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Mental health among men who have sex with men in Cambodia: Implications for integration of mental health services within HIV programmes

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Abstract

Background: Poor mental health contributes to poor HIV prevention, treatment and care outcomes. This paper documents factors associated with psychological distress among men who have sex with men (MSM) in Cambodia and discusses potential ways in which routine mental health management could be integrated into HIV services.

Methods: A cross-sectional study was conducted in 2014 among 394 MSM randomly selected from two provinces using a two-stage cluster sampling method. A structured questionnaire was used to assess psychological distress, sexual behaviors, substance use, adverse childhood experiences and family dysfunction. Multivariate logistic regression analysis was performed to explore factors associated with levels of psychological distress.

Results: In total, 10.7 % of the respondents reported having suicidal thoughts and 6.6 % reported having attempted to commit suicide in the past three months, while 38.8 % had a higher level of psychological distress (GHQ-12 > 3), which indicates poor mental health. Higher levels of psychological distress were independently associated with older age (AOR = 1.09, 95 % CI 1.03–1.14), alcohol use (AOR = 3.3, 95 % CI 1.36–7.83), illicit drug use (AOR = 3.53, 95 % CI 1.12–11.18), poor self-reported quality of life (AOR = 7.45, 95 % CI 1.79–3.04), and reduced condom use at last sex (AOR = 0.40, 95 % CI 0.21–0.73). MSM with higher levels of psychological distress were significantly more likely to report that a family member said hurtful things to them (AOR = 1.80, 95 % CI 1.10–2.97), a parent or guardian had been physically abused (AOR = 3.51, 95 % CI 1.86–6.62), and a family member had been mentally ill (AOR = 4.01, 95 % CI 2.06–7.81) when they were growing up.

Conclusions: In order to mitigate psychological distress among MSM in Cambodia, integration of mental health interventions within HIV programmes should be strengthened. To achieve optimal impact, these interventions should also address alcohol and other substance use, and low condom use among distressed MSM. In addition, training of clinical and non-clinical HIV service providers to screen for mental health symptoms, and subsequent provision of peer-based outreach and social support for MSM identified with psychological distress is required.

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Background

Poor mental health is a source of significant public health burden globally [1, 2]. In Cambodia, exploration of mental illnesses is particularly relevant given the local history of mass violence, trauma, and genocide, which could also have an impact on mental health of the general population [3]. Available data suggest a background of high levels of psychiatric symptoms among older populations exposed to past traumatic events in Cambodia [4]. Apart from previous exposure to traumatic events, other social factors, including sexual exploitation, family violence, child abuse, trafficking, gambling, and alcohol have been associated with poor mental health in Cambodia [5].

In this context, sexual minorities, including men who have sex with men (MSM), are highly stigmatised based on their sexual orientation [6], and might be at higher risk of mental health issues, depression, and increased suicidal ideation, although comprehensive data are lacking [6]. In Cambodia, HIV is concentrated among MSM, female entertainment workers and injecting drug users. HIV prevalence among these populations is 2.2, 9.8 and 24.8 %, respectively [7–9]. As a result of high levels of HIV prevalence among these groups, they are a key focus for HIV prevention and treatment services. However, there has been very limited provision of mental health services for MSM and other key populations within HIV programmes and indeed, wider health systems in Cambodia [6].

Yet mental health is an important determinant of HIV outcomes: among people living with HIV (PLHIV), untreated or poor mental health contributes to late recruitment onto antiretroviral therapy (ART) [10, 11], poor adherence to ART [12–14] and low retention in care [15, 16]. Among PLHIV, mental disorders have also been associated with higher rates of HIV disease progression [17, 18], hospitalizations [19, 20], viralogical failure [18], and mortality, including suicides [21]. In addition, among HIV-negative individuals, depression and other mental health problems can increase uptake of sexual and other behaviors that increase HIV risk [22], thereby compromising the impact of HIV prevention programmes [23]. In Cambodia, this is relevant to HIV programmes that work with MSM and other populations that are already at high risk of HIV.

Given the increasing evidence of the link between HIV and mental health, it is important to identify ways in which HIV services can be adjusted to adequately address mental health needs of people at risk of or living with HIV [24]. Leveraging on HIV programmes to provide mental health screening is particularly important in Cambodia given the relatively limited mental health services countrywide. National strategy and system of mental health care did not exist until 1993 [25]. By 2010, mental health services were available in only 9 out of 24 provinces [26] and at the end of 2012, there were 49 psychiatrists and 45 psychiatric nurses in the entire country [25]. Although 297 physicians and 270 nurses working with the Ministry of Health have been trained in mental health care [25], mental health services are still poorly accessed [25]. Where available, these services are inequitably concentrated in urban areas [25, 27], and are predominantly 'trauma focused', given the previous legacy of war [28]. As a result, there is a need to find ways to extend mental health services to community-based, primary health, and other non-specialised services based on current epidemiological trends [25, 28]. The main challenge is that there are limited etiological data on the causes of mental health morbidity in Cambodia. Besides trauma and mass violence [28], other correlates of mental distress are largely ignored [29].

Methods

Study aims and settings

In response to this gap, a study related to mental health of key populations in Cambodia was conducted. This study was conducted as part of an evaluation of a community-based HIV project known as the Sustainable Action Against HIV and AIDS in Communities (SAHACOM), which was implemented by KHANA, the largest national NGO providing community-based HIV prevention, care, and support services in Cambodia [30]. Participants were MSM recruited from Battambang and Siem Reap province between April and May 2014. This study was the basis of a 2015 paper in which we reported a strong relationship between mental health and stigma among PLHIV [31]. Most recently in 2016, we published additional study findings showing that sex workers who had been forced to drink alcohol at work and those whose clients refused to use a condom experienced high levels of mental distress [32]. In addition, we reported high prevalence of psychological distress among drug users in this study [33]. In this paper, we focus on the findings related to MSM, and make recommendations regarding how HIV programmes can contribute to early screening and identification of mental health conditions among this population.

