

# ASSESSING NEEDS AND CAPABILITIES: TOWARDS AN ICT RESOURCE TO SUPPORT HIV-POSITIVE GAY MEN AND OTHER MSM IN SOUTHEAST ASIA

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## Abstract

*HIV-positive gay men and other men who have sex with men (MSM) experience sexual stigma, HIV-related stigma and isolation that can function as barriers to accessing information related to HIV. Little is known about how these men utilise and use technology to overcome these barriers. This study sought to explore technology use and identify key technological concerns of this population through a survey among 119 HIV-positive MSM. This survey was part of a formative assessment undertaken at the initial stage of the development an information and communications technology (ICT) resource and peer-support web-app for HIV-positive MSM in Southeast Asia. In this assessment, we found that HIV-positive MSM lack access to HIV-related support and resources. In particular, we observed that younger MSM (<30) and those diagnosed with HIV within the last year were less likely to report having friends living with HIV compared to older MSM and those without a recent HIV-diagnosis, respectively. These men expressed a need for ICT services that afford opportunities for social connection and resource sharing as well as information related to legal and health care resources. These findings illustrate the capability deprivations experienced by HIV-positive men. Using Amartya Sen's capability approach we argue that developing an ICT resource can begin to address the deprivations and information deficiencies of HIV-positive MSM by enhancing peer support and increasing access to HIV-related information and resources.*

**Keywords:** HIV, Stigma, ICT, Technology, Asia, Capability Approach, HIV-Positive MSM

## Introduction

Gay men and other men who have sex with men (MSM) globally face institutions, policies, and discourses that continue to position their same-sex attraction and intimate relationships as negative (Hammack, Thompson, & Pilecki, 2009; Herek, 2007). This homonegativity works to marginalise MSM and in many contexts lays the grounds for legislation that criminalises their sexual activities (Csete & Dube, 2010) and expression. At least 76 countries worldwide, and at least 5 countries within Southeast (SE) Asia, continue to criminalise same-sex sexual behaviour among consenting adults, with punishments ranging from fines, to imprisonment, or even death sentences (Itaborahy and Zhu, 2013).

This marginalisation is particularly concerning for HIV-positive gay men and other MSM who face stigma associated with their sexual activity and expression, their gender identity and expression, as well as their HIV status. For HIV-positive MSM the perceived stigma can result in a feeling of guilt or shame and if their status becomes known they could experience discrimination and verbal abuse (United Nations, 2011), including from other MSM (Smit et al., 2012). This paper takes the starting point that information and communication technology can support and empower such

populations. At present no transnational ICT resource for HIV-positive MSM exists within SE Asia to address this regional HIV epidemic. B-Change Foundation, a non-profit civil society organisation based in the Philippines identified this gap and is developing an ICT resource called PLUS to connect HIV-positive MSM to resources and support to enhance their lives. The development of this resource began with a formative assessment that included a survey to further understand the needs of HIV-positive MSM in SE Asia. The paper reports on the findings from this assessment.

## Background

### *The Affordances of Network Technologies*

Through providing people with opportunities to come together, the Internet has ‘...afforded greater involvement in communities of shared interests’ (Wellman, 2001, p. 247). These communities are not constrained by propinquity and can be conceptualised as ‘cyberplaces’ (Wellman, 2001) or ‘networked publics’ that provide distinct affordances for people to gather and connect with similar others (Boyd, 2011).

These spaces afford particular opportunities for those who have been marginalised by ‘mainstream society’. Research has shown that same-sex attracted and gender-diverse young people (Hanckel & Morris, 2014; Paradis, in press), BDSM community participants (Rambukkana, 2007) and crossdressers (Ferreday & Lock, 2007; Hegland & Nelson, 2002) engage in online spaces for social connection, resources, and identity formation. These spaces afford people living with marginalised identities the opportunity to find similar others in anonymous spaces that are not restricted by temporal and geographic boundaries.

