found a higher score on the scale to facilitate HIV testing. They, however, did not present details of the validity or reliability of this HIV-related knowledge scale.

One quantitative study, however, failed to find a significant association between HIV-related knowledge and HIV testing in the previous year. In their study, Ojikutu et al. examined barriers and facilitators to HIV testing in the previous year in non-US born and US born Blacks (54). They measured HIV-related knowledge using the HIV-KQ-18 (8), which includes items related to HIV transmission myths and prevention and was previously validated in the US with a low literacy sample. In addition to the HIV-KQ-18, they included an additional three items, which they summed into a scale. The scale's reliability in the study population was acceptable (Cronbach's α : 0.7), and scores were dichotomised for analysis based on median splits (knowledge: $< 80\%$ versus $\geq 80\%$). They found HIV-related knowledge, in bivariate analysis, not to be associated with HIV testing in the previous year in non-US born Blacks.

Qualitative research with migrants, and/or their healthcare providers, in HICs has repeatedly found poor HIV-related knowledge, i.e. related to transmission modes, myths, prevention, awareness of services and treatments, to act as a barrier to HIV testing (30, 31, 33, 191). In research with Latino migrants in the US, although not explored in depth, poor or no knowledge of HIV and sexually transmitted infections (STIs) generally, was expressed by a significant number of participants (i.e. n=12/20) as resulting in delayed presentation (30). In another study with migrant Latino men, there was a subset of men who were insufficiently knowledgeable about HIV/AIDS, i.e. they had questions regarding HIV transmission and/or believed myths about HIV, which acted as a barrier to HIV testing (33). Research with female migrants from HIV endemic countries in sub-Saharan Africa and the Caribbean identified inadequate awareness of HIV services, i.e. screening and treatment, as barriers to HIV testing; however, healthcare providers serving these migrants identified poor knowledge of HIV transmission and prevention as limiting HIV testing uptake (31). This contrasts with research with healthcare providers, i.e. general practitioners (GPs) and interns, in Belgium, who assumed sub-Saharan African migrants to have good knowledge of HIV, due to the high prevalence and visibility of HIV in their home countries, which limited PITC (191). This research also highlights the need to engage with migrants and their healthcare providers, as there is often a disconnect between their perceptions of HIV-related knowledge and HIV testing needs.

Previous research has generally found an association between HIV-related knowledge and HIV testing among migrants in HICs, whereby poor HIV-related knowledge has limited HIV testing and greater HIV-related knowledge has facilitated HIV testing. The aspects of HIV-related knowledge measured, e.g. HIV transmission modes and prevention, and measurement type, e.g. individual items, scales and open-ended questions, however, differ between studies. The inconsistency in the measurement of HIV-related knowledge across the evidence-base limits the ability to draw accurate conclusions on the association between HIV-related knowledge and HIV testing approaches. HIV-related knowledge was most comprehensively assessed in the study by Ojikutu et al. (54), i.e. using a previously validated scale, i.e. HIV-KQ-18 (although they added additional items), that included items related to multiple aspects of HIV-related knowledge. This study showed no association

between HIV-related knowledge and HIV testing in the previous year. There is a need to ensure comprehensive measures of HIV-related knowledge that are validated in the target population to accurately gauge the association between HIV-related knowledge and HIV testing approaches. This study used the HIV-KQ-18 (8; see Section 2.5), which was also validated in the study populations (see Chapter Four).

2.4.2.11 HIV-related stigma

HIV-related stigma has been a pervasive factor in the HIV epidemic, broadly (6). The significant social meanings attached to HIV mean HIV should not be considered simply within a biomedical framework (192). This is applicable not only to HIV, with other illnesses such as cancer and mental health issues also being highly stigmatised conditions (193). HIV is, however, especially stigmatised, given the predominant modes of transmission, i.e. sexual intercourse and injecting drug use, and affected populations, i.e. SWs, MSM, IDUs (188, 193). HIV-related stigma has significant implications for HIV testing and HIV-related outcomes (36). The persistence of HIV-related stigma has, in part, been attributed to the lack of consensus on how to define stigma and, subsequently, the lack of appropriate measurement of stigma, i.e. individual items and/or scales (6, 36). The following Section (Section 2.4.2.11) provides an overview of key conceptualisations of stigma, drawn from both the general and HIV-specific literature, and stigma measures used with the general population and migrants, specifically.

In recent decades, understandings of stigma have largely drawn on the work of Erving Goffman (194). Goffman approached stigma from a sociological perspective and focused on the interactions between the 'normal', i.e. "those who do not depart negatively from the particular expectations at issue", and the stigmatised in a social situation, i.e. whether directly or merely in the presence of each other (195, p. 5). In conceptualising stigma, he drew on the stigma literature broadly, e.g. research from the fields of race, criminology and mental health. While Goffman's seminal work was published prior to the identification of HIV, Goffman argued for core or shared processes of stigma regardless of field; although, there may be nuances by field.

According to Goffman, stigma is “an attribute that is deeply discrediting”, whereby those who are stigmatised are “reduced in our minds from a whole and usual person to a tainted, discounted one” (195, p. 3). Importantly, “the normal and the stigmatised are not persons, but rather perspectives” (195, p. 138). Stigma is, therefore, not static and can change according to the social context, and is a product of time and place. For example, Goffman identified divorce, particularly among upper middle-class Americans, as a being source of stigma at one point in time; however, this has since declined (196). Goffman specified three key types of stigma, namely:

- abominations of the body, e.g. physical deformities;
- blemishes of individual character, e.g. mental illness, addiction, homosexuality, and unemployment; and
- tribal, e.g. ethnicity and religion.

People who possess any of these stigmas may experience discriminatory behaviour to some degree, which may reduce their life chances and outcomes. The experiences of those with a stigma can vary according to whether a stigma is evident from the outset (termed ‘discredited’), e.g. skin colour and physical disability, or whether people are able to conceal a stigma (termed ‘discreditable’), e.g. mental illness and sexual orientation (197); however, the stigmatised may experience being both discredited and discreditable. For example, a person with HIV may be discreditable, whereas a person with AIDS may be discredited. Stigma can also surround and transfer to family and friends, for example, of those who possess any of the aforementioned stigma, whereby they become tainted by association, called courtesy stigma.

Since 1963, when Goffman’s book was first published, there has been a renewed interest in stigma (194). While published over half a century ago, insights into stigma that Goffman presented have remained largely timeless. Other investigators have since extended, or deconstructed, Goffman’s conceptualisation of stigma, and several of these conceptualisations are discussed/critiqued below. These conceptualisations vary by type (general or HIV-related stigma), level (individual, structural or both), population (unknown or negative HIV status, or HIV unknown or negative status and HIV positive) and key components, see Table 2-4. HIV-related stigma conceptualisations directed solely towards PLWH were not

reviewed in this study, e.g. Lindberg et al. 2014 (198). HIV-related stigma conceptualisations are those conceptualisations that were developed for, or have been applied specifically to, HIV; however, they may have broader applicability outside of the HIV domain.

Table 2-4 Stigma conceptualisations, presented chronologically

Author, year	Type	Level	Population	Key components
Goffman, 1963 (195)	General	Individual and structural	N/A	Abominations of the body; blemishes of individual character; tribal and courtesy.
Link and Phelan, 2001(194)	General	Individual and structural	N/A	Labelling, stereotyping, separating, discriminating and power.
Parker and Aggleton, 2003 (192)	HIV-specific	Structural	Unknown or HIV negative	Culture, power and difference.
Mahajan et al. 2008 (6)	HIV-specific	Individual and structural	Unknown or HIV negative	Labelling, stereotyping, separating, discriminating, power, structural violence and layered stigma.
Earnshaw and Chaudior, 2009 (36)	HIV-specific	Individual	Unknown or HIV negative and PLWH	Stereotypes, prejudice and discrimination (unknown or HIV negative); and perceived, anticipated and internalised stigma (PLWH)

Earnshaw et al., 2013 (199)	HIV-specific	Individual and structural	Unknown or HIV negative and PLWH	Stereotypes, prejudice and discrimination (unknown or HIV negative); and perceived, anticipated and internalised stigma (PLWH); intersectional stigma; structural factors; and moderators.
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PLWH: People Living with HIV

Earnshaw and Chaudoir provide a conceptual framework of HIV-specific stigma mechanisms and outcomes from an individual level perspective (36). In conceptualising HIV-related stigma, they drew on Goffman (specifically, seeing HIV as a devalued attribute) and research from other fields, including mental health, sexual orientation and race. Their focus is on the way individuals experience HIV-related stigma via a series of mechanisms which they propose manifest in different ways depending on HIV status. They, therefore, map the HIV-related stigma processes for people of unknown or HIV negative status and PLWH, respectively.

For those who are of unknown or HIV negative status (the stigmatisers), HIV-related stigma can manifest in:

- stereotyping, i.e. attributing specific characteristics to group members;
- prejudice, i.e. negative orientation towards people with HIV; and/or
- discrimination, i.e. unfair behaviour (28).

These mechanisms, i.e. stereotyping, prejudice and/or discrimination, can impact HIV testing behaviour, social distancing and policy support. For example, where people hold stereotypical beliefs that HIV is a risk for MSM only, and they do not identify as MSM, they may not test for HIV. In contrast, for PLWH (the stigmatised), they propose that HIV-related stigma manifests in:

- felt, i.e. experience of prejudice, stereotypes and/or discrimination in the past;
- anticipated, i.e. expectation of bias, based on prejudice, stereotyping and/or discrimination, in future; and/or

- internalised stigma, i.e. devaluing and discrediting one's self or one's group based on one's stigma (28).

For PLWH, these mechanisms, i.e. felt, anticipated and/or internalised HIV-related stigma, can impact mental health, social support and HIV symptoms.

The process, however, is not necessarily linear, i.e. each process is not followed sequentially by the next, and there are feedback loops, i.e. where the outcome in one area impacts an outcome in another area, between elements of the framework. For example, HIV symptoms (and particularly visible symptoms) experienced by PLWH may lead people of unknown or HIV negative status to manifest prejudicial feelings towards PLWH. Despite feedback loops, i.e. the inter-relatedness of mechanisms in the model, the distinction Earnshaw and Chaudior 2009 make between the stigmatisers and the stigmatised may not fully capture the HIV-related stigma mechanisms of the stigmatisers. It seems conceivable that some people of HIV unknown or negative status do not manifest any stigmatising attitudes, beliefs or actions towards PLWH, but may believe others manifest stigmatising attitudes, beliefs and/or actions towards PLWH, which also impacts the HIV-related outcomes of people of unknown or HIV negative status. In their discussion, Earnshaw and Chaudior acknowledge that this aspect of HIV-related stigma, i.e. people of unknown or HIV negative status anticipating stigma from others (considered in this study as internalised HIV-related stigma), is less studied (36).

In contrast to Earnshaw and Chaudior (36), Parker and Aggleton approach stigma (general, not HIV-specific) from a structural level perspective (192). As with other investigators, they draw on Goffman; however, they argue that other investigators have misinterpreted Goffman's work by attributing stigma to an individual value. For them, stigma is considered as a distinctly social process operating at "the point of intersection between culture, power and difference" (192). Within their conceptualisation, stigma is not haphazard, but has a social, cultural, political and economic basis that is used to uphold power dynamics and inequalities. In the case of HIV, people of unknown or HIV negative status uphold relative power over those PLWH (36). Other researchers, however, have questioned this conceptualisation, highlighting that stigma is not only attributed to those of low status, and that inequalities are not necessarily maintained by stigma alone, but

often as a result of layered stigma, i.e. “the relationship between existing forms of negative social representation and disadvantage” (200, p. 422). In the case of HIV, layered stigma may stem from the marginalisation already experienced by the predominantly affected populations, i.e. MSM, IDUs and SWs (200). While Goffman did highlight the social construction of stigma, i.e. categorising people based on social norms, this was only one aspect of stigma. The frameworks proposed by Earnshaw and Chaudoir (36), and Parker and Aggleton (192) may be criticised for being insufficiently comprehensive in their approach to (HIV-related) stigma, by their focus on the individual level without consideration of the structural level and vice-versa, respectively.

Link and Phelan combine individual and structural level considerations in their conceptualisation of stigma (not HIV-specific) from a sociological perspective (194). According to Link and Phelan, stigma manifests as a result of four unique processes that occur linearly:

- labelling, i.e. people are distinguished and labelled; and
- stereotyping, i.e. a label is linked to negative attributes, based on dominant cultural beliefs; and
- separating, i.e. people are categorised in a way that separates ‘us’, i.e. the stigmatisers, from ‘them’, i.e. the stigmatised; and
- discriminating, i.e. status loss and unfair behaviour, e.g. disapproval, rejection and exclusion, that leads to poorer outcomes.

For stigma to manifest, they propose that these processes, i.e. labelling, stereotyping, separating and discriminating, must occur within a certain power context (194). Their conceptualisation is largely in line with Goffman, who proposed a process of categorising, stereotyping, distinguishing between ‘normals’ and those with a stigma, resulting in discrimination that leads to poorer outcomes, e.g. social and health, for the stigmatised; however, they extend on Goffman by adding the concept of power (195). As above, the role of power in stigma has been questioned (200). Likewise, other investigators see discrimination as a process distinct from stigma, whereby discrimination can, but does not necessarily always, result from stigmatisation (6, 200). Discrimination has, however, also been considered as ‘enacted stigma’ (201).

Mahajan et al., in synthesising the literature on stigma and HIV, applied and extended Link and Phelan's (194) stigma framework to HIV (6). In addition to labelling, stereotyping, separating, discrimination and power (i.e. social, political and economic), Mahajan et al. also include additional contextual factors in their model that predispose and/or facilitate greater stigmatisation towards PLWH, namely.:

- pre-existing and compounding stigma (or layered stigma), e.g. SWs, MSM, IDUs; and
- structural violence, e.g. racism, sexism and poverty.

In discussing the framework, they also acknowledge the impact of HIV stage on HIV-related stigma. During both early and late stage HIV, PLWH may be symptomatic and, therefore, discredited, e.g. experience overt discrimination. Early stage HIV, however, may present like other illnesses, including glandular fever, and may be less likely to result in discrediting. In contrast, during the middle phase, where PLWH are asymptomatic, PLWH may be discreditable, e.g. live with the threat of discrimination. While PLWH who are discreditable may experience less discrimination, according to Earnshaw and Chadiour, discreditable people may experience other types of HIV-related stigma, i.e. internalised HIV-related stigma (197). It is important, therefore, to distinguish between the different phases of HIV and the visibility of these phases. As AIDS becomes less prevalent, PLWH may remain discreditable. For people who continue to be diagnosed late with HIV, such as migrants, however, AIDS and being discredited remain possibilities.

In a later framework, i.e. the Stigma and HIV Disparities Model, Earnshaw et al. present a model of HIV-related stigma for people of unknown or HIV negative status and PLWH (199). This model expands on the mechanisms presented in the HIV-related stigma framework (36), as above, by incorporating both individual and structural level considerations specific to racial/ethnic stigma. In addition to prejudice, discrimination and/or stereotyping by people of unknown or negative HIV status and the felt, anticipated, and/or internalised stigma experienced by PLWH, the framework includes:

- factors that confound stigma, e.g. immigration, and sexual identity;
- structural level stigma mechanisms, i.e. residential segregation, historical traumatic assaults and medical mistrust; and

- moderators, i.e. resources and resilience.

This framework is unique in its strength-based approach to HIV-related stigma, by explicitly including those factors that moderate mechanisms and outcomes. This is in line with Goffman, who acknowledged that not all people with a stigma conform to what is expected of them and, instead, show resilience, e.g. gypsies. The conceptualisations by Link and Phelan 2001 (194), Mahajan et al. 2008 (6), and Earnshaw et al. 2013 (199), despite some limitations, provide considerations of stigma that most closely reflect Goffman's original conceptualisation of stigma, i.e. incorporating both individual and structural elements.

As evidenced above, (HIV-related) stigma is a complex phenomenon. While investigators have emphasised different levels of (HIV-related) stigma within their conceptualisations, it involves processes at the individual and structural level. Stigmatisation is undertaken via a number of cognitive processes, e.g. labelling and separating, that manifest in the affective, emotional and/or behavioural expression of (HIV-related) stigma. These expressions of (HIV-related) stigma may be reinforced or moderated by contextual factors, e.g. social, political, economic and institutional factors and disease stage. (HIV-related) Stigma can have significant implications for the stigmatisers and stigmatised (and their loved ones), and these are inter-related.

Despite the importance of both individual and structural elements impacting on (HIV-related) stigma, individual approaches have dominated research into HIV/AIDS and stigma (6). Research with general population samples has examined negative feelings, coercive measures, blame, and avoidant behaviour towards PLWH (6, 28):

- negative feelings items have related to anger, fear, disgust, etc. towards PLWH;
- coercive items include those such as support for quarantining PLWH;
- blame items include those such as PLWH are responsible for their illness; and
- avoidant behaviour items include those such as willingness to interact with PLWH.

In line with the framework by Earnshaw et al 2009 and Earnshaw et al. 2013, these factors reflect prejudice, stereotypes and discrimination (36, 199). These indicators

have been considered by some investigators as representing externalised HIV-related stigma (54), while others have termed such factors as internalised HIV-related stigma (for the purpose of this study, these factors are considered externalised HIV-related stigma, as they reflect attitudes, beliefs and behaviours towards other people, specifically PLWH; 202).

Regardless of the umbrella term used to label these factors, i.e. negative feelings, coercive measures, blame and avoidant behaviour, it is, however, unclear why people manifest these negative feelings and/or behaviours towards PLWH (6). In research from the US, Herek et al. examined two types of HIV-related stigma which reflect the underlying causes for externalised HIV-related stigma, i.e. symbolic HIV-related stigma, which introduces prejudice and moralism into discussions of HIV/AIDS, and instrumental HIV-related stigma, which allows personal concerns about infection to outweigh epidemiological facts (186). These types of HIV-related stigma (symbolic and instrumental) have since largely been overlooked in the HIV-related stigma literature (36, 186).

Reviews of (HIV-related) stigma measures highlight the dearth of evidence on internalised HIV-related stigma among people of unknown or negative status (28). Internalised HIV-related stigma, including anticipated stigma and witnessed stigma, relates to HIV-related stigma and/or discrimination that a person feels they would experience if HIV positive or has seen occur to other PLWH, respectively (36, 203). Note that internalised and externalised HIV-related stigma are inter-related, whereby internalised HIV-related stigma manifests from the real or perceived externalised HIV-related stigma of others. As above, internalised HIV-related stigma has also not been captured in current conceptualisations of HIV-related stigma. It is important for all elements of HIV-related stigma to be assessed as, depending on the type of HIV-related stigma or HIV-related stigma mechanisms measured, findings may differ (54).

While many PLWH may experience HIV-related stigma in some form, research suggests that this may be especially so for PLWH from ethnic minority and/or migrant populations (25). For example, research from several HICs (e.g. UK and New Zealand) has shown that PLWH who are from ethnic minorities, as compared to their White Caucasian counterparts, are less likely to disclose their HIV

status (25). Disclosure of HIV status is a proxy for HIV-related stigma, whereby more limited disclosure reflects greater levels of HIV-related stigma (201). Migrants from collectivist cultures may be less likely to disclose due to family obligations, i.e. social, emotional and financial (25). Vietnamese-born migrants, being from a collectivist culture, may also experience such obstacles. Research from Vietnam, in line with previous research by Herek (186), highlights that Vietnamese people manifest HIV-related stigma as a result of both instrumental and symbolic HIV-related stigma (204). As above, context is a key element of HIV-related stigma, and events related to HIV and migration likely influence the manifestation of HIV-related stigma in Vietnamese-born migrants in Australia, see Table 2-5. Vietnamese-born migrants may express or experience stigmatising attitudes, beliefs and behaviours in varying degrees based on their experiences of HIV in Vietnam and Australia.

Table 2-5 Key events related to HIV and Vietnamese-born migrants in Australia

Year	Event
1975	End Vietnam War (65)
1975 -	Vietnamese refugees in Australia (65)
1981	Discovery of AIDS (21)
1983	Discovery of HIV (21)
1985	HIV testing commercially available (24)
Mid-1990's	'Social Evils' campaign in Vietnam (205)
1996	Effective ART available (39)

AIDS: Acquired Immunodeficiency Syndrome; ART: Antiretroviral Treatment

Within the evidence-base on HIV testing behaviour among migrants, most studies do not explicitly draw on conceptual frameworks or models of HIV-related stigma, although there are some exceptions. Ojikutu et al., for example, drew on the work of Herek et al. in conceptualising HIV-related stigma in their study of barriers and facilitators to HIV testing among US-born and non-US born Blacks (54). Likewise, investigators also often refer to HIV-related stigma broadly, without further specification. In their study with Latinos in the US, for example, Lopez-Quintero et al.

state that stigma was not a significantly cited reason for not having previously tested for HIV (140).

Research from the US with non-US-born Black migrants examined the association between externalised HIV-related stigma and HIV testing. The study, using multivariate logistic regression, found that externalised HIV-related stigma was not significantly associated with self-reported HIV testing in the previous year in their sample (54). This study included items on negative feelings, attitudes to coercive public policies, blame and avoidant behaviours related to HIV, and was summed into an index. The authors suggest that the findings, which were contrary to what was hypothesised, may reflect compulsory HIV testing for migrants for immigration purposes, which may bypass HIV-related stigma processes, and/or the HIV-related stigma mechanisms measured, i.e. externalised HIV-related stigma, as opposed to internalised HIV-related stigma.

Most research on HIV-related stigma has highlighted the negative impact of internalised HIV-related stigma on HIV testing in migrants. Quantitative research with Iranian migrants in Australia found that a significant proportion of participants suggested concern about being stigmatised if they tested, or were known to be, HIV positive in the future (27). Their conceptualisation of perceived HIV-related stigma drew on the work of Herek et al. and, while the authors noted summing items to form a scale, it is not clear how this was undertaken or the psychometric properties of these scales. One study, however, reported fear of rejection or discrimination as not being a significant barrier to HIV testing in Latin-American migrants in Spain, with only 1.6 per cent of their sample (n=431) reporting that this was the main reason for having not previously tested (based on a multiple-choice question with 11 closed possible answers and one open-ended question; 121). It is, however, possible that fear of rejection or discrimination did factor into the decision to test for HIV, without being the primary reason.

Qualitative research internationally and across migrant populations has largely been consistent in relation to internalised HIV-related stigma. Internalised HIV-related stigma has negatively impacted HIV testing, even in the case of suspected HIV infection (29-35). In addition to individual manifestations of internalised HIV-related stigma, research with migrants of mixed origin has found

concerns around structural discrimination limit HIV testing (see Section 2.4.3.7; 29, 31, 179).

In several studies, (externalised) HIV-related stigma stemmed from the association of race and HIV (29, 30) and/or sexual orientation and HIV (30). Across studies, HIV was also associated with 'bad' or 'spoiled' blood and others in the community considering them to be a 'bad person', due to perceived moral offences (32, 34, 35). Removing moral connotations from HIV risk may, therefore, facilitate HIV testing (31). In several studies, HIV was associated with death, both social and physical (33, 34, 56, 121). In their qualitative study with Eritrean and Ethiopian migrants in Sweden, Lindkvist et al. found that the social consequences of an HIV positive diagnosis were suggested to be worse than the physical consequences of HIV (35). Socially, PLWH would be marginalised and this would also extend to family members of PLWH (33, 195). Courtesy HIV-related stigma likely occurs as HIV is seen as a moral, not just physical issue (25). Poor knowledge of HIV was also a source of stigmatisation, which led people to think that they could contract HIV from casual contact or that contracting HIV is fatal (34, 35, 184). As a result of the potentially negative social (and physical) aspects of HIV, migrants of mixed origin often fear HIV testing and would rather be in denial of their HIV status than test for HIV (31, 32, 34, 130, 179, 184).

Among migrants of mixed origin, and in keeping with findings on internalised HIV-related stigma, a lack of confidentiality, anonymity and privacy act as barriers to HIV testing (29, 31, 121, 184). Across studies a (perceived) lack of confidentiality acted as a barrier to HIV testing (31, 134, 179, 184). For example, in their qualitative study with Latino migrants, Harvey et al. found that fear of disclosure by providers and/or front-office clinic staff can limit HIV testing (184). HIV testing location also has implications for confidentiality and HIV testing. In their qualitative study with African migrants in Ireland, Adedimeji et al. found that hospitals failed to offer privacy, which limited HIV testing in this population (29). Likewise, among Latin-American migrants in Spain, concerns relating to a lack of anonymity, e.g. "I didn't want to go to my GP/health center", was the third most cited reason for having never tested for HIV (16.9 per cent; 121). Non-traditional, newer HIV testing approaches, such as rapid HIV testing and HIV ST, may overcome some of these barriers to HIV testing.

It is evident from this previously conducted research with migrants internationally that some types of HIV-related stigma, i.e. internalised HIV-related stigma, seem to negatively impact HIV testing. This stems from both instrumental and symbolic HIV-related stigma. Research has also highlighted fear of courtesy HIV-related stigma where migrants test HIV positive. While studies highlight the important role internalised HIV-related stigma plays in HIV testing for migrants, this element is under-, or not, represented in current conceptualisations of HIV-related stigma and, therefore, also HIV-related stigma measures. Additionally, the limited evidence on externalised HIV-related stigma, i.e. prejudice, stereotypes and discrimination, precludes the drawing of conclusions. Different HIV testing approaches, however, may overcome HIV-related stigma barriers to HIV testing. In lieu of a previously validated internalised HIV-related stigma scale, this study used only the ARSS (9; externalised HIV-related stigma; see Section 2.5), which was also validated in the study populations (see Chapter Four).

2.4.3 Enabling

Enabling factors are those conditions, tools or resources which allow (or prevent) a person from obtaining healthcare (91, 168).

2.4.3.1 Income

Across studies, income has been differentially associated with HIV testing (71, 127, 206). Latino men who earned <\$100 per week had greater odds of intending to test for HIV in the next year (AOR: 8.03, 1.41, 45.93), when compared to men who earned \geq \$100 (206). This finding contrasts with another study with Latinos, which found that earning \geq \$201, as compared to <\$201, had greater odds of previous HIV testing (OR 2.76, 1.09–6.99; 127). Likewise, among Latino men (predominantly foreign-born), Solorio et al. 2009 found increases of \$1,000 in annual income were associated with greater odds of having been tested for HIV in the previous year (AOR 1.11, 1.04–1.18; 71). Differences in findings may stem from different operationalisation of income (categorical or continuous); different operationalisation of HIV testing (ever tested for HIV, tested in the last year or intention to test), and subsequent social desirability and recall bias; and/or inaccurate reporting of income (71). It seems likely that participants, especially those without fixed incomes, would not be able to accurately state their income. In research with non-US born Blacks, a significant proportion (18 per cent) of participants refused, missed or did not know

their annual family income (54). To overcome this, instead of numerical assessment of income, investigators may use perceived economic position (141).

2.4.3.2 Social support

Social support has consistently been associated with HIV testing, whereby lesser support acts as a barrier to HIV testing and greater support facilitates HIV testing (29, 31, 180). For example, in a qualitative study with African migrants in Ireland perceived lack of support from social networks, and specifically religious leaders, acted as barriers to HIV testing (29). In their quantitative study with Latinos in the US, Chen et al. found that those females living with relatives had significantly greater odds of having a previous HIV test (AOR: 8.54, 1.74, 41.86; 180). In their study with Surinamese and Dutch-Antillean migrants, Westmaas et al. 2012 found that subjective norms, related to the perceived importance of frequent testing by parents, family, friends and community, were associated with HIV/STI testing intention in the next six months (156).

2.4.3.3 Health insurance

Studies examining the association between health insurance and HIV testing have shown consistent results, whereby lack of insurance has acted as a barrier to HIV testing (22, 59). For example, in their study with foreign-born migrants in Amsterdam, Stolte et al. found that males with health insurance had lower odds of having not actively tested for HIV (AOR: 0.46, 0.22-0.99; 59). It is possible that those migrants without health insurance may have undocumented residency and fear engaging with HIV testing, and the healthcare system in general, and/or have less HIV-related knowledge, as public health campaigns are not targeted at migrants of undocumented residency status (59, 141). Health insurance is widely assessed in studies, particularly those from the US. According to literature on the BMHU, health insurance is a key enabling variable, as it is a proxy for healthcare access (171). Healthcare access is, however, more complex than implied by use of this variable, and includes healthcare navigation, cultural competency and knowledge factors (54). Additionally, in countries such as Australia with universal healthcare systems, where undocumented residency status is more limited and where health insurance is a requirement for international students etc., assessing health insurance is less appropriate.

2.4.3.4 Healthcare use

Several studies have assessed the association between healthcare use and HIV testing with largely consistent results, whereby engagement with healthcare generally facilitated HIV testing and lack of engagement with healthcare acted as a barrier to HIV testing. Among Latino migrants in the US, having a healthcare provider was a facilitator to HIV testing (144). Foreign-born (54) and Latino migrants (140) in the US who had not seen a healthcare provider in the previous year had reduced odds of HIV testing (AOR: 0.58, 0.38–0.90 and not tested AOR: 1.78, 1.48–2.14, respectively). In another study from the US with Latino migrants, having seen a healthcare provider and/or had an emergency room visit in the past 12 months increased the odds of intending to test for HIV (OR 1.97, 1.00–3.88; 127). In their study with South-East Asians in the US, however, Huang et al. found that having a primary care doctor was a barrier to HIV testing (No AOR: 1.6, 1.1 – 2.3; 88). This highlights that while engagement with healthcare generally facilitates HIV testing, it does not necessarily, in itself, provide an enabling environment for HIV testing.

2.4.3.5 Healthcare provider-patient relationship

The healthcare provider-patient relationship has shown largely consistent results across studies, whereby a poor healthcare provider/patient relationship acts as a barrier to HIV testing. In their qualitative study with healthcare providers (GPs and internists) in Belgium in areas where a significant number of sub-Saharan African migrants live, providers acknowledge that a good, trusting healthcare provider-patient relationship is important, but is not always achieved, for HIV testing with sub-Saharan African migrants (191). Across several studies, both migrants and healthcare providers have highlighted the often poor cultural sensitivity of healthcare providers to migrants needs in cross-cultural consultations, including issues relating to communication about sexuality and privacy, resulting from poor understanding of cultural norms (29, 31, 191). This relationship is also often strained due to language related barriers, e.g. difficulties communicating, barriers to client confidentiality imposed by using translators, and difficulties in cross-cultural communication during counselling, which inhibit HIV testing (29, 31, 134, 191).

In their study with sub-Saharan African migrants in Belgium, Manirankunda found that fear of healthcare provider judgement limits HIV testing (34). They found that being offered (as opposed to having to ask for) an HIV test, e.g. PITC, may

facilitate HIV testing; although, where healthcare providers do not follow HIV testing guidelines this may limit HIV testing (34). Health professionals in Belgium also worry about being perceived to be judgemental when discussing HIV testing with sub-Saharan African migrants (191). These health professionals' do not want to be seen to be questioning a patient's fidelity or being racist, which they worried would lead to their practice gaining a bad reputation. This research highlights the need for cultural competence among healthcare providers. Again, it also highlights a disconnect between migrants and healthcare providers on HIV testing preferences and needs.

2.4.3.6 Healthcare resources

Numerous healthcare service factors, such as cost, location, organisation, content and time, can impact HIV testing among migrants. In qualitative research with migrants from HIV endemic countries and healthcare providers in Canada, participants identified insufficient resources and/or funding for health services for migrants as acting as barriers to HIV testing (31). Increased availability of resources to improve the accessibility of health services for migrants, e.g. outreach and language services, flexible healthcare service hours, transportation vouchers/help, and peer health educators/outreach workers, can facilitate HIV testing (31, 33).

Across studies with migrants and providers, financial factors, including limited finances, being on social benefits, the cost of accessing healthcare, fear of hidden costs and perception that migrants are charged more than non-migrants, have been identified as barriers to HIV testing (29, 31, 33, 34, 134, 155, 191). In their qualitative study with African migrants in Ireland, Adedimeji et al. identified cost as one of the most frequently reported barriers to HIV testing (29). In Ireland, patients who earn above a low threshold are required to pay a fee (approximately 40-50 Euro) for a healthcare visit, which may limit HIV testing for preventative purposes (29). In their qualitative study with foreign-born migrants and healthcare providers in Canada, Mitra et al. found that where migrants are aware that they can receive free ART (if HIV positive) this may facilitate HIV testing (31). In their study with African migrants in Spain, the expense of healthcare in migrants home countries meant that free healthcare was often perceived as "strange" (32). Experiences in migrants' home countries, in terms of healthcare costs and treatment availability, can therefore act as barriers (32).

Several studies have identified factors associated with the location and type of services that impede or facilitate HIV testing. Adedimeji et al., in their qualitative study with African migrants in Ireland, found that the location and organisation of services, including waiting time, act as barriers to HIV testing (29). Likewise, among Latino migrant men, poor understanding of how the healthcare system operates, including the need for appointments, was identified as a barrier to HIV testing (33). Mitra et al., in their study with foreign-born female migrants in Canada, identified that HIV-specific services can act as a barrier to HIV testing (31). Additionally, they found that non-targeted services can facilitate HIV testing (31). Studies have identified the need to broaden the settings where HIV testing education, interventions and services are delivered and modes of delivery, e.g. use of telenovelas instead of written resources, to facilitate HIV testing (31, 33). In qualitative research with Latino migrants in the US, for example, Dolwick Grieb et al. identified the need for interventions and services, such as HIV testing, to be brought to migrants, not simply clinic and/or hospital-based (33). In another study with Latinos in the US (96 per cent foreign-born), men who accessed Latino Outreach services at a bar, as compared to the street/clinic/fair/community-based organisation (CBO), had lower odds of having been previously tested for HIV (AOR: 0.30, 0.10 - 0.90; 180). These findings suggest the possible enabling effect of newer HIV testing technologies, i.e. rapid HIV testing and HIV ST, on HIV testing. These approaches, which can be delivered in non-traditional settings, may be more accessible to migrants.

Healthcare providers have identified time issues as negatively impacting HIV testing (31, 191). For example, in their study with foreign-born migrants and health professionals in Canada, Mitra et al. identified that within family practice, health professionals suggested time constraints for HIV testing limited HIV testing (31). Similarly, health professionals in Belgium working with sub-Saharan African migrants suggested proposing an HIV test would take up consultation time, particularly counselling, and not allow for them to treat the patient's primary reason for the consult, which acted as a barrier to HIV testing (191). This research highlights that it is important to understand both migrant and healthcare provider-level barriers and facilitators to HIV testing. Additionally, there is a need to examine the efficiency of HIV testing and counselling.

2.4.3.7 Legal status

Across studies, immigration requirements have facilitated HIV testing (54, 179, 183). In their study with non-US born Blacks in the US, for example, Ojikutu et al. found that 54 per cent had their last HIV test for immigration purposes (54). Legal status-related issues also impact HIV testing across studies. Undocumented legal status and fears of deportation act as barriers to HIV testing, while legal status facilitated HIV testing (29, 31, 32, 34, 127, 155, 179). In a qualitative study with African migrants in Spain, for example, participants suggested the healthcare system and the police may be interconnected (32). In their study with foreign-born migrants in Portugal, Dias found that legal status increased the odds of ever having been tested (AOR: 1.27, 1.02–1.59; 141). In their study with male Latino migrants in the US, Dolwick Grieb et al. found that migrants were often concerned for their safety in clinics, due to not being US citizens (33). In Australia, a mandatory HIV test is performed for all migrants seeking permanent residency (except on-shore asylum seekers) aged ≥ 15 years (207). It is, however, important to understand use of HIV testing, more broadly, apart from mandatory HIV testing for immigration purposes.

2.4.3.8 HIV policy

Several HIV testing related policies and practices act as barriers or facilitate HIV testing. In their research with healthcare providers with sub-Saharan African migrant patients in Belgium, Manirankunda et al. identified the lack of HIV testing guidelines for migrants acts as a barrier to PITC (191). Additionally, HIV exceptionalism, i.e. the treatment of HIV as different to other chronic diseases, was a barrier to PITC (191). In their qualitative study with African migrants in Ireland, however, Adedimeji et al. identified routine screening post migration as potentially discriminatory policy towards refugees and asylum seekers (29). This research highlights the need for clear guidelines on HIV testing for migrants that are informed by evidence and developed in consultation with migrants themselves, to ensure community acceptability, and that reduce 'HIV exceptionalism'.

2.4.4 Need

Need factors relate to (perceived) illness and includes objective and subjective measures of health need (167).

2.4.4.1 Symptoms and preventative healthcare

Across studies, lack of preventative healthcare and preventative screening tests, feeling healthy and/or lack of symptoms acted as barriers to HIV testing, whereas experiencing symptoms, wanting to ensure health, being unwell, and knowing that PLWH can seem healthy acted as facilitators to HIV testing (22, 30-32, 34, 121, 127, 134, 155, 179, 183, 184). For example, in their study with African migrants in the UK, Thomas et al., found that participants self-medicate and wait until extremely sick before seeking “formal” healthcare, which also saw them delay HIV testing (155). In their qualitative study with African migrants in Spain, Navaza et al. found that African migrants’ often greater contact with traditional, as opposed to western, medicine in their home country, which continued to act as a barrier (32). Conversely, in their study with HIV positive Latino migrants in the US, Levy et al. found that symptoms were the (equal) most salient reason for HIV testing (n=7/20; 30). Healthcare providers, in a study by Manirankunda et al. in Belgium, however, stated that African patients often minimised their symptoms, which acted as a barrier to HIV testing (191). African migrants in the UK also identified that too much blood was drawn in undertaking testing, and misinformation regarding reutilisation and selling of blood acted as a deterrent to HIV testing (32). Non-traditional testing approaches, i.e. rapid HIV testing and HIV ST, which require less or no blood (saliva specimen) may overcome such barriers. In their study with Latinos in the US, participants that preferred an HIV test that used a finger prick to collect the blood sample (with results given in 20 minutes) had greater odds of intending to accept an HIV test (OR 4.47, 1.60–12.49; 127).

2.4.4.2 HIV risk perception

Individual perceptions of HIV risk have shown consistent results across studies, whereby low self-perceived risk has acted as a barrier to HIV testing, while higher self-perceived risk acts as a facilitator to HIV testing (30, 31, 34, 121, 130, 140, 142, 183, 184, 206). For example, among Latin American migrants, Hoyos et al. found that the most common reason for never having been HIV tested was low perceived HIV risk (47 per cent; 121). Conversely, in their study with Latino migrants in the US, participants who perceived themselves to be at risk of acquiring HIV/AIDS had greater odds of intending to test for HIV (OR 3.19, 1.18, 8.60), while participants who did not know their risk of HIV had lower odds of intending to test for HIV (OR

0.36, 0.16 - 0.78; 206). Likewise, in their study with predominantly migrant Latinos in the US, Fernandez et al. found that worrying about acquiring HIV increased the odds of intending to test for HIV (OR 3.64, 1.81–7.33; 127). In their research with Spaniards and Latin American migrants in Spain, however, Hoyos et al. highlight that HIV risk perception is often inaccurate, with a significant number of participants classified as high HIV risk (based on self-reported HIV risk behaviours) having low risk HIV perception (121). There is a need to improve HIV risk awareness among migrants, which may positively impact HIV testing (127). Additionally, or alternatively, PITC may overcome inaccurate HIV risk perception and facilitate HIV testing.

2.4.4.3 HIV risk behaviour

HIV risk behaviour has been operationalised in many ways across studies, using single items or composite measures. Regardless of measurement type, HIV risk behaviour has generally consistently impacted HIV testing. Engagement, or greater engagement, in HIV risk behaviour largely facilitates HIV testing, while no engagement or less engagement acts as a barrier to HIV testing (88, 184, 206). In their qualitative study with Latino men in the US, Harvey et al. found that participants equated HIV risk behaviour to having multiple sexual partners (184). They found that having sex with multiple partners would facilitate HIV testing, but where men had not had multiple partners this would act as a barrier to HIV testing. The authors, however, note the differences between participants in what constituted multiple partners and the frequency of contacts that would place men at high risk for HIV.

Huang et al., in their quantitative study with South-East Asians in the US, found that high risk sexual behaviour increased the odds of having tested for HIV (OR: 1.9, 1.2–3.1; 88). Sexual HIV risk behaviour was assessed via an index with six items related to unprotected sex with prostitutes (with/without protection), unprotected anal sex, sex with casual partners in the home country, alcohol/drug use immediately before sex, and having had sex for money, drugs or goods. A participant who had engaged in at least one of these sexual HIV risk behaviours was deemed to have engaged in high HIV risk behaviour. Similarly, in their study with male Latino migrants in the US, Ehrlic et al. found that between any two adjacent levels of a risk scale, Latino men in the higher risk category had significantly greater odds of intending to test for HIV (OR 1.52, 1.14–2.03), as compared the next lowest level of risk (206). The HIV risk scale was calculated based on the number of lifetime female

sex partners, number of female partners in the past six months, and whether a participant had sex with a woman in the US, and was summed to four level (low, medium-low, medium, high risk) sex partner risk scale. Lopez-Quintero et al. found that participants not meeting national health interview survey (NHIS) criteria for high-risk status had greater odds of not previously HIV testing (AOR: 2.93, 1.97–4.34; 140). High risk status was attributed to participants who have haemophilia and have received clotting factor concentrations, are a man who has had sex with another man, taken street drugs by needle at any time; traded sex for money or drugs at any time; tested positive for HIV, and/or you are or have sex (even just one time) with someone who would endorse, i.e. answer 'yes' to, any of these statements.

Among Latina migrants in the US, HIV testing was facilitated by females wanting “to get rid of doubt” (28.5 per cent), which stemmed from partner’s known, or suspected, sexual concurrency (144). In their study with male Latinos in the US, having no casual partners decreased the odds of ever having had an HIV test and HIV testing in the past year (AOR: 0.36, 0.21–0.61 and 0.42, 0.23–0.77, respectively). Consistent (100 per cent) use of condoms with casual partners increased the odds of HIV testing in the past year (AOR: 4.49, 1.54–13.1; 22). Likewise, in qualitative research with Latino migrant men, use of condoms acted as a barrier, and inconsistent condom use a facilitator, to HIV testing (184). Schulden et al., however, found that migrant men of mixed origin who had given money or goods for sex during the past year had lower odds of previously tested for HIV (AOR: 0.54, 0.36–0.79; 52). Research with Latinos in the US has found that ever having used marijuana increased the odds of HIV testing (OR 3.31, 1.06–1.03; 127).

Across multiple studies previous sexually transmitted infection (STI) diagnosis facilitated HIV testing, while no previous STI diagnosis acted as a barrier to HIV testing (52, 59, 88, 142). For example, in their study with South-East Asians in the US, Huang et al. found previous STI diagnosis significantly increased the odds of HIV testing (AOR: 20.7, 9.4 - 45.5; 88). Conversely, in their study of foreign-born migrants in Amsterdam, Stolte et al. found that females never treated for STIs had increased odds of having never been tested for HIV (AOR: 2.19, 1.17-4.12; 59). In several studies, knowing someone diagnosed with an STI/HIV, i.e. being the sexual partner, family member or acquaintance, facilitated HIV testing (30, 141). In qualitative interviews with Latinos in the US, being the sexual partner of someone

recently diagnosed with a STI/HIV (n=7/20) was a primary reason for HIV testing (30). Among foreign-born migrants in the US, males who reported sex with a person of unknown HIV status had greater odds of HIV testing (AOR: 2.76, 1.93–3.96; 52). Previous HIV testing has acted as a barrier and facilitator to HIV testing across studies (179, 182, 184). In a qualitative study with HIV positive Latino migrants in the US, participants reported that after testing HIV negative once, despite ongoing HIV risk behaviour, they and others would not test for HIV again (179). In another quantitative study with Latino migrants, however, ever having tested for HIV previously increased the odds of intending to accept a free HIV test (OR 2.36, 1.03–5.42; 127). PITC may, therefore, be a particularly important HIV testing modality for ongoing HIV testing among migrants.

2.4.5 Summary

Numerous barriers and facilitators to HIV testing have been explored among migrants in HICs (2). Barriers and facilitators for inclusion in this study were based on previous studies, but also previous applications of the BMHU. The BMHU does not specify the inclusion of specific variables in the construction of the model (92). Many other variables not included in the current study would equally fit into the components of predisposing, enabling and need (see Section 2.4.1). Additionally, consideration of the research objectives and practical aspects, including quantitative questionnaire length, informed variable inclusion. Included, variables represent what the author considers to be the most salient predictors, based on the evidence-base and prior applications of the BMHU (169, 176). Variables for further examination were gender, age, marital status, sexual orientation, education, employment, religion, acculturation, HIV-related knowledge, HIV-related stigma, healthcare access, HIV risk perception and HIV risk behaviour, see Table 2-6.