Participant recruitment

We used a two-stage cluster sampling method to select participants. Communes in each province were considered the basic sampling unit. In Cambodia, communes are local administrative divisions consisting of 3–30 villages. In total, 32 communes in Battambang and 22 communes in Siem Reap were covered by the SAHACOM project. We included 25 Battambang communes and 13

Siem Reap communes in this study. Communes with less than 20 MSM were excluded.

Probability proportional-to-size sampling was used to select the required number of MSM from each commune. MSM were randomly selected from geographical venues and locations identified as hotspots for HIV acquisition, and preliminarily screened to identify eligible MSM using a screening questionnaire by community health workers. To be included in the study, potential participants needed to be: (1) self-reported as an MSM; (2) at least 18 years of age; (3) available for a face-to-face interview on the day of the data collection; and (4) willing to consent to participate in the study.

Questionnaire development and training

A structured questionnaire was initially developed in English and then translated to Khmer, the national language of Cambodia. The Khmer questionnaire was then back-translated and pre-tested with a sample of 10 MSM in Phnom Penh to ensure that the intended meanings were retained. Experts working on HIV in key populations in Cambodia also reviewed the questionnaire, which was then revised based on their feedback. The research team members were trained for three days on the study protocol, questionnaire, interview techniques, privacy confidentiality, and quality control strategies, such as rechecking and reviewing the filled questionnaires.

Variables and measures

To develop the questionnaire, we adapted standardized tools from a previous study in the same population [34], the most recent Cambodia Demographic and Health Survey [35], as well as from previous studies in Cambodia [36]. For socio-demographic characteristics, we collected information on age, marital status, education, occupation, and monthly income. In addition, we collected information on sexual identity, perceived HIV risk, self-rated health and quality of life, and suicidal thoughts and attempts.

The next section collected information on sexual behaviors and diagnosis of HIV and STIs. Condom use was assessed using yes/no questions asking whether participants used a condom at last sex with different types of partners. Yes/no questions were also used to collect information on several other sexual behaviors in the past three months with the above-mentioned partners. We also collected data on HIV testing in the past six months and STI diagnosis in the past three months. To measure substance use, participants were questioned about whether they used any alcohol in the past three months, smoked at least 100 cigarettes in their lifetime, or used any kinds of illicit drugs in the past three months. They were also asked to report the average number of days they got drunk, the average number of cigarettes they smoked per day, and types of illicit drugs they used in the past three months.

Adverse childhood experiences (ACEs) were measured using five questions adapted from the brief screening version of the Childhood Trauma Questionnaire [37, 38]. The questions collected information on the experiences of physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect with five response options ranging from (1) 'never' to (5) 'very often.' Participants who responded 'never' or 'rarely' were grouped together as those without ACEs, and those who answered 'sometimes,' 'often,' or 'very often' as those with ACEs. Five items were also adapted from the brief screening version of the Childhood Trauma Questionnaire to enquire about family dysfunction [37, 38]. The items collected information on 'witnessing violence against a family member,' 'having an alcoholic or drug user family member,' 'having a family member who was depressed, mentally ill, or who has attempted suicide,' 'having parents who had been separated or divorced,' and 'having a family member who has been to prison.' The response options for all the items were 'yes' or 'no,' except for 'having parents who had been separated or divorced.' For this item, another response option was added to indicate if one or both parents had died. In the analysis, participants whose parents had divorced or separated were grouped together with participants whose parent(s) had died.

The final section of the questionnaire assessed psychological distress using a short version of the General Health Questionnaire (GHQ-12) [39]. Each item was rated on a four-point Likert-like scale ranging from "0 = less than usual" to "3 = much more than usual." The scoring method '0-0-1-1' has been suggested as it is believed to help eliminate biases resulted from respondents who tend to choose responses 0 and 3 or 1 and 2 [40]. The mean score for the whole study population was used as the cut-off to define lower (GHQ-12 ≤ 3) and higher (GHQ-12 > 3) levels of psychological distress as it provides a rough guide to the best threshold [40]. Cronbach's alpha among MSM in this study was 0.78.

Data analyses

EpiData version 3 (Odense, Denmark) was used for double data entry. χ^2 test, (or Fisher's exact test when sample sizes were small) and Student's *t*-test were used to compare socio-demographic characteristics, self-rated overall health and quality of life, self-perception of HIV risk, substance use, and sexual behaviors among MSM who had a lower level of psychological distress (GHQ-12 ≤ 3) with those among MSM who had a higher level of psychological distress (GHQ-12 > 3). To

control for the effects of potential confounding factors, a multivariable logistic regression model was constructed. First, all variables associated with significant levels of psychological distress in bivariate analyses at a level of $p < 0.2$ were simultaneously included in the model. We then removed variables with a p-value > 0.05 from the model and the model was refitted. We repeated the steps until all p-values of the remaining variables were <0.05 in the final model. Adjusted odds ratio (AOR) were obtained and presented with 95 % confidence intervals (CI) and p-values. SPSS version 22 (IBM Corporation, New York, USA) was used for all statistical analyses.

Ethical statement

Written informed consent was obtained from each participant after they were made clear that participation in this study was voluntary, and they could refuse or discontinue their participation at any time. We protected privacy of the respondents by conducting the interviews at a private place and we did not collect any personal identifiers in the questionnaires or field notes. This study was approved by the National Ethics Committee for Health Research of the Ministry of Health, Cambodia (Reference no. 082NECHR).

Results

Socio-demographic characteristics

This study included 394 MSM with a mean age of 23.7 ($SD = 3.2$). The majority of the respondents (90.1 %) were never married and the mean year of their formal education completed was 9.5 ($SD = 3.2$). Over half of the respondents (57.9 %) identified themselves as males and their average income in the past month was US$210 ($SD = 629$). Regarding their self-perception of HIV risk, 35.5 % responded that the level of their HIV risk was higher, while 46.7 % responded that it was lower, than that in the general population. Regarding their mental conditions, 10.7 % reported having suicidal thoughts and 6.6 % reported having attempted to commit suicide in the past three months. Overall, 38.8 % had a higher level of psychological distress (GHQ-12 > 3), which indicates poor mental health.