Similarly, research with HIV-positive individuals has found that online spaces provide them with opportunities to be exposed to information and resources about HIV, as well as to connect with other HIV-positive people (Bar-Lev, 2008; Courtenay-Quirk et al., 2010; Drushel, 2013). In doing so these spaces act as supportive environments, which Chenard (2007) argues are crucial for people living with HIV because they function as supportive spaces that protect individuals from stigma and allow them to feel and act ‘normal’. These spaces afford opportunities for brokering new forms of social capital between participants (Drushel, 2013). Social capital occurs here in the form of specific ties that are created between these HIV-positive MSM. In this sense, social capital refers to the resources and benefits that are derived from a network of connections with peers (Bourdieu, 1986; Beaudoin & Thorson, 2004). These connections can lead to support and positive outcomes for people living with varied health concerns (Beaudoin & Tao; 2007; Chung, 2014). Specifically, for HIV-positive MSM, online spaces have been shown to not only reduce feelings of isolation, but they also provide opportunities for individuals to give and receive support and derive positive meanings about living with HIV (Mo & Coulson, 2010; Mo & Coulson, 2013).

There is also evidence to suggest that these online spaces lead to positive coping benefits and increased self-care self-efficacy for HIV positive people who use them (Mo & Coulson, 2010, 2012). Engagement in these spaces can increase participants’ adherence to ART (Samal et al., 2011) as well as provide individuals with the tools and efficacy to address their lived experiences of marginalisation and engage in varied forms of activism (Reeves, 2001). These forms of online engagement have the potential to lead to an increased quality of life for HIV-positive MSM; however more research is required to understand how well these findings hold true for MSM in low to middle income countries (Scanlon & Vreeman, 2013).

This sharing of information and resources between participants can be conceptualised as ‘subcultural knowledge.’ Recent research (Hanckel & Morris, 2014;

Munt, Bassett, & O’Riordan, 2002) has shown how online spaces can play a peer-based mentoring function whereby more self-aware or experienced participants provide advice and support and pass on forms of ‘subcultural knowledge’ to others in the community. In this way these online spaces operate as a ‘... forum for the transfer of (sub)cultural capital’ (Munt et al., 2002, p. 130). In a similar way, HIV-related online spaces afford individuals living with HIV the opportunity to acquire new forms of knowledge about HIV and come together to debate and discuss moral dilemmas of living with HIV/AIDS (Bar-Lev, 2008; Mo & Coulson, 2013; Rier, 2007). However these online spaces may be more likely to transmit dominant discourses about life with HIV to the exclusion of alternative discourses and narratives (Bar-Lev, 2008; Sandaunet, 2008). In Rier’s (2007) work on discussions of HIV disclosure online, he shows how the participants “...police online discourse to mark and attack positions they deem immoral and dangerous” (p. 1053). This hierarchy of subcultural capital (Jensen, 2006) presents limitations and constraints to the possibilities of users on these sites. As Rier (2007) suggests, discourses online are likely to reinforce offline behaviours, and likely to impact people’s values as well. This point presents an interesting challenge for online programs that aim to assist HIV-positive MSM in navigating their lives living with HIV.

Furthermore challenges in access to, and use of, these websites and web-based applications — also known as ‘web-apps’ — persist. One major challenge facing ICT projects continues to be the access individuals have to engage with online-based projects (Kalichman et al., 2002). In addition, several other challenges exist for HIV-positive people. One of these is the prevalence of HIV-related Internet sites that provide false and misleading information. Benotsch, Kalichman, & Weinhardt (2004) in their study, that explored how HIV-positive individuals obtain health information online, found that those from lower socio-economic backgrounds and with minimal formal education are more likely to trust misleading information and be less able to critically evaluate it.