Table 2-6 Barriers and facilitators to HIV testing approaches included in the quantitative questionnaire by Behavioural Model of Healthcare Utilisation (BMHU) component, with example references

Component	Variables	References
Predisposing	Gender	Andersen et al. 2005 (167); Ojikutu et al. 2013 (54); Westmaas et al. 2012 (156)

	Age	Andersen et al. 2005 (167); Ojikutu et al. 2013 (54); Westmaas et al. 2012 (156)
	Marital status	Andersen et al. 2005 (167); Ojikutu et al. 2013 (54); Westmaas et al. 2012 (156)
	Sexual orientation	Westmaas et al. 2012 (156)
	Education	Andersen et al. 2005 (167); Fernandez et al. 2005 (127); Westmaas et al. 2012 (156)
	Employment	Ojikutu et al. 2013 (54)
	Religion	Andersen et al. 2005 (167); Westmaas et al. 2012 (156)
	Acculturation	Chen et al. 2012 (180); Ojikutu et al. 2013 (54)
	HIV-related knowledge	Ojikutu et al. 2013 (54); Westmaas et al. 2012 (156)
	HIV-related stigma	Hosseinzadeh et al., 2012 (27); Ojikutu et al. 2013 (54);
Enabling	Healthcare access	Andersen et al. 2005 (167); Ojikutu et al. 2013 (54)
Need	HIV risk perception	Chen et al. 2012 (180)
	HIV risk behaviour	Chen et al. 2012 (180); Ojikutu et al. 2013 (54)

There was a need to ensure the appropriateness of measures of HIV-related knowledge and HIV-related stigma for the study populations, i.e. Vietnamese-born migrants and Australian-born adults, to accurately gauge the association between HIV testing approaches and HIV-related knowledge and HIV-related stigma, respectively (see Section 2.5). This study used the HIV-KQ-18 (8; see Section 2.5.2) to assess HIV-related knowledge, which was also validated in the study populations (see Chapter Four). In lieu of a previously validated internalised HIV-related stigma

scale, this study used only the ARSS (9; externalised HIV-related stigma; see Section 2.5.3), which was also validated in the study populations (see Chapter Four).

2.5 Scale validation

As outlined above, HIV-related knowledge and HIV-related stigma have, among other factors, been specifically implicated (or shown inconsistent results) in HIV testing behaviour in migrants (see Section 2.4.2.10 and 2.4.2.11; 27, 88). HIV-related knowledge and HIV-related stigma were considered as key independent variables for inclusion in the quantitative questionnaire. Unlike factors such as height or weight, HIV-related knowledge and HIV-related stigma cannot be directly measured and are termed latent traits (208). To measure latent traits, several items are often combined to give a single score (a scale), rather than using only a single item. While there is no gold standard in assessing such traits, the use of a scale is generally perceived to offer a more rigorous estimate of the underlying trait (208). Statistical power is increased through the use of multiple items by increasing measurement reliability (209). The degree to which scales are assessing the underlying trait requires psychometric testing, i.e. an assessment of the validity and reliability of a scale.

2.5.1 Validity and reliability

Validity refers to how consistent a measure is with existing empirical and theoretical understandings of a construct (36). There are many types of validity, e.g. content validity (i.e. the degree to which a measure has drawn from, and is representative of, the topic), construct validity (i.e. the degree to which items in a scale relate to each other statistically), and convergent/divergent validity (i.e., when a measure correlates/does not correlate with other items/measures that are designed to assess the same construct, respectively; 7, 208). In addition to validity, reliability analyses, i.e. internal consistency reliability and test-re-test reliability, are also undertaken to ensure the stability of a measure. Without such assessments it is not possible to ascertain the degree to which the scale is actually measuring the intended constructs and, therefore, limits the utility of findings (210).

Traditionally, construct validity and internal consistency reliability have been assessed and reported using Factor Analysis and Cronbach's Alpha Coefficient, respectively (211, 212). These psychometric tests are underpinned by classical test

theory (CTT; 208). In CTT, an observed score is a product of the true score and the error score, which are assumed to be additive (208). CTT also assumes that ordinal or categorical data, such as that generated by Likert type scales (i.e. multi-response category scales, e.g. 'strongly disagree', 'disagree', 'neither agree or disagree', 'agree', 'strongly agree') are interval data (208). These assumptions, however, cannot be tested (208). Given these limitations, other methods are also being used to complement these traditional approaches (208).

Another approach to scale validation (including construct validity and internal reliability consistency) is latent trait theory (LTT; 208). Its focus is on the relationship between the probability of choosing a particular response category and the latent trait (208). Rasch analysis is one method in LTT (213). In Rasch analysis, item responses are a product of the difference between a person's ability and item difficulty (213). Scales are deemed valid where responses align with model expectations (derived from a parametric probabilistic form of Guttman Scaling), including unidimensionality, i.e. items are assessing only one latent trait, and independence of items, i.e. items are correlated only by the latent trait (214, 215).

The Rasch analysis model allows for nonlinear transformation of ordinal raw scores to interval measures, allowing the use of parametric tests (216). Additionally, Rasch analysis is useful for cross-cultural research (such as this study), through the assessment of, and adjustment of the data to account for, differential item functioning (DIF; 213). DIF occurs when, despite the same degree of the underlying latent trait, subsets of the sample (e.g. based on gender, age, nationality etc.) score differently on a scale item (216). Rasch analysis has been used to complement and extend, or to replace, CTT approaches, and has frequently been used in educational and health settings (212, 216).

2.5.2 HIV-related knowledge scales

Often HIV-related knowledge has been assessed by an individual question or multiple questions summed together to create a scale without rigorous assessment of their appropriateness in measuring HIV-related knowledge (see Section 2.4.2.10; 88, 156, 217, 218). Few validated scales exist to examine HIV-related knowledge in the general, HIV negative or unknown status population (190). There are several HIV-related knowledge scales designed for specific populations, e.g. healthcare

workers, PLWH and adolescents (219); however, these populations were not the focus of this study. Additionally, in Australia, among migrants HIV is predominantly acquired via heterosexual transmission (5), questions related to injecting drug use would be of little relevance (190). Several HIV-related knowledge scales were considered for use in this study, see in Table 2-7. The HIV-KQ-18, while dated, was chosen due to its (1) use in general, HIV negative or unknown status population samples and with a focus on heterosexually-acquired HIV; (2) thorough psychometric properties, although in different populations; and (3) brevity (see Appendix 3). In the quantitative questionnaire, questions 15 to 32, inclusive, relate to the HIV-KQ-18 (8).

Table 2-7 Reviewed HIV-related knowledge scales for possible use in this study

Author, year	Scale name	No. items	Population	Knowledge elements measured
Carey et al. 1997(7)	Knowledge Questionnaire	45	People with low-literacy skills, and of all ages, genders, and sexual orientations.	HIV transmission; non-transmission; effective risk reduction strategies; ineffective prevention methods; and consequences of infection
Carey et al. 2002 (8)	HIV-KQ-18	18	Low-income adults in the US	Myths around HIV; prevention of HIV; and transmission of HIV
Ananth et al. 2003 (220)	HIV/AIDS Knowledge	12	Adult Indian women	Transmission modes; health consequences of HIV; and at risk populations

HIV-KQ-18: The Brief HIV Knowledge Questionnaire; US: United States

2.5.2.1 The Brief HIV Knowledge Questionnaire (HIV-KQ-18)

The HIV-KQ-18 (8) is a condensed version of the HIV Knowledge Questionnaire (HIV-KQ-45; 7), with 18 items (see Appendix 3). Items in the HIV-KQ-18 relate to myths around HIV, prevention of HIV and transmission of HIV. Items

were formulated for a heterosexual, general population sample and relate to sexual transmission and mother to child transmission (8). Participants respond 'True', 'False', or 'Don't know' to statements. Scores are summed to make one single score, where higher scores indicate greater HIV-related knowledge.

Selected psychometric properties, i.e. internal consistency and test-retest reliability and validity (as assessed by correlation with the HIV Knowledge Questionnaire), were assessed with a sample of low-income adults in the US (n=1019). The HIV-KQ-18 was found to be internally consistent across samples ($\alpha=0.75-0.89$), test-retest stability across several intervals showed satisfactory to excellent reliability ($r=0.76-0.94$), and strong associations with the HIV-KQ-45 ($r=0.93-0.97$). Additionally, the scale was able to detect knowledge gains in intervention participants, when compared to controls, across three clinical trials.

2.5.3 HIV-related stigma scales

HIV-related stigma has been widely examined in research with migrants and HIV testing, often with inconsistent results (see Section 2.4.2.11). These differences have been, in part, attributed to different aspects of HIV-related stigma being measured (54). Several scales are available to measure HIV-related stigma. Often, however, this is from the perspective of PLWH (28). For example, Zelaya et al. 2012 constructed and validated three parallel scales for self-, experienced and perceived HIV/AIDS stigma in PLWH in India (221). Fewer tools are available to assess HIV-related stigma in people of unknown or HIV negative status. Prior reviews of HIV-related stigma measures have identified measures specifically targeting externalised HIV-related stigma, i.e. social distancing, support for coercive measures, and/or negative feelings and attitudes towards PLWH (6, 28). Those that are available have largely not had their psychometric properties, i.e. validity and reliability, assessed (222). Several HIV-related stigma scales were considered for use in this study, see Table 2-8. The ARSS, while dated, was considered the best option for this study due to its (1) use in general, HIV negative or unknown status population samples; (2) thorough psychometric properties (although in different populations); and (3) brevity. In the quantitative questionnaire, items 33 to 41, inclusive, form the ARSS (9).

Table 2-8 Reviewed HIV-related stigma scales for possible use in this study

Author, year	Scale name	No. items	Population	HIV-related stigma elements measured
Beaulieu et al., 2014 (222)	Stigmatising attitudes towards people living with HIV (SAT-PLWHA-S)	27	General population, males and females in Canada.	1) Concerns about occasional encounters; 2) avoidance of personal contact; 3) responsibility and blame, 4) liberalism, 5) non-discrimination, 6) confidentiality of seropositive status, and 7) criminalisation of HIV transmission.
Bresnahan et al., 2011 (223)	N/A	27	Undergraduate students, males and females in the US	(1) Labelling; (2) negative attribution; (3) distancing; (4) status loss; (5) controllability
Genberg et al., 2009 (224)	N/A	22	18-32-year-old, males and females in Thailand, Zimbabwe, Tanzania, and South Africa.	Negative attitudes and beliefs associated with PLHA; perceptions of acts of discrimination faced by PLHA within their community; personal attitudes and beliefs related to fair treatment of PLHA in society.
Mukolo et al. 2013 (225)	N/A	15	Female household members in Mozambique	Negative labelling and devaluation; social exclusion

Pulerwitz et al., 2008 (226)	N/A	15	Male truck drivers in Brazil	Fear of casual transmission; blaming attitudes towards PLHA; and fear of discrimination
Kalichman et al., 2005 (9)	ARSS	9	Males and females in South Africa	Coercive attitudes; blame; and avoidant behaviours

ARSS: AIDS-Related Stigma Scale; N/A: Not Applicable; PLHA: People Living with HIV/AIDS

2.5.3.1 AIDS-Related Stigma Scale (ARSS)

The ARSS is a nine item measure developed by Kalichman and colleagues for use in Southern Africa (see Appendix 4; 9). They drew on the theoretical framework of Goffman and previous research by Herek and colleagues to guided items. The scale aimed to assess respondents' feelings toward people living with HIV/AIDS, including coercive attitudes, blame, and avoidant behaviours, without crossing over into knowledge about HIV transmission.

The ARSS was tested for validity (i.e. construct, convergent and divergent) and reliability (i.e. internal consistency and time stability) with five independent samples of men and women in Cape Town, South Africa (n=2306). Findings showed the scale to be internally consistent (total sample $\alpha = 0.75$, English: $\alpha = 0.78$, Xhosa: $\alpha = 0.88$, and Afrikaans: $\alpha = 0.71$) and time stable over 3 months ($r = 0.67$; 9). Construct validity was demonstrated by individuals who responded that HIV positive persons should conceal their HIV status had higher ARSS scores, as did individuals who refused to report whether they had been tested for HIV. The scale being moderately inversely correlated with years of education and AIDS knowledge demonstrated convergent and divergent validity.

2.5.4 Summary

HIV-related knowledge and HIV-related stigma were key independent variables within the quantitative questionnaire. Across the evidence-base on HIV testing and migrants, studies have used individual items, items summed together, or amended previously used scales to assess HIV-related knowledge and HIV-related stigma, often without regard for the psychometric properties of these measures.

Without psychometric assessment of scales, it is unclear whether HIV-related knowledge and HIV-related stigma are being accurately assessed. This study provides preliminary evidence of the psychometric properties, i.e. the construct validity and internal consistency reliability, of the HIV-KQ-18 (8) and ARSS (9) in the study populations. These scales were chosen based on relevancy to the study populations, previous rigorous psychometric analyses (although in other populations) and length. Justification for methodology

2.6 Study design and methods

Investigators may employ quantitative, qualitative or mixed methods to answer their research questions (227). In previous research on HIV testing among migrants in HICs, investigators have largely used either quantitative or qualitative methods separately, with limited studies reporting using both quantitative and qualitative methods, or mixed methods (2). In their study from the US, however, Levy et al. used both quantitative and qualitative methods, although they did not explicitly define their study as mixed methods (30). It is possible, however, given the succinct nature of journal articles that larger mixed methods studies may be presented across multiple articles, as opposed to being presented in one article.

According to Creswell and Plano-Clarke, leading authors in the field of mixed methods, mixed methods "...involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies" (228, p. 5). Through using mixed methods and combining the best aspects of both approaches, i.e. quantitative and qualitative, as compared to either approach alone, research questions can be better answered (228-230). Mixed methods may improve the rigour of findings, i.e. through identifying consistent or complementary findings, through triangulation of methods (231, 232). Mixed methods have been identified as being particularly beneficial in conducting cross-cultural research to fully capture and explain contextual factors (233).

While there are multiple ways to mix methods, there are several commonly used designs. In their paper, Fetters et al. 2013 (234) identify three basic designs that differ by the sequencing of data collection and/or analysis, namely:

- Exploratory sequential – Qualitative data collection and analysis, which informs quantitative data collection;
- Explanatory sequential - Quantitative data collection and analysis, which informs qualitative data collection and analysis; and
- Convergent – Quantitative and qualitative data collection and analysis undertaken at approximately the same time.

Studies also differ by how quantitative and qualitative data are integrated at the methods, i.e. connecting, building, merging, embedding, and findings, i.e. narrative, data transformation, joint display (234). Integration is guided by studies research questions.

This study employed an explanatory sequential mixed methods design. Quantitative data was collected first. Preliminary quantitative data analysis informed the subsequent qualitative sample and data collection materials. This was followed by qualitative analysis. The results of the qualitative analysis informed the final quantitative data analysis. Mixing, therefore, occurred at the methods and analysis levels. Findings were integrated using a narrative approach, specifically a weaving approach, whereby quantitative and qualitative findings are presented together by variable/theme (234).

Quantitative data can be useful for quantifying and examining associations between independent variables (e.g. predisposing, enabling and need) and dependent variables (e.g. HIV testing), attributing causality and generalisability of findings (234). Causality may be attributed from quantitative data where non-cross-sectional designs are used (234). Within the evidence-base on migrants and HIV testing, however, cross-sectional designs are widely applied, limiting causality (139). Quantitative findings may also be generalisable where a probability sample is used. Lack of appropriate sampling frames, i.e. a list of all members of a set population, have been acknowledged in previous research with migrants and in HIV/AIDS and means that a probability sampling design is not always possible (54, 235-237). Across the evidence-base of HIV testing behaviour in migrants the majority of studies have not used probability sampling, but have largely used convenience sampling. For example, in their study with South-East Asians in the US, Huang et al. used both outreach at community events and snowball approaches to recruitment (88). There are, however, several exceptions (127, 140). For example, Fernandez et al. reported

using time and space sampling in their study with Latino farmworkers in the US (127). Time location sampling is particularly useful for obtaining a representative sample of hard to reach populations, including migrants (52), who are known to frequent set locations (238). Quantitative methods also allow a broad range of topics to be covered in an efficient manner, via questionnaires, and greater numbers of participants to be included in the study (239).

In previous research on HIV testing behaviour in migrants, quantitative questionnaires have been delivered in multiple ways, i.e. self-administered via pen and paper or online, interviewer-administered or computer assisted. In their study with South-East Asians in the US, Huang et al. used an audio computer assisted survey instrument (A CASI) and participants could conduct the quantitative questionnaire in their Asian language of choice, i.e. Lao, Thai or Vietnamese, or English (88). Prior to participation, participants were required to undergo a short training period. The use of A CASI also requires greater resources, i.e. computers and the correct program, and centralised administration, i.e. fixed locations where computers are set up, and may not be feasible for all research. Many studies have used interviewer-administered quantitative questionnaires, often by bilingual investigators who can deliver the study materials in the participant's native language or predominant language of the host country, e.g. Spanish and English for Latino migrants in the US (127, 184). While (peer) interviewer-administered quantitative questionnaires overcome illiteracy, they may inhibit participants' responses due to time pressure or social desirability bias, i.e. participants providing responses they feel they should give, rather than responses they actually believe (240). They are also resource intensive, requiring one interviewer per participant. In contrast, self-administered quantitative questionnaires (pen and paper or online) are beneficial due to privacy, ability to self-pace and are less resource intensive. They are also especially useful with sensitive topics such as HIV (241). This is due to minimal contact with the researcher. They, however, require a degree of literacy and do not allow the researcher to obtain additional information or the nuance within the responses to be captured (242).

This study employed a cross-sectional design. While not ideal, time constraints associated with the Doctor of Philosophy (PhD) meant that this was the only feasible design. It was expected that the number of Vietnamese-born migrants would

fluctuate, due to the broad operationalisation of migrants, i.e. people born in Vietnam regardless of their immigration status in Australia. Data from the last Census (2011), therefore, were likely to be incomplete. It was also improbable, due to the aforementioned and the voluntary nature of membership that the Vietnamese Association based in greater-Brisbane would have a complete or representative list of Vietnamese-born migrants. The Vietnamese Association was, therefore, not engaged with as a gatekeeper. A targeted location sampling type approach was selected (243). Quantitative data collection occurred in suburbs known to be 'hubs' for Vietnamese-born migrants and people of Vietnamese ethnicity, i.e. Inala and West End. Other sampling approaches were considered, including Respondent-Driven Sampling (RDS). RDS is a type of snowball sampling, whereby participants recruit eligible participants from within their networks across waves (participants in each wave participate and then recruit new participants; 243, 244). This approach, however, was not chosen due to possible selection biases and logistical issues, i.e. significant investment on the part of the participant and recruitment of friends/family that may hold similar traits and/ or beliefs as themselves, with implications for sample selection, data collection and results (245).

In this study, self-administered quantitative questionnaires were used, as illiteracy was not deemed a significant issue for Vietnamese-born migrants. This was based on data on education level from the Australian Bureau of Statistics (ABS) 2011 Census, which showed that 71 per cent of Vietnamese-born people in the Local Government Area (LGA) of Brisbane had Year 10 education or higher (246). Additionally, a key informant from Ethnic Communities Council of Queensland (ECCQ), who has previously undertaken research with Vietnamese-born migrants, suggested that a self-administered quantitative questionnaire given directly to participants by the research team was an appropriate data collection method. A quantitative questionnaire mailed or emailed to Vietnamese-born migrants would likely result in a high non-response rate; however, they would be receptive to participation if there was a face-to-face element. As shown in other research with migrants in Queensland (i.e. sub-Saharan African), mailed questionnaires are far less effective than face-to-face approaches (247).

Research on health, sexual health and/or deviant behaviours are widely considered as sensitive topics, and may be especially sensitive for migrants (248).

Qualitative research is particularly useful for developing a more in-depth understanding of sensitive and complex issues, such as HIV testing behaviour in migrants (249). Qualitative research is not representative (249). Instead, participants are chosen purposively, for their ability to shed light on a particular topic. For example, in their research on PITC for sub-Saharan African migrants in Belgium, Loos et al. identified and approached providers, GPs and internists, working in two cities where most sub-Saharan African migrants reside (250). Providers were purposively sampled based on specialisation, gender, and experience with HIV testing and with sub-Saharan African migrant patients. Data collection finishes when data reaches saturation, i.e. no new data, codes, or themes emerge and the study is replicable (251).

There are many qualitative methods to gather data. Two predominant modes of qualitative data collection are in-depth interviews (IDIs) and focus group discussions (FGDs; 249). Research with migrants on HIV testing behaviour has used IDIs and FGDs, or a combination of both. For example, in their study of HIV testing behaviour of Eritrean and Ethiopian migrants in Sweden, Lindkvist et al. used both interviews and FGD, which allowed for new and interesting knowledge generation through the more dynamic FGDs, but also for sensitive topics to be discussed in individual interviews (35). IDIs are purposeful conversations between an investigator and a participant that allow a participant to share their personal perspective on a topic, and are particularly useful for sensitive topics, and can be structured, semi-structured or unstructured (249). IDIs are generally designed to gain 'rich', or in-depth, data from participants (252). FGDs, group discussions facilitated by a moderator, are useful for gaining a broad understanding of a topic, through the interaction of multiple (usually between 8-10) participants (249).

IDIs were used in this study as there was (1) little prior knowledge of this topic in this population; (2) the topic was complex; (3) participants were able to focus on areas of interest for them; (4) they allowed opportunities for clarifying and delve deeper into topics; and (5) they provided confidentiality (239, 249). Semi-structured interviews, instead of unstructured or structured interviews, were chosen as the IDIs drew on previous literature and the preliminary quantitative questionnaire findings (which provided some structure) and so that the interviews were not too rigid (as per a structured interview), so participants were allowed to discuss the topic more

broadly (253). This was especially important given the dearth of previous research on HIV testing with Vietnamese-born migrants and the cross-cultural element to the research, i.e. the author not being of Vietnamese heritage.

2.6.1 Summary

This study was cross-sectional and used a mixed methods approach, specifically an explanatory sequential mixed methods design. Quantitative data collection occurred using a time space sampling approach and data were collected via pen and paper questionnaires. Qualitative data were collected from a purposive sample using IDIs. These approaches were chosen as they were appropriate for the study populations, i.e. Vietnamese-born migrants and Australian-born adults, and topic, i.e. HIV testing behaviour, and were logistically feasible.

2.7 Summary

As described in the previous Chapter (Chapter One), migrants in HICs consistently have elevated rates of HIV, as compared to the host country population, (2, 3, 5). Additionally, they often have high rates of late diagnosis of HIV (2, 3, 5). In Australia, South-East Asian-born migrants have disproportionately high rates of HIV and late diagnosis of HIV, as compared to Australian-born adults (5). Within this population, Vietnamese-born migrants are a large population, with poor preventative behaviour more broadly, and potentially at greater HIV risk, particularly due to HIV risk behaviour on return visits to Vietnam (see Section 1.2.2). Yet, there is little research from Australia or internationally with South-East Asian migrants (and, specifically, Vietnamese-born migrants) available (2). Research from the evidence-base of HIV testing behaviour and migrants in HICs offers an important starting point for this study.

This Chapter (Chapter Two) provided a rationale for the need to better understand HIV testing behaviour in migrants. HIV testing has significant implications for individual and population health. There are several approaches to HIV testing that aim to reach those at risk of HIV, including newer HIV testing approaches such as rapid HIV testing and HIV ST. While some migrants in HICs use, or have used, HIV testing, rates of HIV testing are low when compared with other populations at higher HIV risk, e.g. MSM. There is little evidence of HIV testing uptake among South-East Asian (and, particularly, Vietnamese-born) migrants and also newer HIV testing

technologies. This study aimed to better understand uptake of, and willingness to use/accept, HIV testing approaches among Vietnamese-born migrants in greater-Brisbane. HIV testing approaches examined in this study were: ever having tested, tested for HIV in the previous year, previously offered HIV testing, willingness to use CITC, willingness to accept PITC, willingness to use rapid HIV testing and willingness to use HIV ST.

Poorer HIV-related outcomes for migrants, i.e. high rates of HIV and late diagnosis of HIV, suggest that ineffective health promotional strategies are in place for this population. Across studies multiple barriers and facilitators to HIV testing among migrants in HICs have been identified. This study aimed to better understand the barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in greater-Brisbane, Queensland. This study included a subset of the barriers and facilitators to HIV testing in migrants, as outlined in this Chapter (Chapter Two). Selection occurred based on previous studies, fit with the theoretical framework, i.e. BMHU, research objectives and practical considerations. Barriers and facilitators considered for further analysis in this study were: predisposing, i.e. age, gender, marital status, education, employment, religion, acculturation, HIV-related knowledge and HIV-related stigma; enabling, i.e. healthcare and healthcare provider attributes, e.g. cost of accessing healthcare and wait time for healthcare; and need, i.e. perceived HIV risk and HIV risk behaviour. Additionally, selected psychometric analyses (construct validity and internal consistency reliability) of an HIV-related knowledge scale and an HIV-related stigma scale, i.e. HIV-KQ-18 (8) and ARSS (9) respectively, were undertaken in the study populations.

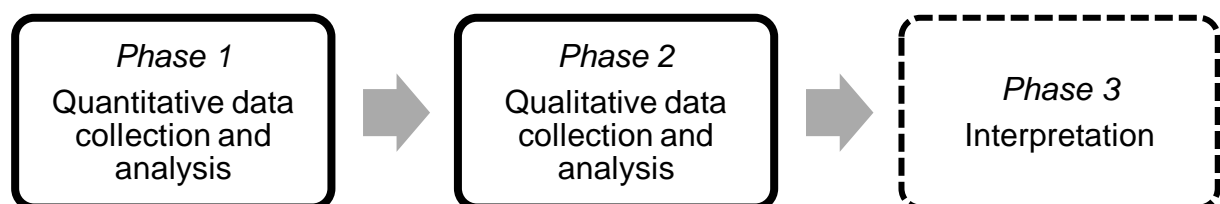
The following Chapter (Chapter Three) presents the methods used to address the objectives of this study, related to the HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane, Queensland. The study used a cross-sectional, explanatory sequential mixed methods design. A cross-sectional, explanatory sequential mixed methods design was appropriate given the research questions, study population, and logistical constraints.

3 Methods

The previous Chapters have highlighted that migrants often have higher rates of HIV, as compared to the host population. Yet, uptake of HIV testing is lower in migrants, as compared to other high-risk populations, and late diagnosis of HIV is heightened in migrants. This is despite the many benefits of, and approaches to, HIV testing. Multiple barriers and facilitators to HIV testing approaches were found across the evidence-base for migrants in high-income countries (HICs). There are, however, several gaps in understanding HIV testing behaviour among migrants. This includes the paucity of research related to (1) the HIV testing behaviour of South-East Asian-born migrants in Australia and internationally; (2) willingness to use/accept newer HIV testing approaches, such as rapid HIV testing and HIV self-testing (HIV ST); and (3) the validity of measures of HIV-related knowledge and HIV-related stigma.

This Chapter (Chapter Three) presents the specific objectives, research questions and hypotheses to be tested in this study related to the HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane, Queensland. This is followed by an overview of the study design, i.e. a cross-sectional, explanatory sequential mixed methods design across three phases (Phase One, Quantitative data collection and analysis; Phase Two, Qualitative data collection and analysis; and Phase Three, Interpretation). Note, in Phase Two, a total of ten participants completed twelve qualitative interviews (two female participants were re-interviewed; see Section 3.3.3.2). Additionally, only details relating to Phases One and Two are detailed in this Chapter (Chapter Three; Phase Three is presented in Chapters Four and Five), see Figure 3-1 below.

Figure 3-1 Study phases presented in this Chapter



The study design and research methods adopted in this study were informed by the literature review (see Chapter Two). Additionally, discussions with a key informant from Ethnic Communities Council of Queensland (ECCQ) ensured the

study design and research methods employed were appropriate for Vietnamese-born migrants.

3.1 Objectives, research questions and hypotheses

This study had four research objectives. Hypotheses were informed by the literature review (see Chapter Two).

3.1.1 Objective One: Uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants and Australian-born adults

Objective One was to assess self-reported uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants in Australia and compare these to Australian-born adults of non-Vietnamese heritage.

3.1.1.1 Research question

The research question was: 'Do self-reported HIV testing rates differ between Vietnamese-born migrants and Australian-born adults?'

3.1.1.2 Hypotheses

Hypotheses were formulated based on previous literature, where available (see Section 2.3). Specifically, previous studies have shown that:

- Ever having tested is often higher in migrants than the host population (75, 142).
- Recent testing is often lower in migrants than non-migrants (54).

As newer HIV testing approaches are hoped to facilitate HIV testing among populations previously not accessing, or under accessing, HIV testing, where there was insufficient previous literature, it was hypothesised that willingness to use these HIV testing approaches would be greater among migrants, see Table 3-1. Note, as there was insufficient variability in responses to the question related to previously being offered HIV testing, this was not analysed in this study (see Section 3.3.2.5).

Table 3-1 Hypotheses for uptake of, and willingness to use/accept, HIV testing approaches for Vietnamese-born migrants and Australian-born adults

Hypothesis No.	Hypothesis
1.1	Vietnamese-born migrants will be more likely to report having ever tested for HIV compared to Australian-born adults.
1.2	Vietnamese-born migrants will be less likely to report HIV testing in the previous year compared to Australian-born adults.
1.3	Vietnamese-born migrants will be less willing to ask their doctor for an HIV test (i.e. CITC) compared to Australian-born adults.
1.4	Vietnamese-born migrants will be more willing to accept PITC compared to Australian-born adults
1.5	Vietnamese-born migrants will be more willing to use rapid HIV testing compared to Australian-born adults
1.6	Vietnamese-born migrants will be more willing to use HIV ST compared to Australian-born adults

CITC: Client-Initiated Testing and Counselling; HIV ST: HIV Self-Testing; PITC: Provider-Initiated Testing and Counselling

3.1.2 Objectives Two and Three: Barriers and facilitators to HIV testing approaches for Vietnamese-born migrants

Research Objectives Two and Three were to quantify the extent to which specific self-reported demographics, HIV-related knowledge, HIV-related stigma, HIV risk behaviour and perceived HIV risk, and healthcare access variables act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia; and qualitatively explore factors that act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia, respectively.

3.1.2.1 Research question

The research question was ‘What are the barriers and facilitators to accessing HIV testing approaches for Vietnamese-born migrants in Australia?’

3.1.2.2 Hypotheses

Hypotheses were formulated based on previous literature, where available (see Section 2.4). Specifically, previous studies have shown that:

- Gender has largely had a consistent relationship with HIV testing among migrants, whereby females have greater, and males lesser, HIV testing (127, 141, 179, 180).
- Marital status has largely had a consistent relationship with HIV testing, whereby being in a relationship acted as a barrier to HIV testing (140, 182).
- Greater HIV-related knowledge, i.e. transmission, prevention, prognosis and awareness of services, facilitated HIV testing (88, 180), while poorer knowledge acted as a barrier to HIV testing (180).
- (Internalised) HIV-related stigma has largely negatively impacted HIV testing, even in the case of suspected HIV infection (29-35).
- Financial factors, including limited financial resources, reliance on social benefits, the cost of accessing healthcare, fear of hidden costs and perception that migrants are charged more than non-migrants, have been identified as barriers to HIV testing (29, 31, 33, 34, 134, 155, 191).
- Individual perceptions of HIV risk have had a consistent relationship with HIV testing, whereby low self-perceived risk has acted as a barrier to HIV testing, while higher self-perceived risk acts as a facilitator to HIV testing (30, 31, 34, 121, 130, 140, 142, 183, 184, 206).
- Engagement, or greater engagement, in HIV risk behaviour largely facilitates HIV testing, while no engagement or less engagement acts as a barrier to HIV testing (88, 184, 206).

For newer HIV testing approaches, where there was insufficient previous literature, hypotheses were formulated based on other HIV testing approaches, but also key attributes/strengths of each respective HIV testing approach, see Table 3-2.

Table 3-2 Hypotheses for barriers and facilitators to HIV testing approaches for Vietamese-born migrants

Hypothesis No.	Hypothesis
2.1	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate previous testing for HIV.
2.2	Being female; being unmarried; having higher HIV-related knowledge; having lower externalised HIV-related stigma; higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate HIV in the previous year.
2.3	Being female; being unmarried; having higher HIV-related knowledge; having lower externalised HIV-related stigma; higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate CITC.
2.4	Being female; being unmarried; having higher HIV-related knowledge; having lower externalised HIV-related stigma; higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate PITC.
2.5	Being female; being unmarried; having higher HIV-related knowledge; having lower externalised HIV-related stigma; higher HIV risk perception and HIV risk behaviour; and finding the cost of accessing healthcare prohibitive would facilitate rapid HIV testing.
2.6	Being female; being unmarried; having higher HIV-related knowledge; having lower externalised HIV-related stigma; higher HIV risk perception and HIV risk behaviour; and finding the cost of accessing healthcare prohibitive would facilitate HIV ST.

CITC: Client-Initiated Testing and Counselling; HIV ST: HIV Self-Testing; PITC: Provider-Initiated Testing and Counselling

3.1.3 Objective Four: Scale validation

Objective Four was to assess selected psychometric properties, i.e. construct validity and internal consistency reliability, of the Brief HIV Knowledge Questionnaire (HIV-KQ-18; 8) and the AIDS-Related Stigma Scale (ARSS; 9; originally designed for use in the United States (US) and South Africa, respectively) in Vietnamese-born migrants in Australia and Australian-born adults, including people of Vietnamese heritage.

3.2 Study design

This study was cross-sectional and used a mixed methods approach, i.e. quantitative and qualitative methods used in one research project (231). Specifically, an explanatory sequential mixed methods design was employed (see Section 2.6). The research was conducted across three phases, i.e. Quantitative data collection and analysis; Qualitative data collection and analysis; and Interpretation, see Table 3-3. Integration of quantitative and qualitative methods occurred at several levels, specifically, sample and analysis (see Section 2.6).

Table 3-3 Overview of study design phases, procedures, outputs, objective and chapter numbers

Phase No. and description	Procedure	Output	Objective No.	Chapter No.
Piloting				
Pre-pilot	Interviews (n=3)	Textual and numeric data	1,2,3,4	3
Pilot	Questionnaire (n=128)	Revised study materials		
Phase One, Quantitative data collection and analysis				
Quantitative data collection	Questionnaire (n=350)	Numeric data	1,2,3,4	3

Preliminary quantitative analysis	Data cleaning and sample characteristics, SPSS	Collinearity, missing data and descriptive statistics	1,2,3	3
	Scale: Rasch analysis, RUMM2030	Construct validity and internal consistency reliability	4	3
Phase Two, Qualitative data collection and analysis				
Connecting quantitative and qualitative	Subsample from quantitative data collection (n=8) used in qualitative data collection	Participants (n=8; 2 participants re-interviewed)	1,2,3,4	3
	Developing interview questions	Interview guide	1,2,3,4	3
Qualitative data collection	Semi-structured in-depth interviews (n=10, 2 participants re-interviewed)	Textual data	1,2,3,4	3

Qualitative analysis	Coding and the Framework method	Codes and themes	1,2,3,4	3
Connecting quantitative and qualitative	Themes from the qualitative analysis used to guide quantitative analysis	Themes from the qualitative analysis mapped to the questionnaire variables	1,2,3	3
Quantitative analysis	Univariate and multivariate analysis of quantitative analysis using only variables in the questionnaire that relate to qualitative analysis themes, SPSS	Numeric data	1,2,3	3

Phase Three,
Interpretation

Integration of quantitative and qualitative results	Discussion of quantitative and qualitative results	Discussion and interpretation of findings	1,2,3,4	4,5
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3.3 Method

The method is largely presented according to the first two study design phases, Quantitative data collection and analysis and Qualitative data collection and analysis; while Phase Three is presented across later Chapters (Chapters Four and Five). Several topics, such as translation and ethics, however, relate to more than one phase and are presented separately for ease of reading. Note, prior to Phase One, there was a piloting stage. The details of the piloting are presented below; however, no formal analysis was conducted on the pilot data.

3.3.1 Piloting

3.3.1.1 Pre-pilot (qualitative interviews)

The purpose of the pre-pilot was to ensure that the content and format of the draft quantitative questionnaire to be used in the pilot and quantitative questionnaire would be acceptable to Vietnamese-born migrants.

3.3.1.1.1 Setting

Qualitative interviews were conducted in the greater-Brisbane area, Queensland. The venue for each qualitative interview was a location convenient for the participants and a place that would ensure privacy, e.g. at university or work in a pre-booked private meeting room.

3.3.1.1.2 Sample

Participants for the pre-pilot (n=3) represent a purposeful, convenience sample. Participants from ECCQ, who work in the health field with the Vietnamese population in the greater-Brisbane area, were purposively sampled. Additionally, a Vietnamese higher degree by research (HDR) student at the School of Public Health known to the researcher participated in the pre-pilot.

Participants in the pre-pilot were required to self-identify as Vietnamese or of Vietnamese heritage and speak English. Participants were required to be aged ≥ 18 years. Participants could be of HIV positive, negative or unknown status.

3.3.1.1.3 Study materials

All documents for the pre-pilot (participant information sheet, consent form, and draft quantitative questionnaire) were available only in English. The draft quantitative questionnaire, with additional space under each question for comments, was used to guide discussions in the pre-pilot. The draft quantitative questionnaire

included 72 items. It included items capturing demographic (e.g. year of birth, gender, marital status, employment status), migratory (e.g. year of arrival, immigration status, language spoken at home), HIV-related knowledge (HIV-KQ-18; 8), externalised HIV-related stigma (ARSS; 9), HIV risk perception, HIV risk behaviour (e.g. prostitution, drug use, condom use), healthcare provider (e.g. regular provider, seen provider in last year) and access to healthcare (e.g. distance to healthcare facility, waiting time for appointment, cost) factors.

3.3.1.1.4 Data collection

Participants received a small gift (\$20) for their participation in the pre-pilot. Offering a token of acknowledgment of the time taken to support the study was suggested by a key informant at ECCQ, based on previous research undertaken with migrant populations. This is typical practice in research with migrants, more broadly (33, 54, 254, 255). Staff members of ECCQ who participated in the study during their work activities, however, did not receive this token of acknowledgment. In this one instance, the author instead brought a small food gift to share over the course of the qualitative interview.

A qualitative interview of between 30 and 60 minutes was conducted. The participants from ECCQ asked to complete, and did complete, the qualitative interview together. The author, a research assistant and participants took written notes on the draft quantitative questionnaire.

3.3.1.2 Pilot (quantitative questionnaire)

3.3.1.2.1 Setting

A document search (local government areas; LGAs), consultation with ECCQ, and brief visits to the proposed sites informed the study areas. Data from LGAs on migrant origin were gathered to find the areas with the highest concentrations of Vietnamese-born migrants, see Table 3-4. Discussions were undertaken with a key informant at ECCQ who had previously conducted field work with Vietnamese migrants in the greater-Brisbane area. Additionally, brief visits to the potential locations were undertaken by the author to informally observe the potential for the site to recruit eligible participants. These observations provided further evidence of the potential suitability of the locations as future research sites. Information from all sources was examined and found to be consistent, and Inala was selected as the

study site for the pilot. Data for the pilot were collected for both Vietnamese-born migrants and Australian-born adults at the same sites, using the same research methods.

Table 3-4 Number of Vietnamese-born people residing in South-East Queensland local government areas (LGAs) according to 2011 Census data

Local Government Area (LGA)	No. of Vietnamese-born persons
Brisbane	11,602
Ipswich	1,065
Lockyer Valley	N/A
Logan	881
Moreton Bay	N/A
Redland	N/A
Scenic Rim	N/A
Somerset	N/A

Inala is a suburb 18 kilometres south-west of Brisbane. Inala falls in the LGA of Brisbane City, and has a significant and well established Vietnamese-born population (256). Data from the 2016 Census shows the most identified ancestry in Inala is Vietnamese (24 per cent), followed by Australian (15 per cent; 90). Vietnam is the second highest birth country in Inala (i.e. 19 per cent), after Australia (46 per cent). Many residents of Inala are of low socio-economic status. The weekly personal median income in Inala is \$394, as compared to \$690 and \$692 in Queensland and Australia, respectively.

Inala Civic Centre was chosen as a data collection site as it is a noted hub for people of Vietnamese origin or heritage. The Civic Centre is, however, also frequented by people of other ethnicities, including Caucasian, Aboriginal, Islander, African and Middle-Eastern people. Inala Civic Centre is located outside the Inala Shopping Centre. Many other services are also located in the vicinity, specifically the

bus terminal, local library, and town hall. The layout is in the form of a square with several small shops (largely signposted in Vietnamese), including fruit and vegetable stores, butchers, restaurants and drinks stores, interspersed with bigger service providers, such as the Commonwealth Bank of Australia, which line the outside of the Civic Centre. The Civic Centre is, therefore, highly accessible and offers goods and services that draw a wide range of people of multiple ethnicities. There is a large central, open paved area which houses tables, chairs, shade sails, a gazebo and gardens. The area has an informal, casual atmosphere, with groups of men often sitting playing board games. Appropriate approvals from the site managers and body corporate occurred prior to data collection.

3.3.1.2.2 Sample

A targeted location sampling type approach was used (243). The sample for the pilot (n=150) consisted of adult (18 - 49-year old) Vietnamese-born migrants, who self-reported being born in Vietnam, and Australian-born adults, who self-reported being born in Australia, who presented at the Inala Civic Centre in Inala. There were no restrictions on participation based on residency status for Vietnamese-born migrants. Australian-born adults could be of Vietnamese heritage. A question in the quantitative questionnaire asked participants their heritage, so sensitivity analyses could be run, as required, to determine if Vietnamese heritage differentially affected HIV testing behaviour. Participants could be of HIV positive, negative or unknown status.

3.3.1.2.3 Study materials

All documents for the pilot (participant information sheet, consent form, and quantitative questionnaire) were professionally translated into Vietnamese prior to beginning the pilot (see Section 3.3.4). Documents were also available to Vietnamese-born migrants in English.

The pilot used a self-completed quantitative questionnaire. The questionnaire included questions capturing demographic, migratory, HIV-related knowledge (HIV-KQ-18; 8), externalised HIV-related stigma (ARSS; 9), HIV risk perception, HIV risk behaviour, healthcare provider and access to healthcare factors. The quantitative questionnaire initially consisted of a total of 72 items (see Section 3.3.1.1.3), but was reduced to 66 items (a total of four pages, with writing on both sides of the page) based on pre-pilot participant feedback. The number of items was reduced and

reformatted after concerns about the length of the questionnaire from pre-pilot participants and a key informant.

The layout was amended to be more streamlined, whereby response options were presented horizontally across the page, not vertically. Items removed were on HIV risk behaviour. The wording of items was largely informed by comments made by pre-pilot participants and represent 'culturally-appropriate' questions. For example, participants were asked their birth year, instead of year of birth, as a pre-pilot participant said that Vietnamese-born people add one year to their age. Likewise, the question on sexual orientation was reworded for easier interpretability. Standardised questions from the HIV-KQ-18 (8) and ARSS (9), however, were left largely unchanged, see Appendix 3 and 4 for the HIV-KQ-18 and ARSS, respectively. These standardised questions were flagged for further scrutiny post-pilot. Where both qualitative and quantitative data showed problems, items were reassessed.

Items were grouped together, with headings above describing the content of each section (239, 257). As many of the questions were quite sensitive, these sensitive questions came later in the quantitative questionnaire. This was so that participants eased their way into the questionnaire and be less likely to feel confronted. For example, section one contained demographic and migratory factors and section four contained HIV risk behaviours (257). Skip questions, such as 'If female, how many children have you had?', were not used in the questionnaire, as this may have made navigation of the questionnaire too complex (257). Items measured according to a standard Likert-type scale format were minimised. This response format has been found to be incompatible with participants from collectivist cultures (such as the Vietnamese), as a result of participants not being able to distinguish between categories, such as 'agree' and 'somewhat agree' (160, 258).

3.3.1.2.4 Data collection

Advertising was minimal for the pilot. A small number of A4 posters giving an overview of the study requirements in English and Vietnamese were posted around Inala Civic Centre on the first day of data collection for the pilot. These posters remained up during the week of data collection. Additionally, A4 signage was presented at the stall.

Whilst undertaking field work at Inala, a stall was set up to co-ordinate the field work and offer a place to house health information. Brochures on HIV and hepatitis were available in Vietnamese and English. It was thought that, regarding reciprocity and respect for participants and the broader community where the research was taking place, having this information was appropriate (249). ECCQ provided these resources, plus several small gifts, including rulers, water bottles, notebooks and stress balls.

A Vietnamese-speaking research assistant, the researcher and two English-speaking research assistants set up a stall in Inala Civic Centre. The table was set up between 10am and 1pm on a Tuesday, 8am and 11am on a Wednesday, and 9am and 2pm on a Saturday, which also coincided with a Harmony Day event, in mid-March 2015. A research team member always manned the stall. Participants completed the short self-administered quantitative questionnaire at/in close proximity to the stall, and handed it to a member of the research team upon completion (either at the stall or roaming around the centre). The quantitative questionnaire took approximately 10 minutes to complete. Participants received the paperwork on clipboards, so that they could stand, sit or find a quiet place nearby to complete the quantitative questionnaire. Vietnamese-born migrants and Australian-born adults were recruited in the same manner.

Participants received a small gift (\$10) for their help in this study. This is common practice in research with migrants (see Section 3.3.1.1.4). During the pilot, however, a small number of participants, particularly of Vietnamese-heritage, declined the gift card.

No information was gathered on response rate or reason for non-participation. While not ideal, the opportunistic nature of the data collection method meant that this was not feasible in the field. This is consistent with previous research with migrant populations using time location type sampling which has also not reported demographic details of non-participants (238).

3.3.2 Phase One Quantitative data collection and analysis

3.3.2.1 Setting

Inala was selected as a study site for the quantitative questionnaire (see Section 3.3.1.2.1). To increase the rigour of the data collected, West End was

selected for the second data collection location. Data were collected for both the Vietnamese-born migrants and Australian-born adults at the same sites, using the same research methods.