As shown in Table 1, MSM who had a higher level of mental disorders were significantly older (23.1 ± 4.8 vs. 24.8 ± 5.7, $p = 0.001$) with a lower level of formal education (9.8 ± 3.1 vs. 9.1 ± 3.3, $p = 0.04$) compared to MSM with a lower level of psychological distress. They were significantly more likely to perceive that they were at higher HIV risk compared to the general population (30.3 % vs. 43.8 %, $p = 0.02$) and to rate their overall quality of life as poor or very poor (1.2 % vs. 10.5 %, $p < 0.001$).

Substance use

Of total, 88.1 % of the respondents reported having drunk at least a full glass of wine or one can of beer in the past three months. The proportion of respondents who reported having smoked at least 100 cigarettes in their lifetime and used any kinds of illicit drugs in the past three months was 19.5 and 5.1 %, respectively. Table 2 shows that MSM with a higher level of psychological distress were significantly more likely to have drunk at least a full glass of wine or one can of beer (85.5 % vs. 92.2 %, $p = 0.04$) and use any kinds of illicit drugs in the past three months (2.1 % vs. 9.8 %, $p = 0.001$).

Sexual behaviors and HIV/STI testing

As shown in Table 3, risky sexual behaviors of sexually active MSM in this study were common. Many of them were involved in both heterosexual and homosexual relationships, multiple sexual partnerships, and commercial sex; with a mean number of sex partners in the past three months of 3.9 ($SD = 5.4$). In total, 64.0 % had been tested for HIV in the past six months and 7.1 % had been diagnosed with an STI in the past three months. MSM with a higher level of psychological distress were significantly less likely to use a condom at last sex (87.4 % vs. 75.5 %, $p = 0.003$) and to have sex with a girlfriend (65.3 % vs. 50.0 %, $p = 0.03$). However, they were significantly more likely to report having anal sex with boyfriends in the past three months (91.3 % vs. 98.8 %, $p = 0.03$).

Adverse childhood experiences and family dysfunction

Table 4 shows that exposure to ACEs were common: 22.8 % of the respondents reported having been physically hurt and 34.0 % reported that a family member said hurtful or insulting things to them when they was growing up. Regarding family dysfunction, 17.8 % reported that their parent or guardian had been physically abused and 29.2 % reported that at least a member of their family had been a problem drinker or drug user. MSM with a higher level of psychological distress were significantly more likely to report that they had been physically hurt (17.4 % vs. 31.4 %, $p = 0.001$), a family member said hurtful or insulting things to them (26.6 % vs. 45.8 %, $p < 0.001$), and someone touched them in a sexual way (10.0 % vs. 20.3 %, $p = 0.004$). They were significantly less likely to report that someone in family made them feel that they were loved (97.5 % vs. 92.8 %, $p = 0.03$). For family dysfunction, MSM with a higher level of psychological distress were significantly more likely to report that their parent or guardian had been physically abused by another family member (10.0 % vs. 30.1 %, $p < 0.001$) and that a family member had been depressed or mentally ill (7.5 % vs. 31.4 %, $p < 0.001$).

Table 1 Comparisons of characteristics of MSM with a lower and higher level of psychological distress

Socio-economic characteristics	Total	Total GHQ-12 score		
	(*n* = 394)	≤3 (*n* = 241)	>3 (*n* = 153)	*p*-value*
Provinces				0.07
Battambang	329 (83.5)	208 (86.3)	121 (79.1)	
Siem Reap	65 (16.5)	33 (13.7)	32 (20.9)	
Gender identity				0.25
Male	228 (57.9)	139 (57.7)	89 (58.2)	
Female	81 (20.6)	55 (22.8)	26 (17.0)	
Transgender	85 (21.5)	47 (19.5)	38 (24.8)	
Mean age (in year)	23.7 ± 5.2	23.1 ± 4.8	24.8 ± 5.7	0.001
Years of formal education completed	9.5 ± 3.2	9.8 ± 3.1	9.1 ± 3.3	0.04
Marital status				0.91
Never married	355 (90.1)	217 (90.0)	138 (90.2)	
Married and living together	30 (7.6)	19 (7.9)	11 (7.2)	
Divorced/separated/widowed	9 (2.3)	5 (2.1)	4 (2.6)	
Main occupation				0.18
Unemployed	35 (8.9)	17 (7.1)	18 (11.8)	
Students	102 (25.9)	70 (20.9)	32 (20.9)	
Farmer/laborer	59 (15.0)	39 (16.2)	20 (13.1)	
Self-employed	112 (28.4)	66 (27.4)	46 (30.1)	
Other	81 (21.8)	49 (20.3)	37 (24.2)	
Average income in the past month (USD)	210 ± 629	168 ± 505	275 ± 784	0.10
Duration living in current city (in months)	232 ± 106	225 ± 98	244 ± 117	0.09
Self-perception of HIV risk compared to the general population				0.02
Higher	140 (35.5)	73 (30.3)	67 (43.8)	
Same	70 (17.8)	43 (17.8)	27 (17.6)	
Lower	184 (46.7)	125 (51.9)	59 (38.6)	
Self-rated overall health				0.10
Good/very good	147 (37.3)	80 (33.2)	67 (43.8)	
Neither good nor poor	224 (56.9)	147 (61.0)	77 (50.3)	
Poor/very poor	23 (5.8)	14 (5.8)	9 (5.9)	
Self-rated quality of life				<0.001
Good/very good	119 (30.2)	68 (28.2)	51 (33.3)	
Neither good nor poor	256 (65.0)	170 (70.5)	86 (56.2)	
Poor/very poor	19 (4.8)	3 (1.2)	16 (10.5)	
Ever thought to commit suicide	42 (10.7)	23 (9.5)	19 (12.4)	0.37
Ever attempted to commit suicide	26 (6.6)	18 (7.5)	8 (5.2)	0.38

GHQ general health questionnaire, *MSM* men who have sex with men
Values are number (%) for categorical variables and mean ± SD for continuous variables
*Chi-square test was used for categorical variables and Student's *t*-test was used for continuous variables