Another challenge HIV-positive people face is finding ICT resources that provide them with the particular information they need. As Horvath et al (2010) suggest, many HIV websites might be overwhelming for newly diagnosed people, which is a particular concern as these individuals are also likely to be one of the primary users of online support groups (Mo & Coulson, 2010). Furthermore different groups have different needs, such as women (Walsh, Horvath, Fisher, & Courtenay-Quirk, 2012), trans\* people (Herbst et al., 2008), and, for the purposes of the current paper, gay men and other MSM. As Horvath et al (2010) suggest, the information provided on websites needs to reflect differing demographics and situational diagnoses, which may help HIV-positive people manage their disease more effectively. These challenges have design implications that impact on the functionality of ICT resources (Courtenay-Quirk et al., 2010).

#### *Enhancing the Capabilities of HIV-positive Gay Men and Other MSM in SE-Asia*

As recent authors (Courtenay-Quirk et al., 2010; Horvath, Wilkerson, McFarlane, & Courtenay-Quirk, 2012; Scanlon & Vreeman, 2013) have advocated, including HIV-people in the design and development of community development interventions is crucial. This work is based around the guiding principle ‘Greater involvement of people living with HIV/AIDS’ (GIPA) which aims to ensure that HIV-positive people are recognised for their expertise of living with HIV and are consulted at every stage of the process of developing the ICT resource (International HIV/AIDS Alliance & Global Network of People Living with HIV, 2011).

To develop an ICT resource that will enhance the quality of life for HIV-positive gay men and other MSM, B-Change Foundation sought to initially assess the needs of this

population. Understanding the needs of individuals, and how it will enhance their quality of life is crucial to doing development (Sen, 1999). We draw on the Capability Approach which is focused on expanding individuals' substantive freedoms, that is, their capabilities, and removing the "various types of unfreedoms that leave people with little choice and little opportunity of exercising their reasoned agency" (Sen, 1999, p. xii). If individuals have enhanced capabilities they are able to exercise a greater amount of choice than those with diminished capabilities. For example, the capabilities of a person who has had access to sexual health literacy programs will be far greater than a person who has had no access to such information.

ICTs, we argue, present an opportunity to enhance an individual's capabilities while circumventing or at least buffering existing multiple stigmas and legislative barriers. Thus ICTs can be used to enhance the opportunities that individuals have available to them, which can result in individuals leading lives they have reason to value. The formative assessment undertaken at the beginning of the development of PLUS sought to understand the daily experiences of these MSM and what they need from an ICT resource to improve their capabilities and thereby improve their quality of life.

## Method

An online survey was undertaken at the initial stages of the development of PLUS, from December 2012 to March 2013. The survey sought to understand the experiences of HIV-positive MSM in SE Asia, and the needs they felt could be addressed through an ICT resource. It also sought to understand how they use ICTs within their everyday lives. An online survey was determined to be the best data collection method to ensure diversity and allow access to participants across SE Asia. As has been found previously, web-based self-report questionnaires provide accessibility to a wide and broad audience (Gosling, Vazire, Srivastava, & John, 2004; Ayala et al., 2013). Using an online survey gave us access to a diverse number of participants across Asia at a low cost, which was important as the ICT resource is transnational in scope. The survey could be accessed on a computer, or through a mobile or tablet device. The use of online surveys also has the benefit of allowing volunteers to participate anonymously, ensuring their privacy.

A targeted sampling procedure was devised to reach HIV-positive MSM in SE Asia who have had a diversity of experiences living with HIV, including both those who have had contact with support and services, and those who have not. Participants were recruited through social media channels, including Facebook and Twitter. They were also recruited via email networks and contact with staff who works with HIV-positive MSM in the region who were asked to forward on the anonymous survey to their clients. As part of the recruitment strategy a poster (see Figure 1) was developed which included a blurb about the questionnaire, as well as a call to action that encouraged potential participants to either click on a hyperlink, or scan a quick response (QR) code to access the survey. The recruitment material was produced in all the languages of the survey - English, Bahasa Melayu, Bahasa Indonesian and Chinese (both simplified and traditional scripts).