In addition to Inala Civic Centre, a further location in Inala was used in the quantitative questionnaire. Discussions with event organisers at the Harmony Day event (also held at the Inala Civic Centre), held during the pilot data collection, revealed additional multicultural events throughout the year. Further contact with a representative notified the author of another event coinciding with the quantitative questionnaire data collection, i.e. Multicultural Youth Day, and permission was sought to attend this event to collect data. The event took place on 30 June at the Inala Police Citizens Youth Club (PCYC). The event drew thousands of youth and their families. The Multicultural Youth Day included rides, games, entertainment, food and stalls, which were encouraged to be interactive in nature.

West End is in the LGA of Brisbane City. West End was identified, through the research team and key informants, as having a sizeable Vietnamese-born population; although, the Vietnamese-born population in West End is significantly smaller than Inala. According to 2016 Census data, after Australia (55 per cent), Vietnam was the fourth highest country of birth for people in West End (2.3 per cent; 90). The personal median weekly income also differs from Inala, with income significantly higher in West End (\$893, as compared to \$394).

Davies Park Market, West End, was chosen as the third data collection site. It runs on Saturdays from 6am to 2pm. The market offers not-for-profit stallholders free admission. The market has a mix of products, from fruit and vegetables, to clothing, jewellery, hot food and social awareness services. There are multiple open green spaces used by patrons, where often live music plays.

3.3.2.2 Sample

As with the pilot, a targeted location sampling type approach was used (243). The sample for the quantitative questionnaire consisted of adult (18 - 49-year-old) Vietnamese-born migrants, who self-reported being born in Vietnam, and Australian-born adults, who self-reported being born in Australia, who presented at the Inala Civic Centre and Inala PCYC in Inala, and at Davies Park Market in West End. As with the pilot, Vietnamese-born migrants could be of any residency status, Australian-

born adults could be of any heritage (including Vietnamese heritage), and participants could be of HIV positive, negative or unknown status.

A sample size calculation was undertaken using a freely available online tool, i.e. G*power 3.1 (259). Based on the pilot data, sample size calculations for each dependent variable were calculated. Sample size calculations were based on one-tailed tests, using power of 0.80, an alpha of 0.05. Logistic regression analyses were run in the Statistical Package for the Social Sciences (SPSS) to obtain odds ratios (ORs) and these were input into the sample size calculator tool to gain sample sizes. In undertaking the sample size calculations, HIV risk behaviour was considered as a confounding variable. While there were several other confounders, HIV risk behaviour was considered to be one of the most salient and, therefore, adjustments were made for this variable alone. Each of the sample size calculations for the dependent variables resulted in differing estimated sample sizes (see Appendix 5). Additionally, logistical constraints needed to be considered. Based on the sample size calculations, and consideration of sample sizes from previous research, 200 people per population group, i.e. Vietnamese-born migrants and Australian-born adults, were sought (27, 260). This sample size was also sufficiently large enough to assess selected psychometric properties of the HIV-KQ-18 (8) and ARSS (9, 261).

3.3.2.3 Study materials

All documents for the quantitative questionnaire (participant information sheet, consent form, and quantitative questionnaire) were professionally translated into Vietnamese prior to beginning the quantitative questionnaire (see Section 3.3.4). Documents were also available to Vietnamese-born migrants in English.

The quantitative questionnaire included questions capturing demographic, migratory, HIV-related knowledge (HIV-KQ-18; 8), externalised HIV-related stigma (ARSS; 9), HIV perceived risk, HIV risk behaviour, healthcare provider and access to healthcare factors (see Appendix 6). The quantitative questionnaire consisted of a total of 66 questions. The quantitative questionnaire was largely in line with the quantitative questionnaire used in the pilot (see Section 3.3.1.2.3), with only a few minor changes.

Changes were made to the ARSS (9) after reviewing the pilot data. Changes made were: (1) the term 'AIDS' was replaced with 'HIV', after consultation with a key informant who advised the lead author that AIDS was not being widely used in

documents anymore, and this was also supported by the literature (262); (2) item 4 did not fit the model in Rasch analysis, i.e. the item did not work well as part of the scale, using the pilot data (based on an examination of the item-fit statistics) and the wording of that item was re-examined, found to be not asking the same question as the English version and was subsequently changed in both the Vietnamese and English questionnaires (from “It is safe for people who have AIDS to work with children” to “It is safe for children to be taken care of by people who have HIV”); (3) the response categories were increased from two to four, due to lack of variability in results and in line with comments made by the authors of the original scale in their paper (9). No changes were made to the HIV-KQ-18 (8).

The preliminary analyses conducted on the pilot data indicated (at least some potential) issues with the included scales. These scales were, however, retained for the quantitative questionnaire. This was because there were insufficient alternative scales that were appropriate for the study requirements (e.g. study population, previous psychometric assessment and length) for HIV-related knowledge and HIV related stigma (see Section 2.5.2 and Section 2.5.3, respectively). Selected psychometric properties (construct validity and internal consistency reliability) of these scales were assessed in the study populations (see Section 4.5).

3.3.2.4 Data collection

Advertising for the quantitative questionnaire was minimal. During the quantitative questionnaire, only A4 signage that included an overview of the study requirements in English and Vietnamese at the stall was present.

Participants received a small gift (\$10) for their help in the study (see Section 3.3.1.1.4). Additionally, brochures on HIV and hepatitis were available in Vietnamese and English. ECCQ provided these resources, plus several small gifts, including rulers, water bottles, notebooks and stress balls.

Two Vietnamese-speaking research assistants, the researcher and an English-speaking research assistant set up a ‘stall’ at Davies Park Markets, West End, Inala Civic Centre and Inala PCYC. Participants were asked to complete a quantitative questionnaire at/near the stall. At least one team member always staffed the stall. Other team members roamed around the market itself and the nearby green spaces. As the procedures worked well in the pilot, participants received the paperwork on

clipboards, so that they could stand, sit or find a quiet place nearby to complete the quantitative questionnaire. The quantitative questionnaire took approximately 10 minutes to complete. Vietnamese-born migrants and Australian-born adults were recruited in the same manner. No information was gathered on response rate or reason for non-participation.

Data collection occurred at Davies Park market on Saturdays, as this was the only day the market ran, specifically 30 May, 6 June and 20 June 2015. For the first data collection day the stall was set up between 6am and 2pm, the whole duration of the market. From approximately 8am until 1pm; however, was the busiest time. To ensure the most efficient use of time and funds, at subsequent data collection times all staff were therefore rostered only between the times of 8am until 1pm.

Data collection occurred at Inala Civic Centre on Thursday 18 June 2015 between 1.30pm and 5.30pm, and Saturday 20 June 2015 between 8.30am and 12.30pm. Times and days were varied, where possible, to attempt to ensure a mix of people. Additionally, attention was paid to the weather forecast, as those days during the Pilot that were fine/overcast were much more conducive to data collection than rainy days. Data collection occurred at Inala PCYC on June 30. This was the location of the Multicultural Youth Day event.

3.3.2.5 Data management and analysis – uptake of, and barriers and facilitators to, HIV testing approaches

Factors associated with uptake of, and barriers and facilitators to, HIV testing approaches were analysed using SPSS version 24 (263). To maintain the integrity of the original dataset, it was kept free of changes and, instead, copies of the dataset were used in conducting the analyses. Frequency distributions and numerical summaries were obtained initially, and variables recoded/reassessed accordingly. Continuous data were generally recoded into categorical data, as has been done in other studies (54). In line with previous research (and specifically with research using an amended HIV-KQ-18), scales were split into 'low' and 'high' using the median score as the cut-off threshold (median split), with 'low' below the median and 'high' above the median (54). Median splits are widely undertaken in health research, for easier interpretability of results (264).

A small number of Australian-born adults were of Vietnamese heritage, namely had parents born in Vietnam. In previous research with migrants, perceptions of HIV informed by the home country can also influence second generation migrants, i.e. those born in the host country (35). To have a clearer distinction between Vietnamese-born migrants and Australian-born adults, Australian-born adults of Vietnamese heritage were excluded from the analyses (mother born in Vietnam, n=16; father born in Vietnam, n=14). Additionally, few participants stated they were separated, divorced or widowed (n=8). Due to the significant effect marital status seems likely to have on HIV testing, participants in this category were excluded. A small number of participants (n=8) failed to answer any of the questions on HIV testing (the dependent variable) and were therefore excluded from the analyses. The total eligible sample size was, therefore, 350.

Collinearity occurs when at least two independent variables are approximately determined by a linear combination of other independent variables in the model (265). The degree of collinearity can vary, with differing effects on the model (266). In this study, collinearity was measured using, tolerance and Variance Inflation Factor (VIF; 265). Tolerance is an indicator of how much collinearity a regression analysis can tolerate, and is equal to $1-R^2$ ("where R^2 refers to the coefficient of determination for the regression of each independent variable on the remaining independent variables"; 267, p.258). VIF indicates how much of the inflation of the standard error could be caused by collinearity, and is calculated by $1/\text{tolerance}$. In cases where variables are completely uncorrelated with each other, the tolerance and VIF equal 1; however, where a variable is very closely related to another variable(s), the tolerance nears 0, and the VIF becomes large (267). Generally, a tolerance of ≤ 0.1 (equivalent VIF >10) is not ideal. In this study, collinearity was checked using an equivalent linear regression model, i.e. a linear regression model that included all variables to be used in the logistic regression models, specifically birth country, gender, marital status, HIV-related knowledge, HIV-related stigma, perceived risk, HIV risk behaviour, cost of accessing healthcare prohibitive and HIV testing approaches (e.g. ever tested for HIV and recent testing).

Missing data is common in surveys (241, 268). Missing data is problematic as it reduces the quality and quantity of the data and may introduce bias (241). To

assess missing data, missing data analysis was conducted. There were <1 per cent missing data across values for variables that were to be included across all models, i.e. gender, marital status, birth country, HIV-related knowledge, HIV-related stigma, HIV risk perception, HIV risk behaviour, access and HIV testing. According to Schafer, this degree of missing data (<5 per cent) is unimportant (269).

Further analysis was undertaken to assess the patterns of missingness. There were three variables with > 1 per cent of missing data. These were HIV-related knowledge (5.1 per cent), HIV-related stigma (2.9 per cent) and HIV risk behaviour (1.4 per cent). To see if there were any variables that were significantly associated with the three variables with the most missing data (HIV-related knowledge, HIV-related stigma and HIV risk behaviour), a logistic regression using a dependent variable that accounted for missingness across HIV-related knowledge, HIV-related stigma and HIV risk behaviour was run (270).

3.3.2.5.1 Independent variables

The quantitative questionnaire included numerous possible independent variables for inclusion in the analyses. It was not possible to include all variables, due to the relatively small sample size. It was therefore important to identify the most salient variables related to HIV testing behaviour. Independent variables were considered for inclusion based on the findings from the qualitative interviews. Specifically, qualitative interview findings were mapped to quantitative questionnaire variables (where possible). Independent variables are presented according to the Behavioural Model of Healthcare Utilisation (BMHU), see Table 3-5.

Table 3-5 Independent variables by Behavioural Model of Healthcare Utilisation (BMHU) component

Component	Variables
Predisposing	Birth country, gender, marital status, HIV-related knowledge and externalised HIV-related stigma
Enabling	Cost of healthcare

Need

HIV risk perception and HIV risk
behaviour

3.3.2.5.1.1 Predisposing factors

3.3.2.5.1.1.1 Demographics

Demographic factors assessed were birth country (Australia; Vietnam); gender (male; female); and marital status (never married; married).

3.3.2.5.1.1.2 HIV-related knowledge

HIV-related knowledge questions were derived from the HIV-KQ-18 (8). Selected psychometric properties (construct validity and internal consistency reliability) of the HIV-KQ-18 were assessed in the study populations (see Section 4.5). In attempting to fit the HIV-KQ-18 to the Rasch model, the HIV-KQ-18 was amended, e.g. response categories collapsed and items were removed, and the revised HIV-KQ-18 was used in the subsequent analyses (see Appendix 3). Items in the revised HIV-KQ-18 were scored true, false or don't know. Low and high scores were obtained by calculating, and then splitting by, the median score.

3.3.2.5.1.1.3 Externalised HIV-related stigma

Externalised HIV-related stigma questions were derived from the ARSS (9). Selected psychometric properties (construct validity and internal consistency reliability) of the ARSS were assessed in the study populations (see Section 4.5). In fitting the ARSS to the Rasch model, the ARSS was amended, e.g. response categories collapsed and items were removed, and the revised ARSS was used in the subsequent analyses (see Appendix 4). Items in the revised ARSS were scored strongly disagree, disagree, agree or strongly agree. Low and high scores were obtained by calculating, and then splitting by, the median score.

3.3.2.5.1.2 Enabling factors

3.3.2.5.1.2.1 Cost of accessing healthcare

An access variable included was finding the cost of accessing healthcare prohibitive (yes;no).

3.3.2.5.1.3 Need factors

3.3.2.5.1.3.1 Perceived HIV risk

Perceived HIV risk was assessed via a question relating to personal HIV risk (yes;no or don't know).

3.3.2.5.1.3.2 HIV risk behaviour

HIV risk behaviour was assessed via six questions relating to behaviour in the past 12 months i.e. having had 2 or more sexual partners (yes;no); having given or received goods for sexual intercourse (yes;no); injecting drug use (yes;no); drug and/or alcohol use before sexual intercourse (yes;no); diagnosed with a sexually transmissible infection (STI; yes; no); and condom use (yes;no/not applicable – have not had sex). HIV risk behaviour items were summed to give one score. Low and high scores were obtained by calculating, and then splitting by, the median score.

3.3.2.5.2 Dependent variables

Six dependent variables, ever tested for HIV, tested for HIV in the previous year, willingness to use CITC, willingness to accept PITC, willingness to use rapid HIV testing and willingness to use HIV ST, were analysed. Previously offered HIV testing was assessed via the question, “Has a doctor ever recommended you have an HIV test?” Response categories were yes;no. Few participants, however, selected ‘yes’ (n=34). As a result, no further analyses were performed with this variable.

3.3.2.5.2.1 Ever tested for HIV

Having ever tested for HIV was assessed via the question, “Have you ever tested for HIV, other than as part of a health check-up for immigration reasons?” Response categories were yes;no. Participants were asked to include instances where they had ever tested for HIV apart from immigration so that the HIV testing behaviour of Vietnamese-born migrants was more comparable to Australian-born adults (who would not have tested as part of immigration requirements).

3.3.2.5.2.2 Tested for HIV in the previous year

Having tested for HIV in the previous year was assessed via the question, “In the previous 12 months, have you tested for HIV? Response categories were yes;no.

3.3.2.5.2.3 CITC

Willingness to use CITC was assessed via the question, “In the next 12 months, would you ask a doctor for an HIV test?” Response categories were yes;no.

3.3.2.5.2.4 PITC

Willingness to accept PITC was assessed via the question, “In the next 12 months, if a doctor offered you an HIV test, would you accept?” Response categories were yes;no.

3.3.2.5.2.5 Rapid HIV testing

Willingness to use rapid HIV testing was assessed via the question, “Would you prefer to find out the result of an HIV test on the same day as you test?” Response categories were yes;no.

3.3.2.5.2.6 HIV ST

Willingness to use HIV ST was assessed via the question, “If the option was available in Australia, would you test yourself for HIV in your own house, without the need to see a doctor?” Response categories were yes;no.

3.3.2.5.3 Sample characteristics

Univariate analyses provided an overview of sample characteristics. Frequencies and proportions were reported for categorical variables. Additionally, the differences between Vietnamese-born migrants and Australian-born adults in key demographic and HIV testing variables were assessed. For categorical variables that had sufficiently large cell sizes, the Pearson chi-squared test was used (271). For categorical variables with small cell sizes, $n < 5$, Fisher’s Exact Test was reported. All results were considered significant at $p < 0.05$, as is typical in statistics (271).

3.3.2.5.4 Uptake of, and willingness to use/accept, HIV testing approaches for Vietnamese-born migrants, compared to Australian-born adults

To examine whether there were differences between Vietnamese-born migrants and Australian-born adults in uptake of, and willingness to use/accept, HIV testing approaches, bivariate and multivariate logistic regression models were run for each HIV testing approach. Results of the bivariate analyses were presented as unadjusted ORs and 95% confidence intervals (CIs). These results represent the crude relationship between the dependent variables (HIV testing approaches) and individual independent variables (predisposing, enabling and need; 54). Results of

the multivariate logistic regression analyses were presented as adjusted odds ratios (AOR) and 95% CIs. Results were considered significant at $p < 0.05$ (271). These results were adjusted for gender, marital status, HIV-related knowledge, externalised HIV-related stigma, the cost of accessing healthcare, HIV risk perception and HIV risk behaviour (see Appendix 7).

3.3.2.5.5 Barriers and facilitators to HIV testing approaches for Vietnamese-born migrants

Barriers and facilitators to HIV testing approaches were examined for Vietnamese-born migrants using bivariate and multivariate logistic regression analyses for each HIV testing approach. Results of the bivariate analysis were presented as unadjusted ORs and 95% CIs. Results of the multivariate logistic regression analyses were presented as AORs and 95% CIs. These results were adjusted for gender, marital status, HIV-related knowledge, externalised HIV-related stigma, the cost of accessing healthcare, HIV risk perception and HIV risk behaviour (see Appendix 8). Results were considered significant at $p < 0.05$ (271).

3.3.2.6 Data management and analysis – scale validation

Quantitative questionnaire data were entered independently by two investigators into an Excel document and, from there, imported into SPSS 24 (263). Where findings were different, these were re-examined until a resolution was found. Descriptive statistics were run. Two new data sets were then created in SPSS with only the ID number, gender, birth country, and HIV-related knowledge and externalised HIV-related stigma items, respectively. These files were saved to Excel format, where further data cleaning (such as altering the cell width) occurred, before being saved in a file type compatible with RUMM2030, where the analyses were undertaken (272). In RUMM2030, gender and birth country were entered as 'person factors', for later assessment of differential item functioning (DIF).

3.3.2.6.1 Psychometric properties of the Brief HIV Knowledge Questionnaire (HIV-KQ-18) and AIDS-Related Stigma Scale (ARSS)

This study used Rasch analysis to assess the construct validity and internal consistency reliability of the HIV-KQ-18 (8) and the ARSS (9). Psychometric evaluation of the scales followed the established guidelines for undertaking Rasch analysis (212). Rasch analysis does not produce one statistic that determines model

fit (216). Three (summary) statistics provide the basis for determining overall model fit, i.e. item-trait interaction, individual- and item-fit (273). Additionally, further statistics and figures are used to assess model (mis)fit. Diagnostic checks included:

- item-trait interaction, as measured by the chi-squared statistic, which reflects invariance across a trait (a significant chi-square indicates misfit);
- individual item-fit to check for misfitting items, i.e. a fit residual >2.5 or a significant chi-square probability value. Items over this threshold do not reflect the same underlying trait and may be removed.
- individual person-fit to check for misfitting cases, i.e. a fit residual >2.5 . Cases over this threshold are considered as outliers and may be removed.
- the item-threshold map to check for disordered thresholds suggesting inconsistent use of response categories. There should be a somewhat even distribution between categories. Disordered thresholds may occur due to (1) too many options; (2) availability of a mid-point option, i.e. neither agree nor disagree); and/or (3) confusing labelling, e.g. sometimes, often. Collapsing categories may overcome disordered thresholds.
- Principal Components Analysis (PCA) is used to check for unidimensionality. PCA involves examining the top three items against the bottom three items (the two subsets that differ the most from each other on the first residual) using independent t-tests. Where there is <5 per cent difference between the subsets, this indicates unidimensionality.
- DIF is used to see whether items worked in the same way in the different subsets of the sample, e.g. nationality, gender etc. Where there is significant DIF items are split by that factor, e.g. nationality, to create two separate items.
- Internal consistency reliability was assessed via the person separation index (PSI) statistic. The PSI ranges from 0 to 1, where higher scores indicate less error and are interpreted in a similar way to Chronbach's Alpha (210).

To account for the multiple tests being run, Bonferroni adjustments were applied to the p value, therefore, 0.05 was divided by the number of items in each model. For

example, the first ARSS analysis run had 9 items and, therefore, 0.05 was divided by 9 (0.0056). Where there was misfit to the model, items were removed/alterd one at a time (216). In line with Pallant and Tennant (212), fit to the Rasch model was considered to be achieved where:

- 1) The chi-squared statistic was non-significant; and
- 2) The standard deviation (SD) of the item-fit residual and person-fit residual were <2.5; and
- 3) Independent t-tests showed there was a <5 per cent difference between the top three and the bottom three PCA item subsets.

3.3.3 Phase Two Qualitative data collection and analysis

Phase Two, Qualitative data collection, was conducted soon after Phase One, Quantitative data collection. Consistent with a mixed methods design, components of Phase One informed Phase Two. Specifically, most of the sample for Phase Two was drawn from Phase One (see Section 3.3.3.2). The interview guide for Phase Two was informed by preliminary quantitative analyses from Phase One (see Section 3.3.3.3). Note that due to funder requirements (one year of funding for the pilot, Phase One, Phase Two and Phase Three), complete quantitative analyses of Phase One data were not possible prior to conducting Phase Two, thus 'preliminary' quantitative analyses informed the interview guide. Phase Two qualitative analysis, therefore, was used to inform the complete quantitative analyses from Phase One (see Section 3.3.2.5.1).

3.3.3.1 Setting

Qualitative interviews were conducted in the greater-Brisbane area. The venue for each qualitative interview was a location convenient for the participants and also a place that would ensure privacy, such as at university or work in a private area or meeting room.

3.3.3.2 Sample

Qualitative interview participants were adult (18 - 49-year-old) Vietnamese-born migrants, who self-reported being born in Vietnam. The sample for the qualitative interviews largely consisted of a subset of Vietnamese-born migrant participants who completed the quantitative questionnaire (n=8; additionally, 2 of

these participants were re-interviewed). The last item on the quantitative questionnaire asked participants if they would be willing to be contacted to participate in further qualitative research. If yes, participants provided their name and a contact number. A list of potential interviewees was compiled by the author. These participants were then contacted by the Vietnamese research assistant. Interviews were scheduled with all participants who were still willing and available to participate in a qualitative interview. Respondents were advised that the interviews would be predominantly conducted in English (as the author does not speak Vietnamese); however, the Vietnamese research assistant would also be present. A mix of male and female participants were sought. Participants were not purposively sampled based on any other criteria.

Two of these female participants were re-interviewed. In the first round of interviews, female participants had been interviewed first, followed by the male participants. In conducting the interviews, several additional themes emerged that required further follow up. These participants were re-approached to gain further depth in understanding HIV testing behaviour.

Additionally, several participants who had participated in a previous study and were known to the Vietnamese research assistant participated (n=2).

No set sample size was set a priori; instead, interviews were scheduled until saturation was satisfactorily achieved. Saturation is, however, contentious in qualitative research (274). For the purpose of this study, saturation was considered the point at which there was informational redundancy, i.e. no new themes emerged in the interviews, related to the research questions.

3.3.3.3 Study materials

Guidelines for the qualitative interviews were developed prior to conducting Phase Two. The guidelines were based on preliminary findings from the quantitative questionnaire, related to Objectives One, Two and Four. For example, “In preliminary analysis of the survey, Vietnamese people were less likely than Australian-born participants to say that they would self-test for HIV at home. Do you have any idea why this might be?” The guidelines were not static, but were iteratively amended as further quantitative questionnaire, and subsequent qualitative interview, data were analysed (see Appendix 9). The author and Vietnamese research assistant at each

qualitative interview held a copy of the guidelines. Not all questions were framed around HIV testing, specifically; for example, HIV-related stigma questions were framed in relation to an HIV positive diagnosis. The rationale for this was that increasing HIV testing would also likely result in increased HIV positive diagnoses in the population, so understanding HIV-related stigma within the Vietnamese-born population, more broadly, was considered important (29-35).

3.3.3.4 Data collection

The author and a Vietnamese-speaking research assistant conducted semi-structured in-depth interviews (IDIs). The qualitative interviews ran for approximately 60 minutes. While the qualitative interviews were conducted primarily in English, the presence of a Vietnamese-speaking research assistant was sought to help in any instances of English language difficulties or where participants expressed a concept in Vietnamese. In nearly all interviews, even those participants with English proficiency spoke some Vietnamese.

Qualitative interview locations were chosen in consultation with participants, and included participants' homes, workplaces or other public locations. Privacy was essential for all qualitative interviews; however, often private rooms were not available. In such instances, the most private space available was chosen and participants were asked if they were happy to proceed. Notes were taken, and participants' permission sought for the study team to audio record the qualitative interview. Only one participant did not agree to be audio recorded and, in this case, more detailed notes were taken during the qualitative interview.

3.3.3.5 Data management and analysis

De-identified audio recordings of the qualitative interviews were professionally transcribed in a conversational manner, whereby 'ums' and 'ahs' etc. were omitted. Where Vietnamese was used in qualitative interviews, only the English translation was transcribed. The author reviewed the audio and transcripts for accuracy and minor amendments were made, as required. All data from the qualitative interviews were entered into Excel for analysis. The author undertook analysis. Where the participant did not consent to being audio recorded, notes of the qualitative interview were examined to ensure all themes were captured.

The Framework method was used to identify key themes and findings related to the HIV testing behaviour of Vietnamese-born migrants. The Framework method

is widely used to analyse semi-structured interviews, as in this study (275). It is typified by:

- Being grounded in the original data;
- Being a dynamic analytic process;
- Being systematic and accessible; and
- Allowing comparisons within and across participants (276).

Analysis was undertaken using both an inductive and deductive approach. Themes were generated during the analysis process (inductively). Where possible, these themes were then mapped to constructs measured in the quantitative questionnaire (deductively), which drew on the BMHU, e.g. HIV-related knowledge and HIV-related stigma.

In line with the guidelines set by Ritchie and Spencer, analysis followed five key steps, specifically familiarisation, identifying a thematic framework, indexing, charting, and mapping and interpretation (276). It involved the author listening to the audio recordings of the interviews and reading and re-reading the transcripts to get a sense of the data prior to coding. This was followed by generating initial codes. Coding was undertaken on the transcripts, sentence by sentence. After initial coding, these codes were grouped into categories (or sub-themes, where required) and themes, and this was followed by further reviewing and then defining themes. Identified themes were mapped to the BMHU categories of predisposing, enabling and need. In this way, analysis occurred in an iterative manner and using inductive and deductive methods (277). Analysis was undertaken on each transcript individually, before being combined across all transcripts for interpretation of the whole data set. Themes present both consistent and divergent findings across study participants, which deepen understanding of HIV testing behaviour among Vietnamese-born migrants.

A selection of quotes that illustrate each theme (and category, where available) were extracted to provide examples of the coding. Quotes were only included where the participant had been audio recorded and used English. Often, however, even where English was spoken, this was with a heavy accent, and it is possible that some words were misheard in the transcription process. Presented, therefore, are best considered as 'edited quotes' from participants. For contextual

purposes, each quote is presented along with the gender and age of the respective participant.

3.3.3.6 Researcher stance

It is particularly important in qualitative research to provide some background information on the researchers who conducted the qualitative interviews (i.e. the author and Vietnamese research assistant), and the procedures and dynamics within the qualitative interviews (228). This information allows the reader to understand the perspectives taken, conclusions drawn, and any possible biases in the research.

I, the author, am a female, <30 year old Caucasian and speak only English. I have a background in behavioural science (psychology). I have also previously studied public health and, specifically, international public health. I have travelled extensively, including Asia, Africa, Europe, North and South America. Whilst in Asia, I volunteered with a non-government organisation (NGO) in Cambodia for 2 months. During this time I worked with the organisation's sexual health worker, specifically in relation to health promotion. I have also volunteered and worked for ECCQ in their sexual health program. From my studies, travel and work/voluntary work I became interested in improving the health of vulnerable populations, specifically in overseas (developing countries) and/or migrant populations.

The study developed iteratively, through discussions with a key informant and examining the literature. Given my ethnicity (Anglo-Australian), it was possible that the research may not have been culturally appropriate and, therefore, not of interest or not of use to the target community, i.e. Vietnamese-born migrants. Throughout the research process, however, efforts were made to ensure cultural sensitivity and acceptability in multiple ways. For example, the study included multiple piloting stages (pre-pilot and pilot), discussions were undertaken with key informants, and Vietnamese research assistants were employed.

The Vietnamese research assistant who conducted the qualitative interviews with the author was a mature aged, male Doctor of Philosophy (PhD) Candidate at the School of Public Health, The University of Queensland, at the time of the first round of interviews (and later a Post-Doctoral Research Fellow at the Institute for Social Sciences Research, The University of Queensland). He has a background in Sociology. He has experience conducting qualitative and quantitative research in

Vietnam, the US and Australia. He is proficient in Vietnamese (native speaker) and English. He did not live in any of the data collection locations.

I was an outsider to the community and the research staff hired, while Vietnamese, were not intimately tied to either of the research areas and communities. This was deliberate. Community members within the study sites were interconnected through families, work and other community activities. If the research staff came from the communities within the study sites, and were well integrated into the community, then participants may not have been able to discuss such a sensitive topic openly (31, 248).

As a researcher, I was inevitably in a position of power. I recognised this and proactively used techniques to reduce the impact of my positioning as researcher. The tone and content of the qualitative interviews were respectful and guided by participants. Control of the qualitative interview was, therefore, shared by the researchers and the participants (278). To minimise any possible issues arising from differing culture (Australian/Vietnamese) and power differentials (PhD student/participant), participants were asked to nominate a location to be interviewed and were able to speak Vietnamese (if needed), due to a Vietnamese research assistant who was present at all qualitative interviews. While the addition of an additional person in the interview may have also potentially increased the power imbalance further, the participants were familiar with the Vietnamese research assistant. He was present at the quantitative questionnaire data collection and had contacted the interview participants to arrange the interviews. Had he been replaced with a Vietnamese research assistant or an interpreter who had joined only for the qualitative interviews, then the dynamics likely would have changed for the worse. His familiarity with the topic, culture and interviewees enabled the establishment of good rapport. The processes put in place likely made participants feel comfortable to share their opinions and experiences (279).

The qualitative interviews were conducted by the author and Vietnamese research assistant, often within one interview both would ask questions, either from the qualitative interview guide or in response to a participant's previous answer (sometimes in Vietnamese). Often the Vietnamese research assistant would elaborate further on a point that a participant had made, usually in relation to events and/or practices in Vietnam, for the benefit of myself (the author), and would often

inspire more discussion around the topic from the participant. In this sense, the researchers were active within the qualitative interviewing process. Through the qualitative interview process knowledge was constructed via the interplay between researchers and participants.

3.3.4 Translation

An accredited translator professionally translated all documents for both the piloting and quantitative questionnaires from English to Vietnamese. For the checking process a second translator checked the first translator's work. In this process, both translators had the original source text available and the second translator improved and/or corrected the initial translation. The checker's suggestions were then passed back to the original translator for review. Additionally, one of the Vietnamese research assistants viewed the translated documents and made minor changes to the quantitative questionnaire wording. While the professional translation was not incorrect, this was done to make the documents less formal/more conversational and, therefore, more appropriate for the general community (280).

For the quantitative questionnaire, translation occurred in the same way as described previously. Additionally, however, to ensure the accuracy of the quantitative questionnaire, back translation was also undertaken. Back translation is widely used in the health domain as a method for quality control (281). Back translation, however, does not necessarily reproduce the original English text exactly, as language is very complex (281). The intent is to produce an English document which conveys the same meaning, but which is likely to be phrased differently. Despite the limitations of back translation, this was done for comprehensiveness. Where there were questions over the back translation, a Vietnamese-speaking research assistant and Vietnamese-speaking key informants (with health backgrounds) were consulted.

The translation process proved to be a complex task. Knowledge of both English and Vietnamese by the author and/or the primary supervisor would have been beneficial. A significant amount of trust was bestowed upon auxiliary staff (research assistants) and key informants (an accredited Vietnamese translator working in the health field and Vietnamese PhD students in the School of Public Health), who were no doubt proficient in Vietnamese, but did not necessarily possess the degree of knowledge that the author has on the specific topic. As

above, translation is complex and knowledge of the topic would have minimised the potential for meaning to be lost during the translation process. Despite these possible limitations, every effort was made to ensure the translation was the most accurate, and numerous sources with proficiency in Vietnamese, English and health were triangulated.

The qualitative interviews were originally to be conducted predominantly in English. In reality, a number of participants either had the question read to them or answered in Vietnamese. This, therefore, meant that the Vietnamese research assistant had to interpret for the author, specifically translate from English to Vietnamese, and vice versa. The Vietnamese research assistant was not, however, an accredited translator. Some participants also spoke with a heavy accent, and it is possible that some words were misheard. Through this process it is possible that some nuance was lost.

3.3.5 Ethics approval

Ethics approval (and subsequent amendments) was received from The University of Queensland Behavioural and Social Sciences Ethical Review Committee (Approval number 2014001398; see Appendix 1). Participants received an information form on each phase of the research, and written informed consent was obtained from all participants prior to data collection (see Appendix 10). Participants were informed of the voluntary nature of participation and that they could withdraw without penalty at any time, without retribution. The Gilead Fellowship Program funded the data collection phase of this study. Gilead, however, had no input into this study, including the design, running or write-up of any materials.

All general population participants received a token of acknowledgment of the time taken to support this study, as compensation for their time. This is standard practice in research with migrants (see Section 3.3.1.1.4). While offering a token of acknowledgment of the time taken to participate in this study may be construed as coercive, the gift card amount offered for the time taken to participate was not excessively high and, therefore, did not jeopardise informed consent in the author's view (282). Several participants declined such tokens, and brief discussions between the author and several participants after the quantitative questionnaire was

completed, indicated that participants were engaged in this study regardless of the gift card (283).

Participant data were transferred from the data collection site via a lockable portable cabinet, before being locked in a cabinet in a locked room only accessible by a research team member. All efforts were made to ensure confidentiality by holding qualitative interviews in a private place, although not necessarily a private room; participants completing quantitative questionnaires on a clipboard and, therefore, able to move to a private space; and no identifying information collected at the time of data collection, except for the informed consent sheet which was separated from other study materials. Several questions were sensitive in nature, but there was no risk to participants beyond possible discomfort.

Consultation was undertaken with a key informant from ECCQ to identify any ethical issues specific to Vietnamese-born migrants; however, no ethical issues specific to this population were identified. As with research with any population from a non-English speaking background (NESB), however, there were potential issues related to language. All study materials (quantitative questionnaire, information and consent forms) for the pilot and quantitative questionnaire were professionally translated into Vietnamese. A Vietnamese-speaking research assistant also checked the study materials to ensure they were appropriate for the general population. Additionally, at least one Vietnamese-speaking research assistant was on site for the pilot, quantitative questionnaire and qualitative interviews.

A small number of participants requested to hand quantitative questionnaires back at a later date, and did so. Upon reflection, however, this practice was not deemed suitable. One participant, for example, collected approximately 10 quantitative questionnaires for family members not present at the data collection site; however, the author could not ensure the participants were not coerced into participating. Where these quantitative questionnaires met other inclusion criteria (people were born in Australia or Vietnam and were aged between 18 and 49 years of age) data from these quantitative questionnaires were included in the analysis. It was, however, decided that, for subsequent data collection, participants had to be those people approached directly at the sites.

3.4 Summary

This Chapter (Chapter Three) provided an overview of the study design and research methods used in this study. This study was cross-sectional and used an explanatory mixed methods design across three phases in addressing the objectives of this study. Specifically, to examine uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants, as compared to the Australian-born adults (Objective One); quantitatively and qualitatively explore the barriers and facilitators to HIV testing approaches for Vietnamese-born migrants (Objectives Two and Three, respectively); and assess selected psychometric properties (content validity and internal consistency reliability) of the HIV-KQ-18 (8) and ARSS (9) in Vietnamese-born migrants and Australian-born adults (Objective Four).

In designing and undertaking this study, efforts were made to ensure methods used were culturally appropriate to Vietnamese-born migrants, and that it was sufficiently comprehensive and rigorous to ensure the findings of this study were meaningful. This was done through (1) use of mixed methods, i.e. an explanatory sequential mixed methods design, and using a number of data collection rounds/phases, i.e. pre-pilot, pilot, quantitative questionnaire, qualitative interviews; (2) drawing on the BMHU; (3) use of translation, i.e. professional translation of research documents from English to Vietnamese in the pilot and quantitative questionnaire; and (4) use of Vietnamese-born research assistants. Additionally, selected psychometric properties (construct validity and internal consistency reliability) of the HIV-KQ-18 (8) and the ARSS (9) were assessed for their appropriateness for use with Vietnamese-born migrants and Australian-born adults.

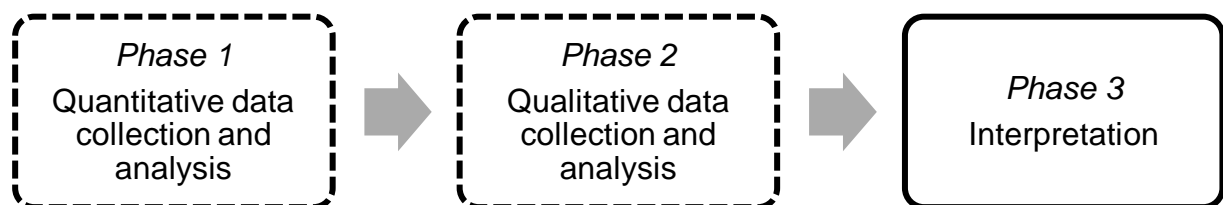
The following Chapter (Chapter Four) presents the findings from Phases One and Two, as presented in this Chapter (Chapter Three). It also contributes to Phase Three, Interpretation.

4 Results

The previous Chapters have highlighted migrants increased of risk of HIV, as compared to the host population, and high rates of late HIV diagnosis. This is despite the benefits of timely HIV testing and the numerous approaches to HIV testing. They highlight the need to understand the HIV testing behaviour of migrants, including uptake of, and willingness to use/accept, and barriers and facilitators to, HIV testing approaches. This study addresses several gaps in the evidence-base in examining the HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane, Queensland. The study design and research methods (see Chapter Three) were informed by the literature review (see Chapter Two), as well as information provided by a key informant.

The purpose of this Chapter (Chapter Four) is to present the findings related to the objectives of this study. Specifically, this Chapter presents the findings on self-reported uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants and Australian-born adults (Objective One). It also presents quantitative and qualitative findings on the barriers and facilitators to different HIV testing approaches for Vietnamese-born migrants (Objectives Two and Three, respectively). Additionally, this Chapter presents the findings of the selected psychometric analyses (content validity and internal consistency reliability) of the Brief HIV-Knowledge Questionnaire (HIV-KQ-18; 8) and AIDS-Related Stigma Scale (ARSS; 9) in Vietnamese-born migrants and Australian-born adults (Objective Four). This Chapter relates to Phase Three of the study design, i.e. Interpretation, see Figure 4-1.

Figure 4-1 Study phases presented in this Chapter



4.1 Data cleaning

4.1.1 Collinearity

Results from the tolerance and Variance Inflation Factor (VIF) analysis found no evidence of substantial collinearity, see Table 4-1.

Table 4-1 Collinearity statistics

Variable	Tolerance	VIF
Birth country	0.46	2.17
Gender	0.91	1.09
Marital status	0.64	1.56
HIV-related knowledge	0.82	1.22
HIV-related stigma	0.78	1.27
Perceived risk	0.93	1.08
HIV risk behaviour	0.67	1.49
Cost of accessing healthcare prohibitive	0.93	1.08
Ever tested for HIV	0.59	1.70
Tested for HIV recently	0.60	1.66
CITC	0.85	1.17
PITC	0.81	1.24
HIV ST	0.69	1.46
Rapid HIV testing	0.72	1.40

CITC: Client-Initiated Testing and Counselling; HIV ST: HIV Self-testing; PITC: Provider-Initiated Testing and Counselling; VIF: Variance Inflation Factor

4.1.2 Missing data

Results from an equivalent linear regression (a linear regression including all variables to be included in the logistic regression) found no significant associations between the dependent and independent variables, see Table 4-2. Given the low level of missing data and that no variables significantly predicted missingness, no technique for missing data was employed and complete case analyses (analyses including only those variables with complete data) were conducted (270, 284).

Table 4-2 Associations between missingness of variables with >1 per cent of missing data and other variables to be included in logistic regression models.

	AOR (95% CI) ¹	P value*
Birth country		0.76
Australia	1	
Vietnam	0.86 (0.33-2.26)	
Gender		0.65
Male	1	
Female	0.83 (0.37-1.86)	
Marital status		0.75
Never married	1	
Married	1.16 (0.47-2.84)	
HIV risk perception		0.83
Low	1	
High	0.88 (0.27-2.84)	
Cost of accessing healthcare prohibitive		0.85
No	1	
Yes	0.92 (0.39-2.16)	
Ever tested for HIV		0.92
No	1	
Yes	0.94 (0.32-2.80)	
Tested in previous year		0.66
No	1	
Yes	0.76 (0.22-2.59)	
CITC		0.08
No	1	
Yes	0.39 (0.13-1.13)	
PITC		0.31
No	1	
Yes	1.60 (0.65-3.93)	

Rapid HIV testing		0.25
No	1	
Yes	1.81 (0.65-5.01)	
HIV ST		0.41
No	1	
Yes	1.49 (0.58-3.84)	

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; HIV ST: HIV self-testing; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for birth country, gender, marital status, HIV risk perception, cost of accessing healthcare prohibitive, ever tested for HIV, tested for HIV in the previous year, CITC, PITC, rapid HIV testing and HIV ST.

4.2 Demographics

4.2.1 Quantitative questionnaire

A total of 350 participants (Vietnamese-born $n=177$ and Australian-born $n=173$) met eligibility criteria and are included in the quantitative questionnaire analyses. Results from the chi-squared tests showed significant differences between Vietnamese-born migrants and Australian-born adults in selected predisposing, enabling and need variables, see Table 4-3. Vietnamese-born migrants were significantly more likely to: be male (51% vs 34%; $p=0.001$); have been married (73% vs 20%; $p < 0.001$); have lower HIV-related knowledge (67% vs 38%; $p < 0.001$); have higher externalised HIV-related stigma (68% vs 26%; $p < 0.001$); and have lower HIV risk behaviour (91% vs 44%; $p < 0.001$), as compared to Australian-born adults. Vietnamese-born migrants were less likely to have ever tested for HIV (66% vs 54%; $p=0.012$), were less willing to use HIV self-testing (HIV ST; 55% vs 31%; $p < 0.001$) and less willing to use rapid HIV testing (31% vs 7%; $p < 0.001$), when compared to Australian-born adults. There were no significant differences between Vietnamese-born migrants and Australian-born adults for tested for HIV in the previous year or willingness to use client-initiated testing and counselling (CITC) or willingness to use provider-initiated testing and counselling (PITC).

Table 4-3 Characteristics of the sample by birth country

	Australia	Vietnam	
	N (%)	N (%)	P Value
Gender			0.001
Male	58 (34)	91 (51)	
Female	115 (66)	86 (49)	
Marital status			<0.001
Never married	138 (80)	47 (27)	
Married	35 (20)	129 (73)	
HIV-related knowledge ¹			<0.001
Low	63 (38)	110 (67)	
High	105 (63)	54 (33)	
Externalised HIV-related stigma ¹			<0.001
Low	123 (74)	55 (32)	
High	43 (26)	119 (68)	
HIV risk perception			0.477
No	152 (88)	156 (89)	
Yes	21 (12)	20 (11)	
HIV risk behaviour ¹			<0.001
Low	75 (44)	158 (91)	
High	96(56)	16 (9)	
Cost of accessing healthcare prohibitive			0.083
No	128 (74)	118 (67)	
Yes	45 (26)	59 (33)	
Ever tested for HIV			0.012
No	93 (54)	117 (66)	
Yes	79 (46)	59 (34)	

Tested for HIV in previous year				0.260
No	136 (79)		145 (82)	
Yes	37 (21)		32 (18)	
Willingness to use CITC				0.072
No	143 (83)		157 (89)	
Yes	30 (17)		20 (11)	
Willingness to accept PITC				0.322
No	53 (31)		59 (34)	
Yes	120 (69)		117 (66)	
Willingness to use rapid HIV testing				<0.001
No	12(7)		57 (32)	
Yes	161(93)		120 (68)	
Willingness to use HIV ST				<0.001
No	53 (31)		98 (55)	
Yes	120 (69)		79 (45)	

CITC: Client-initiated testing and counselling; HIV ST: HIV self-testing; PITC: Provider-initiated testing and counselling; ¹Low and high were calculated based on median splits.

4.2.2 Qualitative interviews

A total of ten participants completed twelve qualitative interviews. Of these, four were male and six female (two female participants were re-interviewed), see Table 4-4. Participants ranged in age from 26 to 45 years old. Participants were a mix of students, specifically higher degree by research (HDR), and non-students, who had resided in Australia since 1984 - 2015. Participants were all Vietnamese-born migrants who had come to Australia for a variety of purposes, including for study, employment and/or family reasons.

Table 4-4 Qualitative interview participant characteristics

Participant ID No.	Interview location	Gender	Year of birth	Year arrived in Australia	Reason for coming to Australia
215	Participant's home	Female	1984	2014	Study
1	Public place (Eating area near workplace)	Female	1983	2015	Study
66	Participant's home	Female	1984	1984	Family
308	Public place (University library)	Male	1981	2010	Study
67	Public place (University library)	Female	1989	2014	Study
334	Public place (Public library)	Male	1983	1999	Family
263	Workplace	Male	1981	2014	Study
397	Public place (Shopping centre eating area)	Male	1985	2008	Employment
1 (re-interview)	Public place (Eating area near workplace)	Female	1983	2015	Study

66 (re-interview)	Participant's home	Female	1984	1984	Study
2301	Participant's home	Female	1972	2012	Family
2302	Participant's home	Female	1972	2002	Family

4.3 Uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants and Australian-born adults

This Section (Section 4.3) addresses Objective One, i.e. to assess self-reported uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants in Australia and compare these to Australian-born adults of non-Vietnamese heritage. Below are the results of uptake of, and willingness to use/accept, HIV testing approaches from the quantitative questionnaire for Vietnamese-born migrants and Australian-born adults, see Table 4-5.