Independent factors associated with psychological distress

Results of multivariable logistic regression analysis are shown in Table 5. After adjustment, MSM with a higher level of psychological distress remained significantly more likely to be recruited from Siem Reap (AOR = 2.16, 95 % CI 1.14–4.09), be older (AOR = 1.09, 95 % CI 1.03–1.14), to report poor/very poor overall quality of life (AOR = 7.45, 95 % CI 1.79–3.04), to be an alcohol drinker (AOR = 3.3, 95 % CI 1.36–7.83), and to be an illicit drug user (AOR = 3.53, 95 % CI 1.12–11.18). They were significantly less likely to report using a condom at

Table 2 Comparisons of substance use among MSM with a lower and higher level of psychological distress

Substance use in the past 3 months	Total	Total GHQ-12 score		
	(*n* = 394)	≤3 (*n* = 241)	>3 (*n* = 153)	*p*-value*
Drank at least a full glass or one can of alcohol	247 (88.1)	206 (85.5)	141 (92.2)	0.04
Mean number of days getting drunk (past month)	5.1 ± 6.7	8.4 ± 9.0	8.2 ± 5.8	0.93
Smoked at least 100 cigarettes in lifetime	77 (19.5)	40 (16.6)	37 (24.2)	0.14
Mean number of cigarettes smoked per day	8.3 ± 7.6	8.4 ± 9.0	8.2 ± 5.8	0.93
Used any kinds of illicit drugs (past three months)	20 (5.1)	5 (2.1)	15 (9.8)	0.001

GHQ general health questionnaire, *MSM* men who have sex with men
Values are number (%) for categorical variables and mean ± SD for continuous variables
*Chi-square test was used for categorical variables and Student's *t*-test was used for continuous variables

last sex (AOR = 0.40, 95 % CI 0.21–0.73). Regarding ACEs and family dysfunction, MSM with a higher level mental disorders remained significantly more likely to report that a family member said hurtful or insulting things to them (AOR = 1.80, 95 % CI 1.10–2.97), a parent or guardian had been physically abused (AOR = 3.51, 95 % CI 1.86–6.62), and a family member had been depressed or mentally ill (AOR = 4.01, 95 % CI 2.06–7.81).

Discussion

Mental health is influenced by a range of environmental, social, and individual factors, some of which may be accentuated by the contexts that people live in. Cambodia has a history of trauma and genocide, and generally high levels of psychological distress among its population [3]. However, in this context, daily stressors may be equally or more important causes of current psychological stress than a history of trauma [29]. We believe our study is the first to explore issues of mental health among MSM in Cambodia, in response to calls for aetiological and epidemiological research of mental health in Cambodia [25, 28]. The focus on MSM in this paper is particularly important given that psychologically distressed MSM may experience stigma related to their sexual orientation [6], stigma of mental disorders which remains prevalent in Cambodia [25], and if diagnosed with HIV, HIV-related stigma [41, 42]. Together, these factors could hinder their access to appropriate health services.

Our study demonstrated strong association between psychological distress and older age, low condom use, alcohol use, illicit drug use, as well as verbal abuse and family violence. In addition, there was a strong link between psychological distress and family history of depression and mental illness. These findings are consistent with those

Table 3 Comparisons of sexual behaviors and HIV/STI testing among MSM with a lower and higher level of psychological distress

Sexual behaviors in the past 3 months	Total	Total GHQ-12 score		
	(*n* = 394)	≤3 (*n* = 241)	>3 (*n* = 153)	*p*-value*
Mean number of sex partners	3.9 ± 5.4	3.8 ± 5.7	4.0 ± 5.0	0.68
Used a condom in the last sex	313 (82.8)	202 (87.4)	211 (75.5)	0.003
Had sex with girlfriends	118 (29.9)	79 (32.7)	39 (15.4)	0.03
Mean number of girlfriends you had sex with	1.7 ± 1.1	1.7 ± 1.0	1.9 ± 1.2	0.26
Used a condom in last sex with girlfriends	97 (82.2)	68 (86.1)	29 (74.4)	0.12
Had sex with boyfriends	206 (86.9)	126 (85.7)	80 (88.9)	0.48
Mean number of boyfriends you had sex with	2.4 ± 3.8	2.3 ± 3.5	2.6 ± 4.3	0.53
Used a condom in last sex with boyfriends	192 (92.8)	117 (92.9)	75 (92.6)	0.94
Had anal sex with boyfriends	196 (94.2)	116 (91.3)	80 (98.8)	0.03
Used condom in last anal sex with boyfriend	187 (92.1)	114 (94.2)	73 (89.0)	0.18
Sold sex to men	67 (17.0)	42 (17.4)	25 916.3)	0.78
Used condom when selling sex last time	63 (94.0)	40 (95.2)	23 (92.0)	0.59
Tested for HIV in the past 6 months	252 (64.0)	160 (66.4)	92 (60.1)	0.21
Been diagnosed with an STI	28 (7.1)	16 (6.6)	12 (7.9)	0.63

GHQ general health questionnaire, *MSM* men who have sex with men, *STI* sexually transmitted infection
Values are number (%) for categorical variables and mean ± SD for continuous variables
*Chi-square test or Fisher's exact test was used as appropriate for categorical variables and Student's *t*-test was used for continuous variables

Table 4 Comparisons of adverse childhood experiences and family dysfunction among MSM with a lower and higher level of psychological distress

Adverse childhood experiences and family dysfunction	Total	Total GHQ-12 score		
	(*n* = 394)	≤3 (*n* = 241)	>3 (*n* = 153)	*p*-value*
Adverse childhood experiences (ACEs)				
Physically hurt that needed medical care	90 (22.8)	42 (17.4)	48 (31.4)	0.001
Family member said hurtful or insulting things to me	134 (34.0)	64 (26.6)	70 (45.8)	<0.001
Someone touched me in a sexual way	55 (14.0)	24 (10.0)	31 (20.3)	0.004
Had someone to take care of or protected me	376 (95.4)	232 (96.3)	144 (94.1)	0.32
Someone in family made me feel that I was loved	377 (95.7)	235 (97.5)	142 (92.8)	0.03
Family dysfunction				
Parent or guardian had been physically abused	70 (17.8)	24 (10.0)	46 (30.1)	<0.001
Family member had a drinking problem/drug user	115 (29.2)	64 (26.6)	51 (33.3)	0.15
Family member had been depressed/mentally ill	66 (16.8)	18 (7.5)	48 (31.4)	<0.001
Parents ever been separated or divorced	54 (35.3)	70 (29.0)	54 (35.3)	0.19
Family member had been to prison	12 (3.0)	8 (3.3)	4 (2.6)	0.69