Community-based organisations that support MSM living with HIV in PLUS Phase I coverage sites (Kuala Lumpur, Jakarta, Manila and Singapore) assisted with translating the 25 closed questions in the survey. Draft translations were subsequently peer reviewed by independent third-parties from within the community prior to publication online.

Participants were eligible to participate in this program formative assessment if they self-reported as an HIV-positive male who has sex with other men. Informed consent was collected and participation in the survey was voluntary and anonymous.

Participants were given the option of getting more information about the launch of PLUS by providing an email address. Email addresses were stored securely and were not linked to their survey data.



Figure 1. Survey recruitment poster

### *Measures*

The instrument collected data on demographic, social and clinical characteristics. Questions about sexual attraction and behaviour offered participants the option to provide more than one response to these questions. Information was collected about needs from an ICT-based resource by asking participants to rank 11 functions (i.e., potential uses) of an ICT peer-support service. These functions were under the following broad themes: opportunities for social and sexual relationships; access to HIV-related information and resources; information about legal and health services; and opportunities to engage in advocacy (the individual functions are listed in Table 2). Data were also sought on participants' current use of ICTs, including information about hardware and software that they use to access the Internet, and how they engage with new ICT resources.

### *Sample and Analysis*

During the research period, 344 people started the survey. Once the data were cleaned and 'non-completes' removed, there were 302 cases in total. Of these 302 there were 119 MSM who identified as being HIV-positive. This paper focuses on the experiences and needs of these HIV-positive MSM. The survey data were coded and analysed using SPSS. Summary statistics were calculated for data among HIV-positive MSM and stratified by different covariates of interest. Between-group differences among HIV-positive MSM were assessed using Wilcoxon rank-sum test for means and Fisher's exact test for proportions; statistical significance was evaluated using a p-value cut-off of 0.05.

## **Results**

### *Participants*

Of the participants 117 were male and 1 identified as a female to male (FTM) transgender person. Participants ranged in age from 21 years to 68 years in age ( $M = 35$ ). The majority of participants identified as Asian ( $n=89$ ; 75%); few identified as Caucasian ( $n = 21$ ; 18%), 'mixed' ( $n = 4$ ; 3%), African ( $n=3$ ; 3%) or Latino ( $n=1$ ; 1%).

Twenty-nine (24%) participants came from Malaysia, 17 (14%) came from the Philippines, 13 (11%) came from Singapore and 11 (9%) came from Taiwan. Ten (8%) came from the United States, 8 (7%) came from Indonesia and 6 (5%) were from Canada. Five or less participants (in descending order) came from Thailand, UK, HK, China, Australia, Russian Federation, Netherlands, Sri Lanka, Cambodia, Japan, India and Andorra. Almost all participants reported being attracted to other men (99%). Many narratives have attended the rise of the read write web and social media. Finance capitalism, the credit crunch and crash demonstrated (again) the volatility of the market and the consequences on the public sphere of private (and corporate) behaviour. Creative industries strategies and policies attempted to inject entrepreneurialism and urban regeneration into post-manufacturing cities and nations. The economic focus on fashion and music, sport and tourism, creates a culture where one group's work enables another group's leisure. Through mobile telephony, work is displaced into leisure time. Indeed, the confluence of consumerism and non-working time means that leisure is now traded for the more ambivalently constituted label of 'lifestyle.'

Table 1. Profile of survey respondents

	Number	%
<b>Age</b>		
<30	38	32%
>30	77	65%
<b>Gender</b>		
Male	117	98%
FTM	1	1%
<b>Race</b>		
Asian	89	75%
Caucasian	21	18%
'Mixed Race'	4	3%
African	3	3%
Latino	1	1%
<b>Country of residence<sup>+</sup></b>		
Malaysia	29	24%
Philippines	17	14%
Singapore	13	11%
Taiwan	11	9%
US	10	8%
Indonesia	8	7%
Canada	6	5%

<sup>+</sup>Includes >6 participants

Note: Numbers may not add to 119 and percentages may not add up to 100 for questions with missing data due to participant non-response.