In bivariate analyses, there were no significant associations between birth country and tested for HIV in the previous year, willingness to use CITC or willingness to accept PITC. There were, however, significant associations between birth country and ever tested for HIV, willingness to use HIV ST, and willingness to use rapid HIV testing. Vietnamese-born migrants had reduced odds of ever tested for HIV (odds ratio; OR: 0.59, 0.39-0.92), willingness to use HIV ST (OR: 0.36, 0.23-0.55), and willingness to use rapid HIV testing (OR: 0.16, 0.08-0.31).

In multivariate analyses, there were no significant differences between Vietnamese-born migrants and Australian-born adults for most HIV testing approaches, specifically ever tested for HIV, tested for HIV in the previous year, willingness to use CITC, willingness to accept PITC or willingness to use HIV ST, after adjusting for selected predisposing (gender, marital status, HIV-related knowledge and externalised HIV-related stigma), enabling (cost of healthcare prohibitive) and need (HIV risk perception and HIV risk behaviour) variables. Willingness to use rapid HIV testing, however, remained significantly different between Vietnamese-born migrants and Australian-born adults. Vietnamese-born

migrants had significantly lower odds of willingness to use rapid HIV testing (adjusted odds ratio; AOR: 0.21, 0.08-0.53).

Table 4-5 Results of uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants, as compared to Australian-born adults

HIV testing modality	Birth country	OR (95% CI)	AOR (95% CI) ¹
Ever tested for HIV	Australia	Reference	Reference
	Vietnam	0.59 (0.39-0.92)*	0.77 (0.39-1.54)
Tested for HIV in the previous year	Australia	Reference	Reference
	Vietnam	0.81 (0.48-1.38)	1.07 (0.44-2.58)
Willingness to use CITC	Australia	Reference	Reference
	Vietnam	0.61 (0.33-1.12)	0.93 (0.35-2.50)
Willingness to accept PITC	Australia	Reference	Reference
	Vietnam	0.88 (0.56-1.37)	1.39 (0.70 – 2.75)
Willingness to use rapid HIV testing	Australia	Reference	Reference
	Vietnam	0.16 (0.08-0.31)*	0.21 (0.08-0.53)*
Willingness to use HIV self-testing	Australia	Reference	Reference
	Vietnam	0.36 (0.23-0.55)*	0.53 (0.27-1.03)

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; *Significant at $p < 0.05$; ¹Adjusted for gender, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, HIV risk behaviour and the cost of accessing healthcare.

4.4 Barriers and facilitators to HIV testing approaches for Vietnamese-born migrants

This Section (Section 4.4) addresses Objective Two and Objective Three, i.e. to quantify the extent to which specific (self-reported) demographics, HIV-related

knowledge, HIV-related stigma, HIV risk behaviour and perceived HIV risk, and healthcare access variables act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia; and qualitatively explore factors that act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia, respectively. Below are the results of barriers and facilitators to HIV testing approaches from the quantitative questionnaire and qualitative interviews for only Vietnamese-born migrants. In line with a narrative approach to mixed methods results presentation, findings from the quantitative questionnaire and qualitative interviews are presented together (quantitative results followed by qualitative results for each variable/theme), where available. Often, however, qualitative interview themes did not match to a quantitative questionnaire variable and are, therefore, presented only by theme. For example, HIV-related symptoms were not measured in the quantitative questionnaire, but were identified as impacting several HIV testing approaches (CITC and PITC) in the qualitative interviews. Results are not presented as barriers or facilitators, as often a factor was discussed as both a barrier and a facilitator (277). For example, high HIV-related knowledge facilitates HIV testing, while low HIV-related knowledge acts as a barrier to HIV testing.

Results from the quantitative questionnaire are presented for each specific HIV testing approach, specifically ever tested for HIV, tested for HIV in the previous year, willingness to use CITC, willingness to accept PITC, willingness to use rapid HIV testing, and willingness to use HIV ST. The qualitative interview results are presented for willingness to use CITC, willingness to accept PITC, willingness to use HIV ST and willingness to use rapid HIV testing, but not ever tested for HIV and tested for HIV in the previous year. To be consistent with the qualitative findings, findings from the quantitative questionnaire on ever tested for HIV, tested for HIV in the previous year and willingness to use CITC are presented under willingness to use CITC. In the qualitative interviews, HIV testing was often discussed generally. Unless otherwise specified, 'HIV testing' refers to CITC (or CITC in the healthcare setting using a non-rapid test), which is the predominant approach used in Australia (285). Where a barrier or facilitator relates to other HIV testing approaches, such as PITC, rapid HIV testing or HIV ST, this is specified.

There were few significant associations between HIV testing approaches and selected predisposing (gender, marital status, HIV-related knowledge and HIV-

related stigma), enabling (cost of healthcare prohibitive) and need (HIV risk perception and HIV risk behaviour) variables from the quantitative questionnaire, see Table 4-6. For complete results, see Appendix 11. Qualitative interview participants identified several barriers and facilitators to willingness to use HIV testing approaches, see Table 4-7. There were often considerable overlap/cross-cutting issues across themes. Results were grouped in terms of what the author considered the most salient theme; however, where appropriate, findings were also presented across themes. For example, HIV-related knowledge deficits were often discussed in reference to HIV-related stigma and, in such cases, were presented under HIV-related knowledge and HIV-related stigma.

Table 4-6 Overview of significant barriers and facilitators to HIV testing approaches in bivariate and multivariate analyses from the quantitative questionnaire for Vietnamese-born migrants

HIV testing modality	Variable	Barrier/facilitator	OR (95% CI)	AOR (95% CI) ¹²	P value
Ever tested for HIV	HIV-related knowledge (high)	Facilitator	2.10 (1.07-4.13)	2.49 (1.15-5.37)	0.02
	HIV risk behaviour (high)	Facilitator	N/A	3.78 (1.07-13.32)	0.04
Tested for HIV in the previous year	Marital status (married)	Facilitator	N/A	4.80 (1.06-21.65)	0.04
	HIV risk behaviour (high)	Facilitator	3.52 (1.17-10.63)	7.39 (1.77-30.84)	0.01
Willingness to use CITC	HIV risk behaviour (high)	Facilitator	4.68 (1.42-15.38)	N/A	N/A
	Cost of accessing healthcare prohibitive (yes)	Facilitator	2.78 (1.08-7.13)	3.16 (1.02-9.74)	0.05

Willingness to accept PITC	HIV-related knowledge (high)	Facilitator	2.16 (1.02-4.57)	N/A	N/A
Willingness to use rapid HIV testing	Cost of accessing healthcare prohibitive (yes)	Facilitator	2.10 (1.02-4.32)	2.29 (1.01-5.19)	0.05
Willingness to use HIV ST	HIV-related knowledge (high)	Facilitator	2.36 (1.21-4.58)	2.78 (1.32-5.86)	0.01
	Cost of accessing healthcare prohibitive (yes)	Facilitator	2.21 (1.17-4.17)	2.52 (1.21-5.22)	0.01

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; N/A: Not Applicable; PITC: Provider-Initiated Testing and Counselling; ¹ Significant at $p < 0.05$; ² Adjusted for gender, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, HIV risk behaviour and cost of accessing healthcare prohibitive.

Table 4-7 Overview of barriers and facilitators to HIV testing approaches from the qualitative interviews, by theme, category and associated quotes

HIV testing approach	Theme	Categories	Exemplary quote(s)
Willingness to use CITC	Gender	Testing uptake	“Honestly, I think that there should not be any difference between men and women doing the HIV test.” Female, 31 years old
		Willingness to test	“I think women are willing to have a test – the men maybe not.” Female, 32 years old
	Marital status	Marriage	“Yeah, I think it’s safer that way before you get married.” Male, 32 years old
	HIV-related knowledge	Awareness of HIV	“This is actually the first time I’ve heard about people talking about HIV in Australia.” Male, 32 years old
		Level of knowledge	“It’s like in my case, I don’t have too much knowledge about HIV, just, I think, just barely enough to make sure that, okay, in just go to test for HIV or not.” Female, 31 years old
		HIV transmission and prevention	“When – I mean, I probably should know how easy it is to get – to contract the disease. I actually don’t know” Female, 31 years old
HIV treatment	“For me I don’t understand much about the treatment” Female, 32 years old		

	HIV outcomes	“So I think whether they get some results – positive to HIV, the first thing they say, what do I do now? I have nothing here. They have no information. They have no idea regarding that” Female, 31 years old
	HIV testing services	“I think quite normal. We lack the information about the health system” Male, 34 years old
	HIV testing procedures	“I think maybe it take time and the procedure for testing is quite complicated.” Male, 34 years old
HIV-related stigma	Privacy	“Maybe because it’s private – if they get HIV for some reason, then other people still know” Female, 32 years old
	Family	“...I think the close family would actually be the only people that would support them.” Female, 31 years old
	Friends	“I don’t think they would stop the friendship. I reckon they would keep the friendship, but not for a very close one...” Male, 30 years old
	Community	“I don’t think it would be well at all. I think it would probably, if it was known, I’d say he’d be shunned...” Female, 31 years old
	Knowledge	“I mean, to be honest with you, maybe because I’m not educated enough, and I don’t know how easy or hard it is to contract these diseases, but I know that I would really second-guess, no, I wouldn’t second-guess the friendship, but I

would be more aware of myself physically with my HIV positive friend. Yeah, I would. I'd be like, where's her drink bottle or where's his drink bottle. Is he bleeding, does he have a cold. I'd be more aware. I'd be more aware."

Female, 31 years old

Moral judgement

"You are addicted or you do something wrong, that's why you get the HIV. And you are not the person I know. That's why I don't want to make friendship with you, something like that." Female, 31 years old

Cost of HIV testing

"I think cost might be an issue." Female, 31 years old

Perceived HIV risk

"If nothing happened in their life then I think – it's just my opinion that - and never want to do some test for HIV. "Female, 31 years old

HIV risk behaviour

"You are addicted or you do something wrong, that's why you get the HIV." Female, 31 years old

Symptoms

"...if someone has sex with another woman, but that woman is not healthy or he doesn't know about this woman's got the virus or not, so the testing if you feel sick for some months after that. He worries he's got HIV or not so can be in the hospital for testing." Male, 30 years old

Willingness to
accept PITC

Privacy

"...having a routine test at a doctor's surgery would be a brilliant idea...obviously that's more private when it gets done at the doctor's surgery as well." Female, 31 years old

	Cost	“...I will do it if it’s free.” Male, 32 years old
	Healthcare provider –patient relationship	“It might be half a chance, because they know each other – more trust in there, so I think that’s a better way too. Male, 32 years old
	Symptoms	“Unless one of the triggers might be if someone was consistently sick all the time you would do a blood test, like a general blood test, whether that would be an option to be like, "Should we check for something more?" Female, 32 years old
Willingness to use rapid HIV testing	Privacy	“If they go to some special clinic, maybe you must have HIV to go there – I think it’s not a good idea.” Female, 32 years old
	Convenience	“I think that it can be easier for the same day.” Male, 30 years old
	Accuracy	“...they may need the doctor, because they think the doctor may do something better.” Female, 31 years old
	Risk perception	“Because when they take the test in their mind they have some risk of getting HIV. So as soon as possible.” Male, 34 years old
Willingness to use HIV ST	Privacy	“...I guess it would be because they wouldn’t want Mum and Dad to find out, or anyone else, really.” Female, 31 years old
	Cost	“...cost would probably be an issue though.” Female, 31 years old

Convenience and
comfort

“I definitely would feel a lot more comfortable doing it ... at home, compared to in a clinical environment... I would definitely prefer to do tests at home if I could.” Female, 31 years old

Technical and
emotional support

“...some else...beside them, will be good. Yeah. Maybe some nurse...”
Female, 31 years old

CITC: Client-Initiated Testing and Counselling; HIV ST: HIV self-testing; PITC: Provider-Initiated Testing and Counselling.

4.4.1 Previous use and willingness to use CITC

In the quantitative questionnaire, there were several statistically significant barriers and/or facilitators to ever tested for HIV, tested for HIV in the previous year and willingness to use CITC. Likewise, several themes were identified from the qualitative interviews that impede or facilitate willingness to use CITC. Barriers and facilitators from the quantitative questionnaire and qualitative interviews related to gender, marital status, HIV-related knowledge, HIV-related stigma, cost of (accessing) HIV testing, HIV risk perception, HIV risk behaviour and HIV-related symptoms, as below.

4.4.1.1 Gender

In bivariate and multivariate analyses, there were no significant associations between gender and ever tested for HIV, tested for HIV in the previous year or willingness to use CITC from the quantitative questionnaire.

In the qualitative interviews, several male and female participants perceived that there were likely to be gender differences in willingness to use, and use of, HIV testing. Several male and female participants suggested that Vietnamese-born migrant women were more willing to test for HIV, whereas Vietnamese-born migrant men were less, or not, willing to test for HIV. Participants gave differing reasons for these gender differences in willingness to test for HIV. Two female participants suggested pregnancy facilitated HIV testing for Vietnamese-born migrant women. This was due to the possibility that the baby could get HIV. HIV testing when pregnant was suggested to be normal. One male participant suggested that Vietnamese-born migrant women's greater willingness to use HIV testing was because of lesser pressures on their time, as compared to Vietnamese-born migrant men. Both male and female participants suggested that women were more willing to test for HIV because they care about their health and have a greater use of healthcare in general (e.g. when they have the flu or to check for diabetes), as compared to men:

“Like, I think just working in healthcare, women are often – they would get the same rate of flus, I guess, of flus and colds and infections and what not...But you would often see women come in first, before men. And so I think for women it would just – you must

just have that gene ... I would say with women, yeah, women would be the first ones to come in. Yeah.” Female, 31 years old

One female participant suggested that Vietnamese-born migrant men were less willing to test for HIV (or other illnesses) due to concern over consequences if unwell, i.e. loss of appetite, stress and depression, and denial.

Two female participants suggested that there should or would be no difference in HIV testing uptake between Vietnamese-born migrant men and women. One of these female participants, however, suggested that Vietnamese-born migrant men may test more, due to greater engagement in ‘bad things.’ One male participant suggested that it was ‘easier’ for Vietnamese-born migrant men to test for HIV; however, men must keep this secret from their families otherwise trust could be broken.

One female participant suggested that Vietnamese-born migrant women may have to consult their partner before testing for HIV. She said that this was not specific to HIV testing. Instead, this was a product of broader cultural reasons, whereby men are more controlling and women would, therefore, seek approval before HIV testing:

“But I definitely see a lot more women, yeah, have to ask permission from their husband before they would do this test. Before they do it – do any test, they’d be discussing it with their husband and seeking approval before. Only because, like, a lot of – culturally, they are often seen as, not, I wouldn’t say master, but in sort of the same context...” Female, 31 years old

4.4.1.2 Marital status

There were no significant associations between marital status and having ever tested for HIV, having tested for HIV in the previous year or willingness to use CITC in bivariate analysis. In multivariate analysis, marital status was significantly associated with having tested for HIV in the previous year in the quantitative questionnaire, whereby being married was a facilitator to having tested for HIV in the previous year (AOR: 4.80, 1.06-21.65). There were no significant associations between marital status and having ever tested for HIV or willingness to use CITC.

In keeping with the multivariate analysis results for having tested for HIV in the previous year from the quantitative questionnaire, marriage was also a facilitator to HIV testing in the qualitative interviews. One male and one female participant stated that Vietnamese-born migrants might test for HIV prior to getting married. This was to ensure the health of both partners, and as unprotected sex would likely occur in such a relationship:

“Because, who knows – if you get married, normally it involves unprotected sex and unprotected sex means you transmit the disease, so it’s better to test it out if you don’t know.” Male, 32 years old

HIV testing before marriage was considered as a normal undertaking by both participants. The male participant also noted the possible use of couple’s HIV testing in Western countries; although, he suggested it was not something people talk about much.

4.4.1.3 HIV-related knowledge

HIV-related knowledge, as measured by the revised HIV-KQ-18, was significantly associated with ever having tested for HIV in bivariate and multivariate analyses in the quantitative questionnaire. Specifically, higher HIV-related knowledge was a facilitator to ever having tested for HIV (OR: 2.10, 1.07-4.13 and AOR: 2.49, 1.15-5.37). There were no significant associations between HIV-related knowledge and having tested for HIV in the previous year or willingness to use CITC in bivariate or multivariate analyses. The revised HIV-KQ-18, however, did not fit the Rasch model (see Section 4.5.1). It was, therefore, not an optimal measure of HIV-related knowledge in this sample.

In the qualitative interviews, male and female participants displayed some awareness and knowledge of HIV, most of which they obtained in Vietnam. Several male and female participants noted HIV rates in Vietnam (and in developing countries, more generally) as being high, when compared to Australia. One female participant attributed the lower HIV rate in Australia to Australians being better educated and having greater HIV-related knowledge, which allowed them to protect themselves. Participants identified a myriad of sources of information on HIV from Vietnam, including promotional campaigns, billboards, educational sessions, and

events related to HIV. The visibility of HIV information in Vietnam, however, varied between participants, with some identifying a limited number of sources, while others recalled multiple sources.

In contrast, most male and female participants stated having no, or limited, awareness or knowledge of HIV from Australia. Several male and female participants noted that this study was the first time they had heard people discussing HIV in Australia:

“I have been here for one year, but definitely the first time I heard about HIV was your questionnaire.” Female, 31 years old

One female participant thought she might have seen an advertisement on a bus in Australia, but could not be sure; although, she noted that she did not care much about HIV. Two participants noted learning of HIV through high school programs, specifically sex education class and an information session for parents of adolescents, which discussed sexual health and sexually transmitted infections (STIs), more generally:

“...when I was in high school (in Australia) we had a special class, it was called sex education, so everything was educated back in high school – I think Year 10, so all this stuff they throw at you.” Male, 32 years old

One female participant, who worked in the healthcare field, had contact with people living with HIV (PLWH) through her employment. She had also previously worked in an area with a high concentration of men who have sex with men (MSM), and was aware of information targeting MSM, but not the general population. She suggested that HIV is an uncomfortable issue in Australia within the general population and that is why there are no advertisements. This was in contrast to the MSM population in Australia, where there were HIV advertisements in magazines and HIV was discussed openly. Otherwise, male and female participants stated that they were not aware of any information, campaigns or news related to HIV in Australia and it was not something that was discussed in social networks. Several male participants attributed a lack of awareness and discussion of HIV in Australia to people already having sufficient knowledge of HIV:

“Maybe, yes, because I got most information about HIV in Vietnam. So in Australia I don’t take time to get more understanding. Yes, just study [laughs].” Male, 34 years old

As below, however, participants did identify HIV-related knowledge deficits for at least subsets of Vietnamese-born migrants.

Several male and female participants, while noting that Vietnamese-born migrants have some HIV-related knowledge, suggested that Vietnamese-born migrants generally did not have enough HIV-related knowledge:

“I don’t think they have enough information about HIV, just some. A little bit, not much.” Male, 30 years old

Several male and female participants, however, identified a number of subsets of the Vietnamese population as either having poorer or greater HIV-related knowledge. One male participant suggested that Vietnamese people born in Vietnam (i.e. Vietnamese-born migrants) would have lower HIV-related knowledge, whereas people of Vietnamese heritage born in Australia would have greater HIV-related knowledge. Several male and female participants identified Vietnamese-born students in Australia as generally having good HIV-related knowledge. This was due to greater education and access to resources:

“The group for studying, they have more chance to access many source of information, the internet, the media, social media and stuff like that and they can update the treatment, the therapy regularly...”

Male, 34 years old

One female participant, however, suggested that poor HIV-related knowledge was related to people not caring, regardless of education level. She also suggested that someone with an HIV positive family member would have greater HIV-related knowledge. In contrast, male and female participants suggested that Vietnamese-born migrants who: are older, moved to Australia years ago, and are working, have poorer HIV-related knowledge. Two male participants suggested that older Vietnamese-born migrants and Vietnamese-born migrants in Australia for work would have less HIV-related knowledge, due to more limited access to technology and, therefore, information. One female participant suggested that people who came

to Australia earlier would have poorer HIV-related knowledge due to their limited English proficiency.

Several male and female participants suggested that Vietnamese-born migrants have knowledge of HIV transmission modes and prevention, which enabled people to protect themselves and others. Across the qualitative interviews, participants correctly identified several behaviours/modes which could transmit HIV and methods to safeguard against HIV transmission, including the control/safe use of heroin, needle and syringe containers for safe disposal of sharps, condom use, and populations at higher HIV risk, including MSM, sex workers (SWs), injecting drug users (IDUs). Despite knowledge of HIV transmission modes and prevention methods, this would not necessarily facilitate optimal HIV preventative behaviours. Several male and female participants suggested that Vietnamese-born migrants (and, for one participant, men in particular) may forget knowledge of HIV transmission modes/preventative methods, or be in denial of the HIV risks, and engage in HIV risk behaviour:

“I think they know the way HIV can transmit, but sometimes they forget, for example where they have sex they forget, oh [laughs]. Or maybe they think other people not have HIV...” Female, 32 years old

Several male and female participants, however, also expressed some uncertainty over modes of HIV transmission or how hard it was to transmit HIV:

“...for example, I know the HIV only goes through blood and sharing sex and blood transmission – but if I go to gym with you, I would not join the same classes with you anymore, because obviously I’m afraid of getting HIV, you know? I’m not sure whether or not it’s possible to share glasses and transmit HIV, but it’s still the risks are – even I know the chance might be really, really low, but I’d rather not.” Male, 32 years old

In contrast to knowledge of HIV transmission and prevention, male and female participants generally stated Vietnamese-born migrants have a limited understanding of HIV treatment options (including costs) and prognosis. Several male and female participants noted the use of medication, and regular medication, to

manage and live with HIV. Two female participants, however, suggested an HIV positive diagnosis was associated with death. Two female participants suggested that people diagnosed with HIV would have insufficient knowledge to know how to proceed, and this was only something PLWH would learn after an HIV positive diagnosis:

“So I think whether they get some results – positive to HIV, the first thing they say, what do I do now? I have nothing here. They have no information. They have no idea regarding that.” Female, 31 years old

One male participant suggested that Vietnamese-born migrants who were studying, but not those working, would have knowledge of HIV treatment options. One female participant, however, suggested that even well-educated Vietnamese-born migrants would not have sufficient knowledge of HIV treatment options.

Several participants also suggested that Vietnamese-born migrants lack knowledge of the Australian healthcare system, HIV testing costs and procedures, which act as barriers to HIV testing. According to one male participant, it was common for Vietnamese-born migrants to be unaware of where to go for HIV testing. Several male and female participants were unsure of the cost of HIV tests; however, there was the hope that an HIV test would be free:

“I don’t know how much it would cost. I’d hope that the government – like Medicare would be able to – I mean, as the government, we should be protecting our community.” Female, 31 years old

One male and one female participant were unsure of when HIV testing is performed, i.e. whether an HIV test was already included in blood tests in Australia. The male participant was shocked to find out that HIV testing is not performed unless requested by the client. While one female participant suggested that HIV testing should not be painful, several male participants suggested that HIV testing was difficult (due to the trajectory of HIV and that it takes time to be detectable), complicated, time consuming and potentially not cost-effective (due to cost of delivering HIV tests).

4.4.1.4 HIV-related stigma

In bivariate and multivariate analyses, externalised HIV-related stigma, as measured by the revised ARSS, was not significantly associated with ever having tested, having tested for HIV in the previous year or willingness to use CITC in the quantitative questionnaire. The revised ARSS fit the Rasch model; however, it had inadequate internal consistency reliability and it was reduced significantly in achieving model-fit (see Section 4.5.2). It may not be a sufficiently comprehensive measure of externalised HIV-related stigma in this sample.

In contrast to the quantitative questionnaire which examined externalised HIV-related stigma, the qualitative interviews largely focussed on internalised HIV-related stigma. In this study, internalised HIV-related stigma relates to the HIV-related stigma that people feel that people may experience should they access HIV testing or test HIV positive. Internalised HIV-related stigma was a highly discussed barrier to HIV testing in the qualitative interviews.

Several male and female participants noted fear, shame and shyness associated with HIV testing or testing HIV positive. These feelings stemmed from the perception that others would view someone testing for HIV or HIV positive differently. Across male and female participants, the perception that others would view someone testing for HIV or HIV positive differently (and, specifically, negatively; i.e. internalised HIV-related stigma) was a key barrier to HIV testing:

“I think that the most important thing that prevents people to doing some HIV tests is that they think that the other people will look at them in different way.” Female, 31 years old

As a result, Vietnamese-born migrants may delay HIV testing, and be in denial of their HIV status, to reduce the time that they would be potentially isolated and lonely. One female participant also attributed denial to people not caring about their health and the perception that life would get worse generally, if HIV positive. One male participant suggested that the wait time for the HIV test results may act as a barrier to HIV testing. He described the wait as uncomfortable, due to fear and needing to hide an HIV positive diagnosis. One female participant, who works in the healthcare field, also stated that PLWH often do not come in to collect their medications personally, but instead have other people close to them collect medication on their

behalf, to avoid being seen by the wider community. Further discussion with qualitative interview participants, however, highlighted that views towards PLWH would not always be negative. People's views towards PLWH were often dependent on multiple factors, including a person's relationship to the person with HIV, HIV-related knowledge and education level, and how HIV was (perceived to be) contracted.

Male and female participants suggested that family generally, and parents in particular, would be accepting and supportive in the case of a family member's HIV positive diagnosis:

“So the other one, a neighbour or somebody else, okay, treats them different, but the parents no. I think so.” Male, 30 years old

According to one female participant, this would manifest in parents helping their HIV positive child to get treatment and also collecting medications. She attributed this support to Vietnamese family values, whereby she suggested that Vietnamese parents would be more supportive than Caucasian parents. She also suggested that this support and protectiveness by Vietnamese parents over an HIV positive child was due to parents feeling as though an HIV positive diagnosis reflects on them, too.

Several female participants discussed an HIV positive diagnosis within an intimate relationship. One female participant suggested that a partner would be more sympathetic to an HIV diagnosis than parents, as they have a closer relationship with their partner. Several participants suggested that a relationship with an HIV positive partner may remain. One female suggested that where a partner had HIV, a couple who were married and/or had children would likely stay in a relationship. This was attributed to traditional Vietnamese family values, whereby a couple who were married/with children were a 'real' family:

“... And I think it's different from the white people culture. We think if we have some – any commitment, like marriage, say, or the baby or the family, we are real family.” Female, 31 years old

In the case of a de facto relationship, or where a couple did not have children, however, then a relationship may terminate. Two other female participants

suggested that a relationship would terminate, regardless of children or marital status.

Several male and female participants suggested friends would be supportive of, and maintain a friendship with, an HIV positive friend. One female participant noted that friends may also offer physical support, such as collecting medications for PLWH. Several male and female participants, however, suggested that there might be a change in the relationship. This may result in a friendship becoming more limited:

“For example, if I know you have HIV – I’ll still associate with you, but then at least I – I think on a certain level only, I would limit myself with you – so I think that’s what’s stopping people from (HIV testing) ...” Male, 32 years old

Several female participants also suggested that friendships with an HIV positive friend may terminate.

Apart from one male participant, who suggested that PLWH would be treated the same by the Vietnamese community, several male and female participants suggested that Vietnamese people would view, and treat, PLWH differently. Several male and female participants suggested that Vietnamese people may tolerate, have sympathy for, or engage superficially with, PLWH, but would minimise contact with them. One female participant noted that this was despite Vietnamese people knowing that they should not discriminate against PLWH:

“I mean, even though I think that, okay, we should not let any discrimination between the normal people and the HIV people, but when I look at someone that – I know that he’s HIV, maybe my behaviour will be slightly different.” Female, 31 years old

Two female participants suggested that Vietnamese PLWH may receive support from other sources, such as HIV organisations, including over the internet, but not the general community.

Across male and female participants, Vietnamese people’s views towards people accessing HIV testing and PLWH, as well as denial of HIV testing, were attributed to HIV-related knowledge/education and/or moral connotations associated

with HIV risk behaviours. One male participant suggested that different views would be exhibited by Vietnamese people towards those accessing HIV testing (including those not HIV positive), due to assumed HIV risk behaviour and HIV test results:

“I mean, like, it’s like you only go and take the HIV test because you think you have HIV, and then if you went for the test, this means you are at risk of having it, so people might think you have HIV and you have positive results...” Male, 32 years old

One female participant recounted acquired immunodeficiency syndrome (AIDS; or, as AIDS was known in Vietnam, SIDA) as being something children teased each other about. She described SIDA as something you would not want to contract and that to say someone had SIDA was an insult.

Several participants attributed views towards people accessing HIV testing and PLWH to HIV related-knowledge/education level. Several male and female participants suggested that poor HIV-related knowledge/education meant that Vietnamese people were often scared of, and feared contracting, HIV. One female participant acknowledged that she, and likely other Vietnamese people, did not know how hard it was to transmit HIV and she did not know if the stigma towards HIV was justified. Across male and female participants, poor HIV-related knowledge meant that people, including family, friends and the community, would often limit even casual contact, including sharing food or attending a gym together, with people accessing HIV testing or PLWH for fear of contracting HIV:

“...some people who have the disease that’s a skin condition, it eats away the flesh – what do you call that, Leprosy? It’s like a virus that eats away the flesh? ... You just need to touch it and you have it.

So basically HIV is similar to that sort of thing. Yeah, because obviously, before if you had that disease, you were like a bomb, like a bomb – you can just like, you know – if I stand near you I should have the risk of dying, of getting the disease, I have a chance to die and of course I have to try my best to protect myself.” Male, 32 years old

Two female participants noted several misconceptions about the efficacy and accessibility of treatment and the prognosis of PLWH, which would see people not wish to test for HIV:

“But some people they don’t care because if they get HIV, the end reason is death – even maybe they can get support or they can get the medicine, but maybe they don’t believe in the medicine or it costs a lot of money and it makes their life worse and worse.”

Female, 32 years old

Several male and female participants suggested that several groups would hold more favourable views towards PLWH, as a result of greater HIV-related knowledge/education. One female participant suggested that Vietnamese people with greater education may hold more favourable views of PLWH:

“...the more educated you are, most probably you will be more friendly with the people who has HIV.” Female, 31 years old

Another female participant suggested that family members of a person with HIV have greater knowledge of HIV, which enabled them to be supportive of an HIV positive loved one. One female participant suggested that HIV was more accepted and not taboo in the MSM population in Australia, which she attributed to greater HIV-related knowledge. Two participants, one female and male, suggested that Australians in general would be less afraid of PLWH, due to greater HIV-related knowledge. One male participant, however, suggested that among Vietnamese people with the same education level, views towards a person with HIV would be dependent on the relationship to the person living with HIV. For example, where a family member and community member have the same education level, the family member would hold more positive views of the person living with HIV. One male participant suggested that a friend with HIV would be more responsible, as they would not wish for others to contract HIV. In such an instance, HIV would be difficult to catch as there would be two barriers against HIV, the person with HIV and their friend.

One female participant suggested that it was not that people have HIV, but the reason why they have HIV, which leads Vietnamese people to view them differently. Several female participants suggested that how Vietnamese people view

PLWH also depends on how, or the perception of how, people likely contracted HIV. These participants noted the associations of HIV with 'immoral' behaviours, including 'heroin addicts', 'thieves', 'doing something wrong' and 'bad things', which would see Vietnamese people, particularly friends and the community, limit contact with PLWH. One female participant, however, also acknowledged that some people 'have a good lifestyle' and get HIV by accident (unsterile medical procedure or partner with HIV), and suggested these people would receive sympathy and support. Likewise, one male participant suggested that a positive outlook by family members of PLWH may be enabled by a denial of the true source of HIV infection; with families of a PLWH attributing an HIV positive status to an accident. Another female participant, however, suggested that Vietnamese people would blame PLWH for having HIV even in the case of an accident:

“And always, you know, always, they think that for the HIV people they may do some bad things, that’s why they’ve got HIV. They say, if you don’t do some bad thing doesn’t mean you never get HIV. And even if they have some toleration for the HIV, maybe you’ve got accident, you forgot to use the protecting type of thing when you make love with someone, but anyway, you did that, and that’s your fault and they think that because you got something wrong...”

Female, 31 years old

One female participant, who associated HIV with MSM, said that being both homosexual and HIV positive would be culturally unacceptable in the Vietnamese community and, particularly, for Vietnamese parents. This association of HIV with MSM would also see her terminate a relationship with an HIV positive partner.

4.4.1.5 Cost of (accessing) HIV testing

In bivariate and multivariate analyses, the cost of accessing healthcare, i.e. related to direct (out of pocket payments) and indirect costs (transportation), was significantly associated with willingness to use CITC in the quantitative questionnaire. Finding the cost of accessing healthcare prohibitive facilitated willingness to use CITC (OR: 2.78, 1.08-7.13 and AOR: 3.16, 1.02-9.74, respectively). There were no significant associations between the cost of accessing healthcare and ever having tested or tested for HIV in the previous year.

Cost was not identified as a barrier or facilitator to willingness to use CITC in the qualitative interviews.

4.4.1.6 HIV risk perception

In bivariate and multivariate analyses, there were no significant associations between HIV risk perception and ever tested for HIV, tested for HIV in the previous year or willingness to use CITC in the quantitative questionnaire.

In contrast to the quantitative questionnaire, the qualitative interviews highlighted HIV risk perception as key to (non-) uptake of HIV testing for Vietnamese-born migrants. Several male and female participants suggested that Vietnamese-born migrants would only test if they felt at HIV risk, including feeling unsafe in their community. Conversely, Vietnamese-born migrants would not test for HIV where they did not feel at risk for HIV:

“If nothing happened in their life then I think – it’s just my opinion that
- and never want to do some test for HIV.” Female, 31 years old

Several male and female participants, however, acknowledged the limitations of perceived HIV risk.

One female participant highlighted that perceived HIV risk does not necessarily correlate with HIV risk behaviour. She stated that HIV risk perception was a function of HIV-related knowledge, whereby only those Vietnamese-born migrants with good HIV-related knowledge (the minority) would test for HIV after engaging in potentially high HIV risk behaviour. While discussing whether Vietnamese-born migrants have enough HIV-related knowledge to make good health decisions, one female participant noted that partners were assumed to be HIV negative, despite people not knowing who has HIV. In discussing HIV testing before marriage, one male participant also acknowledged unknown HIV risk, which made HIV testing reasonable to undertake.

Two male participants identified several broad contexts or populations considered at low HIV risk. One male participant suggested there was no reason to test for HIV in Australia. Another male participant suggested that Vietnamese-born migrant women, specifically, may not believe they are at risk of contracting HIV and, therefore, have no need for HIV testing. While Vietnamese-born migrant women may

engage in less HIV risk behaviour, they may still have HIV risk stemming from their Vietnamese-born male partners (see Section 4.4.1.7).

4.4.1.7 HIV risk behaviour

In bivariate analyses, HIV risk behaviour was significantly associated with having tested for HIV in the previous year and willingness to use CITC in the quantitative questionnaire, whereby high HIV risk behaviour was associated with increased odds of testing (OR: 3.52, 1.17-10.63 and OR: 4.68, 1.42-15.38, respectively). There was no association between having ever tested for HIV and HIV risk behaviour in bivariate analysis. In multivariate analyses, high HIV risk behaviour was a facilitator to having ever tested for HIV and having tested for HIV in the previous year (AOR: 3.78, 1.07-13.32 and AOR: 7.39, 1.77-30.84, respectively). There was no significant association between HIV risk behaviour and willingness to use CITC in multivariate analysis.

In line with the results of the multivariate analysis from the quantitative questionnaire for ever tested for HIV and having tested for HIV in the previous year, in the qualitative interviews one male participant stated that engaging in high HIV risk behaviour would facilitate HIV testing. Several male and female participants suggested that Vietnamese-born migrants would test for HIV where they had had sex with a person of unknown HIV status, a stranger or outside their regular relationship. Two female participants suggested that Vietnamese-born migrants would test for HIV after exposure to blood, through an incident or beauty procedures. Another female participant suggested that where a Vietnamese person had a needle stick injury or was an IDU then HIV testing would be facilitated. Two participants, one male and one female, noted the role of monogamy in the decision to test for HIV. The female participant suggested that MSM would likely test for HIV regularly, as they are often not monogamous, but did not know why Vietnamese-born migrants would test for HIV (implying Vietnamese-born migrants are monogamous). Similarly, the male participant, while acknowledging individual differences, suggested that Vietnamese-born migrants are sexually quite 'boring' and have ongoing monogamous relationships, which limited HIV testing. He went on, however, to acknowledge HIV risk coming from 'outside' a relationship, also confirmed by other participants, as discussed below.

Several male and female participants noted equal HIV risk for Vietnamese-born migrants, regardless of gender. This was attributed to most Vietnamese-born migrants coming to Australia as a couple and, in having sex, both men and women have equal HIV risk. One female participant suggested that while Vietnamese-born migrant men and women have equal HIV risk, this came from two distinct sources. She suggested that Vietnamese-born migrant women's risk came from beauty procedures, i.e. hair and nail treatments, while Vietnamese-born migrant men's HIV risk was from having sex outside of a relationship. One male participant suggested that for Vietnamese teenagers HIV risk was more equal between the genders; however, for Vietnamese adults, men were at greater HIV risk. This was due to Vietnamese-born migrant men being greater risk takers than Vietnamese-born migrant women. He also suggested that Vietnamese-born migrant men had increased HIV risk from drug use. Another male participant, as well as a female participant, also suggested that Vietnamese-born migrant men have greater risk for HIV (due to greater engagement in 'bad things'). Several male and female participants also suggested that Vietnamese-born migrant men have greater HIV risk stemming from multiple partners. While several male and female participants suggested that Vietnamese-born migrant women may also have multiple partners, participants generally suggested this was to a lesser degree than Vietnamese-born migrant men. One female participant suggested that the incidence of Vietnamese-born migrant women having multiple partners was increasing. Another female participant, however, suggested that Vietnamese-born migrant women would not engage in multiple partnerships as they would get a bad reputation.

Two female participants suggested that it was increasingly common and becoming normalised for Vietnamese-born migrants to have multiple partners. Another female participant, however, wondered if it still occurred. This participant and another female participant suggested that not all Vietnamese-born migrants would engage in this behaviour. Instead, it was dependent on each person's disposition and was, therefore, not a product of culture alone. These participants did, however, acknowledge that having multiple partners was often acceptable across earlier generations in Vietnam. One of these participants stated that Vietnamese-born migrant men would often have two wives – big wife and little wife. One female

participant, however, suggested that it was not acceptable to have multiple partners if married.

Several male and female participants noted that some Vietnamese-born migrant men, particularly of middle-age, would have sex, and possibly unsafe sex, with women while on return visits to Vietnam (and, to a lesser degree, in Australia). Across male and female participants, these partners were suggested to be a mix of casual partners, more stable partners, or SWs. Two male participants suggested that these Vietnamese-born migrant men were of an age (middle-aged) where they had a degree of stability in terms of money. One male and one female participant also believed that these Vietnamese-born migrant men often had wives and a family in Australia. One female participant noted that Vietnamese-born migrants may be particularly inclined to have multiple partners where the family is separated geographically, where one partner is in Australia and the other in Vietnam. One male participant believed that Vietnamese-born migrant men's additional partners would remain a secret; however, one female participant noted that Vietnamese-born migrant women may suspect Vietnamese-born migrant men have had sex with other partners in Vietnam. Two participants, one male and one female, reported it was highly likely that Vietnamese-born migrant men would have sex, or 'have fun', with another partner while in Vietnam:

“I think they have actually - for a man to go back there without their partner – obviously they are 100% or give or take – 80% or 90%, they will look for another female to have fun.” Male, 32 years old

Several factors may underlie this behaviour by a subset of Vietnamese-born men. One male participant suggested that Vietnamese-born migrant men were particularly prone to this behaviour due to their controlling nature and feeling as though they can manage multiple relationships, as compared to Vietnamese-born migrant women:

“... he thinks he can handle everything, so he can go out and sleep with many girls, but a woman, sometimes some women can think she can handle something, ...not many like a man.” Male, 30 years old

Two participants, one male and one female, suggested that such behaviour stemmed from boredom, feeling unhappy and/or poor family relations:

“...somebody in their middle age when they’ve got a family in Australia... and been living with his family for a long time, but sometimes he feels boring, or something like that [laughs] and wants a holiday and something different. That’s why...” Male, 30 years old

Economic differentials between Australia and Vietnam may also facilitate this behaviour. While not in reference to multiple partners, one female participant noted the lower cost of living in Vietnam, when compared to Australia. She also noted, in relation to multiple partners, that Vietnamese-born migrant men need women to take care of them, which was attributed to Asian values. Another female participant suggested that Vietnamese-born migrant men may feel peer pressure to engage in this behaviour when reunited with friends in Vietnam.

To contextualise the HIV risk posed by multiple partners in Vietnam, participants were asked about their personal and others’ travel behaviour. The frequency of travel between Australia and Vietnam by participants, or identified by participants, was generally in the range of every one or two years. The frequency of travel was dependent on commitments and financial resources. The majority of participants had travelled back, or had plans to travel back, to Vietnam. Participants identified several reasons for travel to Vietnam, including for scholarship requirements, to undertake data collection for their studies, to visit family, to sell their house in Vietnam, for caring responsibilities, and for holidays/tourism.

4.4.1.8 HIV-related symptoms

HIV-related symptoms were not measured in the quantitative questionnaire.

In the qualitative interviews, two participants, one male and one female, suggested that Vietnamese-born migrants may test for HIV if feeling unwell. The male participant suggested that this was particularly the case after months of first having slept with a person of unknown HIV status.

4.4.2 Willingness to accept PITC

In the quantitative questionnaire, HIV-related knowledge was associated with willingness to accept PITC in bivariate analysis (see Section 4.4.2.1). There were,

however, no statistically significant barriers or facilitators to willingness to accept PITC by Vietnamese-born migrants in multivariate analysis.

In the qualitative interviews, most male and female participants suggested that PITC would facilitate HIV testing. One female participant, however, suggested that Vietnamese-born migrants would not wish to test for HIV, even if offered by a doctor (PITC). This was due to the association of HIV with death. One male participant suggested that PITC was acceptable, but HIV testing should not be compulsory. This was in contrast to one female participant, who suggested that HIV testing should be required by law. One male participant said that, culturally, Vietnamese-born migrants would not ask a doctor for an HIV test (CITC); however, if a doctor asked them to test (PITC), they would say yes:

“It would be suggested by the doctor it’s okay. It’s a quick response.” Male, 34 years old

Male and female participants identified a number of routine processes that do, or could, incorporate HIV testing (PITC) to facilitate HIV testing among Vietnamese-born migrants. These included immigration/visa reasons, as part of a STI check, a regular blood test, a general health check-up, or as part of an HIV-specific health promotional campaign. Several female participants suggested that PITC, offered as a standalone HIV test or incorporated with other routine processes as above, would overcome several barriers to HIV testing. The female participant who suggested HIV testing should be compulsory suggested that, in this context, PITC would be perceived as ‘for everyone’ and there would be no reason to refuse. She also noted that Vietnamese-born migrants do not volunteer for HIV tests (CITC). Another female participant suggested that HIV testing was not something on Vietnamese-born migrants’ radar, particularly those with lower education, when they see a doctor, and people do not have experience testing specifically for HIV. She suggested, for example, that her husband had likely not tested for HIV, as he had no requirement to test. Another female participant suggested Vietnamese-born migrants may find seeking an HIV test (CITC) uncomfortable, as there would likely be further questioning related to HIV risk behaviour. In contrast, she suggested that no HIV risk assessment would accompany PITC. She also suggested that PITC would make HIV

testing accessible to Vietnamese-born migrants who are already presenting at the doctors.

Two male participants suggested doctors (particularly Vietnamese doctors in Australia) would feel comfortable offering PITC. One male participant, however, stated that doctors in Vietnam would not offer PITC. Male and female participants suggested that PITC should be offered between twice annually to every two years. One female participant, however, suggested that Vietnamese-born migrants working in a 'sensitive environment', for example hospitals, should test more regularly, i.e. every two or three months.

Across the quantitative questionnaire and qualitative interviews, several barriers and facilitators to the use of PITC by Vietnamese-born migrants were identified. These related to HIV-related knowledge, privacy, cost, healthcare provider-patient relationship, and symptoms.

4.4.2.1 HIV-related knowledge

In the quantitative questionnaire, high HIV-related knowledge was a facilitator to willingness to accept PITC in bivariate analysis (OR 2.16, 1.02-4.57). The association, however, did not remain significant in multivariate analysis.

HIV-related knowledge was not identified as a barrier or facilitator to willingness to accept PITC in the qualitative interviews.

4.4.2.2 Privacy

Privacy was not measured in the quantitative questionnaire.

In the qualitative interviews, one male and one female participant noted the privacy offered by PITC, as it would be provided by a doctor within routine processes, would likely facilitate HIV testing. The male participant suggested that unlike a free lunch, people would not wish to be seen queueing for HIV testing. Instead, PITC through doctors' clinics was preferable.

4.4.2.3 Cost of (accessing) HIV testing

The cost of accessing healthcare, i.e. related to direct (out of pocket payments) and indirect costs (transportation), was not significantly associated with willingness to accept PITC in the quantitative questionnaire in bivariate and multivariate analyses.