MSM men who have sex with men *GHQ* general health questionnaire
Values are number (%)
*Chi-square test was used

from other countries showing strong association of mental disorders with unprotected anal intercourse [43, 44], alcohol and illicit drug use [45], childhood sexual and physical abuse [46], as well as social isolation [47] among MSM. There was also a strong association between psychological distress and cognitive self-awareness of self-rated quality of life in our study, which is consistent with other research findings [48, 49]. Given the high rates of aggressive behaviour in families reported from a recent national survey (11.5 % $n = 2690$) [25], our study emphasises the importance of ACE in development of psychological distress in latter life as reported elsewhere [5, 50]. However, in contrast to other studies [51], we found that older MSMs experienced higher levels of distress. Hypothetically, this may be may be related to possible long term consequences trauma and civil war among older population in Cambodia, which could exacerbate the impact of daily psychological stressors. An alternative hypothesis is that older generation of MSM may experience higher level of stigma related to sexual orientation compared to younger MSM, because it might be more socially acceptable to be MSM among the younger generation in the Cambodian context. These hypotheses would need to be examined in future research.

The negative consequence of poor mental health on HIV prevention, ART adherence, retention in care, and other outcomes is well documented [13, 14, 16–18, 20, 21]. However, evidence suggests that when poor mental health is promptly attended and managed, there are no differences in important HIV outcomes, such as ART initiation and adherence between individuals on mental health treatment and people without mental health conditions [11, 52]. Given these observations, integration of mental health services into HIV prevention, treatment, and care is necessary in order to mitigate the consequences of unattended mental health on the HIV epidemic. Research from other contexts indicate that a significant number of both HIV-positive and negative MSM have mental concerns that are significant enough to require treatment [53], and that generally among PLHIV, these concerns get worse with age [54].

Yet, two recent reviews showed that despite advances in our understanding of the negative impact of mental health on HIV prevention, treatment and care cascade, there is a lack of evidence-based psychosocial interventions that integrate mental health with HIV services [21, 55]. There is a need to develop models of integrating mental health care into HIV services especially given recent evidence showing that poor mental health is the fourth most important cause of hospitalization among PLHIV [19]. We suggest that to achieve optimal integration of mental health and HIV services, a number of health systems-based elements need strengthening.

To begin with, equipping general practitioners, nurses and non-clinical health professionals working in HIV programmes and clinics to screen and identify non-severe mental disorders early, while referring more complex cases to specialised health providers, is required. Expanding competency based training and mentorship related to mental health to staff in HIV organisations would have a significant impact on the ability of the health system to identify early signs of mental illnesses among MSM and other populations who are constantly reached by HIV programmes. In Ethiopia, this

Table 5 Factors associated with levels of psychological distress among MSM in multivariable logistic regression model

Variables in the final model[a]	Total score of GHQ-12 (≤3 vs. >3)	
	AOR (95 % CI)	*p*-value
Province		
Battambang	Reference	
Siem Reap	2.16 (1.14–4.09)	0.02
Age	1.09 (1.03–1.14)	0.001
Self-rated quality of life		
Good/very good	Reference	
Neither good nor poor	0.84 (0.50–1.41)	0.51
Poor/very poor	7.45 (1.79–3.04)	0.006
Had drunk at least a full glass of alcohol		
No	Reference	
Yes	3.3 (1.36–7.83)	0.008
Used any kinds of illicit drugs		
No	Reference	
Yes	3.53 (1.12–11.18)	0.03
Condom use at last sexual intercourse		
No	Reference	
Yes	0.40 (0.21–0.73)	0.003
Family member said hurtful or insulting things to		
No	Reference	
Yes	1.80 (1.10–2.97)	0.02
Parent or guardian had been physically abused		
No	Reference	
Yes	3.51 (1.86–6.62)	<0.001
Family member had been depressed/mentally ill		
No	Reference	
Yes	4.01 (2.06–7.81)	<0.001

AOR adjusted odds ratio, *CI* confidence interval, *MSM* men who have sex with men

[a]Variables associated with psychological distress in bivariate analyses at a level of $p < 0.2$ were simultaneously included in the model, and then variables with a p-value ≥0.05 were removed for model fitting, and the steps were repeated until all p-values of the remaining variables were <0.05

was achieved by creating a referral network between generalists in HIV programmes and mental health specialists at mental health facilities [56]. Although mental health training occurs in medical schools [25, 27], there is a lack of mental health training opportunities for staff working in HIV organisations and programmes. Evidence suggests that although staff working in HIV programmes might be willing to perform mental health screening, most have poor knowledge of mental health and often miss opportunities to identify mild forms of psychological distress [57].

In Cambodia, non-governmental organisations provide a significant proportion of HIV services at the community level. Engaging these organisations in routine screening of mental health symptoms could facilitate decentralisation of mental health services to communities. Decentralisation of services has been recommended as a potential strategy to address mental health illnesses in Cambodia [5, 25, 28]. Mental heath screening within HIV programmes would also operationalise task-shifting of basic mental health services to non-clinicians who work in these organisations, such as community health workers, peer-outreach workers, and lay counsellors. In practice, the frequency of mental health screening might vary depending on the available human resources in HIV organisations, as is the case elsewhere [58].