#### *Participants Experiences with HIV*

On average, it has been 6.5 years since the participants were diagnosed with HIV. A significantly greater proportion of young MSM (<30), were diagnosed with HIV within the last year compared to those aged over 30 years of age (53% vs. 17%). Participants last HIV test took place within the last 3 years ( $M = 2.18$ ) and their most recent consultation with a health care specialist was on average 5.36 months ago.

Eighty-seven (81%) participants indicated that they had started antiretroviral treatment (ART), while 21 (19%) participants indicated they were not on ART. Of those who had started ART, the average time since treatment initiation reported was four to

five years ago ( $M = 4.61$ ). Of those who were diagnosed with HIV within the last year, a significantly greater proportion had not yet started ART compared to those diagnosed over a year ago (39% vs. 12%;  $p = .003$ ). A significantly greater proportion of these participants were MSM under 30 who had not started ART compared to those above 30 (33% vs. 12%;  $p = .02$ ).

Following their diagnosis, many respondents reported that they experienced negative changes in the areas of sex (52%), relationships (47%) and their expectations for the future (44%). These experiences highlight domains where ICT resources can be targeted to better address the quality of life of newly diagnosed MSM. Some participants indicated a negative change in employment (31%), education (25%), friends (22%), family (17%) and religion (10%). A number of participants reported a positive change with regard to friendships (31%) and family (32%) relationships.

#### *Accessing HIV-related Information and Support*

Information related to HIV was obtained from a variety of sources. Participants indicated that they accessed HIV information from the [Internet](#) (71%), doctors (62%), support groups (48%), and friends (30%). In addition, 93% of participants reported other sources for HIV information including health professionals other than doctors, such as counsellors and nurses. They also indicated obtaining information from print media, through books, brochures and magazines, and through HIV-campaign related resources.

As previous studies (Chenard, 2007) have indicated, being able to draw on the support of friends and others living with HIV is important for social connections, belonging and resource sharing. However for the MSM in this assessment, a significantly greater proportion of those diagnosed with HIV within the past year reported not having any friends who were HIV-positive compared to those diagnosed over a year ago (16% vs. 3%;  $p = .023$ ). This is also particularly true for MSM under 30, of whom a significantly greater proportion reported not having any HIV-positive friends, compared to older MSM (14% vs. 3%;  $p = .04$ ).

#### *HIV-Positive MSM's Technology Use*

Respondent's use of technologies to access the [Internet](#) for private use were varied. They were more likely to use laptops (61%) and smartphones (49%), rather than desktop computers (33%) for accessing the [Internet](#). The respondents were most likely to use computers with Windows-based operating systems (OS) (65%) followed by a Mac-based OS (31%), Google OS (13%) or Linux OS (1%). Respondents who use smartphones were most likely to use either an iPhone or Android-based phone (45% vs. 31%). Fewer participants use a Blackberry (RIM) (13%), Nokia (7%) or Windows mobile phone (2%). Four percent were unsure of the smartphone OS they use and 2% indicated 'other.'

More than half of the participants (58%) indicated that they are likely to wait to hear about new technologies prior to incorporating them into their everyday lives. Of these respondents 23% waited for advice from those close to them prior to adopting new ICTs. In contrast 38% of the sample indicated that they actively sought out new ICTs while 4% of the respondents indicated a frustration with using technology.

#### *Preferred functions of a Peer-Support ICT Resource*

For HIV-positive MSM the most important aspect of an HIV peer support website or app are opportunities to connect with similar others to share their experiences of living with HIV. Among the participants, 43% ranked this item as number 1 and 79% highly-ranked (ranked it in the top 5) this feature.