In the qualitative interviews, one male participant stated that he would accept PITC if it were free. This participant, however, suggested that older Vietnamese-born migrants may not be receptive to an offer of an HIV test (PITC) even if it was free. He suggested that HIV testing was about more than the cost, and that older Vietnamese-born migrants might be offended by PITC:

“Even if it is free – it’s not about money.” Male, 32 years old

4.4.2.4 Healthcare provider-patient relationship

Healthcare provider-patient relationship was not measured in the quantitative questionnaire.

In the qualitative interviews, several male and female participants suggested that PITC would not offend most Vietnamese-born migrants. Several male and female participants, however, suggested that PITC could shock people, make people sad or uncomfortable, and be seen as discriminatory and offensive. This stemmed from Vietnamese-born migrants feeling that a doctor was making an assumption, or knew something, about their risk for HIV. One female participant suggested, initially, that PITC was not a normal question and it may be linked with being a migrant, which would make her uncomfortable. On further reflection, however, PITC would be seen as a more normal question, and something a doctor might also ask in Vietnam, and she would, therefore, undergo PITC. Another female participant would undergo PITC, but would later ask her partner about his own potential HIV risk behaviour. One male and one female participant reported that older and wealthier Vietnamese-born migrants, respectively, might question why they were being asked and/or be offended by PITC:

“...they (older people) might feel offended, because if you ask them to test for HIV, I think they might think that you’re implying to them that they have the disease.” Male, 32 years old

Several male and female participants suggested that a good interpersonal relationship between healthcare provider and patient, however, would facilitate PITC. When PITC is framed in a respectful, open way and where the reason for PITC is clearly articulated, especially within an established trusting healthcare provider-patient relationship, these participants suggested Vietnamese-born migrants

(including older Vietnamese-born migrants) would likely be receptive to PITC. One female participant's desire for PITC to occur in a sensitive manner was as a result of a negative experience with the Australian healthcare system in relation to tuberculosis (TB):

“...I told them that I believe that ... I'm positive with results from TB, but they did something – not just question, not just a request, they did something like push a – push me on the taxi and send me to the TB (clinic) and I feel ... like they put me in prison or something like that [laughter]. And that, I think, for the HIV, they want to do something like that but, I mean, the way they behave with the request is really important.” Female, 31 years old

4.4.2.5 Symptoms

Symptoms were not measured in the quantitative questionnaire.

In the qualitative interviews, two female participants suggested that PITC may be facilitated/accepted where a person felt unwell. This included the female participant who suggested that Vietnamese-born migrants would decline PITC, due to the association of HIV with death.

4.4.3 Willingness to use rapid HIV testing

In bivariate and multivariate analyses, the cost of accessing healthcare, i.e. related to direct (out of pocket payments) and indirect costs (transportation), was significantly associated with willingness to use rapid HIV testing in the quantitative questionnaire (see Section 4.4.3.1).

In the qualitative interviews, male and female participants suggested that Vietnamese-born migrants would want the results of an HIV test as soon as possible, as offered by rapid HIV testing. Overall, rapid HIV testing by a doctor at a doctor's clinic was suggested to be preferred by Vietnamese-born migrants.

Barriers and facilitators to willingness to use rapid HIV testing from the quantitative questionnaire and qualitative interviews related to cost of (accessing) HIV testing, privacy, convenience, accuracy and HIV risk perception.

4.4.3.1 Cost of (accessing) HIV testing

The cost of accessing healthcare, i.e. related to direct (out of pocket payments) and indirect costs (transportation), was significantly associated with willingness to use rapid HIV testing in the quantitative questionnaire in bivariate and multivariate analyses. Finding the cost of accessing healthcare prohibitive was a facilitator to willingness to use rapid HIV testing (OR: 2.10, 1.02-4.32 and AOR: 2.29, 1.01-5.19).

In qualitative interviews, cost was not identified as acting as a barrier or facilitator to rapid HIV testing.

4.4.3.2 Privacy

Privacy was not measured in the quantitative questionnaire.

In the qualitative interviews, several male and female qualitative participants suggested that rapid HIV testing at a doctor's clinic offers privacy, which would facilitate rapid HIV testing. One female participant noted that people could go to the doctor for any issue, whereas going to a special clinic implied being HIV positive:

“I think going to the GP (general practitioner) is not a problem because other people can think the test is another tests. If they go to some special clinic, maybe you must have HIV to go there – I think it's not a good idea.” Female, 32 years old

One male and one female participant noted, specifically in relation to rapid HIV testing, that Vietnamese-born people would want to keep their HIV testing secret. If Vietnamese-born migrants underwent rapid HIV testing in a community-based setting, other people within their network may find out.

4.4.3.3 Convenience

Convenience was not measured in the quantitative questionnaire.

In the qualitative interviews, two male participants suggested that rapid HIV testing was easier and more convenient, due to lesser wait time for the results.

4.4.3.4 Accuracy

Accuracy was not measured in the quantitative questionnaire.

In the qualitative interviews, several male and female participants suggested that Vietnamese-born migrants would prefer rapid HIV testing undertaken by a doctor, as opposed to a trained community member (in a community-based clinic), due to greater perceived expertise. Male and female participants stated that Vietnamese-born migrants believe in the doctor, more so than other healthcare providers, e.g. nurses, or staff. Male and female participants suggested Vietnamese-born migrants consider doctors to be more professional and reliable. Two female participants noted that, even for tasks that nurses were trained to do, including blood tests, Vietnamese-born migrants would often prefer the doctor to perform them. One female participant suggested that this attitude towards healthcare providers stems from differences in training length in Vietnam between the different health professions. She explained that to become a nurse, for example, is easy and takes one and a half or two years, whereas it is competitive to become a doctor and takes five years to become qualified. This participant also suggested that older doctors, as compared to those in training, would be appreciated more by Vietnamese-born migrants, as they had greater experience with patients. Additionally, one female participant noted that, culturally, Vietnamese people respect doctors. She stated that Vietnamese parents' greatest wish would be for their son or daughter to become a doctor.

4.4.3.5 HIV risk perception

HIV risk perception was not significantly associated with willingness to use rapid HIV testing in the quantitative questionnaire in bivariate and multivariate analyses.

In the qualitative interviews, several male and female participants suggested that Vietnamese-born migrants would want results on the same day (rapid HIV testing) as they would only test if at risk for HIV. One female participant, however, suggested that, regardless of perceived HIV risk, Vietnamese-born migrants would be eager to get their results. This was due to Vietnamese-born migrants wanting to know that they are 100 per cent free from HIV. She suggested that people may have unknown HIV risk, e.g. from a non-sterile medical procedure.

Several male and female participants suggested that Vietnamese-born migrants would want the results of an HIV test quickly as HIV testing induces fear,

anxiety, concern and worry over the results. In addition to only HIV testing if at risk for HIV, one male and one female participant acknowledged the seriousness of HIV for individuals and families as contributing to worry over the results. Another female participant, however, stated that she would want the result of any test, not only HIV, as soon as possible. This participant, as well as another male participant, also suggested that everyone, not only Vietnamese-born migrants, would want the results of an HIV test as soon as possible. Another female participant, however, suggested that Vietnamese-born migrants, as compared to people of other nationalities, have a particular cultural disposition towards worrying:

“I think that’s more from the culture. Yeah. It’s relating to something from culture. Maybe you ask someone else, maybe some African people or something. You never know, okay, what about the results from – they will go – what’s for – Vietnamese-born migrants not just HIV test for all other things. They always worry.” Female, 31 years old

This female participant also suggested that Vietnamese people are competitive and would want to find out their results before others. Knowing the results of an HIV test quickly would allow Vietnamese-born migrants to make informed decisions.

4.4.4 Willingness to use HIV ST

In bivariate and multivariate analyses, HIV-related knowledge and the cost of accessing healthcare was significantly associated with willingness to use HIV ST in the quantitative questionnaire, see Section 4.4.4.1 and 4.4.4.3, respectively.

In the qualitative interviews, two female participants initially expressed uncertainty over, or suggested other Vietnamese-born migrants may not know, what HIV ST involved. Specifically, these participants asked whether a healthcare provider would conduct and/or interpret the results of the HIV ST:

“And you mean they will ask some specialist or ask some nurse to come to their home and do some test – HIV test, or?”

Female, 31 years old

These participants were advised that HIV ST would work like a home pregnancy kit. Specifically, a person would collect a sample of blood or saliva, and results would be

delivered in a short space of time. Where the result indicated a possible HIV positive diagnosis, this would require confirmation with a traditional HIV test conducted by a doctor.

HIV ST was largely acceptable to female participants. They did, however, also identify barriers to HIV ST. One female participant suggested that Vietnamese-born migrants may not wish to use HIV ST, as they do not wish to test for HIV at all. In such instances, HIV ST would be a waste of money. In contrast, male participants identified barriers only to HIV ST. Overall, HIV testing at a doctor's clinic was preferable for Vietnamese-born migrants.

Barriers and facilitators to HIV ST from the quantitative questionnaire and qualitative interviews related to HIV-related knowledge, privacy, cost of accessing healthcare, comfort and convenience, and technical and emotional support.

4.4.4.1 HIV-related knowledge

In bivariate and multivariate analyses, HIV-related knowledge was significantly associated with willingness to use HIV ST in the quantitative questionnaire. Specifically, higher HIV-related knowledge (OR: 2.36, 1.21-4.58 and AOR: 2.78, 1.32-5.86, respectively) facilitated willingness to use HIV ST.

In the qualitative interviews, HIV-related knowledge was not identified as a barrier or facilitator to HIV ST.

4.4.4.2 Privacy

Privacy was not measured in the quantitative questionnaire.

In the qualitative interviews, several male and female participants discussed the role of privacy in the use (or non-use) of HIV ST. One female participant suggested HIV ST in one's home was private. This participant, as well as several other male and female participants, however, stated that buying, either in person or online, and taking the HIV ST could lead to a lack of privacy. One male participant, however, did not feel that buying the HIV ST would result in a lack of privacy. In the home, several male and female participants suggested that other people in the household and family members, e.g. parents and partners, could find out that a person had tested, or had tested HIV positive. It was suggested that Vietnamese-born migrants would want to keep this information secret from family and friends.

One male participant considered HIV ST in the home to be 'dangerous' to family life. This danger related to trust (specifically, a lack of trust), rather than danger posed by HIV itself. HIV ST would lead family members to ask questions that people may not want to answer. Another male participant suggested that there were too many people in the house, and that going to the doctor was preferable, as it offers greater privacy. He stated that taking an HIV ST was essentially an admission of an HIV positive status. Another male participant suggested that people would think differently of the person using an HIV ST.

4.4.4.3 Cost of (accessing) HIV testing

In bivariate and multivariate analyses, the cost of accessing healthcare, i.e. related to direct (out of pocket payments) and indirect costs (transportation), was significantly associated with willingness to use HIV ST in the quantitative questionnaire. Specifically, finding the cost of accessing healthcare prohibitive (OR: 2.21, 1.17-4.17 and AOR: 2.52, 1.21-5.22, respectively) facilitated willingness to use HIV ST.

In the qualitative interviews, two female participants suggested costs related to HIV ST could potentially act as a barrier to HIV ST. One female noted that HIV ST would likely be more expensive than traditional HIV testing. Another participant noted, particularly in her work context, that Vietnamese-born migrants often ask for discounts. She suggested that if HIV ST were expensive, then this may prohibit use for some Vietnamese-born migrants, specifically low income earners. Where HIV ST kits were not overly expensive (approximately \$30), however, she suggested that cost should not limit HIV ST.

4.4.4.4 Comfort and convenience

Comfort and convenience were not measured in the quantitative questionnaire.

In the qualitative interviews, two female participants suggested that HIV ST was more comfortable and convenient. One female participant suggested that the home environment was more comfortable than the clinical environment. Another female participant suggested that HIV ST was preferable, as HIV testing at home meant not having to travel.

4.4.4.5 Technical and emotional support

Technical and emotional support was not measured in the quantitative questionnaire.

In the qualitative interviews, two female participants acknowledged accuracy, and specifically a lack of accuracy, as potentially acting as a barrier to HIV ST. One female participant, who worked in the health field, questioned the accuracy of HIV ST; although, she suggested that tests with low accuracy were unlikely to be on the market. She conceded, however, that concerns over accuracy would be unlikely to be a barrier for most Vietnamese-born migrants. Another female participant also expressed possible concern with the technical aspects of HIV ST, and that there would be no one to support people in these aspects. As such, she suggested people would prefer to go to the doctor in a clinic for HIV testing, in order to get accurate results. Likewise, she acknowledged the lack of emotional support in conducting HIV ST. In the case of an HIV ST indicating an HIV positive diagnosis, she would like someone (i.e. a nurse or a stranger) with her to offer emotional support.

4.5 Scale validation

This Section (Section 4.5) addresses Objective Four, i.e. to assess selected psychometric properties (construct validity and internal consistency reliability) of the HIV-KQ-18 (8) and the ARSS (9) in Vietnamese-born migrants in Australia and Australian-born adults, including people of Vietnamese heritage. Results are presented for the original scale followed by the revised scale, where amendments were made to attempt to achieve model-fit.

4.5.1 The Brief HIV Knowledge Questionnaire (HIV-KQ-18)

The HIV-KQ-18 (8) did not initially demonstrate fit to the model expectations. Revisions were, therefore, made to the HIV-KQ-18, see Table 4-8.

Table 4-8 Key Rasch analysis statistics for the (revised) Brief HIV Knowledge Questionnaire (HIV-KQ-18)

Scale	Items	Deleted item/case	Item residual		Person residual		Chi-Square	Interaction	Independent
			Value	SD	Value	SD	Value	P	t-test %
KQ (1)	18	-	-0.43	1.93	-0.23	.83	168.97	<0.01	<0.05
KQ (2)	17	Deleted item 6	-0.54	1.84	-0.24	.84	153.67	<0.01	
KQ (3)	16	Deleted item 12	-0.63	1.82	-0.24	.78	120.12	<0.01	
KQ (4)	15	Deleted item 17	-0.74	1.71	-0.25	.78	117.38	<0.01	
KQ (5)	14	Deleted item 4	-0.70	1.34	-0.27	.79	99.31	<0.01	

4.5.1.1 Original scale

4.5.1.1.1 Summary statistics

Analysis one included all original 18 items of the HIV-KQ-18. The item-fit residual standard deviation (SD) was 1.93, the person-fit residual was 0.83 and the chi-square probability was $P = <0.01$, indicating misfit to the Rasch model.

4.5.1.1.2 Thresholds

Inspection of the threshold map showed no items to have disordered thresholds, indicating that participants could distinguish consistently between the response categories (286). Examination of the category response frequencies provided further evidence of this, with sufficiently even distribution of responses across all categories.

4.5.1.1.3 Item- and individual- fit

Examination of item-fit statistics showed multiple items that did not fit, based on the fit residual (items 6 and 12) and chi-square probability (item 2). Individual person-fit showed no individuals were misfitting.

4.5.1.1.4 Local independence

Principal components analysis (PCA) was undertaken to find the two subsets with the biggest difference on the first component (items 9, 2, 1 and items 3, 4, 17, respectively). Paired t-tests showed that person estimates derived from the two subsets did not differ significantly (the value of the t-test was <5 per cent), indicating unidimensionality.

4.5.1.1.5 Differential Item Functioning (DIF)

Differential item functioning (DIF) by gender showed no significant values. DIF by birth country showed Vietnamese-born migrants and Australian- born adults responded to item 12 differently.

4.5.1.1.6 Person separation index (PSI)

The person separation index (PSI) was 0.76, which showed adequate internal consistency reliability.

4.5.1.2 Revised scale

Due to poor fit to the Rasch model, additional amendments were made to the HIV-KQ-18 (8) to attempt to achieve model-fit. Amendments from the original scale are outlined below.

4.5.1.2.1 Summary statistics

The final analysis included 14 items from the HIV-KQ-18. The item fit residual SD was 1.34, the person-fit residual was 0.79 and the chi-square probability was $P < 0.01$. These statistics indicated misfit to the model.

4.5.1.2.2 Thresholds

The threshold map showed no items to be disordered, indicating no issues with response categories.

4.5.1.2.3 Item- and individual- fit

Examination of the individual item-fit showed two items (items 6 and 12) to have fit residuals > 2.5 . The worst was item 6 ('All pregnant women infected with HIV

will have babies born with AIDS'). Individual person-fit showed no cases with a fit residual of >2.5 . Item 6 was deleted. The item-fit residual SD was 1.84, the person-fit residual was 0.84 and the chi-square probability was $P = <0.01$, indicating misfit to the model. Individual item-fit showed one item (item 12, 'There is a female condom that can help decrease a woman's chance of getting HIV') to have a fit residual >2.5 . Individual person fit showed no cases with a fit residual >2.5 . Item 12 was deleted. The item-fit residual SD was 1.82, the person-fit residual was 0.78 and the chi-square probability was $P = <0.00$ and, therefore misfit the model. Individual item-fit showed one item (item 17, 'A person can get HIV from oral sex') to have a fit residual >2.5 . Individual person-fit showed no cases with a fit residual >2.5 . Item 17 was deleted. The item fit residual SD was 1.71, the person-fit residual was 0.78 and the chi-square probability was $P = <0.01$. Model fit, therefore, was not achieved. Individual item-fit showed one item (item 4, 'A woman can get HIV if she has anal sex with a man') to have a fit residual >2.5 . Individual person-fit showed no cases with a fit residual >2.5 . Item 4 was deleted. The item-fit residual SD was 1.34, the person-fit residual was 0.79 and the chi-square probability was $P = <0.01$ and, therefore, model fit not achieved. Examination of the individual item-fit showed all items to be <2.5 . Individual person-fit showed all cases to have fit residuals <2.5 . No further amendments were made to individual items or individuals.

4.5.1.2.4 Local independence

PCA was undertaken to find the two subsets with the biggest difference on the first component (items 9, 2, 1 and items 13, 3, 10, respectively). Paired t-tests showed that person estimates derived from the two subsets did not differ significantly, indicating unidimensionality.

4.5.1.2.5 Differential Item Functioning (DIF)

DIF by gender and birth country showed no significant values and, therefore, there were no significant differences between Vietnamese-born migrants and Australian-born adults in responses to items.

4.5.1.2.6 Person separation index (PSI)

The PSI revealed the revised 14 item HIV-related knowledge questionnaire to have satisfactory internal consistency reliability, PSI 0.69.

4.5.2 AIDS-Related Stigma Scale (ARSS)

The ARSS (9) did not initially demonstrate fit to the model expectations. Revisions were, therefore, made to the ARSS, see Table 4-9.

Table 4-9 Key Rasch analysis statistics for the (revised) AIDS-Related Stigma Scale (ARSS)

Scale	Items	Amendment item/case	Item residual		Person residual		Chi-Square	Interaction	Independent
			Value	SD	Value	SD	Value	P	t-test %
STIG 1	9	N/A	-1.09	4.67	-0.46	1.20	273.32	<0.01	>0.05
STIG 2	9	Rescored 1,2,3,6,7,9	-1.05	4.79	-0.45	1.30	345.49	<0.01	-
STIG 3	8	Deleted 4	-1.31	3.91	-0.56	1.36	221.78	<0.01	-
STIG 4	7	Deleted 5	-1.34	1.95	-0.90	1.80	63.14	<0.01	-
STIG 5	6	Deleted 1	-1.13	1.72	-0.96	1.82	22.69	<0.01	<0.05
STIG 6	6	Item split 6	-1.05	1.3	-0.87	1.68	12.85	>0.01	N/A

4.5.2.1 Original scale

4.5.2.1.1 Summary Statistics

The first analysis included data on the nine original items from the ARSS. The item-fit residual SD was 4.67, the person-fit residual was 1.20 and the chi-square probability was <0.01. These statistics indicated misfit to the Rasch model.

4.5.2.1.2 Thresholds

Inspection of the threshold map revealed that several items (items 1, 2, 3, 6, 7 and 9) had disordered thresholds, indicating that participants could not distinguish consistently between the response categories, see Figure 4-2. Examination of the

category response frequencies provided further evidence of this, with uneven distribution of responses across all categories, see Table 4-10 for the category response frequencies for ARSS.

Figure 4-2 Threshold map showing disordered thresholds for the AIDS-Related Stigma Scale (ARSS)

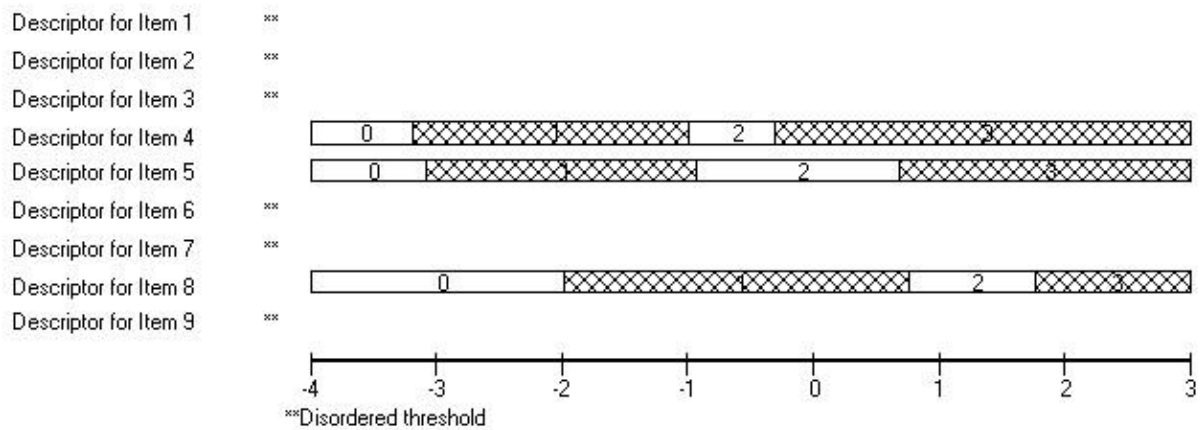


Table 4-10 Category response frequencies for the AIDS-Related Stigma Scale (ARSS)

Item No.	Strongly agree (n)	Agree (n)	Disagree (n)	Strongly disagree (n)
1	126	187	9	2
2	188	125	9	2
3	179	130	11	4
4	52	137	97	38
5	61	147	102	14
6	182	127	12	3
7	168	144	9	3
8	143	148	30	3
9	182	122	15	5

4.5.2.1.3 Item- and individual -fit

Examination of item-fit statistics showed multiple items that did not fit, based on the fit residual (items 4 and 5) and chi-square probability (items 3, 4, 5, 6, 7, 8, 9). Individual person-fit showed two individuals were misfitting.

4.5.2.1.4 Local independence

PCA was undertaken to find the two subsets with the biggest difference on the first component (items 4, 5, 1 and items 9, 6, 7, respectively). Paired t-tests showed that person estimates derived from the two subsets differ significantly, indicating the scale was not unidimensional.

4.5.2.1.5 Differential Item Functioning (DIF)

DIF by gender showed no significant items. DIF by country showed several items (items 5, 6, 8 and 9) were responded to differently by Vietnamese-born migrants and Australian- born adults, as evidenced by significant probability values.

4.5.2.1.6 Person separation index (PSI)

The PSI statistic showed that the original ARSS had adequate reliability (PSI=0.77).

4.5.2.2 Revised scale

Due to poor fit to the Rasch model, additional amendments were made to the ARSS (9) to attempt to achieve model-fit. Amendments from the original scale are outlined below.

4.5.2.2.1 Summary statistics

The final analysis included six items from the ARSS. The item-fit residual SD was 1.30; the person-fit residual SD was SD 1.68; and chi-squared value of 12.85 and probability >0.01. These statistics indicated fit to the model.

4.5.2.2.2 Thresholds

Items that were disordered (items 1, 2, 3, 6, 7 and 9) were rescored, by collapsing the strongly disagree category with the disagree category. After rescoring each item, fit statistics were checked before recoding the next item (however, for ease of reading, this is presented as one step in Table 4-10 above). After rescoring all relevant items, the item-fit residual SD was 4.79, the person-fit residual was 1.30 and the chi-square probability was <0.01, indicating misfit to the model.

4.5.2.2.3 Item- and individual- fit

Individual item-fit showed multiple items to be misfitting; however, item 4 ('It is safe for children to be taken care of by people who have HIV') was the worst, with a fit residual of 7.38. The individual person-fit showed no misfitting cases. Item 4 was deleted. Removing item 4 improved the overall fit, however, the scale still showed misfit to the model (item fit residual SD = 3.91, person fit residual SD = 1.36, chi-square = <0.01). Inspection of the individual item-fit statistics showed item 5 ('People with HIV must expect some restrictions on their freedom') to be misfitting, with a fit residual of 7.28. Individual person-fit statistics showed no misfitting cases. Item 5 was deleted. After removing item 5 the item-fit residual SD was 1.95, the person-fit residual SD was 1.80 and the chi-square probability was <0.01 and, therefore, misfit to the model. Examination of the individual item-fit statistics showed two items (item 1, 'People who have HIV are dirty' and 6, 'A person with HIV must have done something wrong and deserves to be punished') had fit statistics <2.5, but significant probability value of <0.05. Inspection of the individual person-fit statistics showed no cases with a fit statistic of > 2.5. Item 1 was deleted. The item fit residual SD was 1.72, the person-fit residual SD was 1.82 and the chi-square value of 22.69 and probability <0.01. Model fit was not achieved. Individual item-fit showed no items to be misfitting. Individual person-fit showed no cases to be misfitting. No further amendments were made to individual items or individuals.

4.5.2.2.4 Local independence

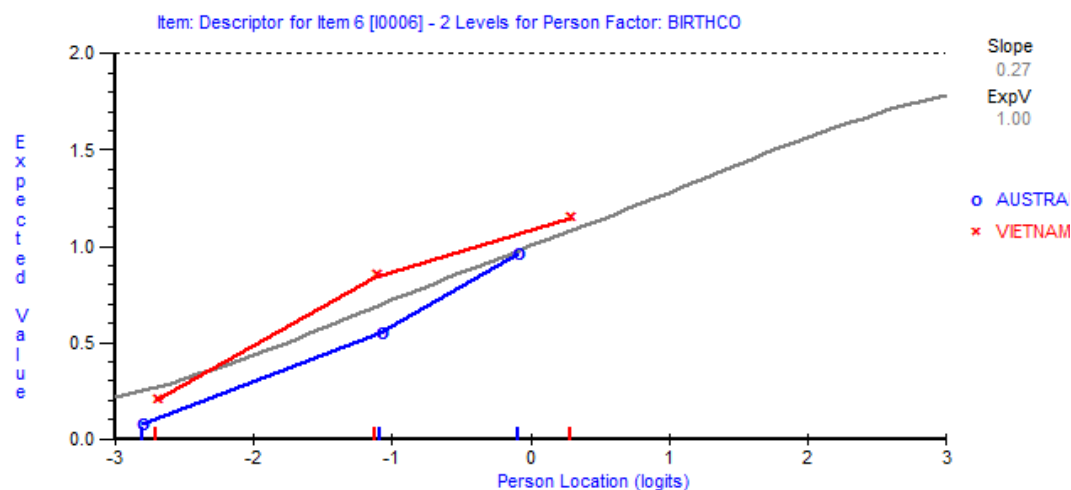
PCA was undertaken to find the two-subsets with the biggest difference on the first component (items 2, 3, 6 and items 7, 8, 9, respectively). Paired t-tests showed that person estimates derived from the two subsets did not differ significantly, indicating unidimensionality.

4.5.2.2.5 Differential Item Functioning (DIF)

DIF by gender showed no issues. DIF by birth country showed one item (item 6, 'A person with HIV must have done something wrong and deserves to be punished') was being responded to significantly differently by Vietnamese-born migrants and Australian- born adults. Vietnamese-born migrants were more likely to endorse item 6 than Australian-born adults, given equal levels of externalised HIV-related stigma, see Figure 4-3. Item 6 was, therefore, split by birth country. Examination of the summary statistics showed fit to the model, the item-fit residual

SD was 1.30; the person-fit residual SD was SD 1.68; and chi-squared value of 12.85 and probability >0.01.

Figure 4-3 Differential Item Functioning (DIF) for item 6 and birth country



4.5.2.2.6 Person separation index (PSI)

The PSI statistic of the revised six item ARSS scored below the threshold for adequate reliability (PSI=0.67).

4.6 Summary

This Chapter (Chapter Four) addressed the objectives of this study. Specifically, it quantitatively examined HIV testing uptake in Vietnamese-born and Australian-born adults (Objective One). Barriers and facilitators to HIV testing in Vietnamese-born adults were also examined both quantitatively and qualitatively (Objective Two and Three, respectively). Additionally, selected psychometric properties (construct validity and internal consistency reliability) of the HIV-KQ-18 (8) and ARSS (9) for Vietnamese-born migrants and Australian-born adults were assessed (Objective Four).

Uptake of, and willingness to use/accept, HIV testing approaches was largely not significantly different between Vietnamese-born migrants and Australian-born adults in the quantitative questionnaire. In multivariate analyses, after adjusting for selected predisposing (gender, marital status, HIV-related knowledge and HIV-related stigma), enabling (cost of healthcare prohibitive) and need (HIV risk perception and HIV risk behaviour) variables, only willingness to use rapid HIV testing was significantly different between Vietnamese-born adults and Australian-

born adults. Vietnamese-born adults had significantly lower odds of willingness to use rapid HIV testing.

The quantitative questionnaire identified few significant barriers and facilitators across HIV testing approaches for Vietnamese-born migrants, after adjusting for selected predisposing (gender, marital status, HIV-related knowledge and HIV-related stigma), enabling (cost of healthcare prohibitive) and need (HIV risk perception and HIV risk behaviour) variables. Marital status was associated with having tested for HIV in the previous year, whereby being married facilitated HIV testing. HIV-related knowledge was associated with ever having tested and willingness to use HIV ST, whereby high HIV-related knowledge facilitated testing/willingness to HIV test. HIV risk behaviour was associated with ever having tested and having tested for HIV in the previous year, whereby high HIV risk behaviour facilitated HIV testing. The cost of accessing healthcare was associated with willingness to use CITC, rapid HIV testing and HIV ST, whereby finding the cost of healthcare prohibitive facilitated willingness to use HIV testing.

The qualitative interviews identified several barriers and facilitators to HIV testing approaches. Qualitative interview participants generally suggested that female gender, being married, perceiving oneself to be at risk for HIV, engaging in HIV risk behaviour, and having symptoms, would facilitate CITC, while low HIV-related knowledge, internalised HIV-related stigma (including issues related to privacy) and finding the cost of healthcare prohibitive would act as barriers to CITC among Vietnamese-born migrants. PITC was widely acceptable to qualitative interview participants. PITC would generally be approved by Vietnamese-born migrants due to the privacy offered by doctors' clinics, where offered for free, where a person has a good relationship with a healthcare provider, and where a person was experiencing symptoms. In contrast to quantitative questionnaire findings, where Vietnamese-born adults had significantly lower odds of willingness to use rapid HIV testing, rapid HIV testing was largely acceptable to qualitative interview participants who would want the results of an HIV test as soon as possible. Rapid HIV testing would be facilitated by convenience, feeling at risk of HIV, and where delivered by a doctor in a doctor's clinic (for reasons of privacy and accuracy), as opposed to a trained staff member at a community clinic. HIV ST was largely acceptable to female participants, but not male participants; although, female participants also noted

several barriers to HIV ST. Facilitators to HIV ST for female participants were the comfort, convenience and privacy offered by testing at home. Barriers to HIV ST for male and female participants were a lack of privacy, the possible cost of HIV ST, and lack of technical and emotional support in HIV testing/testing HIV positive.

Additionally, qualitative interviews provided context for the quantitative questionnaire findings for Vietnamese-born migrants. HIV risk behaviour was not widely significantly associated with HIV testing approaches in quantitative analyses. Qualitative interviews, however, highlighted that a subset of Vietnamese-born migrants have increased HIV risk, which was likely not well captured in the quantitative questionnaire. Likewise, qualitative interview participants discussed internalised HIV-related stigma as a salient barrier to HIV testing, but only externalised HIV-related stigma was captured in the quantitative questionnaire. Vietnamese-born migrants were also suggested to have insufficient HIV-related knowledge, particularly related to treatment and prognosis, but was not captured in the HIV-KQ-18 (8).

HIV-related knowledge and HIV-related stigma are key factors in the HIV epidemic and HIV testing, specifically. Based on the literature, HIV-related knowledge and HIV-related stigma were considered as potentially being associated with HIV testing in Vietnamese-born migrants. The revised HIV-KQ-18, after all appropriate revisions (from 18 to 14 items), did not fit the Rasch model and, therefore, did not have good construct validity (however, internal consistency reliability was adequate) in the current sample. The revised ARSS fit the Rasch model and, therefore, had adequate construct validity in this study. To achieve model-fit, however, the ARSS was significantly reduced (from 9 to 6 items). As the scale was already brief, and externalised HIV-related stigma is complex, the utility of the revised scale is questionable. Additionally, the internal consistency reliability of the revised-ARSS was below adequate in Vietnamese-born migrants and Australian-born adults. Due to the findings from the psychometric analyses, some caution is advised in interpreting the results of HIV-related knowledge and externalised HIV-related stigma based on the quantitative analysis. It was, however, beyond the objectives of this study to further revise these scales.

The following Chapter (Chapter Five) discusses the findings from this Chapter (Chapter Four) in light of broader research into migrants and HIV testing and other relevant research. It contributes to Phase Three of the study design, Interpretation. It presents recommendations for researchers and policy makers on improving HIV-related outcomes for Vietnamese-born migrants. These recommendations have possible relevance for other migrant populations, as well.

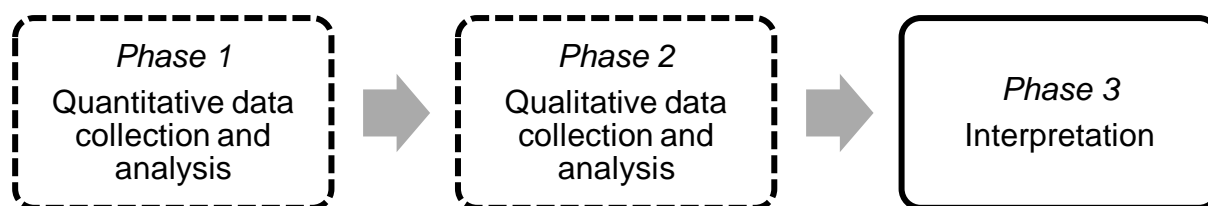
5 Discussion

The purpose of the previous Chapter (Chapter Four) was to better understand the HIV testing behaviour of Vietnamese-born migrants in the greater-Brisbane area. Specifically, it assessed uptake of, and willingness to use/accept, and barriers and facilitators to, HIV testing in Vietnamese-born migrants, which aligned with Objectives One, Two and Three of this study. Additionally, it assessed selected psychometric properties (construct validity and internal consistency reliability) of the Brief HIV Knowledge Questionnaire (HIV-KQ-18; 8) and AIDS-Related Stigma Scale (ARSS; 9) for Vietnamese-born migrants and Australian-born adults (Objective Four).

It found uptake of, and willingness to use/accept, HIV testing approaches to be largely the same between Vietnamese-born migrants and Australian-born adults. Additionally, few barriers and facilitators to HIV testing for Vietnamese-born migrants were identified from the quantitative questionnaire. Qualitative interviews identified several barriers and facilitators to HIV testing approaches, and provided context for the quantitative questionnaire findings for Vietnamese-born migrants. The revised HIV-KQ-18 and the revised ARSS did not fit the Rasch model and, therefore, do not measure well HIV-related knowledge and externalised HIV-related stigma (negative views towards PLWH), respectively, in the study populations.

The purpose of this Chapter (Chapter Five) is to discuss the findings from this study (as presented in Chapter Four), considering broader research into migrants and HIV testing and other relevant research. Based on the findings from this study, and with considerations of the strengths and limitations of this study, recommendations for researchers and policy makers are presented. Through adoption of these recommendations, HIV testing may be facilitated and, therefore, HIV outcomes optimised for Vietnamese-born migrants. This may also have possible relevance for other migrant populations, particularly those from South-East Asia due to cultural proximity and other established migrant populations. This Chapter contributes to Phase Three of the study design, Interpretation, see Figure 5-1.

Figure 5-1 Study phases presented in this Chapter



The use of a mixed methods design aided in the interpretability of both the quantitative and qualitative data. Several findings were consistent across the quantitative and qualitative phases, which strengthens these findings. For example, provider-initiated testing and counselling (PITC) was viewed favourably by Vietnamese-born migrants in both the quantitative questionnaire and qualitative interviews (see Section 5.1.2.2). An inconsistency was, however, found between the quantitative questionnaire and qualitative interviews for rapid HIV testing. Vietnamese-born migrants had lower odds of willingness to use rapid HIV testing; however, interview participants indicated the acceptability of rapid HIV testing (see Section 5.1.2.3). This was, however, in the context of a doctor offering a rapid HIV test at a doctor's clinic, not by a trained community member in a community setting. The discrepancy in findings may also relate to (externalised) HIV-related stigma. This highlights the need for a more nuanced understanding of the acceptability of rapid HIV testing. The qualitative findings also help to understand the poor psychometric properties of the HIV-related knowledge and HIV-related stigma scales in this study (see Section 5.3).

5.1 Uptake of, and willingness to use/accept, HIV testing approaches

This Section (Section 5.1) contributes towards addressing Objective One. Specifically, to assess self-reported uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants in Australia and compare these to Australian-born adults of non-Vietnamese heritage. In the quantitative questionnaire, uptake of, and willingness to use/accept, HIV testing was found to be largely similar between Vietnamese-born migrants and Australian-born adults. There were no significant differences between Vietnamese-born migrants and Australian-born adults across the majority of HIV testing approaches, either previous HIV testing use, i.e. ever tested for HIV or having tested for HIV in the previous year, or willingness to

use/accept HIV testing, i.e. client-initiated testing and counselling (CITC), provider-initiated testing and counselling (PITC), or HIV self-testing (HIV ST), after adjusting for selected predisposing (gender, marital status, HIV-related knowledge and HIV-related stigma), enabling (cost of healthcare prohibitive) and need (HIV risk perception and HIV risk behaviour) variables. Willingness to use rapid HIV testing was, however, significantly different between Vietnamese-born migrants and Australian-born adults. Vietnamese-born migrants had lower odds of willingness to use rapid HIV testing. Findings were contrary to what was hypothesised, see Table 5-1.

Table 5-1 Hypotheses for uptake of, and willingness to use/accept, HIV testing approaches for Vietnamese-born migrants and Australian-born adults

Hypothesis no.	Hypothesis	(Not/partially) Supported
1.1	Vietnamese-born migrants will be more likely to report having ever tested for HIV compared to Australian-born adults.	Not supported
1.2	Vietnamese-born migrants will be less likely to report HIV testing in the previous year compared to Australian-born adults.	Not supported
1.3	Vietnamese-born migrants will be less willing to ask their doctor for an HIV test (i.e. CITC) compared to Australian-born adults.	Not supported
1.4	Vietnamese-born migrants will be more willing to accept PITC compared to Australian-born adults	Not supported
1.5	Vietnamese-born migrants will be more willing to use rapid HIV testing, when compared to Australian-born adults.	Not supported
1.6	Vietnamese-born migrants will be more willing to use HIV ST compared to Australian-born adults	Not supported

CITC: Client-initiated testing and counselling; HIV ST: HIV self-testing; PITC: Provider-initiated testing and counselling.

5.1.1 Previous HIV testing

5.1.1.1 Ever tested for HIV

In the quantitative questionnaire, having ever tested for HIV was not significantly different between Vietnamese-born migrants and Australian-born adults, after adjustments for selected predisposing (gender, marital status, HIV-related knowledge and externalised HIV-related stigma), enabling (cost of healthcare prohibitive) and need (HIV risk perception and HIV risk behaviour) variables. This is inconsistent with some previous research, which has found having ever tested for HIV to be higher in migrants, as compared with the general population (75, 121).

While ever having HIV tested has been higher in migrants in previous research, this may have been due to HIV testing for routine processes, namely immigration requirements. For example, in their study, Ojikutu et al. found that 54 per cent of non-United States (US) born participants had undertaken their most recent HIV test for immigration requirements, which was until recently mandated for migrants pre-arrival (54). Likewise, in Australia, HIV testing is compulsory for a subset of migrants prior to entry into Australia (207, 287). In this study, qualitative interview participants highlighted routine processes (including immigration requirements) as being a key facilitator to HIV testing for Vietnamese-born migrants. In the quantitative questionnaire, however, participants were asked whether they had ever tested for HIV apart from for immigration processes, which may account for the different findings between this study and previous studies. The question was framed this way for easier comparison between Vietnamese-born migrants, at least a subset of whom may have tested for immigration purposes prior to entering Australia, and Australian-born adults. It is, however, unclear whether participants responded as intended to this question.

5.1.1.2 Tested for HIV in the previous year

In the quantitative questionnaire, having tested for HIV in the previous year was not significantly different between Vietnamese-born migrants and Australian-born adults, after adjustments for selected predisposing, enabling and need variables. This is inconsistent with previous research that has found HIV testing in the previous year to be lower in migrant populations, as compared with non-migrant populations (54). In this study, unlike the question on ever tested for HIV, the question on having

tested for HIV in the previous year did not ask participants to exclude HIV testing for immigration purposes. In this study, most Vietnamese-born migrants included in the quantitative analysis had resided in Australia for in excess of one year (n=325). HIV testing for immigration purposes, therefore, would only minimally confound the association between birth country and having tested for HIV in the previous year.

5.1.2 Willingness to use/accept HIV testing approaches

5.1.2.1 Willingness to use CITC

In the quantitative questionnaire, willingness to use CITC was not significantly different between Vietnamese-born migrants and Australian-born adults, after adjustments for selected predisposing, enabling and need variables. Descriptive statistics (frequency tables), however, showed low acceptability of CITC for both Vietnamese-born migrants and Australian-born adults. Qualitative interviews also highlighted the unacceptability of CITC for Vietnamese-born migrants.

The findings from this study on the (un)acceptability of CITC are in keeping with previous research on use of CITC, which has shown low rates of CITC among migrants. In their study with foreign-born migrants in Amsterdam, Stolte et al. examined self-reported previous HIV testing, both active (CITC) and passive (PITC; 59). They found that only one tenth (10.7 per cent) of their sample had used CITC. Together, the findings from this study and previous research highlight the low acceptability/use of CITC and, therefore, the important role of newer HIV testing approaches, namely PITC, rapid HIV testing and HIV ST, in reaching migrants.

5.1.2.2 Willingness to accept PITC

Willingness to accept PITC was not significantly different between Vietnamese-born migrants and Australian-born adults, after adjustments for selected predisposing, enabling and need variables, in the quantitative questionnaire. Descriptive statistics (frequency tables), however, showed high acceptability of PITC for both Vietnamese-born migrants and Australian-born adults. Qualitative interviews also highlighted the acceptability of PITC for Vietnamese-born migrants. Across most qualitative interview participants, PITC offered either as part of other routine processes, including blood tests, or as offered as a standalone HIV test was suggested to facilitate HIV testing for Vietnamese-born migrants.

The findings from this study on the acceptability of PITC are in keeping with a growing body of research with migrants in HICs which supports the acceptability and use of PITC for migrants (34, 56, 59, 125-127, 134). For example, in a sample of never-tested Latino men in the US (n=255), the strongest predictor of intention to test for HIV in multivariate analysis was willingness to accept a physician-endorsed HIV test (126). In a recent qualitative study from Australia with migrants of mixed origin including South-East Asian, the failure of a doctor to offer an HIV test during routine processes, such as sexual transmittable infection (STI) checks, full check-ups and blood tests, was seen by migrants as a missed opportunity for HIV testing (134).

In this study, participants noted several reasons underlying the acceptability of PITC to Vietnamese-born migrants. It was suggested that Vietnamese-born migrants would not think to ask for an HIV test (CITC). Vietnamese-born migrants may feel that they are not at HIV risk in Australia, or they do not engage in HIV risk behaviour. HIV risk perception, however, is not always accurate and/or people may have unknown HIV risk, including medical procedures using unsterilised medical instruments (see Section 5.2.3.1). It was suggested that, while a client asking for an HIV test (CITC) would elicit questioning from the healthcare provider (related to engagement in HIV risk behaviour), an offer of HIV testing (PITC) would not require an HIV risk assessment. As such, PITC would be more comfortable. Vietnamese-born migrants also 'put doctors on a pedestal' and '100 per cent believe in doctors', so are generally willing to test for HIV if it is offered by a doctor. These findings are consistent with previous research. Sub-Saharan African migrants in Belgium feared judgement if they asked for an HIV test, but would accept PITC as doctors are seen as the authority on health (34). Similarly, in Spain, Navaza et al. found that PITC was largely acceptable to Latin American men who have sex with men (MSM) and transgender women, as it avoided the embarrassment arising from asking for an HIV test (125).

Healthcare providers, however, may not offer PITC as they may not consider migrants to be at heightened risk for HIV, or may assume that patients know their own risk. Huang et al. note in their discussion of low HIV testing rates among South-East Asians in the US the concept of the "model minority", whereby patient and healthcare provider HIV risk perception is reduced as a result of South-East Asians generally being well educated and having good incomes (88). It seems likely that

healthcare providers in Australia also believe South-East Asian-born migrants to be at lower HIV risk. Anecdotally, in describing this study to people, the study population (Vietnamese-born migrants) was often met with surprise. This may be as South-East Asian-born people are considered quite conservative. The findings from this study, related to the sexual behaviour of a subset of Vietnamese-born migrant men, however, highlight a need for HIV testing among at least some Vietnamese-born migrants (see Section 5.2.3.2). Additionally, in Australia, disproportionately high HIV rates among South-East Asian-born migrants, as compared to Australian-born adults, show that this population is at HIV risk (5). In their study in Belgium with healthcare providers who have sub-Saharan African patients, Manirankunda et al. found that they often wrongly assumed that, due to the substantial impact HIV has had in sub-Saharan Africa, patients would ask for an HIV test (CITC) if at risk (191).