Finally, significant shifts in the organisation of HIV service provision should occur. Successful integration of mental health with HIV services requires changes in organisational structures, infrastructure, and service delivery packages [59]. In Cambodia, HIV services need to be reconfigured to enable the inclusion of peer-based social support for MSM who have been screened and identified as having psychological distress. Social support and outreach can counter mental health morbidity by reducing perceived stigma and social exclusion [60, 61], and enhancing emotional wellbeing and mental health literacy [62, 63]. Engaging HIV programmes in extending the reach of mental health screening could reduce inequality of access to mental health services, given that current access is geographically skewed and disadvantages marginalised groups, including sexual minorities [27], while HIV programmes have national coverage, and predominantly work with sexual minorities, including MSM.

Conclusions

This study found that psychological distress among MSM in Cambodia is associated with low condom use, alcohol and illicit drug use, older age, poor quality of life, as well as social and family contexts related to child abuse, family violence, and family history of mental illness. However, before firm conclusions can be made regarding our findings, limitations of this study, including limited representativeness of the sample, limited generalizability of the results, and potential recall bias, should be noted. Data used for this study were collected as part of an impact evaluation of SAHACOM, a comprehensive community-based project aiming to improve sexual and reproductive health and quality of life of key populations, including MSM. The levels of health risk behaviours and psychological distress reported in this study may therefore represent a more optimistic picture than in other areas of Cambodia. Moreover, the sampling method was not necessarily designed for this cross-sectional analysis, and adjusting for the sampling effect was difficult. Despite these limitations, findings from this study

have important implications for integration of HIV and mental health interventions for MSM in resource-poor settings. Integration of mental health and HIV care has potential to improve HIV care cascade, mitigate perceived HIV stigma and support decentralisation of mental health screening services to MSM and other communities in Cambodia. To achieve optimal impact, models of screening of mental health by staff in HIV service programmes, training of clinical and non-clinical HIV service providers with low knowledge of mental health symptoms, and inclusion of peer-based outreach and social support for MSM identified with psychological distress mental is required.

Competing interests
The authors declare that they have no competing interests.

Author' contributions
SY and GM drafted and revised the manuscript. ST, PC, KP and SCC designed the study. All authors read and approved the final manuscript.

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References
1. Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, et al. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. Lancet. 2013;382(9904):1575–86. doi:10.1016/s0140-6736(13)61611-6.
2. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012;380(9859):2197–223. doi:10.1016/s0140-6736(12)61689-4.
3. Mollica RF, Brooks R, Tor S, Lopes-Cardozo B, Silove D. The enduring mental health impact of mass violence: a community comparison study of Cambodian civilians living in Cambodia and Thailand. Int J Soc Psychiatry. 2014;60(1):6–20. doi:10.1177/0020764012471597.
4. Dubois V, Tonglet R, Hoyois P, Sunbaunat K, Roussaux JP, Hauff E. Household survey of psychiatric morbidity in Cambodia. Int J Soc Psychiatry. 2004;50(2):174–85.
5. Somasundaram DJ, van de Put WA. Mental health care in Cambodia. Bull World Health Organ. 1999;77(3):275–7.
6. UNDP and USAID. Being LGBT in Asia: Cambodia Country Report. A Participatory Review and Analysis of the Legal and Social Environment for Lesbian, Gay, Bisexual and Transgender (LGBT) Persons and Civil Society. Bangkok: UNDP; 2014.
7. Liu K, Chhea C. The BROS Khmer: behavioral risks on-site serosurvey among at-risk urban men in Cambodia. Phnom Penh: Family Health International; 2010.
8. Couture MC, Sansothy N, Sapphon V, Phal S, Sichan K, Stein E, et al. Young women engaged in sex work in Phnom Penh, Cambodia, have high incidence of HIV and sexually transmitted infections, and amphetamine-type stimulant use: new challenges to HIV prevention and risk. Sex Transm Dis. 2011;38(1):33–9. doi:10.1097/OLQ.0b013e3182000e47.