Table 2. Preferred functions of an ICT resource for HIV-positive gay men and other MSM by rank

	<b>% who highly ranked the functionality (top 5)</b>	<b>% that ranked this functionality as number 1</b>
<b>Sharing experiences with other HIV-positive MSM</b>	79%	43%
<b>Opportunity to find health services in local areas</b>	78%	9%
<b>Ask questions about medication</b>	75%	8%
<b>Learn about how others deal with emotional issues</b>	69%	7%
<b>Opportunity to find Legal/Human Rights services in local areas</b>	66%	10%
<b>Meet others for friendships</b>	34%	6%
<b>Ask questions about sex</b>	29%	4%
<b>Opportunity to feedback about Health services in local areas</b>	22%	2%
<b>Documenting examples of discrimination</b>	18%	5%
<b>Meet others for relationships</b>	18%	5%
<b>Meet others for sex</b>	13%	3%

Note: The percentages are rounded to whole numbers

The participants indicated that they wanted to connect with other HIV-positive MSM to share information about medication (75% highly ranked this function) and share strategies to deal with the emotional issues of living with HIV (69% highly ranked this feature). Furthermore, being able to share strategies related to emotional issues was important for a significantly greater proportion of MSM who were diagnosed with HIV within the past year, compared to those diagnosed over a year ago (84% vs. 62%, respectively).

Though the opportunity to share their experiences of living with HIV is important, of less interest to participants was having an online space to meet others for sexual encounters or for relationships (only 13% and 18% highly-ranked these features, respectively).

The HIV-positive MSM in this assessment also indicated that having access to information about local resources was important. They indicated that being connected to local health resources (78%) and legal and human rights services (66%) are important functions of an ICT resource. Few participants though saw a need for using the space as a feedback mechanism where they could rate these local health and legal services (22% highly-ranked this function). Noteworthy also is that few participants considered being



able to report cases of discrimination and stigma as important; only 18% of respondents highly ranked this function.

## Discussion

Taken together this formative assessment indicates that HIV-positive MSM in SE Asia seek opportunities to connect with similar peers for emotional support and belonging, and to discuss their experiences of living with HIV. Those who had been diagnosed within the last year were more likely to want to be able to share strategies related to the emotional issues of living with HIV. This finding corresponds to previous research (Horvath et al., 2012; Walsh et al., 2012) that found that socialisation and emotional support are important for people living with HIV, particularly for those individuals in their first year of diagnosis as they transition into a life living with HIV. This assessment also indicates that HIV-positive MSM under 30 and those diagnosed within the first year were least likely to know others who are living with HIV. This has implications for the types of support and (sub)cultural knowledge they have access to. Moreover, our data suggest that HIV-positive MSM under 30 and MSM recently diagnosed with HIV may be more isolated, and thus might benefit more greatly from ICTs that can mitigate their isolation.

HIV-positive MSM utilise both the Internet and offline resources to enhance their knowledge of HIV. There is an indication that what is missing from these resources are opportunities to connect with similar others whom they can share coping strategies and knowledge to increase their own HIV-related expertise. These men specifically seek information related to medication and the opportunity to share strategies for handling emotional issues related to living with HIV. In doing so they seek opportunities to enhance their own expertise of HIV, and subsequently improve their quality of life. This sharing of resources and information with similar others is sharing of subcultural knowledge; that is, these MSM seek opportunities to further enhance their knowledge and access to information about living with HIV from their peers, i.e., gay men and other MSM living with HIV.

This peer-to-peer engagement lies at the heart of enhancing social capital. The access to networks of HIV-positive MSM that online spaces afford, and the resulting subcultural knowledge is important for these men. Interestingly these HIV-positive gay men and other MSM reported less interest in an ICT-resource that connects them to opportunities for romantic relationships or sexual encounters. One possible explanation for this is that providing a space to share their emotional experiences and share resources is a more pressing priority. In addition, online spaces, such as Grindr, Jack'd, PlanetRomeo and Manhunt exist elsewhere that may fulfill the sexual and intimacy needs of these men. Our findings are similar to Courtenay-Quirk et al's (2010) study with persons recently diagnosed with HIV in the US, where participants rated meeting others for dates or sex partners as less important than being able to socially connect with others for support.