Additionally, while PITC is often acceptable to migrants of mixed origin, as above, it is not always acceptable to healthcare providers. Research from the US, where HIV testing is recommended to be routinely offered in healthcare settings, shows barriers to implementing PITC, including a lack of awareness of, or belief in, HIV testing guidelines; insufficient time to offer HIV testing; HIV testing not being related to the reason for the consultation; and insufficient reimbursement (288, 289). In the context of PITC for migrants specifically, healthcare providers have also expressed concerns, including that implementing PITC with specific population groups could be perceived as a discriminatory practice (191). In this study, one qualitative interview participant raised this issue, i.e. perceived discrimination by the doctor, as a possible barrier to PITC; however, it was suggested that this could be overcome within a good patient-healthcare provider relationship (see Section 5.2.2.3). In previous research, healthcare providers have also expressed concerns related to uneasiness in discussing HIV and sexual behaviour; engagement across linguistic barriers; and the increased time required for pre-test counselling (191). On the latter concern, in the US, however, a reduced counselling component has been implemented to be able to provide HIV testing in settings where HIV testing has not traditionally been possible (105). Specifically, pre-test prevention counselling is not required prior to a healthcare provider conducting an HIV test (290). In Australia, such an approach, i.e. reduced counselling burden, may be a facilitator to PITC for doctors, with positive implications for HIV-related outcomes among migrants.

Australia has a strong system of primary healthcare providers (general practitioners; GPs). Research shows that GPs are most often the first point of contact for migrant patients (75). In Australia, most sexually transmitted infection (STI) testing for heterosexuals (the predominant mode of HIV transmission for many migrant populations) is carried out in GP settings (43). This is consistent with qualitative research with migrants from Ethiopia and Eritrea, whereby most participants (n=17 of 24) identified their GP as their first point of contact for HIV-related services (109). GPs, therefore, offer an important entry way to HIV testing for migrants.

In their study with HIV positive people from culturally and linguistically diverse (CALD) backgrounds and Anglo-Australians in Sydney, Australia, however, 34 per cent of CALD participants self-reported being very sick in hospital before testing for HIV, as compared to 25 per cent of Anglo-Australian participants (185). This is consistent with research from Belgium, which highlights that HIV testing often occurs as a result of HIV-related symptoms, pregnancy, or pre-operatively (191). HIV-related symptoms may manifest only in the late and final stage of disease and, given the trajectory of HIV, a symptomatic person is likely to have had HIV for a significant number of years (12). Where HIV testing occurs as a result of HIV-related symptoms, the scope for providing health promotional information, and the ability to instill the most optimal preventative and curative action, where appropriate, may be more limited. Placing a greater emphasis on the role doctors, and particularly GPs, play in HIV prevention, e.g. through PITC, for migrants in Australia may prove highly beneficial (291).

5.1.2.3 Willingness to use rapid HIV testing

In the quantitative questionnaire, Vietnamese-born migrants had significantly lower odds of willingness to use rapid HIV testing (adjusted odds ratio; AOR 0.21, 0.08-0.53), after adjustments for selected predisposing, enabling and need variables. This is contrary to findings from the qualitative interviews on the acceptability of rapid HIV testing. Qualitative interview participants stated that knowing the results of an HIV test in a short space of time (rapid HIV testing) was ideal. This was due to worry and anxiety as a result of the seriousness of HIV and HIV risk perception, which would have led to HIV testing in the first instance. A salient finding in the qualitative interviews was the preference of Vietnamese-born migrants for rapid HIV testing to

be conducted by doctors in a clinical setting (doctor's clinic), as opposed to community-based setting.

The inconsistency in findings between the quantitative questionnaire and qualitative interviews in this study on the acceptability of rapid HIV testing in Vietnamese-born migrants warrants further research. When considered in light of findings on internalised HIV-related stigma (fear of being stigmatised if seen HIV testing/HIV positive) from the qualitative interviews, however, the quantitative questionnaire findings on rapid HIV testing are more consistent. Several qualitative interview participants noted in relation to HIV testing, generally, that Vietnamese-born migrants would be in denial of their HIV status, and may wish to delay knowing their HIV status due to internalised HIV-related stigma. Vietnamese-born migrants who accessed HIV testing, or tested HIV positive, were suggested to be viewed differently and, specifically, negatively (see Section 5.2.1.4). It seems likely that Vietnamese-born migrants may feel ambivalent about rapid HIV testing. While they would want to know the results of an HIV test quickly, due to perceived HIV risk, the seriousness of HIV and worry, the potential for an HIV test result (using any approach) to indicate a positive diagnosis would generate ongoing worry about HIV-related stigma (internalised HIV-related stigma).

The findings from the qualitative interviews in this study are consistent with findings from another recent study from Australia. In their study with migrants of mixed origin, including South-East Asian, Gray et al. found rapid HIV testing to be largely acceptable to migrants in their sample (n=77; 134). South-East Asian participants (total n=40; Vietnamese n=3) in their study were either MSM or women, however, and may not reflect the perceptions of heterosexual men. In Australia, the HIV epidemic has been, and continues to be, concentrated predominantly in MSM (146, 148). As such, the HIV-related perceptions and experiences of this population is unlikely to be generalisable to non-MSM. Additional research with migrant populations, and specifically South-East Asian-born migrants, on the acceptability of rapid HIV testing, is required.

5.1.2.4 Willingness to use HIV ST

In the quantitative questionnaire, willingness to use HIV ST did not differ significantly between Vietnamese-born migrants and Australian-born adults, after

adjustments for selected predisposing, enabling and need variables. Data from the qualitative interviews, however, suggest that findings from the quantitative questionnaire for HIV ST may be inaccurate, due to Vietnamese-born migrants not understanding the concept of HIV ST. Several participants in the qualitative interviews were unaware of how HIV ST would work, and they were advised that HIV ST would work much like a home pregnancy kit (105), whereby a person purchases the test and conducts the test themselves (119). No such information was provided to participants in the quantitative questionnaire. In Australia, until recently, no HIV ST kits were available for sale that met therapeutic goods administration (TGA) guidelines (292). Prior to this time, however, people who wished to use HIV ST could import them from overseas (120). Aside from this initial confusion, HIV ST was suggested by qualitative interview participants to have some advantages and disadvantages for Vietnamese-born migrants. Disadvantages of HIV ST, however, seemed to outweigh the advantages of HIV ST.

The findings from the qualitative interviews in this study are somewhat inconsistent with findings from another recent study from Australia with migrants of mixed origin, including South-East Asian. Gray et al. found HIV ST to be largely acceptable to migrants (134). South-East Asian migrant participants in this study were, however, all MSM or female, which may have impacted findings. As outlined above in relation to rapid HIV testing, it is likely that the views of MSM are different from non-MSM men, given the current and historical HIV-related context in Australia, i.e. MSM being the predominantly affected population for HIV (146). In the current study, male qualitative participants did not feel HIV ST would facilitate HIV testing. Additionally, while female participants did note some positives of HIV ST, they also identified several barriers to HIV ST. As a result, Vietnamese-born migrants were suggested to prefer testing for HIV at a GP clinic rather than use HIV ST.

5.1.3 Summary

In the quantitative questionnaire, uptake of HIV testing was largely found to be the same between Vietnamese-born migrants and Australian-born adults (Objective One). In Australia, neither population is the target of health promotional campaigns for HIV or HIV testing, specifically. Neither population, therefore, likely feels HIV testing is of relevance to them. This may be particularly the case for migrants who may have previously tested negative for immigration purposes, and may not see the

need for ongoing HIV testing. Comparing the HIV testing behaviour of Vietnamese-born migrants and MSM (another high risk population; although, the target population for HIV prevention campaigns), however, would likely yield different results. For example, HIV testing behaviour would likely be significantly greater in the MSM population.

Taken together, the findings from the quantitative questionnaire on ever tested for HIV and having tested for HIV in the previous year, suggest that Vietnamese-born migrants have not been engaged with HIV testing or, if they have, this has only been for immigration requirements, without regular follow-up HIV testing. HIV testing for immigration purposes may increase late HIV diagnosis through complacency. Migrants may think that because they have tested for HIV once, then they do not have to test for HIV again, therefore, increasing the chance of late HIV diagnosis. This may especially be the case where migrants consider the host country as lower risk for HIV, as found in this study and previous research (see Section 5.2.3.1).

Findings from this study on the acceptability of traditional HIV testing, i.e. CITC, among Vietnamese-born migrants were relatively clear. There was no significant difference between Vietnamese-born migrants and Australian-born adults in the quantitative questionnaire on willingness to use CITC. Descriptive statistics and qualitative interviews, however, highlighted low acceptability. There is, therefore, a need to understand newer HIV testing approaches, namely PITC, rapid HIV testing and HIV ST.

Acceptability of newer HIV testing approaches were mixed. While there was no significant difference between Vietnamese-born migrants and Australian-born adults in the quantitative questionnaire on willingness to accept PITC, descriptive statistics and qualitative interviews highlighted high acceptability. Vietnamese-born migrants had significantly lower odds of willingness to use rapid HIV testing after adjustments, as compared to Australian-born adults; however, qualitative interviews highlighted the acceptability of rapid HIV testing. This, however, was only in the case of a doctor administering the rapid HIV test, not a trained community member. Had the qualitative interviews been conducted first, a more nuanced understanding of willingness to use rapid testing may have been gained. As with CITC and PITC, while there was no significant difference between Vietnamese-born migrants and

Australian-born adults in the quantitative questionnaire on willingness to use HIV ST; qualitative interviews largely highlighted low acceptability. Several qualitative interview participants highlighted a preference for HIV testing conducted by a doctor, as opposed to a trained community member or themselves, in a doctor's clinic, as opposed to in a community-based setting or at home. This also adds support to the increased use of PITC.

Descriptive statistics from the quantitative questionnaire (chi-squared statistics) showed that Vietnamese-born migrants have significantly lower HIV risk behaviour than Australian-born adults. Regular HIV testing for Vietnamese-born migrants may, therefore, not seem appropriate. It is possible, however, that the HIV risk behaviour measure used in this study did not reflect all appropriate sources of HIV risk for Vietnamese-born migrants (see Section 5.2.3.2). While many Vietnamese-born migrants may not be at risk for HIV and, therefore, have little need for ongoing HIV testing, findings from the qualitative interviews in this study suggest a subset of Vietnamese-born migrants do have ongoing HIV risk and need for HIV testing (see Section 5.2.3.2). It is, therefore, important to understand the acceptability of different HIV testing approaches, and barriers and facilitators to each HIV testing approach.

5.2 Barriers and facilitators to willingness to use/accept HIV testing approaches

This Section (Section 5.2) contributes towards addressing Objective Two and Objective Three. Specifically, to quantify the extent to which specific self-reported demographics, HIV-related knowledge, HIV-related stigma, HIV risk behaviour and perceived HIV risk, and healthcare access variables act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia; and qualitatively explore factors that act as barriers and facilitators to HIV testing approaches for Vietnamese-born migrants in Australia, respectively. Few significant barriers and facilitators to HIV testing were identified from the quantitative questionnaire. Barriers and facilitators that were significantly associated with HIV testing approaches related to all Behavioural Model of Healthcare Utilisation (BMHU) components, i.e. predisposing (marital status, HIV-related knowledge), enabling (cost of healthcare prohibitive) and need (HIV risk behaviour). The results either partially, or did not, reflect hypotheses expectations, see Table 5-2.

Table 5-2 Hypotheses for barriers and facilitators to HIV testing approaches for Vietnamese-born migrants

Hypothesis no.	Hypothesis	(Not/Partially) Supported	Factor/s supported
2.1	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; having higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate ever having tested for HIV.	Partially supported	Higher HIV-related knowledge; higher HIV risk behaviour
2.2	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; having higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate HIV testing in the past year.	Partially supported	Higher HIV risk behaviour
2.3	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; having higher HIV risk perception and HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate client-initiated testing.	Not supported	N/A
2.4	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; having higher HIV risk perception and	Not supported	N/A

	HIV risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate provider-initiated testing.		
2.5	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; having higher HIV risk perception and HIV risk behaviour; and finding the cost of accessing healthcare prohibitive would facilitate willingness to use rapid HIV testing.	Partially supported	Finding the cost of accessing healthcare prohibitive
2.6	Being female; being unmarried; having higher HIV-related knowledge, having lower externalised HIV-related stigma; having higher HIV risk perception and HIV risk behaviour; and finding the cost of accessing healthcare prohibitive would facilitate willingness to use HIV ST.	Partially supported	Higher HIV-related knowledge; Finding the cost of accessing healthcare prohibitive

HIV ST: HIV self-testing

Across the quantitative questionnaire and qualitative interviews, several barriers and facilitators to HIV testing approaches were identified. Numerous consistent findings were found; however, there were some inconsistent and/or interesting findings that warrant further attention. It is important to note that quantitative questionnaire findings from this study are discussed for each specific HIV testing type, i.e. ever tested for HIV, tested for HIV in the previous year, CITC, PITC, rapid HIV testing and HIV ST. In the qualitative interviews, however, HIV testing was often discussed generally. Unless otherwise specified, 'HIV testing' refers to CITC (or CITC in the healthcare setting using a non-rapid HIV test, which is the predominant approach used in Australia; 285). Where a barrier or facilitator relates to other HIV testing approaches, namely PITC, rapid HIV testing or HIV ST, this is specified.

5.2.1 Predisposing

5.2.1.1 Gender

In the quantitative questionnaire, gender was not significantly associated with any HIV testing approach, after adjusting for selected predisposing, enabling and need variables. In the qualitative interviews, however, gender was a salient factor in HIV testing. Vietnamese-born migrant women were considered more willing to test for HIV. In contrast, men were less or not willing to test for HIV. This finding is consistent with previous research with migrants of mixed origin (127, 140, 141, 143, 179, 180). In fact, in their study with HIV positive Latino migrant in the US, Shedlin et al. found that often the only way men find out about their HIV status is through the HIV positive status of their partner (179).

Two female participants (with children) acknowledged pregnancy as a facilitator to HIV testing for Vietnamese-born migrant women. The facilitating role of pregnancy in HIV testing has also been found across the broader evidence-base (31, 140, 144). In a study with Latinos in the US, however, women (as compared to men) were less likely to intend to accept an HIV test, offered at no cost (127). The authors suggested this may have been due to the HIV test being offered outside the reproductive setting, i.e. in the community. HIV testing is largely routine (i.e. PITC) in antenatal settings, worldwide (114, 153). In this setting, HIV testing is normalised and largely facilitates HIV testing for both general population and migrant women (293).

Due to Vietnamese-born migrant women's potential exposure to HIV, particularly through the possible HIV risk-taking practices of their partners (see Section 5.2.3.2), and the efficacy of interventions preventing mother-to-child transmission, HIV testing (and, specifically, PITC) in the antenatal setting is important for facilitating prevention and management of HIV for Vietnamese-born migrant women and their children (24). In this study, it is unclear whether Vietnamese-born migrant women who completed the quantitative questionnaire, and who had previously tested for HIV (ever or in the previous year), had tested for HIV in the antenatal setting, as there was not a separate question on gravidity/parity in the quantitative questionnaire. Such a question was not asked to avoid 'skip' questions (no questions were to be answered by women only) to avoid possible participant confusion.

A female participant in the qualitative interviews acknowledged Vietnamese-born migrant women possibly having to ask permission from their partner before testing for HIV. Needing to seek partner approval prior to HIV testing has also been found in previous research (182). In the host country, migrant women often maintain the gender roles of their home country (25). In Vietnamese culture, women have traditionally been caretakers and homemakers, while men provide economic means (205). Within relationships, Vietnamese-born migrant women are not always able to exert autonomy over all aspects of their lives, including their HIV-related outcomes. In their research on the role of political policies on men's extramarital sexual relations and HIV risk in Hanoi, Vietnam, Phinney et al. found that Vietnamese-born migrant women were rendered "ideologically and structurally inferior to their husbands" (205, p. 655). Such gendered norms within Vietnamese culture may also negatively impact Vietnamese-born migrant women's HIV testing behaviour in Australia, depending on their, and their partners, degree of acculturation.

5.2.1.2 Marital status

In this study, being married was a significant facilitator to having tested for HIV in the previous year in the quantitative questionnaire, after adjusting for selected predisposing, enabling and need variables (AOR: 4.80, 1.06-21.65). This finding is consistent with the findings of a previous study with predominantly (approximately 80 per cent) foreign-born Hispanics aged 18-39 year old, whereby being unmarried acted as a barrier to HIV testing (143); although inconsistent with several other studies (140, 182). Qualitative interview findings from this study highlighted that Vietnamese-born migrant men who have families and are in seemingly monogamous relationships often have multiple partners (see Section 5.2.3.2). Being married or in a monogamous relationship does not necessarily reduce HIV risk and ongoing HIV testing is, therefore, important.

In the qualitative interviews, marriage was highlighted as potentially facilitating HIV testing. Two qualitative interview participants acknowledged that Vietnamese-born migrants might test for HIV before getting married. In such a scenario, this was considered as normal. In France, among other populations, HIV testing is offered to people who are getting married (294). Among Vietnamese-born migrants, given the acceptability of HIV testing before marriage, PITC (see Section 5.1.2.2), and the large number of Vietnamese-born migrants in the quantitative questionnaire who

were married (76 per cent), integrating an offer of HIV testing into the pre-marriage processes may facilitate HIV testing for a large number of Vietnamese-born migrants (294). While such an intervention may facilitate HIV testing prior to marriage, HIV risk behaviour does not necessarily cease at marriage (see Section 5.2.3.2). As a subset of Vietnamese-born migrants, particularly married, middle-aged Vietnamese-born migrant men, likely have increased HIV risk, ongoing HIV testing among married Vietnamese-born migrants is appropriate. Married Vietnamese-born migrant women may, however, find it difficult to test for HIV due to the imbalance of power in their relationships (see Section 5.2.1.1; 205).

5.2.1.3 HIV-related knowledge

In the quantitative questionnaire, HIV-related knowledge, as measured by the revised HIV-KQ-18, was significantly associated with ever tested for HIV and willingness to use HIV ST, after adjustments for selected predisposing, enabling and need variables. Specifically, higher HIV-related knowledge was linked to higher odds of ever tested for HIV and willingness to use HIV ST among Vietnamese-born migrants (AOR: 2.49, 1.15-5.37 and AOR: 2.78, 1.32-5.86, respectively). This finding is consistent with previous research, which has found poor HIV-related knowledge to act as a barrier, while greater HIV-related knowledge acts as a facilitator, to HIV testing (30, 31, 88, 180). Given the poor fit of the revised HIV-KQ-18 to the Rasch model (see Section 4.5.1), however, it is possible that HIV-related knowledge was inadequately assessed in the quantitative questionnaire in this study. This has implications for the association between HIV testing approaches and HIV-related knowledge.

After appropriate amendments were made to the HIV-KQ-18, the revised HIV-KQ-18 did not fit the Rasch model. This indicates that the items in the revised HIV-KQ-18 do not fully measure the latent trait (HIV-related knowledge). The original HIV-KQ-18, however, did not attempt to assess all aspects of HIV-related knowledge. Carey et al. 2002 note that the HIV-KQ-18 does not include items relating to the natural history, trajectory or treatment for HIV (8).

Qualitative interview participants generally noted that Vietnamese-born migrants have some, but limited, knowledge of HIV. They suggested that Vietnamese-born migrants had at least basic knowledge of HIV, particularly related to transmission modes and prevention. There were, however, also several

misconceptions and myths related to HIV, including that HIV could be spread by casual contact, such as sharing drinking utensils. This finding is consistent with other research with female West African migrants in Australia, which showed accurate and inaccurate knowledge of HIV transmission modes, such as sex and mosquitoes, respectively (217). Additionally, qualitative interview participants suggested that Vietnamese-born migrants generally did not have sufficient knowledge of HIV treatment and outcomes. For example, two participants suggested that HIV was still associated with death. Vietnamese-born migrants were also noted to have knowledge deficits related to HIV testing services and/or procedures. Two participants thought that HIV testing was already included in blood tests. This is a commonly held misconception by many migrants, i.e. that HIV tests are included as part of routine check-ups (54). It was not possible to quantify participants' knowledge of HIV treatment, outcomes, HIV testing services and procedures, however, as these aspects of HIV-related knowledge were not included in the quantitative questionnaire. Incorporating HIV testing into routine processes, or as a standalone HIV test, via PITC would likely facilitate HIV testing (see Section 5.1.2.2).

Qualitative interview participants shared their experiences or understanding of HIV from Vietnam and Australia. Findings suggested that essentially all HIV-related awareness and/or knowledge came from Vietnam. Participants recounted interactions with people living with HIV (PLWH), HIV-related knowledge and sources of HIV-related knowledge from Vietnam. In Australia, participants either had no, or limited, awareness or knowledge of HIV. In fact, multiple participants in this study specifically stated that the first time they had heard about HIV in Australia was as part of this study. In Australia, participants were not aware of any HIV-related campaigns targeting the general, or migrant, population. The two participants who were re-interviewed (after an approximate one year gap), displayed no greater awareness of HIV between the first and second interviews. This is contrary to the expectation that awareness of HIV may have potentially increased after previous participation in this study. This finding is consistent with other research from Australia with migrants of mixed origin, which highlighted the limited visibility of HIV in Australia (134).

This lack of awareness of HIV in Australia also likely feeds into HIV risk perception and, specifically, misperception. In the qualitative interviews, one male

participant suggested that there was no reason to test for HIV in Australia (see Section 5.2.3.1). Previous qualitative research with Ethiopian and Eritrean migrants in the UK, also found that HIV-related knowledge was gained in the home country, that HIV awareness and knowledge was minimal in the host country due to a lack of HIV campaigns, and HIV risk was thought to be lower in the UK (109). Other researchers have suggested that, in addition to the limited HIV campaigns targeting the general public, the increasingly good outcomes for PLWH as a result of wider use of antiretroviral treatment (ART), also likely feeds this perception of HIV not being an issue of significance in HICs (129).

In the qualitative interviews, participants highlighted that there was often a disconnect between HIV-related knowledge, HIV risk behaviour and HIV risk perception. It was acknowledged that even where Vietnamese-born migrants had accurate knowledge of HIV transmission modes, they would often still engage in HIV risk behaviour. These people, however, may not see themselves as at risk of HIV. For example, a person who knows that HIV can be transmitted sexually may have sex with a partner of unknown HIV status, but may assume the partner to be HIV negative. Awareness and knowledge of HIV, but lack of translation into HIV preventative behaviour/poor HIV risk perception has also been found in sub-Saharan African migrants in Western Europe and other CALD populations in Australia (26, 75). Poor HIV risk perception has been attributed to denial or HIV transmission misconceptions, i.e. that HIV transmission was facilitated by sexual practices beyond the 'norm' (26). Again, PITC may overcome such barriers to HIV testing (see Section 5.1.2.2).

In the qualitative interviews, participants made a connection between HIV-related knowledge and HIV-related stigma. Vietnamese-born migrants with less HIV-related knowledge would likely hold greater stigmatising views towards PLWH, as compared with people with greater HIV-related knowledge. This is in line with previous research, which attributes externalised HIV-related stigma to two sources, i.e. knowledge deficits and moral connotations (see Section 5.2.1.4; 186). It seems likely, therefore, that efforts to improve HIV-related knowledge may not only increase HIV-related knowledge, with implications for HIV transmission and diagnosis, but also reduce externalised HIV-related stigma (negative views towards PLWH).

5.2.1.4 HIV-related stigma

In this study, externalised HIV-related stigma, as measured by the revised ARSS, was not significantly associated with any HIV testing approaches for Vietnamese-born migrants in the quantitative questionnaire, after adjustments for selected predisposing, enabling and need variables. In this study, while the revised ARSS achieved fit to the model, externalised HIV-related stigma may have been inadequately assessed in the quantitative questionnaire (see Section 4.5.2). The revised ARSS had inadequate internal consistency reliability. Additionally, in achieving fit to the model, the revised ARSS was reduced from 9 to 6 items. It is possible that the revised ARSS does not fully measure externalised HIV-related stigma, with implications for the association between externalised HIV-related stigma and HIV testing approaches in this study. These findings are, however, in keeping with research from the US with non-US born blacks. Ojikutu et al. found externalised HIV-related stigma (respondents' negative feelings, attitudes about coercive public policies, blame, and avoidant behaviours related to HIV) not to be associated with HIV testing in this population (54). These findings may stem from multiple factors, including mandatory HIV testing policies and the type of HIV-related stigma assessed, namely internalised or externalised.

It is possible that migrants may have tested for HIV for mandatory purposes, particularly for immigration requirements. In such instances, HIV testing would occur regardless of a migrant's personal feelings towards HIV testing. For example, migrants may hold stigmatising attitudes and beliefs towards PLWH, which would cause them not to test for HIV voluntarily. They may, however, be required to test for HIV for immigration purposes. While mandatory HIV testing for immigration requirements has since been removed in the US, in research pre-dating this time many migrants tested for HIV regardless of their personal feelings towards HIV and HIV testing (54). HIV testing is still mandated in Australia for a subset of migrants (287). Vietnamese-born migrants in Australia, who have previously tested for HIV, may have done so for immigration requirements. The association between HIV testing and externalised HIV-related stigma would, therefore, possibly be inaccurate.

In this study, however, participants were asked to state whether they had ever had an HIV test other than for immigration requirements. Whether participants did in fact answer the question in the intended way, however, is unknown. The question

relating to having tested for HIV in the previous year, however, did not ask participants to exclude testing for immigration purposes. For the small number of Vietnamese-born migrants who had moved to Australia in the previous year (n=25), it is possible that reported HIV testing in the previous year may have been for immigration requirements, with implications for the association between having tested for HIV in the previous year and externalised HIV-related stigma.

Ojikutu et al., and other authors, suggest that different components and types of HIV-related stigma impact HIV testing behaviour differently (36, 54). For example, Earnshaw and Chadiour note in relation to their conceptualisation of externalised HIV-related stigma that a person who is aware of stereotypes, but does not feel prejudicial towards HIV high risk groups, may not test for HIV where they do not see themselves as a member of that high risk group (36). In such an instance, stereotyping may be more strongly associated with HIV testing than prejudice or discrimination. Likewise, internalised HIV-related stigma (the perception that a person would experience discrimination if they tested HIV positive) as opposed to externalised HIV-related stigma (negative feelings towards PLWH) may impact HIV testing (54). In this study, the quantitative questionnaire had questions on externalised HIV-related stigma that showed no association with HIV testing approaches; however, the qualitative interviews largely focused on internalised HIV-related stigma, which was implicated in HIV testing behaviour. These types of stigma (internalised and externalised HIV-related stigma) are inter-related, whereby internalised HIV-related stigma manifests from the real or perceived externalised HIV-related stigma of others.

In this study, qualitative interview participants identified issues related to internalised HIV-related stigma as a salient barrier to HIV testing and willingness to use/accept PITC, rapid HIV testing and HIV ST for Vietnamese-born migrants. This could cause Vietnamese-born migrants to delay or not test for HIV. Previous research has found internalised HIV-related stigma, i.e. perceived and experienced HIV-related stigma, to negatively affect HIV testing in migrant populations (27, 29, 30). In previous research with sub-Saharan African migrants in Belgium, participants acknowledged denial of one's HIV status was the motivating factor for preferring not to test for HIV (34). This stemmed from fear of the significant personal and social consequences, i.e. death and social rejection, accompanying an HIV positive

diagnosis. In such cases, people have plausible deniability of their HIV status and avoid externalised HIV-related stigma from others (internalised HIV-related stigma). In this study, a factor inter-related with internalised HIV-related stigma was privacy/secretcy. This is consistent with, and is identified within, other research (46, 134). Qualitative interview participants suggested that HIV testing undertaken at a doctor's clinic would, in part, overcome issues related to privacy and internalised HIV-related stigma for PITC. The privacy offered at doctors' clinics also had implications for rapid HIV testing and HIV ST.

Qualitative interview participants were asked whether they thought Vietnamese-born migrants would prefer to access rapid HIV testing in a community-based or clinical setting. Participants unanimously stated that rapid HIV testing occurring at a GP clinic, rather than other private community-based settings using trained community members, for example, would facilitate HIV testing. In addition to wanting a doctor to do the HIV test due to perceived greater accuracy (see Section 5.2.2.4), HIV testing at a GP clinic was suggested to offer privacy. At a GP clinic, people could be there for any medical reason, not only to test for HIV. This is in keeping with previous research with key informants with experience working with the HIV African populations in the UK, who noted a preference for non-specialist centres, due to fear of disclosure (26). This finding is contrary to the acceptability of peer-led approaches to HIV (rapid) testing in the MSM population in Australia. In a sample of approximately 1000 MSM, for example, over half of participants preferred to test in non-healthcare settings (285). As with all of the qualitative findings from this study, caution is advised in extrapolating the findings, which reflect the thoughts of 10 interviewees, as compared to approximately 1000 people in the aforementioned study. The finding from this study, however, provides preliminary evidence of the unacceptability of rapid HIV testing in community-based setting, as opposed to clinical settings, and needs further corroboration. In Vietnam, HIV testing largely occurs in hospital, but not in HIV-specific testing clinics, so it seems plausible that this finding has at least some merit (86).

Several male and female participants discussed the role of privacy in the use (or non-use) of HIV ST. Only one female participant suggested HIV ST in one's home was private. Several participants stated that buying and taking the HIV ST could lead to a lack of privacy. In the home, it was suggested that there were too

many people, and that other people in the household could find out that a person had tested for HIV, or had tested HIV positive. It was suggested that Vietnamese-born people would want to keep this information secret from family and friends, as this may lead people asking questions that a person undertaking HIV ST may not want to answer. Going to the doctor's for HIV testing was preferable as it offers greater privacy. This finding from the study is contrary to recent research with migrants of mixed origin in Australia, who felt concern over HIV testing at a doctor's, as a result of fear of lack of confidentiality and discrimination and, as a result, would prefer HIV ST (134). Additionally, HIV ST was preferred as participants would not want to discuss their sexual health with a doctor; however, an offer of PITC offered to all migrants would likely overcome such a perceived barrier. Together, the findings from this study largely highlight the important and facilitating role traditional healthcare providers, and specifically GPs, have in HIV testing among Vietnamese-born migrants. This has implications for the uptake of newer HIV testing approaches, such as rapid HIV testing and HIV ST.

Despite acknowledging internalised HIV-related stigma as a key barrier to HIV testing, participants noted that views towards PLWH specifically would not always be negative. The qualitative interviews sought participants' thoughts on the perceived experience of Vietnamese-born migrants diagnosed with HIV from the perspectives of family, friends and the community. Participants largely suggested that those with closer relationships to PLWH, including family and friends, would hold more positive views towards them, compared to the Vietnamese community more broadly. Most participants stated that family, and particularly close family (parents) would be supportive in the case of a family member's HIV diagnosis. Most participants suggested that pre-existing friends, especially close friends, would continue to be friends with someone after an HIV positive diagnosis; however, the dynamics within the relationship would likely change. The general community, however, was perceived to be unsupportive of PLWH.

These findings from this study are consistent with previous research (295, 296). For example, Goffman noted that those with closer relationships generally hold less stereotypical responses to a stigmatised person, due to a greater appreciation of the person's other qualities (195). He also noted the possible dynamic changes between someone who acquires a stigmatising trait later in life and the person they

knew beforehand, which may leave stigmatised people feeling uneasy in these relationships (195). In the case of HIV, people who knew the person living with HIV before acquiring HIV may not be able to accept or treat the person as they had before, as they are too attached to who the person living with HIV was before they had HIV. The degree to which people maintain, or fail to maintain, interpersonal relationships may be an indicator of prejudice (36).

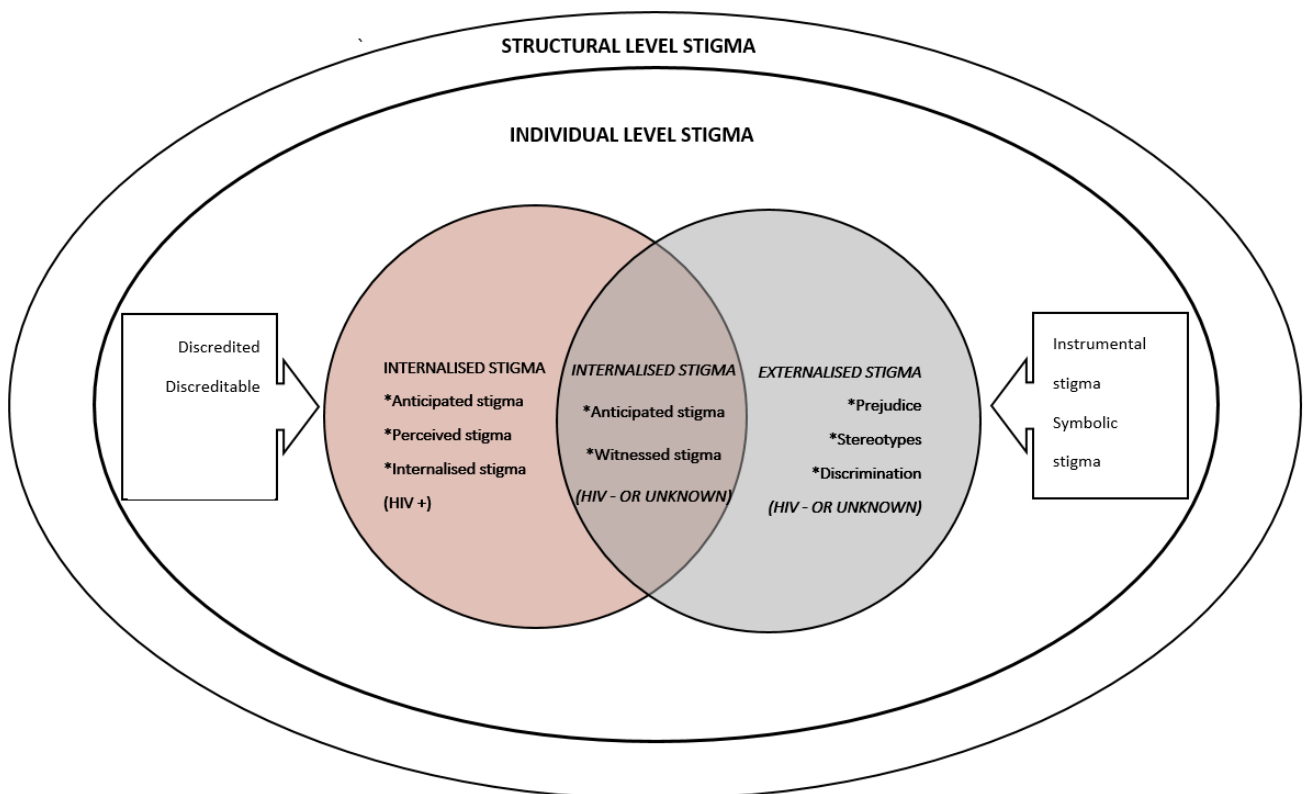
Qualitative interview participants provided reasons why Vietnamese-born migrants, including family, friends and the community, would manifest positive and negative views towards people accessing HIV testing or who test HIV positive. Across HIV testing approaches, it was acknowledged that people would only test for HIV if at risk. People accessing HIV testing may be assumed by others, generally, to have engaged in HIV risk behaviour and/or be HIV positive. Fear of onward transmission, resulting from insufficient knowledge of HIV transmission modes, would result in Vietnamese-born migrants changing behaviour towards PLWH. For example, friends may no longer share food from the same plate (as is typical in Vietnamese culture), so as not to inadvertently spread HIV. Likewise, associations of HIV with 'immoral' behaviours, including drug use, would account for changed behaviour towards people seen HIV testing or who test HIV positive. These findings are consistent with research by Herek et al. in the US, who identified knowledge deficits (instrumental stigma) and connotations of immorality (symbolic stigma), as underlying externalised HIV-related stigma (186).

The findings from this study, as well as previous research, suggest that current, widely applied stigma conceptualisations do not fully capture HIV-related stigma mechanisms, particularly for migrants of HIV negative or unknown status. Previous conceptualisations of HIV-related stigma have distinguished distinct and independent mechanisms for HIV positive and HIV negative or unknown populations (36, 199). For the HIV negative or unknown population, HIV-related stigma mechanisms have related to externalised HIV-related stigma (negative views towards PLWH). Findings from this study, and previous research, show that the HIV negative or unknown population may also experience internalised HIV-related stigma (anticipated HIV-related stigma) or the 'social risk' of HIV testing. These findings, on the role of internalised HIV-related stigma, highlight the false dichotomy between the 'stigmatisers' and 'stigmatised', as often presented in conceptualisations of stigma

(36, 199). Figure 5-2 presents an updated HIV-related stigma conceptualisation, which includes findings integrated from this study, previous original research and stigma conceptualisations.

The updated HIV-related stigma conceptualisation includes HIV-related stigma mechanisms for people of HIV positive and HIV negative or unknown status (36, 199). For PLWH, HIV-related stigma can manifest in felt, anticipated and/or internalised stigma. The degree to which PLWH experience these HIV-related stigma mechanisms may be dependent on the visibility of their HIV, and whether their HIV is discrediting or discreditable (197). For those people of HIV negative or unknown status, externalised HIV-related stigma can manifest in stereotyping, prejudice and/or discrimination. As in the quantitative questionnaire in this study, externalised HIV-related stigma has been assessed with items related to shame, blame, social isolation, etc. (9, 36). Among people of unknown or HIV negative status, these HIV-related stigma mechanisms may stem from knowledge deficits (instrumental stigma) or moral judgements (symbolic stigma).

Figure 5-2 HIV-related stigma conceptualisation



Additionally, as found in this study and previous research, people of negative or unknown status (not only PLWH) may also experience anticipated and/or witnessed HIV-related stigma (internalised HIV-related stigma). These internalised HIV-related stigma mechanisms reflect the 'social risk' of HIV testing, which result in a reluctance to test for HIV. Such internalised HIV-related stigma mechanisms may occur independently of externalised HIV-related stigma mechanisms. It is plausible, for example, that people may not endorse any externalised HIV-related stigma mechanisms personally (e.g. prejudice), and yet may not test for HIV where they perceive they would be stigmatised by others if they tested positive for HIV (internalised HIV related- stigma). As a result of internalised HIV-related stigma, people may manifest feelings of fear, denial, etc., which may result in delayed or no HIV testing.

Together, these individual level internalised and externalised HIV-related stigma mechanisms occur alongside, and impact and are impacted by, broader structural factors, including layered stigma and structural violence (6). Note, that while this conceptualisation acknowledges structural level factors, these are not presented in depth in the figure. The findings from this study relate to individual level HIV-related stigma mechanisms; however, it is important to note that these are situated within a broader context. Future conceptualisations of HIV-related stigma should be cognisant of the multiple mechanisms and types of HIV-related stigma. It is important that these facets are accurately assessed and can be disentangled (e.g. using subscales). This will ensure clarity of HIV-related stigma types and mechanisms that impact HIV-related outcomes, including HIV testing (36).

5.2.2 Enabling

5.2.2.1 Cost of (accessing) HIV testing

The cost of accessing healthcare, i.e. related to direct (out of pocket payments) and indirect costs (transportation) was significantly associated with willingness to use CITC, rapid HIV testing and HIV ST for Vietnamese-born migrants in the quantitative questionnaire, after adjustments for selected predisposing, enabling and need variables. Specifically, finding the cost of healthcare prohibitive was a facilitator to willingness to use CITC, willingness to use rapid HIV testing and willingness to use HIV ST (AOR: 3.16, 1.02-9.74, AOR: 2.29, 1.01-5.19 and AOR: 2.52, 1.21-5.22, respectively). It seems that finding the cost of healthcare prohibitive

might make Vietnamese-born migrants more active with HIV testing, as evidenced by their increased odds of willingness to use CITC. Finding the cost of healthcare prohibitive may, however, make other non-clinical options, more appealing. While there would likely be costs associated with rapid HIV testing and HIV ST, costs may be less. For example, rapid HIV testing likely cuts down costs for Vietnamese-born migrants, e.g. the number of appointments needed for testing and collection of results, and indirect costs, e.g. through lost time off work.

Findings from the qualitative interviews highlighted the cost of HIV testing as a barrier/facilitator to HIV testing, specifically CITC, PITC and HIV ST. Across these HIV testing approaches, cost was suggested to potentially limit HIV testing, while free/low cost would facilitate HIV testing. One participant noted that HIV ST would likely be facilitated where HIV ST kits were not overly expensive (i.e. approximately \$30). This is in keeping with research with African migrants in Ireland, that found high costs of attending healthcare (direct costs, e.g. between EU\$40 to 50 for a consultation, and indirect costs, e.g. transport etc.) limit HIV testing (29).

In many HICs, HIV testing is offered for free. In their review of HIV testing policy in Europe, Mounier-Jack et al. found that all surveyed countries offered HIV testing free to migrants (297). It may be that migrants are not aware of this, and/or costs associated with indirect costs of accessing healthcare, e.g. transport and loss of work, may be prohibitive. Many Vietnamese-born migrants in this study were recruited from Inala, a lower socio-demographic area. In the qualitative interviews in this study, participants acknowledged uncertainty over costs and healthcare entitlements, including HIV testing services. Cost was a salient factor across HIV testing approaches and there is a need to ensure transparency in cost and also free/low cost HIV testing options.

5.2.2.2 Comfort and convenience

Several participants in the qualitative interviews suggested that comfort and convenience would facilitate both rapid HIV testing and HIV ST. Two male participants suggested that rapid HIV testing was easier and more convenient, due to lesser wait time for the results. In the qualitative interviews, Vietnamese-born men were often said to be unwilling to test for HIV, generally (see Section 5.2.1.1). One male participant attributed this to Vietnamese-born men being busy. Given a subset

of Vietnamese-born migrant men's increased HIV risk (see Section 5.2.3.2), facilitating HIV testing for them is particularly important. Rapid HIV testing in clinical settings, as opposed to community-based settings (see Section 5.1.2.3), may be a particularly useful approach to increase HIV testing for Vietnamese-born migrant men.

Two female participants suggested that HIV ST in the home environment was more comfortable, as compared to the clinical environment, and meant not having to travel. In general, however, HIV testing conducted by a doctor, at a doctor's clinic was suggested to be preferred by Vietnamese-born migrants, as compared to HIV ST. This was due to issues related to privacy and technical and emotional support (see Section 5.2.1.4 and Section 5.2.2.4, respectively).

Together, these findings related to comfort and convenience of rapid HIV testing and HIV ST showed some acceptability among Vietnamese-born migrants. Despite this, a more traditional approach to HIV testing (HIV testing conducted by a doctor in a doctor's clinic) was still suggested to be preferred by Vietnamese-born migrants. Further research of the acceptability of these newer HIV testing approaches in Vietnamese-born migrants is warranted.

5.2.2.3 Healthcare provider-patient relationship

In qualitative interviews, several participants suggested that a good interpersonal relationship between Vietnamese-born migrants and healthcare providers would facilitate PITC. This was suggested to be especially the case where there was an existing trusting interpersonal relationship, and when PITC is communicated in a respectful and transparent manner. In such instances, PITC may also facilitate HIV testing for Vietnamese-born migrants who would be hesitant to test for HIV, e.g. older Vietnamese-born migrants who might feel offended by being asked to test for HIV. In the qualitative interviews, a female participant's desire for HIV testing to occur in a sensitive manner was as a result of a previous negative experience with the Australian healthcare system.

Previous research has also identified the importance, though not necessarily the practice, of a good healthcare provider-patient relationship for HIV testing (191). Poor healthcare provider-patient relationships often stem from poor cultural sensitivity of healthcare providers to migrants' needs, and language barriers (29, 31,

191). In this study, a qualitative interview participant, however, noted that Vietnamese-born migrants often travel to see a Vietnamese doctor. In such instances, these factors that inhibit optimal healthcare provider-patient relationships, including lack of cultural sensitivity and language barriers, may be overcome, with positive implications for HIV testing.

5.2.2.4 Technical and emotional support

Several qualitative interview participants noted technical and emotional support as acting as a barrier to rapid HIV testing in a non-clinical setting and HIV ST. Qualitative interview participants suggested that Vietnamese-born migrants would not wish to access rapid HIV testing in a community-based setting. This was, in part, due to preferring a doctor to conduct the HIV test and perceived greater accuracy. Participants stated that Vietnamese-born migrants trust doctors, who they believe to be professional and reliable, as compared to other healthcare providers or staff. These views stem from doctors training for significantly longer periods than other health professional, as well as cultural factors that encourage Vietnamese-born people to respect doctors.

Two female qualitative interview participants acknowledged a lack of accuracy as potentially acting as a barrier to HIV ST. One female participant, who worked in the health field, questioned the accuracy of HIV ST. Another female participant also expressed possible concern with the technical aspects of HIV ST and that there would be no one to support Vietnamese-born migrants in performing the actual test. She, therefore, suggested Vietnamese-born migrants would prefer to go to the doctor in a clinic for HIV testing, which would ensure accurate results. She also acknowledged the lack of emotional support in conducting HIV ST. In the case of an HIV positive diagnosis, she would prefer someone (a nurse or a stranger) with her to offer emotional support, which she may not have if at home using HIV ST. The findings on concern over accuracy and support are in keeping with other research from Australia with migrants of mixed origin in relation to newer HIV testing approaches, namely HIV rapid testing and HIV ST (134). The findings from this study again support the important role of doctors, and doctor's clinics, in HIV testing among Vietnamese-born migrants and the implications of this for newer HIV testing approaches, such as rapid HIV testing and HIV ST.