9. Chhea C, Heng S, Tuot S. National population size estimation, HIV related risk behaviors, HIV prevalence among people who use drugs in Cambodia in 2012. Phnom Penh: National Authority for Combating Drugs and KHANA; 2014.
10. Farber EW, Lamis DA, Shahane AA, Campos PE. Personal meaning, social support, and perceived stigma in individuals receiving HIV mental health services. J Clin Psychol Med Settings. 2014;21(2):173–82. doi:10.1007/s10880-014-9394-3.
11. Tegger MK, Crane HM, Tapia KA, Uldall KK, Holte SE, Kitahata MM. The effect of mental illness, substance use, and treatment for depression on the initiation of highly active antiretroviral therapy among HIV-infected individuals. AIDS Patient Care STDS. 2008;22(3):233–43. doi:10.1089/apc.2007.0092.
12. Nakimuli-Mpungu E, Mojtabai R, Alexandre PK, Musisi S, Katabira E, Nachega JB, et al. Lifetime depressive disorders and adherence to anti-retroviral therapy in HIV-infected Ugandan adults: a case-control study. J Affect Disord. 2013;145(2):221–6. doi:10.1016/j.jad.2012.08.002.
13. Mellins CA, Havens JF, McDonnell C, Lichtenstein C, Uldall K, Chesney M, et al. Adherence to antiretroviral medications and medical care in HIV-infected adults diagnosed with mental and substance abuse disorders. AIDS Care. 2009;21(2):168–77. doi:10.1080/09540120802001705.
14. Tucker JS, Burnam MA, Sherbourne CD, Kung FY, Gifford AL. Substance use and mental health correlates of nonadherence to antiretroviral medications in a sample of patients with human immunodeficiency virus infection. Am J Med. 2003;114(7):573–80.
15. Krumme AA, Kaigamba F, Binagwaho A, Murray MB, Rich ML, Franke MF. Depression, adherence and attrition from care in HIV-infected adults receiving antiretroviral therapy. J Epidemiol Community Health. 2015;69(3):284–9. doi:10.1136/jech-2014-204494.
16. Tominari S, Nakakura T, Yasuo T, Yamanaka K, Takahashi Y, Shirasaka T, et al. Implementation of mental health service has an impact on retention in HIV care: a nested case-control study in a japanese HIV care facility. PLoS One. 2013;8(7):e69603. doi:10.1371/journal.pone.0069603.
17. Bouhnik AD, Preau M, Vincent E, Carrieri MP, Gallais H, Lepeu G, et al. Depression and clinical progression in HIV-infected drug users treated with highly active antiretroviral therapy. Antivir Ther. 2005;10(1):53–61.
18. Villes V, Spire B, Lewden C, Perronne C, Besnier JM, Garre M, et al. The effect of depressive symptoms at ART initiation on HIV clinical progression and mortality: implications in clinical practice. Antivir Ther. 2007;12(7):1067–74.
19. Ford N, Shubber Z, Meintjes G, Grinsztejn B, Eholie S, Mills E, et al. Causes of hospital admission among people living with HIV worldwide: a systematic review and meta-analysis. Lancet HIV. 2015;2(10):e438-44. doi:10.1016/S2352-3018(15)00137-X.
20. Mijch A, Burgess P, Judd F, Grech P, Komiti A, Hoy J, et al. Increased health care utilization and increased antiretroviral use in HIV-infected individuals with mental health disorders. HIV Med. 2006;7(4):205–12. doi:10.1111/j.1468-1293.2006.00359.x.
21. Catalan J, Harding R, Sibley E, Clucas C, Croome N, Sherr L. HIV infection and mental health: suicidal behaviour–systematic review. Psychol Health Med. 2011;16(5):588–611. doi:10.1080/13548506.2011.582125.
22. Houston E, Sandfort T, Dolezal C, Carballo-Dieguez A. Depressive symptoms among MSM who engage in bareback sex: does mood matter? AIDS Behav. 2012;16(8):2209–15. doi:10.1007/s10461-012-0156-7.
23. Safren SA, Blashill AJ, O'Cleirigh CM. Promoting the sexual health of MSM in the context of comorbid mental health problems. AIDS Behav. 2011;15 Suppl 1:S30–4. doi:10.1007/s10461-011-9898-x.
24. Freeman M. HIV/AIDS in developing countries: heading towards a mental health and consequent social disaster? S Afr J Psychol. 2004;34(1):139–59. doi:10.1177/008124630403400109.
25. Schunert T, Khann S, Kao S, Pot C, Saupe L, Lahar C, et al. Cambodian Mental Health Survey. Phnom Penh: Royal University of Phnom Penh Department of Psychology; 2012.
26. Ministry of Health. Mental Health and Substance Misuse. Strategic Plan 2011–2015. Phnom Penh: Ministry of Health and World Health Organization; 2010.
27. Aberdein C, Zimmerman C. Access to mental health and psychosocial services in Cambodia by survivors of trafficking and exploitation: a qualitative study. Int J Mental Health Syst. 2015;9:16. doi:10.1186/s13033-015-0008-8.
28. Jegannathan B, Kullgren G, Deva P. Mental health services in Cambodia, challenges and opportunities in a post-conflict setting. Asian J Psychiatry. 2015;13:75–80. doi:10.1016/j.ajp.2014.12.006.
29. Cantor-Graae E, Chak T, Sunbaunat K, Jarl J, Larsson CA. Long-term psychiatric consequences of exposure to trauma in Cambodia: a regional