HIV-positive gay men and other MSM are also interested in knowing more about local health care, as well as legal and human rights services. This information is crucial as many SE Asian MSM reside in areas of stigmatisation and legislation marginalisation (Csete & Dube, 2010). The discrimination encountered can result in delayed access to services (Kinsler et al., 2007). Knowing about accessible services that meet their needs are important for these MSM. Furthermore, the prospect of having a directory of safe(r) services allows for HIV-positive MSM to handle concerns about disclosure and potentially stigmatising reactions from homonegative professionals.

While identifying these services is important for these MSM, less important is being able to assess and report on their experiences of using these services. We believe that the importance of being able to assess and report on these services may change over time once these men have actually used these services and had varying experiences with them. A greater understanding of minimum standards of HIV care and support is also likely to trigger a greater interest in assessing and providing feedback on these services.

New ICTs provide opportunities for forms of advocacy and mobilisation, and opportunities to document cases of discrimination. Interestingly, however, few of the men in our survey reported an interest in ICT resources that allow them to report cases of discrimination and stigma. It may be that participants believed that HIV-related discrimination was not a reportable offence or a human rights violation. Question wording may have also shaped responses. The item asked participants if they thought it was important to be able to 'document examples of discrimination and stigma.' Participants may have reservations about whether documenting this information actually works or if it puts them at risk for further stigma and discrimination. How these MSM might be empowered through ICT resources to document and report lived experiences of stigma, a critical practice in HIV and LGBT advocacy, remains an area for future investigation.

Taken together these needs represent capabilities that participants do not have access to, or do not believe current services adequately fulfill. A peer-support website or app has the potential to fulfill these capability deprivations. By being able to provide HIV-related information and connection to similar others, an ICT resource can address the information deficiencies that these men experience because of the multiple stigma they face as gay men and MSM living with HIV. In doing so, ICTs can help improve their quality of life by breaking down barriers due to stigma and connecting them with resources and information important to their needs.

## **Limitations**

Like all formative studies, the current assessment has several limitations. One is that the conclusions drawn here are from a small non-representative sample of predominantly HIV-positive MSM from SE Asia. Secondly, though we presented data on technology use, these behaviours are likely to change over time as new hardware and software emerge. In addition, our data are based solely on self-reports, rather than direct observations of technology use. Finally, even though we sought to get a diverse sample of participants and translated the survey into several languages, the survey could not reach HIV-positive gay men with literacy constraints, who do not readily use or access ICTs, and those with technological limitations during the time of data collection.

## **Conclusion**

There is a need in SE Asia to connect HIV-positive MSM to safe, supportive settings where they can accrue the (sub)cultural capital and knowledge they need to be able to enhance their capabilities and thereby improve their quality of life. This is particularly the case for MSM under 30 and those who have been recently diagnosed with HIV who may not have the connections with others living with HIV.

HIV-positive MSM are actively engaged in using new technologies. The particularly large number of mobile phone users is unsurprising given the increasing uptake of mobile phones in Asia (International Telecommunications Union, 2013). This development provides increasing opportunities for the deployment of ICT resources that engage HIV-positive MSM in SE Asia. Through a greater understanding about how

HIV-positive MSM adopt and use new technologies, as well as the needs that ICTs might be able to fulfill, we can ensure that the limited resources available are used effectively for developing and designing effective ICT resources for their needs.

This assessment has been an important initial stage in engaging HIV-positive MSM in the design of PLUS, an ICT resource being developed by B-Change Foundation. These findings and the ongoing testing of the service with HIV-positive MSM will inform the creation of a resource that is responsive to the needs and capability deficits experienced by these MSM in SE Asia, which has the potential to be scaled up across other geographic regions.

Our formative assessment indicates that HIV-positive MSM are looking for information, emotional support, and resources from similar others to learn more about living with HIV. These needs, or capability deficits, can be addressed and enhanced through strategically designed ICT resources that can circumvent marginalising stigmas. In doing so ICT resources afford the opportunity for enhancing the participants' lives and overall quality of life.

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