5.2.3 Need

5.2.3.1 HIV risk perception

In the quantitative questionnaire, HIV risk perception was not significantly associated with any HIV testing approach, after adjustment for selected predisposing, enabling and need variables. This is contrary to previous literature, which has found low self-perceived risk to act as a barrier to HIV testing, while higher self-perceived risk acts as a facilitator to HIV testing (30, 31, 34, 121, 130, 140, 142, 183, 184, 206). In line with previous literature, however, HIV risk perception was key to HIV testing and rapid HIV testing for Vietnamese-born migrants in the qualitative interviews. For rapid HIV testing, it was suggested that Vietnamese-born migrants would want the results of an HIV test as soon as possible, as people would only test if they believed they were at HIV risk. The short reactivity time of the HIV rapid test, and knowing the results quickly, would limit the period of worry by Vietnamese-born migrants.

HIV risk perception, however, may not be accurate. In this study, a female participant noted ten men may engage in HIV high risk behaviour, but only two may test for HIV due to perceived risk. Likewise, a male participant noted that Vietnamese-born migrants, and Vietnamese-born migrant women in particular, have low risk for HIV, despite then stating that Vietnamese-born migrant men often engage in high HIV risk behaviour (which likely places Vietnamese-born migrant women at HIV risk; see Section 5.2.3.2). Another male participant in the qualitative interviews suggested that there was no need for Vietnamese-born migrants to test for HIV in Australia. HIV risk misperception has also been found in previous studies (121). Previous research with female Thai migrants in Sweden and Ethiopian, and Eritrean migrants in the UK, has also highlighted this view of lower HIV risk in the host country (56, 109).

Accurate HIV risk perception would likely facilitate HIV testing across HIV testing approaches. There is a need to broaden people's perception of HIV risk through improving HIV-related knowledge. In the qualitative interviews, however, even where Vietnamese-born migrants have good knowledge of HIV transmission modes/prevention methods, this was suggested to be forgotten during engagement in HIV high risk behaviour or the HIV risks of the behaviour would be minimised, i.e. partners assumed to be HIV negative (see Section 5.2.1.3). In such instances, PITC

may be a useful approach in overcoming poor HIV risk perception and facilitating HIV testing for Vietnamese-born migrants (see Section 5.1.2.2).

5.2.3.2 HIV risk behaviour

HIV risk behaviour was associated with ever having tested and having tested for HIV in the previous year in the quantitative questionnaire, after adjustments for selected predisposing, enabling and need variables. Specifically, high HIV risk behaviour was a facilitator to ever having tested and having tested for HIV in the previous year (AOR: 3.78, 1.07-13.32 and AOR: 7.39, 1.77-30.84, respectively). This is largely in keeping with previous research, whereby migrants with greater HIV risk behaviour have been shown to test (or intend to test) for HIV more (127, 144, 184, 206); although not uniformly (52). Conversely, those with less HIV risk have been shown to test for HIV less (22, 140, 184). For example, among South-East Asians in the US, engaging in sexual HIV risk behaviour increased the odds of having tested for HIV (88).

Qualitative interview participants identified high HIV risk behaviour broadly, and numerous HIV risk behaviours and/or population groups that facilitate HIV testing. Both male and female interview participants stated middle-aged Vietnamese-born men, who often have families in Australia, would often travel back to Vietnam and form other partnerships. In some cases, these were thought to be transactional partnerships, i.e. with sex workers (SWs). There is evidence that migrants returning to their home country often engage in potentially risky behaviour, for example with SWs (298). This appears to be, at least in part, due to the increased purchasing power of returning overseas Vietnamese, and also sex dynamics within social spaces. In Vietnam, for example, men often socialise and conduct business in bars where “promotion girls” are employed to entertain clients, and who also work as SWs (205, 298).

Such behaviour in Vietnam has important implications for HIV in Vietnamese-born migrants in Australia. Vietnam has a higher rate of HIV than Australia, i.e. 0.50 and 0.13, respectively, although it is also a concentrated epidemic, i.e. disproportionately high HIV prevalence (>5 per cent) among sub-populations (43, 299). Additionally, while female sex workers (FSWs) in Australia have an extremely low rate of HIV, the HIV epidemic in Vietnam is largely concentrated in FSWs,

among other high HIV risk groups (300). As risk is a function of epidemiological (HIV prevalence) and individual (HIV risk behaviour) factors, this behaviour in Vietnam highlights additional HIV risk for some Vietnamese-born migrants in Australia, both the Vietnamese-born migrant men and their partners (69).

Across cultures, women are often at HIV risk from sexual intercourse within a heterosexual monogamous relationship (180). Female Thai migrant women have acknowledged their HIV risk stemming from their partners' HIV risk behaviour (56). Likewise, in Vietnam, married women are acknowledged to be at risk for HIV due to their partners' relationships with other women, where condom use is often limited (205). In a study from Vietnam, most men sought HIV testing due to HIV risk behaviour; in contrast, women had sought HIV testing due to their partners' HIV risk behaviour or HIV status (300). In this study, it was suggested that Vietnamese-born men would keep their HIV risk behaviour secret. Vietnamese-born migrant women may, therefore, not perceive that they have any high HIV risk behaviour. In their study, Aynalem et al. found that among foreign-born pregnant women who refused HIV testing in the antenatal setting, a significant proportion of women (40 per cent) did so because they were in a monogamous relationship (182). Even where Vietnamese-born migrant women suspect a partner's high HIV risk behaviour, however, culturally they may not be able to employ preventative HIV behaviours, i.e. condom use, or HIV testing (see Section 5.2.1.1; 25, 180).

Despite being significantly associated with two HIV testing approaches in the quantitative questionnaire of this study, it may be that the HIV risk behaviour measures were not assessing all relevant HIV risk behaviours of Vietnamese-born migrants. While the quantitative questionnaire asked participants about having 'more than one partner', people may have answered this question with respect to their 'everyday life' in Australia. It may, therefore, have been more appropriate to ask about specific HIV risk behaviour, particularly for Vietnamese-born migrant men, in Vietnam. It may also have been appropriate to ask Vietnamese-born migrant women's perception of their partners' HIV risk. In their study with Latino migrants in the US, Chen et al. 2012, for example, asked participants if they believed their partners had concurrent partners (180). Participants from the qualitative interviews in this study, however, indicated that Vietnamese-born migrant men would keep these additional relationships in Vietnam a secret and, therefore, such a question may not

yield accurate results. PITC may facilitate HIV testing for Vietnamese-born migrants (see Section 5.1.2.2). PITC may be less uncomfortable than CITC for Vietnamese-born migrants who have engaged in HIV risk behaviour, as it would not require an HIV risk assessment, and also capture those that have unknown HIV risk behaviour, i.e. from a partner's high HIV risk behaviour, or poor HIV risk perception.

5.2.3.3 Symptoms

In the qualitative interviews, several participants acknowledged symptoms as facilitating CITC and PITC, or an offer of PITC. This is consistent with previous research, where a lack of symptoms acted as a barrier to HIV testing, whereas experiencing symptoms acted as a facilitator to HIV testing (22, 30-32, 34, 121, 127, 155, 179, 183, 184). Among HIV positive people from CALD backgrounds and Anglo-Australians in Sydney, Australia, approximately one-third (34 per cent) of CALD participants self-reported being very sick in hospital before testing for HIV, as compared to one-quarter of Anglo-Australian participants (185). Given the trajectory of HIV, people who present with HIV-related symptoms have likely had HIV for a significant number of years (12). HIV-related outcomes are optimised where HIV is diagnosed early (see Section 2.1). There is, therefore, a need for Vietnamese-born migrants to be engaged with HIV testing prior to onset of symptoms. This may, in part, be overcome by PITC, whereby HIV testing is undertaken at regular intervals (see Section 5.1.2.2).

5.2.4 Summary

Few significant barriers and facilitators were identified across HIV testing approaches for Vietnamese-born migrants in the quantitative questionnaire, after adjusting for selected predisposing, enabling and need variables (Objective Two). Being married facilitated having tested for HIV in the previous year. High HIV-related knowledge facilitated ever having tested for HIV and willingness to use HIV ST. High HIV risk behaviour facilitated ever having tested for HIV and having tested for HIV in the previous year. Finding the cost of healthcare prohibitive facilitated willingness to use CITC, willingness to use rapid HIV testing and willingness to use HIV ST.

In qualitative interviews, several barriers and facilitators were identified for HIV testing approaches (Objective Three). Qualitative interview participants generally suggested that CITC would be facilitated by female gender, being married,

perceiving oneself to be at risk for HIV, engaging in HIV risk behaviour, and having symptoms, while low HIV-related knowledge, internalised HIV-related stigma and finding the cost of healthcare prohibitive would act as barriers. PITC would generally facilitate HIV testing for Vietnamese-born migrants due to the privacy offered by doctors' clinics, where offered for free, where a person has a good relationship with a healthcare provider, and where a person was experiencing symptoms. Rapid HIV testing would be facilitated by convenience, feeling at risk of HIV, and testing delivered by a doctor in a doctor's clinic, as opposed to trained staff in the community. Facilitators to HIV ST for female participants were the comfort, convenience and privacy offered by testing at home. Barriers to HIV ST for male and female participants were a lack of privacy, the possible cost of HIV ST, and lack of technical and emotional support in HIV testing.

Qualitative interviewees provided additional information to contextualise quantitative findings. HIV risk behaviour was not widely significantly associated with HIV testing approaches. It was suggested across male and female participants, however, that a subset of Vietnamese-born men have increased HIV risk, due to having multiple partners in Vietnam. This, however, was not captured in the quantitative questionnaire. Likewise, qualitative interview participants discussed internalised HIV-related stigma as a salient barrier to HIV testing, but only externalised HIV-related stigma was captured in the quantitative questionnaire. Vietnamese-born migrants were also suggested to have insufficient HIV-related knowledge, particularly related to treatment and prognosis, but this was not captured in the HIV-KQ-18. These findings highlight the need for ongoing HIV testing among at least a subset of Vietnamese-born migrants. Additionally, there is a need for accurate measurement of HIV-related constructs, e.g. HIV-related knowledge and HIV-related stigma, which may be associated with HIV testing approaches. This will enable greater utility of findings and, subsequently, implementation of appropriate interventions.

5.3 Scale validation

This Section (Section 5.3) contributes towards addressing Objective Four, i.e. to assess selected psychometric properties (construct validity and internal consistency reliability) of the HIV-KQ-18 (8) and the ARSS (9) in Vietnamese-born migrants in Australia and Australian-born adults including people of Vietnamese

heritage. HIV-related knowledge and HIV-related stigma were key independent variables within the quantitative questionnaire, as well as in qualitative interviews. Across the evidence-base on HIV testing and migrants, studies have used individual items, individual items summed together, or amended previously used scales to assess HIV-related knowledge and HIV-related stigma, often without regard for the psychometric properties of these measures (see Section 2.5.2 and Section 2.5.3, respectively). This is insufficient for measuring complex constructs, such as HIV-related knowledge and HIV-related stigma (see Section 2.5). Without psychometric assessment of measures, it is unclear whether these measures accurately assess HIV-related knowledge and HIV-related stigma. For example, Burke et al. note that scales measured with error (e.g. low consistency among items) may lead to a biased estimate (towards the null), leading to incorrect results/conclusions (190).

In this study, previously validated scales were used to assess HIV-related knowledge and HIV-related stigma, i.e. the HIV-KQ-18 (8) and ARSS (9), respectively. These tools were designed for and validated in other populations, not the Vietnamese or Australian populations. Selected psychometric properties (construct validity and internal consistency reliability) of these scales were therefore assessed in the study populations, as an important part of the study. To the author's knowledge, neither the HIV-KQ-18 nor the ARSS have been validated previously in the Vietnamese- or Australian-born populations.

The findings of the selected psychometric analyses (construct validity and internal consistency reliability) from this study highlight the importance of undertaking these analyses (see Section 4.5). In this study, the revised HIV-KQ-18 did not fit the Rasch model after all appropriate changes were made to the scale, i.e. scale reduced from 18 items to 14 items. The revised ARSS fit the Rasch model; however, it had inadequate internal consistency reliability and it was significantly shortened (i.e. from 9 to 6 items). It is unclear whether aspects of externalised HIV-related stigma are well captured by the revised ARSS. While the pilot data analyses indicated some potential issues with the scales, these were, however, retained for the quantitative questionnaire. This was because there were insufficient alternative scales that were appropriate for the study requirements for HIV-related knowledge and HIV related.

There were few HIV-related knowledge and HIV-related stigma scales from which to choose that were appropriate/relevant for the study population, e.g. general/HIV negative or unknown status population, predominantly heterosexual HIV transmission, and research purpose, e.g. length (190). Most scales on HIV-related stigma, for example, were from the perspective of the HIV positive population, not the general, HIV negative or unknown status population (see Section 2.5.3). This is despite the significant impact HIV-related knowledge and HIV-related stigma among the general population have on prevention and management of HIV. Additionally, among those scales targeted at the general, HIV negative or unknown status population, there were no scales, to the author's knowledge, on internalised HIV-related stigma.

Unfortunately, the inadequacy of the revised HIV-KQ-18 and revised ARSS in this study precludes the drawing of definitive conclusions from the findings of the quantitative questionnaire on HIV-related knowledge and HIV-related stigma related to Objective One and Objective Two. In this study, while there were few significant associations between the revised HIV-KQ-18 and HIV testing approaches (and no significant associations between the revised ARSS and HIV testing approaches) for Vietnamese-born migrants, it is possible that HIV-related knowledge and externalised HIV-related stigma are associated with HIV testing approaches for Vietnamese-born migrants. Scales that had adequate psychometric properties (construct validity and internal consistency reliability) in the study populations may have found different results. Several issues with the scales used in this study were identified, which likely contributed to their inadequacy in this study.

Both scales used in this study were quite dated. The HIV-KQ-18 (8) was developed in 2002, while the ARSS (9) was developed in 2005. Highlighting the dated nature of these scales, many items in the ARSS had to be reworded. This was as the term AIDS is no longer widely used in the field in Australia (262). Other advances in HIV-related knowledge and changes in community responses to HIV and HIV-related stigma would also have inevitably occurred since these measures were first published (222). These changes likely have implications for the validity of these tools. Recently, in the US, while explicit biases (blatant and intentional) towards PLWH have decreased, subtle ones (implicit and unconscious) persist (199). Likewise, in Australia, stigmatising PLWH on the basis of having HIV is

unlawful; despite this, PLWH report experiencing (perceived) stigma and discrimination (27). In recent times, it is likely, therefore, that less overt stigmatisation and discrimination occur, as compared to earlier in the HIV epidemic, but that these processes do still occur. HIV-related stigma is, therefore, not static. Likewise, HIV-related knowledge scales assessing modes of HIV transmission are acknowledged as being more useful earlier in the HIV epidemic; today, more sophisticated scales are required, e.g. items on acute stage HIV infection and concurrent sexual partnerships, to better assess HIV-related knowledge (190). New measures are needed to assess current HIV-related knowledge, beliefs and attitudes.

In developing new measures for HIV-related knowledge and HIV-related stigma, more comprehensive and nuanced measures would be beneficial. It may be useful for investigators to use quantitative and qualitative methods to ensure conceptualisation of, and scales for, HIV-related knowledge and HIV-related stigma within migrant populations are appropriate (190, 301). As outlined in Section 5.2.1.4, current prominent (HIV-related) stigma conceptualisations do not fully capture HIV-related mechanisms for (at least) Vietnamese-born migrants. As a result, scales do not fully capture these constructs. For example, scales are needed that measure externalised HIV-related stigma and internalised HIV-related stigma. Additionally, sub-scales that measure elements within different types of HIV-related knowledge and HIV-related stigma are needed, as HIV-related outcomes can differ by sub-elements of HIV-related knowledge and HIV-related stigma. For example, within externalised HIV-related stigma, prejudice, but not stereotyping, may impact HIV testing. It is, therefore, important to be able to disentangle these different sub-elements, as opposed to having only a total HIV-related stigma score. Constructing appropriate scales to assess the impact of different facets of HIV-related stigma is acknowledged as an important starting point for overcoming HIV-related stigma broadly (36).

The language used in HIV-related knowledge and HIV-related stigma scales and conceptualisations impacts the interpretability of findings. It is important that scale items are not phrased ambiguously (28). In this study, several participants wrote alongside ARSS items, to clarify their responses. For example, several quantitative questionnaire participants noted alongside their response to item five, i.e. "People with AIDS must expect some restrictions on their freedom", that PLWH

should not knowingly transmit HIV to others. For example, one female participant responded 'agree' to the statement, "People with AIDS must expect some restrictions on their freedom"; however, she commented "only in the context that if they know they have HIV/AIDS, they should advise prospective partners and take necessary precautions". Such comments may not necessarily reflect stigmatising beliefs. This also highlights the need to understand the reasons underlying stigmatising attitudes, beliefs and actions (28). There is also a need for consistency in terminology. Across studies, investigators have used a myriad of terms to reflect HIV-related stigma constructs. This inconsistency in labelling makes synthesising findings often difficult or, potentially, incomplete. In their study, for example, Westmaas examined 'social risk', which aligns with internalised HIV-related stigma and, specifically, anticipated HIV-related stigma (156).

While it is important that measures of HIV-related knowledge and HIV-related stigma are sufficiently comprehensive, future researchers need to consider the context in which these tools will be used. A long tool that measures the multipronged construct of HIV-related stigma may not be useful in all research settings, especially where other constructs are also examined. It is, therefore, important that context be considered in all aspects of measure construction, from tool content to length etc. In this study, both scales were chosen, in part, due to their brevity. Quantitative questionnaire length was flagged as an issue in discussions with key informants and in the pre-pilot. The quantitative questionnaire included a multitude of variables, so scales that were relevant and brief were prioritised.

5.3.1 Summary

Rasch analysis was undertaken on the HIV-KQ-18 and ARSS to assess selected psychometric properties (construct validity and internal consistency reliability) in the study populations (Objective Four). The revised HIV-KQ-18 and revised ARSS did not adequately assess HIV-related knowledge and externalised HIV-related stigma, respectively, in the study populations. This likely stemmed from multiple reasons, but particularly as both scales were quite dated. Unfortunately, limited conclusions can, therefore, be drawn on the association between HIV-related knowledge and externalised HIV-related stigma and HIV testing approaches among Vietnamese-born migrants from this study. HIV-related knowledge and HIV-related

stigma are theoretically complex and socially dynamic constructs, and scales measuring these constructs require regular updating and psychometric assessment.

5.4 Behavioural model of healthcare utilisation (BMHU)

Theoretical frameworks and models are useful tools in conducting research and designing interventions (209). Despite this, few previous studies within the evidence-base on HIV testing and migrants have explicitly drawn on theory (see Section 2.4.1). Of those theories used, some may not be appropriate for migrants from collectivist cultures, such as Vietnamese-born migrants, i.e. socio-cognitive theories. The BMHU, an ecological type model, was applied to this study.

The use of the BMHU was a useful starting point for understanding HIV testing behaviour in Vietnamese-born migrants, despite limited significant results in the quantitative phase of the study, which likely stem from methodological (including sample size and operationalisation of variables), rather than theoretical, issues. As previously noted (see Section 2.4.1.1), the BMHU does not specify specific variables that must be included in the analysis/es, but has three overarching components, i.e. predisposing, enabling and need to guide variable inclusion (92). In the quantitative questionnaire, the BMHU components were sufficiently broad to allow for the inclusion of variables possibly implicated in HIV testing behaviour, based on previous research on HIV testing among migrants and also previous applications of the BMHU. Likewise, themes identified in the qualitative interviews were able to be mapped to the components of the BMHU. The broad nature of the BMHU was initially viewed as a strength; however, in hindsight, a more restrictive theoretical framework may have also been useful.

In this study, the BMHU was used to guide (applied theory), rather than explicitly understand HIV testing behaviour (testing theory; see Section 2.4.1). For example, previous quantitative research using the BMHU has analysed BMHU components hierarchically, i.e. additively building logistic regression models with predisposing, enabling and need variables, to understand the impact of each of these components at each stage (92). In this study, due to the small sample size and limited number of predictors in the logistic regression models, hierarchical entry was not undertaken. Future studies, with larger sample sizes and a greater number of predictors, may use the BMHU to a greater degree in analysing and interpreting

findings. In order to advance the field, increased use of theory (and comprehensive use theory, including applying or testing theory) should be considered in future research (177).

Equally, other theories/frameworks should be examined for their potential applicability in the HIV testing behaviour of migrants. While few studies within the evidence-base of HIV testing behaviour of migrants in HICs have drawn on theory, examination of the use of theory in similar research may be helpful. For example, in her study, Dean (247) examined the sexual health knowledge, attitudes and beliefs of Queensland Sudanese communities in which she drew on the Integrated Behavioural Model (IBM). The IBM includes components from several prominent behaviour theories, i.e. the Theory of Reasoned Action (TRA), Health Belief Model (HBM) and Social Cognitive Theory (SCT). In order to change behaviour, IBM's focus is on "changing beliefs about consequences, normative issues, and efficacy with respect to a particular behaviour" (302, p. 164). The IBM, which did not require any amendments, was deemed useful in conducting Dean's research. This research also highlights the potential for theoretical frameworks to be used in combination to meet research needs.

5.5 Strengths

Engagement with a key community-based organisation (CBO), i.e. ECCQ, from early in the study was very helpful for orienting the research towards a gap and an area of relevance. This was also useful for practical help, including how best to reach Vietnamese-born migrants, and contact details for data collection sites. Likewise, discussion both formally and informally with key informants, other Vietnamese higher degree by research (HDR) students, and Vietnamese research assistants throughout the research was useful for ensuring materials and procedures were best targeted towards Vietnamese-born migrants. Through engaging appropriately with these people, it is likely that participation by Vietnamese-born migrants was maximised.

A strength of this study was the narrow study population, i.e. Vietnamese-born migrants only, as opposed to South-East Asian-born migrants, for example. Previous research has examined broader migrant populations in their samples, such as South-East Asian migrants (88), sub-Saharan Africans (34) and non-US born Blacks (54). In their study of the HIV testing behaviours of US and non-US born Blacks, Ojikutu note that in excess of fifty countries of origin were represented in their study (54). In such

a study, with a relatively small sample size (non-US born n=607), it is not possible to explore nuances by country of origin/birth country. Investigators have justified the use of broad categorisation, stating that there are likely shared elements for migrants from world regions (34). While there may be some overlapping barriers and facilitators to HIV between migrants from different world regions, or the same world regions, there may also be nuances by birth country (see Section 2.4.2.8). Research is needed for, and interventions need to be tailored to, specific populations and contexts, if HIV-related outcomes are to be improved.

Offering a small token of acknowledgment for the time taken to support the research, was ideal. A key informant from ECCQ, based on previous research with Vietnamese-born migrants, suggested this token. Anecdotally, recruiting migrant population participants without such a token is increasingly difficult. Future researchers should be cognisant of this when applying for research grants and allocate sufficient funds. In this study, while not so much as to be coercive, this gave participants fair compensation for their time. If this was not offered, the demographics of the sample may have been different. For example, it may have been those people with a greater interest in the research topic who agreed. It seems likely that the inclusion of this token may, however, have reached a broader audience. As the study did not collect data on non-included potential participants, the demographics of people who were not reached are not clear. Future studies should make a concerted effort to collect this data.

Employing Vietnamese staff was an asset. Despite study materials being available in Vietnamese (as professionally translated) for the piloting and quantitative questionnaires, there can be no substitute for a Vietnamese-speaking staff member/s. Likewise, in the qualitative interviews, even when participants spoke English fluently, some still used some Vietnamese phrases to express themselves or a concept. If the investigators present were not familiar with Vietnamese or the Vietnamese culture then these small, but often important, nuances may have been lost. Ensuring Vietnamese staff were not too intimately connected to the community was, however, also important, so that participants felt that their engagement with the study was confidential (31). A Vietnamese research assistant, with knowledge of the research and the Vietnamese population, was also important for reviewing the translated documents (which were often quite literal or formal) to ensure that they were appropriate for the general community.

In their study, Ojikutu et al. noted that several participants failed to answer the sensitive HIV risk questions (54). This, however, was not a significant issue in this study. This was despite key informants and participants suggesting during piloting that such questions may be too sensitive and taboo for Vietnamese-born migrants to discuss. Several participants in this study provided feedback that they were genuinely interested in, and engaged with, the topic and participating in the research. This was also attested to by several, particularly Vietnamese-born participants, declining the gift card offered to participants on completion of the quantitative questionnaire. This suggests that people did not just participate in this study on a sensitive topic for the token of acknowledgement.

It also shows a trust in the research team and the methods employed. The quantitative questionnaire and recruitment methods had been tailored to the Vietnamese-born migrant population through discussions with a key informant at ECCQ, participants during piloting, Vietnamese staff and Vietnamese higher degree by research (HDR) students. Qualitative interview participants were largely recruited via the quantitative questionnaire, which meant that they understood the study aims and topics to be covered. These participants had also previously engaged with the research team (to some degree), which may have led to more trust and openness in the qualitative interviews. Qualitative interviews were conducted in locations chosen by participants. This included their houses, workplaces or other quiet, but public places. The presence of a Vietnamese investigator at the qualitative interviews was likely an asset, in terms of language skills and cultural understanding.

While there are a mix of quantitative and qualitative studies contributing to the evidence-base, there is a dearth of studies using mixed methods designs. Mixed methods approaches are particularly important in conducting cross-cultural research, to fully capture and explain contextual factors (233). This study was strengthened due to its use of mixed methods, specifically the explanatory sequential mixed methods design. This allowed for some quantification of the magnitude of associations between variables drawn from the evidence-base and HIV testing approaches, and to contextualise findings. The qualitative component was particularly important due to the cross-cultural element of the research, which allowed participants to provide meaning to the findings. It also uncovered further areas of interest, e.g. related to HIV risk behaviour of a subset of the Vietnamese-born population. As a result, it may have

been more optimal to have conducted the qualitative interviews before the quantitative questionnaire.

Understanding rates of HIV testing and which HIV testing approaches are preferential for whom, and in what context, is of great importance. In assessing uptake of, and willingness to use/accept, HIV testing, however, the different HIV testing approaches have largely not been distinguished or analysed (52, 127). A strength of this study was the inclusion of different HIV testing approaches. A key finding from this study was the importance of PITC in facilitating HIV testing for Vietnamese-born migrants. There is, however, a need to understand PITC from providers' perspectives. There is a small, but growing, body of evidence available on the use of PITC with migrants, which has identified several barriers to implementation (125, 191). This research, however, comes from Europe. Local research, set within the Australian healthcare system, is needed. Mixed findings on rapid HIV testing and HIV ST, combined with the limited body of evidence on these newer HIV testing approaches, warrant further research.

Assessing selected psychometric properties (construct validity and internal consistency reliability) of the scales included in this study, i.e. HIV-KQ-18 (8) and ARSS (9), was considered critical. Findings from the Rasch analysis showed that these scales were not ideal in the study populations (see Section 4.5). Without this assessment, results in relation to HIV-related knowledge and externalised HIV-related stigma may have been misconstrued. Future research needs to include appropriate, psychometrically sound scales for HIV-related knowledge and HIV-related stigma broadly. Few HIV-related knowledge and HIV-related stigma scales for use with the general/HIV negative or HIV unknown status population that had been rigorously psychometrically tested were available (see Section 2.5). Based on the literature review, and the findings from the quantitative questionnaire, qualitative interviews and scale validation in this study, it seems likely that further scales for HIV-related knowledge and HIV-related stigma need to be constructed.

5.6 Limitations

This study has multiple limitations. These are discussed according to several broad categories below.

5.6.1 Study design

The study was cross-sectional. Causality may, therefore, not be attributed. Due to the time limitations imposed by an approximate three-year PhD, it was not possible to assess uptake of, and willingness to use/accept, and barriers and facilitators to, HIV testing approaches in Vietnamese-born migrants longitudinally.

A further limitation was the sequencing of the quantitative and qualitative phases. The qualitative interviews (n=10, with 2 participants re-interviewed) were conducted after the quantitative questionnaire, i.e. explanatory mixed methods design. It was during the qualitative interviews, however, that Vietnamese-born migrant men were highlighted as often having greater HIV risk behaviour, for example, due to extramarital sexual relationships whilst travelling in Vietnam. This finding was extremely interesting and, after this theme emerged, was consistent across the remainder of the qualitative interviews. It would have been ideal to collect data on this through the quantitative questionnaire, as well. Had the qualitative interviews been conducted prior to the quantitative questionnaire, i.e. exploratory mixed methods design, then this could have been incorporated into the questionnaire and allowed a greater sense of the scale of this issue. This finding, however, may be useful for researchers in this field in the future.

The qualitative interviews were intended to supplement the quantitative questionnaire. In practice, however, given the limited quantitative findings, more emphasis was placed on the qualitative findings. In hindsight, an exploratory mixed methods design would have been more beneficial. Future researchers may wish to conduct a qualitative phase first. Whilst the order of the data collection phases was not ideal, the findings from this study may, however, be useful for future researchers.

5.6.2 Sample

This study used a non-probability sampling design. While not ideal, this was the only feasible way to approach this study, given logistical constraints. This approach, however, is widely used in research within the migrant and HIV domains. The non-probability sample does not permit generalisation across the broader Vietnamese-born migrant population in Australia (283). Additionally, no demographic or other details were collected from people who did not participate in the study, due to the recruitment strategy (convenience sampling). It was, therefore, not possible to

ascertain whether people who agreed to be in the study were similar to, or different from, each other. While this issue was raised in early discussions prior to the data collection, and it was decided efforts would be made to gather such information, upon entering the field it became apparent that it was not going to be feasible to collect this data. This was due to the opportunistic nature of the data collection method. Future studies may use different data collection methods that enable the collection of this data.

The data collection sites, noted enclaves for Vietnamese-born migrants or people of Vietnamese heritage, may have implications for findings. It is possible, due to the social nature of the data collection sites, that it may be those who are integrated better within the Vietnamese community who frequent these locations, regardless of time in Australia. Vietnamese-born migrants living in enclaves are also likely to have access to Vietnamese-speaking doctors etc. who also work in these areas, which may limit language barriers to healthcare, when compared with Vietnamese-born migrants living in non-enclaves. At the same time, Vietnamese-born people with greater assimilation with the Australian-born population may not frequent Vietnamese 'hubs' (236). While the locations had a distinctly social feel, they weren't purely social. Inala Civic Centre and Davies Park Market (West End) offer goods and services, which may have broadened the demographics. As the Australian-born sample were recruited in the same 'Vietnamese hubs', it is also possible that these participants are not representative of Australian-born adults who do not live or frequent these locations.

Sample inclusion criteria was broad. In the quantitative questionnaire, participants could be of any HIV status. HIV status was not collected in the quantitative questionnaire. It is possible that some participants were HIV positive and would not require ongoing HIV testing, thereby biasing results (303). The Australian-born sample included people of any heritage. Most Australian-born participants stated that their mother and father were born in Australia (n=147 and n=150, respectively). A small number had a mother or father born in a country other than Australia or Vietnam (n=30 and n=29, respectively). Fewer had a mother or father born in Vietnam (n=16 and n=14, respectively). These Australian-born participants of Vietnamese heritage (a mother and/or father born in Vietnam) were excluded from the analysis for easier interpretation of differences between Vietnamese-born

migrants and Australian-born adults. Likewise, inclusion criteria for Vietnamese-born participants was broad. The degree to which Vietnamese-born students can, or should, be compared to Vietnamese-born refugees, for example, is questionable. Similarly, newer migrants likely differ from more established populations (62). There is, however, a great deal of variability, both between and within, migrant populations, with implications for generalising findings (54). In hindsight, it may have been preferable to have tighter inclusion criteria, or have greater detail of participant characteristics (e.g. student status).

Qualitative interview participants were largely recruited via the quantitative questionnaire. It is possible that those with a greater interest in, or knowledge of, the topic may have selected to nominate for a qualitative interview. This may introduce bias into the findings (31). There was, however, considerable overlap of themes between participants (26). Additionally, qualitative research is not designed to be representative (228).

The sample size for the qualitative interviews was small. A total of 12 interviews were conducted with 10 participants. In their study of saturation, however, Guest et al. showed that most codes developed across 30 interviews were identified after 12 interviews (92 per cent; 304). As above, findings across participants in this study were largely consistent. This suggests a degree of saturation and, therefore, reliability in the findings (26). Qualitative research is also not designed to be representative (228). Further quantitative research is required to validate the qualitative findings in a larger sample.

Two female participants were re-interviewed in this study. These female participants were reinterviewed to further explore themes from the first round of interviews. This included a theme related to the potentially high HIV risk behaviour of a subset of Vietnamese-born men that emerged among the male participants, after the majority of female participants had already been interviewed. The two female participants were re-interviewed approximately one year after completing their first interview. While this gap was not ideal, it is unlikely to have affected findings. These participants did not report any greater awareness of HIV in Australia since their first interview. The focus of these additional qualitative interviews was also not particularly time-dependent. For example, patterns of high risk behaviour would be

unlikely to shift in the space of one year. In keeping with this, these participants noted trends in acceptability of multiple partners in terms of generations, not individual years.

A limitation of the qualitative interview sample was the limited criteria used to purposely select participants. This included the limited age range of the participants. Participants were largely in their thirties. A broader distribution of ages may have yielded different and/or more accurate (/generalisable) findings. For example, interview participants noted that 'older' Vietnamese-born migrants, particularly men, often engage in potential HIV risk behaviour in Vietnam. Inclusion of older male interviewees (those in the study were all born after 1980) may have increased the accuracy of these findings, as this relates to their peers. Participants were, however, diverse in other demographic details, including their marital status, educational status, and reasons for coming to Australia.

A South-East Asian-born migrant population from a high HIV prevalence country, such as Cambodia or Thailand, was not chosen, due to logistical reasons (107). After discussions with a key informant from ECCQ and within the research team, accessing these populations in Queensland, however, was deemed too difficult. This was due to small numbers of migrants from these countries, and an inability to reach this population in sufficient numbers to gain meaningful insights. In contrast, the Vietnamese-born migrant population is large and accessible, with several geographical areas known to be 'hubs' for people born in Vietnam or of Vietnamese heritage. As such, the research is intended to be representative of Vietnamese-born migrants in the greater-Brisbane area. Insights gained with this migrant population may be more transferable to research with other South-East Asian-born populations (as opposed to research with sub-Saharan African migrants, for example), due to cultural proximity (10), and other established migrant populations.

It would have been ideal to also have a sample of healthcare providers in this study. This would have enabled further triangulation of findings. The aims of this study were not, however, to examine healthcare provider perspectives of HIV testing behaviours among Vietnamese-born migrants. Future investigators, however, should

consider research with healthcare providers who provide services to migrants, particularly in relation to PITC.

5.6.3 Quantitative questionnaire

The HIV testing behaviour of migrants has largely been assessed via self-report. In the quantitative questionnaire, this study also used self-report. The self-reported nature of the quantitative questionnaire may mean that data is not accurate. Previous authors have noted that self-reported HIV testing may be higher than actual HIV testing (54). Additionally, willingness to use/accept HIV testing does not necessarily equate to actual HIV testing (206). Several questions in this study asked about willingness to use/accept HIV testing and may, therefore, not be indicative of actual behaviour. As this study employed a cross-sectional design, the degree to which willingness to use/accept HIV testing translates to HIV testing behaviour is not clear. Data may also be influenced by social desirability bias, whereby participants answer in a way deemed more socially acceptable; however, as the quantitative questionnaire was self-administered (as opposed to interviewer administered) and in private, this was likely to have been minimised (156, 305). A significant number of participants endorsed responses to items that were not necessarily socially acceptable, particularly related to HIV risk behaviour, and it therefore seems likely that participants generally reported accurately. Additionally, recall bias may be an issue for several questions, particularly those which relate to 'ever' or 'in the past 12 months', as opposed to 'the last time' (305). Ideally, studies would be linked to medical records, which would give an objective measure of HIV testing (54).

The quantitative questionnaire included two scales, on HIV-related knowledge and HIV-related stigma, which were validated in the study populations. These scales were, however, suboptimal (see Section 4.5). This stems from multiple reasons, including relevance of construct elements included in the scale and being dated (see Section 5.3). To the author's knowledge, there were no other HIV-related knowledge scales or HIV-related stigma scales that had been previously rigorously psychometrically tested, were appropriate for the study populations and/or were of an appropriate length for use in this study. The lack of recently developed scales for use with general, HIV negative or unknown status, migrant populations is also highlighted in the study by Ojikutu et al., who drew on the HIV-KQ-18 for HIV-related knowledge and work by Herek et al. conducted in 1993 (295) for HIV-related stigma

(9). While unfortunate that the revised HIV-KQ-18 and revised ARSS were not ideal for use with the study populations, the qualitative interviews provided greater insights into HIV-related knowledge and HIV-related stigma. Together, the findings from this study may guide future research into HIV-related knowledge and HIV-related stigma.

In the quantitative questionnaire, a small number of participants (<10) failed to complete both sides of the questionnaire. As a result of the significant degree of missing data, these participants were excluded from the analyses. While this was unfortunate, having a document that appeared much larger would have deterred more participants from agreeing to complete the quantitative questionnaire. All participants who completed the pre-pilot flagged the length of the quantitative questionnaire as an issue.

Based on findings from the qualitative interviews, operationalisation of several variables in the quantitative questionnaire could have been improved. A subset of Vietnamese-born migrant men, for example, engages in HIV risk behaviour in Vietnam. A question relating to specific HIV risk behaviour in Vietnam would have been beneficial. Additionally, for Vietnamese-born migrant women, a question on partner HIV risk behaviour would have been useful. Additionally, while educational attainment was included in the quantitative questionnaire, the range of options may have been too limited. For example, in qualitative interviews, participants discussed differences in attributes for those with higher education; however, the quantitative questionnaire asked only about education to a secondary level. It was for this reason that education was not included in the quantitative questionnaire data analyses.

5.6.4 Quantitative analysis

The sample size for the quantitative questionnaire was small. This was further reduced by missing data. The level of missing data was, however, not a significant issue (<1 per cent of values included across all analyses). Multiple imputation was, therefore, not run to address the missing data.

While adjusting for confounders is acceptable, and even the norm in quantitative research, it is important to also note the limitations. This process is devoid of context. The degree to which adults living in Inala and West End are comparable to adults living in Rockhampton, Mackay, Townsville, etc. is questionable. Extrapolating findings beyond the study sites, therefore, requires caution in generalising the results.

Given the methods used, it is more reasonable to state that the findings from this study are representative of Vietnamese-born migrants and Australian-born adults within the greater-Brisbane area.

5.6.5 Qualitative interviews

The inability to perform all phases in Vietnamese means that important contributors were possibly omitted and nuance lost. During the qualitative interviews, however, several participants spoke at least some Vietnamese at times to better express themselves. While this meant that language was less of a factor, the issue of translation came into question. Where participants spoke Vietnamese in the qualitative interviews, the Vietnamese research assistant translated straight to English. The Vietnamese research assistant, however, was not an accredited translator. In such instances, he translated into English in front of the participant, who was asked whether the English translation was a good representation of what they had said in Vietnamese. Some participants also spoke with a heavy accent, and it is possible that some words were misheard. Through this process it is possible that some nuance was lost.

This study used a semi-structured qualitative interview approach. While this approach allowed for some flexibility, some emergent themes were not able to be examined in-depth (31). The degree of depth for each topic was guided by the research objectives and questions. Other areas that may warrant further attention in migrant populations generally were identified, including HIV risk behaviour, particularly on return visits to the home country, and how this impacts the HIV context in the host country.

In the qualitative interviews, HIV testing was often discussed generally. Unless otherwise specified, 'HIV testing' was considered to refer to CITC (or CITC in the healthcare setting using a non-rapid HIV test, which is the predominant approach used in Australia). This was as opposed to the quantitative questionnaire, which examined HIV testing approaches more clearly, i.e. ever tested for HIV, tested for HIV in the previous year, willingness to use CITC, willingness to accept PITC, willingness to use rapid HIV testing and willingness to use HIV ST. It is possible that some nuance was lost, due to the broader terminology used in the qualitative interviews.

5.7 Recommendations

Despite the many limitations, this study is an important starting point for identifying and understanding the HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane, Queensland. Based on the findings of this study, several areas of interest to policy makers and future investigators have been identified related to increasing HIV testing among Vietnamese-born (and other) migrants. While increasing HIV testing is important, it is only one component in the HIV care continuum. In HICs, ART is widely available (154). Culturally appropriate referral and care pathways are required for migrants who test HIV positive (141). This will ensure the best outcomes for migrant PLWH, but may also encourage migrants, who often fear uncertainty over a possible HIV positive diagnosis, to test for HIV. Among African migrants in the UK, it was acknowledged that while HIV testing was free regardless of immigration status, treatment was not, and this factored into participants' considerations of HIV testing (155).

5.7.1 Improving HIV-related knowledge

Attempts should be made to improve HIV-related knowledge among Vietnamese-born migrants. In the quantitative questionnaire in this study, higher HIV-related knowledge facilitated having ever tested for HIV in multivariate analysis. This is consistent with previous research showing higher HIV-related knowledge facilitates HIV testing, while lower HIV-related knowledge acts as a barrier to HIV testing (30, 31, 180). In this study, qualitative interview participants described Vietnamese-born migrants as having some HIV-related knowledge, but not enough. HIV-related knowledge deficits particularly related to transmission myths and prognosis. In Australia, qualitative interview participants suggested that there was a lack of HIV information, and further HIV-related knowledge was not generally gained.

Dispelling myths of HIV transmission can be easily addressed through a basic health information campaign (217). Up-to-date information on HIV, including information on treatment and prognosis, should also be presented (25). Updated knowledge of the good prognosis PLWH now have, because of ART (and especially ART that is started early), is important. These facets of HIV-related knowledge, i.e. transmission and prognosis, are important for preventative healthcare and, specifically, use of HIV testing in migrant populations (180, 217). Accurate knowledge of HIV transmission modes and, therefore, when to test for HIV, and that

an HIV positive diagnosis does not equate to death, may facilitate HIV testing. Implementing an HIV education campaign may also overcome the perception that HIV is not an issue in Australia.

An information campaign addressing the above HIV-related knowledge deficits could be presented across Vietnamese media, particularly in the Vietnamese language. This includes the newspaper and radio, although the radio was generally felt to have an older audience. Findings from this study, however, highlight that this may be a population at greater risk for HIV, particularly men, and warrants increased HIV awareness. More interactive types of health promotion could also be presented at Vietnamese community events; however, in keeping with the qualitative findings, rapid HIV testing offered at a community event would be unlikely to facilitate HIV testing due to internalised HIV-related stigma. These methods would be likely to reach a large audience of Vietnamese-born migrants who were said to be very engaged with these forms of media and events.

5.7.2 Measuring and addressing HIV-related stigma

Reducing HIV-related stigma should be prioritised to increase uptake of HIV testing approaches, and facilitate a supportive environment in the case of an HIV positive diagnosis. While externalised HIV-related stigma was not associated in multivariate analysis with any HIV testing approaches, internalised HIV-related stigma was a salient barrier to HIV testing in the qualitative interviews. Qualitative interview participants suggested that Vietnamese-born migrants' expressions of externalised HIV-related stigma (and the cause of internalised HIV-related stigma for people accessing HIV testing/PLWH) stemmed from insufficient HIV-related knowledge (instrumental stigma), related to HIV transmission and prognosis, and associations of HIV with 'immoral' behaviour (symbolic stigma). Further research, including the development of HIV-related stigma conceptualisations and HIV-related stigma scales, is needed into the different aspects of HIV-related stigma that affect HIV testing in the Vietnamese-born migrant, and other migrant, populations.

Reductions in HIV-related stigma can likely be achieved, at least in part, through greater HIV-related knowledge. This, however, is not the sole answer, as research has shown that even those migrants with good HIV-related knowledge endorse (externalised) HIV-related stigma (33). Interventions to reduce HIV-related stigma, therefore, need to be multifaceted and multilevel (25, 33). Community level

interventions may be particularly important for migrant populations that come from collectivist cultures, such as Vietnamese-born migrants, where ostracism may be especially difficult for PLWH to manage (32). Efforts to normalise HIV at the community level would also be beneficial for HIV testing. Internalised HIV-related stigma was identified as a salient barrier to HIV testing in the qualitative interviews. The qualitative findings from this study (in keeping with others), highlighted that proximity to PLWH impacts Vietnamese-born migrants' expressions of externalised HIV-related stigma, whereby Vietnamese born migrants with closer relationships generally hold more favourable views of PLWH. This information may be harnessed and incorporated into targeted HIV testing campaigns to increase HIV testing, by challenging Vietnamese-born migrants' views that everyone will look differently at people HIV testing and/or PLWH. The increased visibility of HIV, through health promotional campaigns (in addition to increasing HIV-related knowledge), may also reduce (internalised and externalised) HIV-related stigma.

5.7.3 Additional examination of newer HIV testing approaches

The traditional approach to HIV testing, namely CITC, has failed to reach all populations at risk of HIV, including migrants. This is evidenced by disproportionately high rates of late HIV diagnosis, as compared to the host country population. Newer HIV testing technologies would be hoped to facilitate HIV testing, by removing the barriers to HIV testing of more traditional approaches, and particularly facilitate HIV testing for those people who have not engaged with testing previously and are at increased risk of contracting HIV (202). As such, it is important to examine the role of PITC and other newer HIV testing approaches, i.e. rapid HIV testing and HIV ST, among migrants.