household survey. Soc Sci Med. 2014;123:133–40. doi:10.1016/j.socscimed.2014.10.049.
30. Yi S, Chhoun P, Brant S, Kita K, Tuot S. The Sustainable Action against HIV and AIDS in Communities (SAHACOM): Impacts on health and quality of life of people living with HIV in Cambodia. Glob J Med Public Health. 2014;3(5):1–12.
31. Yi S, Chhoun P, Suong S, Thin K, Brody C, Tuot S. AIDS-related stigma and mental disorders among people living with HIV: a cross-sectional study in Cambodia. PLoS One. 2015;10(3):e0121461. doi:10.1371/journal.pone.0121461.
32. Brody C, Chhoun P, Tuot S, Pal K, Chhim K, Yi S. HIV risk and psychological distress among female entertainment workers in Cambodia: a cross-sectional study. BMC Public Health. 2016;16(1):133. doi:10.1186/s12889-016-2814-6.
33. Yi S, Tuot S, Chhoun P, Pal K, Choub S, Mburu G. Prevalence and correlates of psychological distress among people who inject drugs in Phnom Penh, Cambodia. Int J Drug Policy. 2016. In Press.
34. Heng S, Tuot S. Mid-term review of the sustainable action against HIV and AIDS in communities (SAHACOM). Phnom Penh: KHANA; 2013.
35. National Institute of Public Health National Institute of Statistics and ORC Macro. Cambodia Demographic and Health Survey 2010. Phnom Penh and Calverton: National Institute of Public Health National Institute of Statistics, and ORC Macro; 2010.
36. Yi S, Poudel K, Yasuoka J, Palmer P, Yi S, Jimba M. Role of risk and protective factors in risky sexual behavior among high school students in Cambodia. BMC Public Health. 2010;10:477. doi:10.1186/1471-2458-10-477.
37. Bernstein DP, Ahluvalia T, Pogge D, Handelsman L. Validity of the Childhood Trauma Questionnaire in an adolescent psychiatric population. J Am Acad Child Adolesc Psychiatry. 1997;36(3):340–8. doi:10.1097/00004583-199703000-00012.
38. Bernstein DP, Stein JA, Newcomb MD, Walker E, Pogge D, Ahluvalia T, et al. Development and validation of a brief screening version of the Childhood Trauma Questionnaire. Child Abuse Negl. 2003;27(2):169–90.
39. Goldberg D. The detection of psychiatric illness by questionnaire: a technique for identification and assessment of non-psychotic psychiatric illness. New York: Oxford University Press; 1972.
40. Goldberg DP, Oldehinkel T, Ormel J. Why GHQ threshold varies from one place to another. Psychol Med. 1998;28(4):915–21.
41. Sakara P, Eng S, Barmey P, Reeves M, Nyblade L, Gregowski A. Understanding and challenging stigma toward men who have sex with men: Cambodia edition toolkit for action. Washington, DC: Pact and International Center for Research on Women; 2010.
42. Sovannara K, Ward C. Men who have sex with men in Cambodia: HIV/AIDS vulnerability stigma and discrimination. Phnom Penh: Futures Group and Research Triangle Institute; 2004.
43. Mimiaga MJ, Biello KB, Sivasubramanian M, Mayer KH, Anand VR, Safren SA. Psychosocial risk factors for HIV sexual risk among Indian men who have sex with men. AIDS Care. 2013;25(9):1109–13. doi:10.1080/09540121.2012.749340.
44. Rogers G, Curry M, Oddy J, Pratt N, Beilby J, Wilkinson D. Depressive disorders and unprotected casual anal sex among Australian homosexually active men in primary care. HIV Med. 2003;4(3):271–5.
45. Stoloff K, Joska JA, Feast D, De Swardt G, Hugo J, Struthers H, et al. A description of common mental disorders in men who have sex with men (MSM) referred for assessment and intervention at an MSM clinic in Cape Town, South Africa. AIDS Behav. 2013;17 Suppl 1:S77–81. doi:10.1007/s10461-013-0430-3.
46. Boroughs MS, Valentine SE, Ironson GH, Shipherd JC, Safren SA, Taylor SW, et al. Complexity of childhood sexual abuse: predictors of current post-traumatic stress disorder, mood disorders, substance use, and sexual risk behavior among adult men who have sex with men. Arch Sex Behav. 2015. doi:10.1007/s10508-015-0546-9.
47. Batist E, Brown B, Scheibe A, Baral SD, Bekker LG. Outcomes of a community-based HIV-prevention pilot programme for township men who have sex with men in Cape Town, South Africa. J Int AIDS Soc. 2013;6 Suppl 3:18754. doi:10.7448/ias.16.4.18754.
48. Barry MM, Zissi A. Quality of life as an outcome measure in evaluating mental health services: a review of the empirical evidence. Soc Psychiatry Psychiatr Epidemiol. 1997;32(1):38–47.
49. Fleury MJ, Grenier G, Bamvita JM, Tremblay J, Schmitz N, Caron J. Predictors of quality of life in a longitudinal study of users with severe mental disorders. Health Qual Life Outcomes. 2013;11:92. doi:10.1186/1477-7525-11-92.
50. Rieder H, Elbert T. The relationship between organized violence, family violence and mental health: findings from a community-based survey in Muhanga, southern Rwanda. Eur J Psychotraumatol. 2013;4(10.3402/ejpt.v4i0.21329). doi:10.3402/ejpt.v4i0.21329.
51. Salomon EA, Mimiaga MJ, Husnik MJ, Welles SL, Manseau MW, Montenegro AB, et al. Depressive symptoms, utilization of mental health care, substance use and sexual risk among young men who have sex with men in EXPLORE: implications for age-specific interventions. AIDS Behav. 2009;13(4):811–21. doi:10.1007/s10461-008-9439-4.
52. Nakimuli-Mpungu E, Mutamba B, Othengo M, Musisi S. Psychological distress and adherence to highly active anti-retroviral therapy (HAART) in Uganda: a pilot study. Afr Health Sci. 2009;9 Suppl 1:S2–7.
53. Berg MB, Mimiaga MJ, Safren SA. Mental health concerns of HIV-infected gay and bisexual men seeking mental health services: an observational study. AIDS Patient Care STDS. 2004;18(11):635–43.
54. McGowan J, Sherr L, Rodger A, Fisher M, Miners A, Johnson M, et al. Effects of age on symptom burden, mental health and quality of life amongst people with HIV in the UK. J Int AIDS Soc. 2014;17(4 Suppl 3):19511. doi:10.7448/ias.17.4.19511.
55. Blashill AJ, Perry N, Safren SA. Mental health: a focus on stress, coping, and mental illness as it relates to treatment retention, adherence, and other health outcomes. Curr HIV/AIDS Rep. 2011;8(4):215–22. doi:10.1007/s11904-011-0089-1.
56. Wissow LS, Tegegn T, Asheber K, McNabb M, Weldegebreal T, Jerene D, et al. Collaboratively reframing mental health for integration of HIV care in Ethiopia. Health Policy Plan. 2015;30(6):791–803. doi:10.1093/heapol/czu058.
57. Mall S, Sorsdahl K, Swartz L, Joska J. "I understand just a little…" Perspectives of HIV/AIDS service providers in South Africa of providing mental health care for people living with HIV/AIDS. AIDS Care. 2012;24(3):319–23. doi:10.1080/09540121.2011.608790.
58. Kim S, Ades M, Pinho V, Cournos F, McKinnon K. Patterns of HIV and mental health service integration in New York State. AIDS Care. 2014;26(8):1027–31. doi:10.1080/09540121.2014.894613.
59. Dodds S, Nuehring EM, Blaney NT, Blakley T, Lizzotte JM, Lopez M, et al. Integrating mental health services into primary HIV care for women: the Whole Life project. Public Health Rep. 2004;119(1):48–59. doi:10.1016/j.phr.2004.03.011.
60. Farber EW, Shahane AA, Brown JL, Campos PE. Perceived stigma reductions following participation in mental health services integrated within community-based HIV primary care. AIDS Care. 2014;26(6):750–3. doi:10.1080/09540121.2013.845285.
61. Mburu G, Ram M, Skovdal M, Bitira D, Hodgson I, Mwai GW, et al. Resisting and challenging stigma in Uganda: the role of support groups of people living with HIV. J Int AIDS Soc. 2013;16(3 Suppl 2):18636. doi:10.7448/ias.16.3.18636.
62. Walstrom P, Operario D, Zlotnick C, Mutimura E, Benekigeri C, Cohen MH. 'I think my future will be better than my past': examining support group influence on the mental health of HIV-infected Rwandan women. Glob Public Health. 2013;8(1):90–105. doi:10.1080/17441692.2012.699539.
63. Rosser BR, Bockting WO, Ross MW, Miner MH, Coleman E. The relationship between homosexuality, internalized homo-negativity, and mental health in men who have sex with men. J Homosex. 2008;55(2):185–203. doi:10.1080/00918360802129394.