In the quantitative questionnaire, multivariate analysis indicated there were no significant differences in willingness to accept PITC between Vietnamese-born migrants and Australian-born adults. Descriptive statistics, however, showed high levels of acceptability of PITC by both Vietnamese-born migrants and Australian-born adults. In the qualitative interviews, HIV testing for routine purposes, i.e. immigration reasons, as part of a blood test and/or STI check, as well as a standalone HIV test offered by a doctor, were important facilitators to HIV testing for Vietnamese-born migrants. In Australia, CITC remains the predominant approach to HIV testing, apart from several defined populations, e.g. pregnant women and MSM (285). This is

despite the efficacy of PITC for pregnant women, with significant reductions in mother-to-child transmission of HIV (127).

In terms of allocation of resources, building the HIV testing capacity of doctors who serve Vietnamese-born migrants, as well as other migrant populations at higher risk of HIV (e.g. South-East Asian-born migrants, more broadly), as opposed to the capacity of the migrant populations themselves to request HIV testing, would likely be most effective and cost-effective. As highlighted in the qualitative interviews in this study, even where Vietnamese-born migrants have good HIV-related knowledge, this does not always translate to reduced HIV risk behaviour, accurate HIV risk perception or appropriate HIV testing. It is essential that any HIV testing is undertaken in an ethical and rights-based way where people are offered, but not coerced or forced into, testing and linked to care, as appropriate (125). Additional research and collaboration with healthcare providers in Australia is needed to identify and address barriers to offering PITC to migrant populations. Increased use of PITC may reduce late diagnosis of HIV; however, only those engaged with healthcare would benefit from this approach (33). Increased use of PITC may also decrease HIV-related stigma by normalising HIV and HIV testing.

In the quantitative questionnaire, multivariate analysis indicated there were no significant differences in willingness to use HIV ST between Vietnamese-born migrants and Australian-born adults. Vietnamese-born migrants, however, had lower odds of willingness to use rapid HIV testing, as compared to Australian-born adults. HIV rapid testing was, however, largely acceptable to qualitative interview participants. In contrast, HIV ST was largely suggested to be unacceptable to participants, particularly male participants. Across both of these HIV testing approaches there was a preference for doctor-administered HIV testing in the clinical setting.

The findings from this study indicate the need to explore the use of PITC with Vietnamese-born migrants, and potentially migrants more broadly, as well as healthcare providers. Newer HIV testing approaches, i.e. rapid HIV testing and HIV ST, however, may not necessarily facilitate HIV testing for Vietnamese-born migrants. There was little evidence on the uptake or acceptability of these newer HIV testing approaches from previous studies (138). There is a need to understand barriers and facilitators to these newer HIV testing approaches, especially for those populations or sub-populations at higher risk of HIV.

5.8 Summary

Migrants often have high rates of HIV, as compared to their host country counterparts. HIV is now largely a chronic, non-fatal condition. This is because of the effectiveness of ART. Achievement of optimal health outcomes occur where ART is initiated early. HIV testing is a critical entry point to management and care, as well as prevention. Migrants in HICs, however, often have late diagnoses of HIV, indicating suboptimal use of HIV testing approaches. It is important to understand the HIV testing behaviour of migrants. If efforts are not made to understand and prevent the adverse outcomes for this population, it is likely that poorer HIV outcomes will continue and/or rise.

Multiple reasons underlying (non-) use of HIV testing have been identified across the evidence-base. There are, however, several gaps in the evidence-base. These include a lack of research (a) with South-East Asian migrants in Australia and internationally; (b) examining the different HIV testing approaches, e.g. rapid HIV testing and HIV ST; and (c) using validated measures for latent constructs, i.e. HIV-related knowledge and HIV-related stigma, which are central factors in the HIV epidemic and HIV testing, specifically. This study addressed these gaps in examining the HIV testing behaviour of Vietnamese-born migrants in greater-Brisbane, Queensland.

In multivariate analyses, uptake of, and willingness to use/accept, HIV testing approaches was largely not significantly different between Vietnamese-born migrants and Australian-born adults in the quantitative questionnaire (Objective One). Vietnamese-born adults, however, had significantly lower odds of willingness to use rapid HIV testing, compared with Australian-born adults. In qualitative interviews, provider-initiated testing and counselling (PITC) was suggested to be widely acceptable to Vietnamese-born migrants, in contrast to client-initiated testing and counselling (CITC). Contrary to quantitative questionnaire findings, rapid HIV testing was largely acceptable to qualitative interview participants. HIV self-testing (HIV ST) was largely acceptable to female participants, but not male participants.

Few significant barriers and facilitators were identified across HIV testing approaches for Vietnamese-born migrants after adjustments (Objective Two). Those identified were marital status, HIV-related knowledge, HIV risk behaviour and finding

the cost of healthcare prohibitive. Qualitative interview participants identified numerous barriers and facilitators to HIV testing approaches (Objective Three), including gender, marital status, HIV-related knowledge, internalised HIV-related stigma, cost, convenience, accuracy of HIV testing, perceived HIV risk, HIV risk behaviour and symptoms. Additionally, qualitative interviewees contextualised quantitative findings. HIV risk behaviour was not widely significantly associated with HIV testing approaches in quantitative analyses. Qualitative interviews, however, highlighted that a subset of Vietnamese-born migrants have increased HIV risk, which was likely not well captured in the quantitative questionnaire. Likewise, qualitative interview participants discussed internalised HIV-related stigma as a salient barrier to HIV testing, but only externalised HIV-related stigma was captured in the quantitative questionnaire. Vietnamese-born migrants were also suggested to have insufficient HIV-related knowledge, particularly related to treatment and prognosis, but this was not captured in the HIV-KQ-18 (8).

In Rasch analysis, neither the revised HIV-KQ-18 nor the revised AIDS-Related Stigma Scale (ARSS) were adequate measures of HIV-related knowledge and externalised HIV-related stigma, respectively (Objective Four). The revised HIV-KQ-18, after all appropriate revisions (from 18 to 14 items), did not fit the Rasch model, demonstrating poor construct validity within the study populations (however, internal consistency reliability was adequate). The revised ARSS fit the Rasch model and, therefore, had adequate construct validity in this study. The internal consistency reliability of the revised ARSS was below adequate in the current sample. Additionally, the revised ARSS was significantly reduced (from 9 to 6 items). The inadequacy of these scales in the study populations likely stemmed from multiple reasons, but particularly as both scales were quite dated. HIV-related knowledge and HIV-related stigma are theoretically complex and socially dynamic constructs, and scales measuring these constructs require regular updating and psychometric assessment.

At least a subset of Vietnamese-born migrants are at HIV risk and, therefore, require ongoing HIV testing. Timely uptake of HIV testing by these Vietnamese-born migrants is required for optimal HIV-related outcomes. Several interventions may facilitate HIV testing. These include increasing HIV-related knowledge and addressing internalised HIV-related stigma. There is also a need for up-to-date

scales to measure these constructs. Additional research among migrants on newer HIV testing approaches, i.e. rapid HIV testing and HIV ST, is warranted, as well as research among healthcare providers on increased use of PITC with migrants. Increasing HIV testing is, however, only the first step in ensuring optimal outcomes, and appropriate care pathways are also required.

6 Appendices

6.1 Appendix 1 Ethics approval and amendment approvals



THE UNIVERSITY OF QUEENSLAND
Institutional Human Research Ethics Approval

Project Title: HIV Testing Patterns and Behaviours in the Vietnamese Migrant Population in Queensland, Australia

Chief Investigator: Ms Sarah Jane Blondell

Supervisor: Dr Jo Durham

Co-Investigator(s): Dr Jo Durham, Dr Mark Griffin

School(s): Population Health

Approval Number: 2014001398

Granting Agency/Degree: Gilead Australia Fellowship: Research Grants Program

Duration: 31st October 2015

Comments/Conditions:

Expedited Review - Low Risk

Questionnaire Instructions – please remove statement “*Please attempt all questions*”, and replace with statement to the effect that participants may choose not to answer certain questions if they wish. Please insert corresponding text into the Participant Information Sheet.

Note: if this approval is for amendments to an already approved protocol for which a UQ Clinical Trials Protection/Insurance Form was originally submitted, then the researchers must directly notify the UQ Insurance Office of any changes to that Form and Participant Information Sheets & Consent Forms as a result of the amendments, before action.

Name of responsible Committee:

Behavioural & Social Sciences Ethical Review Committee

This project complies with the provisions contained in the *National Statement on Ethical Conduct in Human Research* and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:

Associate Professor John McLean

Chairperson

Behavioural & Social Sciences Ethical Review Committee

Signature

Date

15/10/2014



THE UNIVERSITY OF QUEENSLAND
Institutional Human Research Ethics Approval

Project Title: HIV Testing Patterns and Behaviours in the Vietnamese Migrant Population in Queensland, Australia - 02/10/2015 - AMENDMENT

Chief Investigator: Ms Sarah Jane Blondell

Supervisor: Dr Jo Durham

Co-Investigator(s): Dr Jo Durham, Dr Mark Griffin

School(s): Population Health

Approval Number: 2014001398

Granting Agency/Degree: Gilead Australia Fellowship: Research Grants Program

Duration: 31st December 2015

Comments/Conditions:

Note: if this approval is for amendments to an already approved protocol for which a UQ Clinical Trials Protection/Insurance Form was originally submitted, then the researchers must directly notify the UQ Insurance Office of any changes to that Form and Participant Information Sheets & Consent Forms as a result of the amendments, before action.

Name of responsible Committee:

Behavioural & Social Sciences Ethical Review Committee

This project complies with the provisions contained in the *National Statement on Ethical Conduct in Human Research* and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:

Associate Professor John McLean

Chairperson

Behavioural & Social Sciences Ethical Review Committee

Signature

Date

6/10/2015



THE UNIVERSITY OF QUEENSLAND
Institutional Human Research Ethics Approval

Project Title: HIV Testing Patterns and Behaviours in the Vietnamese Migrant Population in Queensland, Australia - 28/10/2015 - AMENDMENT

Chief Investigator: Ms Sarah Jane Blondell

Supervisor: Dr Jo Durham

Co-Investigator(s): Dr Jo Durham, Dr Mark Griffin

School(s): Population Health

Approval Number: 2014001398

Granting Agency/Degree: Gilead Australia Fellowship: Research Grants Program

Duration: 31st December 2015

Comments/Conditions:

Note: if this approval is for amendments to an already approved protocol for which a UQ Clinical Trials Protection/Insurance Form was originally submitted, then the researchers must directly notify the UQ Insurance Office of any changes to that Form and Participant Information Sheets & Consent Forms as a result of the amendments, before action.

Name of responsible Committee:

Behavioural & Social Sciences Ethical Review Committee

This project complies with the provisions contained in the *National Statement on Ethical Conduct in Human Research* and complies with the regulations governing experimentation on humans.

Name of Ethics Committee representative:

Associate Professor John McLean

Chairperson

Behavioural & Social Sciences Ethical Review Committee

Signature

Date

2/11/2015

6.2 Appendix 2 Selected theoretical frameworks reviewed for this study

Theoretical framework	Description
Health Belief Model (HBM)	The HBM posits that behaviour is a product of perceived susceptibility, e.g. chance of acquiring HIV; severity, e.g. the degree to which acquiring HIV would be negative, benefits, e.g. belief in HIV testing, and barriers, belief in real and perceived costs of HIV testing, and self-efficacy, e.g. degree to which one believes he/she can successfully test for HIV (306).
Theory of Reasoned Action	Key constructs include subjective norms and intentions to perform specific actions (209).
Social Cognitive Theory (SCT)	SCT sees behaviour as being influenced by personal, behavioural and environmental factors (209). Key constructs include outcome expectations, social outcome expectations (or social norms) and self-efficacy.
Behavioural Model of Healthcare Utilisation (BMHU)	The BMHU sees predisposing, e.g. demographics, attitudes and beliefs, enabling, e.g. health insurance, and need, e.g. perceived risk, as central to healthcare use (7).
Kleinman's model of health care systems (KMHCS)	KMHCS sees healthcare use as being impacted by three inter-related health system factors, i.e. popular sector, e.g. people's beliefs, the area in which an illness is first defined and health care activities initiated, professional sector, i.e. modern scientific medicine, and folk sector, i.e. non-professional, non-bureaucratic, specialists such as herbalists (307).

6.3 Appendix 3 The Brief HIV Knowledge Questionnaire (HIV-KQ-18)

Item number	Item
1	Coughing and sneezing DO NOT spread HIV.*
2	A person can get HIV by sharing a glass of water with someone who has HIV.*
3	Pulling out the penis before a man climaxes keeps a woman from getting HIV during sex.*
4	A woman can get HIV if she has anal sex with a man.
5	Showering, or washing one's genitals, after sex keeps a person from getting HIV.*
6	All pregnant women infected with HIV will have babies born with AIDS.
7	People who have been infected with HIV quickly show serious signs of being infected.*
8	There is a vaccine that can stop adults from getting HIV.*
9	People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.*
10	A natural skin condom works better against HIV than does a latex condom.*
11	A woman cannot get HIV if she has sex during her period.*
12	There is a female condom that can help decrease a woman's chance of getting HIV.
13	A person will NOT get HIV if he or she is on antibiotics.*
14	Having sex with more than one partner can increase a person's chance of being infected with HIV.*
15	Taking a test for HIV one week after having sex will tell a person if he or she has HIV.*
16	A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.*
17	A person can get HIV from oral sex.
18	Using Vaseline or baby oil with condoms lowers the chance of getting HIV.*

*Retained items

6.4 Appendix 4 AIDS-Related Stigma Scale (ARSS)

Item number	Item
1.	People who have HIV are dirty.
2.	People who have HIV are cursed.*
3.	People who have HIV should be ashamed.*
4.	It is safe for children to be taken care of by people who have HIV.
5.	People with HIV must expect some restrictions on their freedom.
6.	A person with HIV must have done something wrong and deserves to be punished.*
7.	People who have HIV should be isolated.*
8.	I do not want to be friends with someone who has HIV.*
9.	People who have HIV should not to be allowed to work.*

*Retained items

6.5 Appendix 5 Sample size calculations for uptake of, and willingness to use/accept, HIV testing approaches by Vietnamese-born migrants and Australian-born adults

Hypothesis no.	Hypothesis	Estimated sample size (n)
1.1	Vietnamese-born migrants will be more likely to report having ever tested for HIV compared to Australian-born adults.	154
1.2	Vietnamese-born migrants will be less likely to report HIV testing in the previous year compared to Australian-born adults.	614
1.3	Vietnamese-born migrants will be less willing to ask their doctor for a HIV test compared to Australian-born adults.	864
1.4	Vietnamese-born migrants will be more willing to accept provider-initiated testing compared to Australian-born adults	647
1.5	Vietnamese-born migrants will be more willing to use HIV same-day testing, when compared to Australian-born adults.	69
1.6	Vietnamese-born migrants will be more willing to use HIV ST compared to Australian-born adults	36

HIV ST; HIV Self-Testing

6.6 Appendix 6 Quantitative questionnaire

HIV testing behaviours of Vietnamese- and Australian-born people in Queensland

This questionnaire will ask you some basic demographic details, about your Knowledge, attitude towards people with HIV, perceived risk and risk behaviours, HIV testing behaviours, and doctor use and attributes.

Where there is a box please select one answer per question by marking with a cross X. Some questions may require a written response. Please write your answer as simply as possible in your own words.

There are no wrong answers. You do not have to answer all questions. If you would like to ask a question or to withdraw from the study at any time, please see a member of the research team.

***Questionnaire ***

Demographic Section

		Male (0)	Female (1)		
1	Are you male or female?	<input type="checkbox"/>	<input type="checkbox"/>		
		Year			
2	What year were you born?				
		Never married (0)	Married (1)	Separated, divorced, or widowed (2)	
3	What is your present marital status?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		Male (0)	Female (1)	Both male and female (2)	
4	What is the sex of your current partner and/or previous partners/s?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

	Year 12 or above (0)	Year 11 (1)	Year 10 (2)	Year 9 (3)	Year 8, or below (4)	Did not go to school (5)
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5 What is the highest level of schooling you have completed?

	Full-time (0)	Part-time (1)	Casual (2)	Not employed (3)
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6 What is your current employment status?

	Catholic (0)	Buddhism (1)	Islam (2)	Not listed - please specify (3)
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7 What is your religion?

	Year	Not applicable – Born in Australia (99)
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8 Which year did you move to Australia?

	Postcode
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9 What is your postcode?

	No, English only (0)	Yes, Vietnamese (1)	Yes, not listed - please specify (2)
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10 Do you speak a language other than English at home?

Very well (0) Well (1) Not well (2) Not at all (3)

11 How well do you speak English?

Australian citizen (0) Permanent resident (1) Temporary resident (2) Not listed - please specify (3)

12 What is your immigration status?

Australia (0) Vietnam (1) Not listed - please specify (2)

13 Was your mother born in Australia or overseas?

14 Was your father born in Australia or overseas?

HIV/AIDS Knowledge Section – Please answer 'True', 'False' or 'Don't know'

True (1) False (0) Don't know (997)

15 Coughing and sneezing DO NOT spread HIV.

16	A person can get HIV by sharing a glass of water with someone who has HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Pulling out the penis before a man climaxes keeps a woman from getting HIV during sex.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	A woman can get HIV if she has anal sex with a man.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Showering, or washing one's genitals, after sex keeps a person from getting HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	All pregnant women infected with HIV will have babies born with AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	People who have been infected with HIV quickly show serious signs of being infected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	There is a vaccine that can stop adults from getting HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23	People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	A natural skin condom works better against HIV than does a latex condom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25	A woman cannot get HIV if she has sex during her period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	There is a female condom that can help decrease a woman's chance of getting HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

		True (1)	False (0)	Don't know (997)
--	--	-------------	--------------	------------------------

27 A person will NOT get HIV if he or she is on antibiotics.

28 Having sex with more than one partner can increase a person's chance of being infected with HIV.

29 Taking a test for HIV one week after having sex will tell a person if he or she has HIV.

30 A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.

31 A person can get HIV from oral sex.

32 Using Vaseline or baby oil with condoms lowers the chance of getting HIV.

HIV Attitude Section – Please answer ‘Strongly Agree’, ‘Agree’, ‘Disagree’ or ‘Strongly disagree’

		Strongly Agree (3)	Agree (2)	Disagree (1)	Strongly Disagree (0)
33	People who have HIV are dirty.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34	People who have HIV are cursed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35	People who have HIV should be ashamed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36	It is safe for children to be taken care of by people who have HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37	People with HIV must expect some restrictions on their freedom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Strongly Agree (3)	Agree (2)	Disagree (1)	Strongly Disagree (0)
38	A person with HIV must have done something wrong and deserves to be punished.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39	People who have HIV should be isolated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40	I do not want to be friends with someone who has HIV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41	People who have HIV should not to be allowed to work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

HIV Risk Section

		Yes (1)	No (0)	Don't know (997)
42	Do you think you are at risk of acquiring HIV?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43	Do you think HIV is a big health issue in Australia?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Yes (1)	No (0)	
44	Have you had two or more sexual partners in the past 12 months?	<input type="checkbox"/>	<input type="checkbox"/>	
45	Have you given or received money or goods for sexual intercourse in the past 12 months?	<input type="checkbox"/>	<input type="checkbox"/>	
46	Have you injected illegal drugs during the past 12 months?	<input type="checkbox"/>	<input type="checkbox"/>	

47	Have you drank alcohol or used drugs immediately before sex in the past 12 months?	<input type="checkbox"/>	<input type="checkbox"/>	
48	Have you ever been diagnosed with a sexually transmitted infection by a doctor?	<input type="checkbox"/>	<input type="checkbox"/>	
		Yes (1)	No (0)	Not applicable - Have not had sex (99)
49	Was a condom used the last time you had intercourse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

HIV Testing and Testing Preferences Section

		Yes (1)	No (0)	
50	Have you ever tested for HIV, other than as part of a health check-up for immigration reasons?	<input type="checkbox"/>	<input type="checkbox"/>	
51	In the previous 12 months, have you tested for HIV?	<input type="checkbox"/>	<input type="checkbox"/>	
52	In the next 12 months, would you ask a doctor for an HIV test?	<input type="checkbox"/>	<input type="checkbox"/>	
53	In the next 12 months, if a doctor offered you an HIV test, would you accept?	<input type="checkbox"/>	<input type="checkbox"/>	
54	Has a doctor ever recommended you have an HIV test?	<input type="checkbox"/>	<input type="checkbox"/>	

55	If the option was available in Australia, would you test yourself for HIV in your own house, without the need to see a doctor?	<input type="checkbox"/>	<input type="checkbox"/>
56	Would you prefer to find out the result of an HIV test on the same day as you test?	<input type="checkbox"/>	<input type="checkbox"/>

Doctor Use and Attributes Section

		Yes (1)	No (0)
57	In the past 12 months have you seen a doctor?	<input type="checkbox"/>	<input type="checkbox"/>

		Yes (1)	No (0)
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58	Do you have a regular doctor?	<input type="checkbox"/>	<input type="checkbox"/>
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59	Would you discuss all health issues, including HIV, openly with a female doctor?	<input type="checkbox"/>	<input type="checkbox"/>
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60	Would you discuss all health issues, including HIV, openly with a male doctor?	<input type="checkbox"/>	<input type="checkbox"/>
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61	Would you discuss HIV with a doctor of the same birth country or cultural background as you?	<input type="checkbox"/>	<input type="checkbox"/>
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62	Does the financial cost (including out-of-pocket payments and transport costs) stop you from accessing a doctor?	<input type="checkbox"/>	<input type="checkbox"/>
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		Same day (0)	Next day (1)	Within one week (2)	Over one week (3)
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63	How long do you usually have to wait for an appointment at your usual health care facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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		Less than 15 minutes (0)	15 - 30 minutes (1)	30 minutes - 1 hour (2)	Greater than 1 hour (3)
64	How long does it take you to travel to your usual health care facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65	How much time do you usually spend in the waiting room before you see a doctor at your usual health care facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Country of Birth

		Australia (0)	Vietnam (1)
66	In which country were you born?	<input type="checkbox"/>	<input type="checkbox"/>

	No	Yes	If Yes:
I agree to being contacted about joining a group discussion or an interview during the next 6 months	<input type="checkbox"/>	<input type="checkbox"/>	Name: _____ Phone: _____

6.7 Appendix 7 Data analysis plan: Uptake of, and willingness to use/accept, HIV testing approaches in Vietnamese-born migrants and Australian-born adults

Hypothesis No.	Hypothesis	Analysis Type	Comparison Groups (Birth country)	Dependent Variable	Independent Variables
1.1	Vietnamese-born migrants will be more likely to report having ever tested for HIV compared to Australian-born adults.	Logistic regression	1. Australian-born adults (0=Australia) 2. Vietnamese-born migrants (1=Vietnam)	Ever tested for HIV (0=no; 1=yes)	1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high) 7. Cost of accessing healthcare prohibitive (0=no; 1=yes)

1.2	Vietnamese-born migrants will be less likely to report HIV testing in the previous year compared to Australian-born adults.	Logistic regression	1. Australian-born adults (0=Australia) 2. Vietnamese-born migrants (1=Vietnam)	Tested for HIV in previous year (0=no; 1=yes)	<ul style="list-style-type: none"> 1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high) 7. Cost of accessing healthcare prohibitive (0=no; 1=yes)
1.3	Vietnamese-born migrants will be less willing to ask their doctor for an HIV test (i.e. CITC) compared	Logistic regression	1. Australian-born adults (0=Australia) 2. Vietnamese-born migrants (1=Vietnam)	Willingness to ask doctor for HIV test (0=no; 1=yes)	<ul style="list-style-type: none"> 1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high)

to Australian-born adults.

4. Externalised HIV-related stigma (0=low; 1=high)

5. Perceived HIV risk (0=no or don't know; 1=yes)

6. HIV risk behaviour (0=low; 1=high)

7. Cost of accessing healthcare prohibitive (0=no; 1=yes)

1.4

Vietnamese-born migrants will be more willing to accept PITC compared to Australian-born adults

Logistic regression

1. Australian-born adults (0=Australia)

2. Vietnamese-born migrants (1=Vietnam)

Agree to provider-initiated testing

(0=no; 1=yes)

1. Gender (0=male; 1=female)

2. Marital status (0=not married; 1=married)

3. HIV-related knowledge (0=low; 1=high)

4. Externalised HIV-related stigma (0=low; 1=high)

5. Perceived HIV risk (0=no or don't know; 1=yes)

6. HIV risk behaviour (0=low; 1=high)

1.5	Vietnamese-born migrants will be more willing to use HIV rapid testing compared to Australian-born adults	Logistic regression	1. Australian-born adults (0=Australia) 2. Vietnamese-born migrants (1=Vietnam)	Willingness to use HIV same-day testing (0=no; 1=yes)	7. Cost of accessing healthcare prohibitive (0=no; 1=yes) 1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high) 7. Cost of accessing healthcare prohibitive (0=no; 1=yes)
1.6	Vietnamese-born migrants will be more willing to use HIV ST compared to	Logistic regression	1. Australian-born adults (0=Australia)	Willingness to use HIV self-testing (0=no; 1=yes)	1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married)

Australian-born
adults

2. Vietnamese-born
migrants
(1=Vietnam)

3. HIV-related knowledge (0=low;
1=high)

4. Externalised HIV-related stigma
(0=low; 1=high)

5. Perceived HIV risk (0=no or don't
know; 1=yes)

6. HIV risk behaviour (0=low; 1=high)

7. Cost of accessing healthcare
prohibitive (0=no; 1=yes)

CITC: Client-Initiated Testing and Counselling; HIV ST: HIV Self-Testing; PITC: Provider-Initiated Testing and Counselling

6.8 Appendix 8 Data analysis plan: Barriers and facilitators to HIV testing approaches for Vietnamese-born migrants

Hypothesis No.	Hypothesis	Analysis	Dependent Variable	Independent Variables
2.1	Being female; being unmarried; having a lower stigma score; having a higher HIV knowledge score, HIV risk perception and risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate past testing for HIV.	Logistic regression	Ever tested for HIV (0=no; 1=yes)	1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high) 7. Cost of accessing healthcare prohibitive (0=no; 1=yes)
2.2	Being female; being unmarried; having a lower stigma score; having a higher HIV	Logistic regression	Tested for HIV in previous year (0=no; 1=yes)	1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high)

knowledge score, HIV risk perception and risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate HIV in the past year.

2.3

Being female; being unmarried; having a lower stigma score; having a higher HIV knowledge score, HIV risk perception and risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate CITC.

Logistic regression

Willingness to ask doctor for an HIV test (0=no; 1=yes)

4. Externalised HIV-related stigma (0=low; 1=high)
5. Perceived HIV risk (0=no or don't know; 1=yes)
6. HIV risk behaviour (0=low; 1=high)
7. Cost of accessing healthcare prohibitive (0=no; 1=yes)

1. Gender (0=male; 1=female)
2. Marital status (0=not married; 1=married)
3. HIV-related knowledge (0=low; 1=high)
4. Externalised HIV-related stigma (0=low; 1=high)
5. Perceived HIV risk (0=no or don't know; 1=yes)
6. HIV risk behaviour (0=low; 1=high)
7. Cost of accessing healthcare prohibitive (0=no; 1=yes)

2.4	Being female; being unmarried; having a lower stigma score; having a higher HIV knowledge score, HIV risk perception and risk behaviour; and not finding the cost of accessing healthcare prohibitive would facilitate PITC.	Logistic regression	Accept provider-initiated testing (0=no; 1=yes)	<ol style="list-style-type: none"> 1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high) 7. Cost of accessing healthcare prohibitive (0=no; 1=yes)
2.5	Being female; being unmarried; having a lower stigma score; having a higher HIV knowledge score, HIV risk perception and risk behaviour; and finding the cost of accessing healthcare prohibitive	Logistic regression	Willingness to use rapid HIV testing (0=no; 1=yes)	<ol style="list-style-type: none"> 1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high)

	would facilitate rapid HIV testing.			7. Cost of accessing healthcare prohibitive (0=no; 1=yes)
2.6	Being female; being unmarried; having a lower stigma score; having a higher HIV knowledge score, HIV risk perception and risk behaviour; and finding the cost of accessing healthcare prohibitive would facilitate HIV ST.	Logistic regression	Willingness to use HIV ST (0=no; 1=yes)	1. Gender (0=male; 1=female) 2. Marital status (0=not married; 1=married) 3. HIV-related knowledge (0=low; 1=high) 4. Externalised HIV-related stigma (0=low; 1=high) 5. Perceived HIV risk (0=no or don't know; 1=yes) 6. HIV risk behaviour (0=low; 1=high) 7. Cost of accessing healthcare prohibitive (0=no; 1=yes)

CITC: Client-Initiated Testing and Counselling; HIV ST: HIV Self-Testing; PITC: Provider-Initiated Testing and Counselling

6.9 Appendix 9 Interview guide

The purpose of these interviews is to talk to Vietnamese people about their perceptions of HIV and HIV testing. Some of the questions are quite general and others have been influenced by the results of the questionnaire.

We wish to hear your thoughts, and there are no wrong answers. If you wish to stop answering at any time you can. If you feel you can't express yourself appropriately in English, please use Vietnamese and the Vietnamese research assistant will translate. Your responses will be added together with other respondents for publications, but you will not be identified. Do you mind if we record the interview? It will be kept secure by the research team and used to take notes at a later stage.

Interview prompts

- How long have you lived in Australia?
- How did you decide to move here?
- Have you travelled back to Vietnam while you've lived in Australia?
- Can you tell me about your experience of HIV in Vietnam?
- Can you tell me what you know about HIV from Australia?
- For what reasons do you think Vietnamese people **would** test for HIV?
 - Which of these do you think is the **most important** reason for testing?
- What factors do you think **stop** Vietnamese people from testing for HIV?
 - Of these, which do you think is the **most important** reason for not testing?
- Do you think one sex has **more** HIV risk than the other in Australia?
- Some men in our study, in particular, have said that often people have **more than one partner** at a time, so that increases their risk; are you aware of any of that sort of behaviour?
- How do you think Vietnamese people would feel if a doctor offered them an HIV test as part of a routine check-up?
 - Why do you think that might be?

- In preliminary analysis of the survey, Vietnamese people were less likely than Australian-born participants to say that they would self-test for HIV at home. Do you have any idea why this might be?
- In preliminary analysis of the survey, Vietnamese people were more likely than Australian-born people to say that they would like to know the result of an HIV test on the same day. Do you have any idea why this might be?
- Sometimes HIV tests that give the results on the same day are offered in settings other than at the doctors. Do you think Vietnamese people would prefer to be tested by a doctor in a clinic or by a trained member of the community in a private setting?
 - Why do you think that might be?
- In preliminary analysis of the survey, Vietnamese and Australian people had quite good knowledge of how HIV is transmitted and myths, but do you think Vietnamese people have enough knowledge of HIV to make informed health decisions?
 - Do you think Vietnamese people are aware of the treatment options available for HIV, for example?
- What do you think would be the experience of a Vietnamese person diagnosed with HIV?
 - What would be the response from the community?
 - From family?
- Some participants in the study said that they would not want to be friends with someone with HIV, I wonder if you have any thoughts on this?
- If we were wanting to increase HIV testing in the Vietnamese community in Queensland how do you think this could be done?

Re-interview prompts:

- HIV testing that is offered by a doctor was generally considered as a good option to improve HIV testing in Vietnamese-born people. How often do you think a provider should offer people an HIV test?

- Do you think partners would react differently to other family members? How might they differ? What do you think are the reasons for this?
- Some people said that Vietnamese people often have **more than one sexual partner** at a time. Can you tell us a bit about what you have heard?
- Vietnamese people who are HIV positive may be treated unequally by the community, in what ways would HIV positive people be treated differently/or unequally? What do you think are of the reasons for this?

RESEARCH PROJECT: HIV testing behaviours in the Vietnamese migrant population in Queensland, Australia.

INFORMATION FORM FOR INTERVIEW PARTICIPANTS

My name is Sarah Blondell. I am a PhD student at The University of Queensland in Brisbane, Australia. I am asking for your help in my project, which is to explore barriers and facilitators to HIV testing in Australian-born and Vietnamese-born migrants. Dr Jo Durham, a researcher at The University of Queensland, Brisbane, Australia is helping me with my project. We are conducting interviews to examine whether a questionnaire that the research team has produced is relevant, acceptable and culturally-appropriate for Vietnamese-born migrants. The resulting questionnaire will be used in community-based research project.

If you are an adult aged over **18 years old** and **Vietnamese-born**, we would like you to participate in an interview. It will take approximately 60 minutes. I would like to ask you to review the questionnaire for relevance, acceptability and wording. Questions relate to HIV testing behaviours, Knowledge, attitude and behaviours, and health care provider and use. Your feedback will be used to construct a culturally-appropriate questionnaire.

Jo and I will be present to take notes of the comments. Your answers will be kept **private and confidential. No-one will be able to match your name to the answers.** If you are willing to help me, I will ask you to sign the consent form.

You can stop taking part at any time. Your help is completely **voluntary**. It is important for you to know that if you decide NOT to take part in this project, you will not be affected in any way. There are NO direct benefits to you in participating in this study. **There are NO risks to you beyond possible discomfort in some of the questions.** If this happens and you would prefer to stop answering the questions you may do so.

Do you have any questions? Would you like to talk to someone else about whether or not to participate in this study?

This study has been cleared by one of the human ethics committees of The University of Queensland in accordance with the National Health and Medical Research

Council's guidelines. You are of course, free to discuss your participation in this study with project staff (contactable on + 61 7 336 5553). If you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Officer on + 61 7 3365 3924.

RESEARCH PROJECT: HIV testing behaviours in the Vietnamese migrant population in Queensland, Australia.

INFORMATION FORM FOR QUESTIONNAIRE PARTICIPANTS

My name is Sarah Blondell. I am a PhD student at The University of Queensland in Brisbane, Australia. I am asking for your help in my project, which is to explore barriers and facilitators to HIV testing in Australian-born and Vietnamese-born migrants. Dr Durham, a researcher at The University of Queensland and Mr Nam, a research assistant at The University of Queensland, are helping me with my project. The information collected in questionnaires undertaken for this research will be added together with responses from other people. This information may be used in reports and publications to make recommendations to improve HIV testing approaches and campaigns.

If you are an adult born between **1966 - 1997** and **Australian-born** or **Vietnamese-born**, we would like you to complete a questionnaire. The questionnaire will take approximately 10-15 minutes, and is to be completed outside Inala shopping centre. The questionnaire will ask you about your Knowledge, attitude, behaviours, risk, HIV testing behaviours, and health care provider and use. Please answer **truthfully**. There are **no wrong answers** to the questions that will be asked.

Your answers will be kept **private and confidential**. Questionnaires will be kept very safe in a locked filing cabinet, and I will be the only person who has a key to the cabinet. I will enter your answers into my computer, but your name will not be entered. **No-one will be able to match your name to the answers**. If you are willing to help me with the questionnaire, I will ask you to sign the consent form.

You can stop taking part in the questionnaire at any time. Your help with this project is completely **voluntary**. It is important for you to know that if you decide NOT to take part in this project, you will not be affected in any way. A **small gift** (\$10 gift card) will be given to you for your participation. Otherwise, there are NO direct benefits to you in participating in this study. **There are NO risks to you beyond possible discomfort in some of the questions**. If this happens, and you would prefer to stop answering the questions, you may do so.

Do you have any questions? Would you like to talk to someone else about whether or not to participate in this study?

This study has been cleared by one of the human ethics committees of The University of Queensland, in accordance with the National Health and Medical Research Council's guidelines. You are, of course, free to discuss your participation in this study with project staff (contactable on + 61 7 336 5553 for English speakers or sarah.blondell@uqconnect.edu.au). If you would like to speak to an officer of the University not involved in the study, you may contact the Ethics Officer on + 61 7 3365 3924.

RESEARCH PROJECT: HIV testing behaviours in the Vietnamese migrant population in Queensland, Australia.

CONSENT FORM FOR PARTICIPANTS COMPLETING QUESTIONNAIRE

This research is being conducted by Ms Blondell, a PhD student at The University of Queensland, Dr Durham, a researcher at The University of Queensland, and Mr Nam, a research assistant at The University of Queensland. The purpose of this research is to examine the HIV testing behaviours of Vietnamese-born migrants and compare these to an Australian-born sample. The aim is to assess what factors facilitate or act as barriers to HIV testing in these selected populations. Results may be used to inform testing interventions and campaigns in the community.

I acknowledge that I have read the information sheet about this project and I am willing to complete a questionnaire. I understand the questionnaire will take approximately 10 to 15 minutes of my time. I am helping voluntarily and I understand that I will not be paid; however, on completion of the questionnaire a small gift (\$10 gift card) will be given for my help. Otherwise, there is no direct benefit for me in participating in this study. I understand that there are no risks to me beyond possible discomfort in some of the questions. I have been given the opportunity to ask questions.

I understand that I can stop answering questions at any time, and I can ask questions about the project. I am helping with the project on the understanding that my answers will be kept confidential, and my name will not be associated with my answers.

I understand that my answers will be added together with responses from other people, and that this information will be used in reports and publications. I agree to this on the understanding that my name, or any other information that identifies me, is not used. I understand that if I stop participating I can request that information collected from me not be used in any way in reports and publications. I understand that the researcher will make available to me the findings of this research.

Signed

Print Name.....

Date...../...../.....

RESEARCH PROJECT: HIV testing behaviours in the Vietnamese migrant population in Queensland, Australia.

CONSENT FORM FOR PARTICIPANTS COMPLETING INTERVIEW

This research is being conducted by Ms Blondell, a PhD student at The University of Queensland, Dr Durham, a researcher at The University of Queensland, and Mr Nam, a research assistant at The University of Queensland, Brisbane, Australia. The purpose of this interview is to discuss the findings of the questionnaire on HIV testing patterns and behaviours of Vietnamese-born and Australian-born adults. The aim is to disseminate findings, clarify interpretations and to get Vietnamese-born participants to identify key points of interest for them. The interview will contribute to the discussion of results in published documents and ensure the community has a voice.

I acknowledge that I have read the information sheet about this project and I am willing to participate in an interview. I understand the interview will take approximately 60 minutes of my time. I am helping voluntarily and I understand that I will not be paid; however, on completion of the interview a small gift (\$20 gift card) will be given for my help. Otherwise, there is no direct benefit for me in participating in this study. I understand that there are no risks to me beyond possible discomfort in some of the questions. I have been given the opportunity to ask questions.

I understand that I can stop answering questions at any time, and I can ask questions about the project. I am helping with the project on the understanding that my answers will be kept confidential, and my name will not be associated with my answers. I understand that my answers will be added together with responses from other people and that this information may be used in reports and publications.

I **agree** to the interview being taped

I prefer that the interview is **not** taped

Signed

Print Name.....

Date...../...../.....

6.11 Appendix 11 Barriers and facilitators to HIV testing approaches by Vietnamese-born migrants

Table 6-1 Barriers and facilitators to ever having had an HIV test for Vietnamese-born migrants

	OR (95% CI)	AOR (95% CI) ^{1*}
Gender		
Male	1	1
Female	0.86 (0.46-1.61)	1.17 (0.55-2.50)
Marital status		
Never married	1	1
Married	1.64 (0.77-3.46)	2.18 (0.87-5.48)
HIV-related knowledge		
Low	1	1
High	2.10 (1.07-4.13)*	2.49 (1.15-5.37)*
Externalised HIV-related stigma		
Low	1	1
High	1.72 (0.84-3.50)	1.64 (0.73-3.70)
HIV risk perception		
Low	1	1
High	2.16 (0.85-5.54)	2.41 (0.82-7.11)
HIV risk behaviour		
Low	1	1
High	2.27 (0.80-6.41)	3.78 (1.07-13.31)*
Cost of accessing healthcare prohibitive		
No	1	1
Yes	1.29 (0.67-2.48)	1.39 (0.65-2.98)

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for sex, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, risk behaviour and cost of accessing healthcare prohibitive.

Table 6-2 Barriers and facilitators to having had an HIV test in the previous year for Vietnamese-born migrants

	OR (95% CI)	AOR (95% CI) ^{1*}
Gender		
Male	1	1
Female	1.25 (0.58-2.69)	2.14 (0.78-5.90)
Marital status		
Never married	1	1
Married	1.64 (0.63-4.30)	4.80 (1.06-21.65)*
HIV-related knowledge		
Low	1	1
High	1.46 (0.65-3.30)	1.86 (0.70-4.96)
Externalised HIV-related stigma		
Low	1	1
High	1.82 (0.74-4.52)	1.17 (0.41-3.37)
HIV risk perception		
Low	1	1
High	2.14 (0.75-6.09)	3.11 (0.82-11.72)
HIV risk behaviour		
Low	1	1
High	3.52 (1.17-10.63)*	7.39 (1.77-30.84)*
Cost of accessing healthcare prohibitive		
No	1	1
Yes	1.47 (0.67-3.24)	1.61 (0.62-4.19)

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for sex, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, risk behaviour and cost of accessing healthcare prohibitive.

Table 6-3 Barriers and facilitators to willingness to use CITC for Vietnamese-born migrants

	OR (95% CI)	AOR (95% CI) ^{1*}
Gender		
Male	1	1
Female	0.85 (0.33-2.16)	0.96 (0.31-2.95)
Marital status		
Never married	1	1
Married	0.45 (0.17-1.21)	0.94 (0.28-3.16)
HIV-related knowledge		
Low	1	1
High	1.34 (0.49-3.68)	1.34 (0.43-4.17)
Externalised HIV-related stigma		
Low	1	1
High	1.44 (0.50-4.19)	0.85 (0.25-2.84)
HIV risk perception		
Low	1	1
High	0.85 (0.18-3.98)	0.82 (0.15-4.62)
HIV risk behaviour		
Low	1	1
High	4.68 (1.42-15.38)*	3.77 (0.81-17.48)
Cost of accessing healthcare prohibitive		
No	1	1
Yes	2.78 (1.08-7.13)*	3.16 (1.02-9.74)*

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for sex, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, risk behaviour and cost of accessing healthcare prohibitive.

Table 6-4 Barriers and facilitators to willingness to accept PITC for Vietnamese-born migrants

	OR (95% CI)	AOR (95% CI) ^{1*}
Gender		
Male	1	1
Female	0.77 (0.41-1.45)	0.74 (0.35-1.53)
Marital status		
Never married	1	1
Married	1.69 (0.85-3.37)	1.32 (0.59-2.94)
HIV-related knowledge		
Low	1	1
High	2.16 (1.02-4.57)*	2.17 (0.97-4.84)
Externalised HIV-related stigma		
Low	1	1
High	1.54 (0.79-2.99)	1.80 (0.85-3.83)
HIV risk perception		
Low	1	1
High	0.94 (0.35-2.49)	0.75 (0.25-2.21)
HIV risk behaviour		
Low	1	1
High	1.12 (0.37-3.39)	0.97 (0.26-3.54)
Cost of accessing healthcare prohibitive		
No	1	1
Yes	1.77 (0.88-3.54)	1.56 (0.73-3.37)

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for sex, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, risk behaviour and cost of accessing healthcare prohibitive.

Table 6-5 Barriers and facilitators to willingness to use rapid HIV testing for Vietnamese-born migrants

	OR (95% CI)	AOR (95% CI) ^{1*}
Gender		
Male	1	1
Female	1.07 (0.57-2.02)	1.32 (0.63-2.79)
Marital status		
Never married	1	1
Married	1.43 (0.71-2.88)	1.25 (0.55-2.84)
HIV-related knowledge		
Low	1	1
High	1.16 (0.57-2.34)	1.25 (0.57-2.72)
Externalised HIV-related stigma		
Low	1	1
High	1.32 (0.67-2.59)	1.31 (0.62-2.79)
HIV risk perception		
Low	1	1
High	1.13 (0.41-3.12)	1.29 (0.40-4.14)
HIV risk behaviour		
Low	1	1
High	3.43 (0.75-15.67)	2.44 (0.50-12.00)
Cost of accessing healthcare prohibitive		
No	1	1
Yes	2.10 (1.02-4.32)	2.29 (1.01-5.19)*

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for sex, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, risk behaviour and cost of accessing healthcare prohibitive.

Table 6-6 Barriers and facilitators to willingness to use HIV ST for Vietnamese-born migrants

	OR (95% CI)	AOR (95% CI) ^{1*}
Gender		
Male	1	1
Female	0.56 (0.30-1.01)	0.55 (0.27-1.12)
Marital status		
Never married	1	1
Married	1.01 (0.52-1.98)	1.03 (0.47-2.29)
HIV-related knowledge		
Low	1	1
High	2.36 (1.21-4.58)*	2.78 (1.32-5.86)*
Externalised HIV-related stigma		
Low	1	1
High	1.33 (0.70-2.55)	1.64 (0.77-3.49)
HIV risk perception		
Low	1	1
High	1.03 (0.40-2.63)	0.84 (0.29-2.40)
HIV risk behaviour		
Low	1	1
High	1.23 (0.44-3.43)	1.18 (0.35-4.03)
Cost of accessing healthcare prohibitive		
No	1	1
Yes	2.21 (1.17-4.17)*	2.52 (1.21-5.22)*

AOR: Adjusted Odds Ratio; CITC: Client-Initiated Testing and Counselling; OR: Odds Ratio; PITC: Provider-Initiated Testing and Counselling; * Significant at $p < 0.05$; ¹ Adjusted for sex, marital status, HIV-related knowledge, externalised HIV-related stigma, HIV risk perception, risk behaviour and cost of accessing healthcare prohibitive.

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