



Addressing Minority Stress and Mental Health among Men Who Have Sex with Men (MSM) in China

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Abstract

Purpose of Review Men who have sex with men (MSM) in China experience elevated risks of mental health issues in comparison to the general population in China, which contribute to vulnerability to HIV/STI risks and can comprise the effectiveness of HIV prevention efforts. A conceptual framework for understanding this mental health disparity is minority stress theory, which posits that experiences of external prejudice events (i.e., distal stressors) and internal stress processes such as internalized homophobia and concealment (i.e., proximal stressors) contribute to sexual minorities' elevated risk of psychological distress. To deepen the understanding of mental health among Chinese MSM and explore the potential utility of minority stress theory in this population, this paper synthesizes research evidence regarding prevalent mental health issues as well as how minority stress may be linked to psychological health in Chinese MSM.

Recent Findings Results indicate that Chinese MSM experience a high prevalence of several mental health issues including depression, anxiety, suicidal behaviors, and alcohol dependence.

Summary This review further reveals minority stress to be an important determinant of psychological distress among Chinese MSM, though evidence is mixed regarding the relationship between proximal minority stress and psychological health. Nonetheless, there is a lack of mental health services and interventions focusing on MSM in China. Culturally relevant, competent, and LGBT-affirmative mental health interventions are needed for Chinese MSM. To guide future intervention research, we provide considerations for reducing minority stress and promoting psychological health among Chinese MSM.

Keywords China · Men who have sex with men · Minority stress · Stigma · Psychological health

Introduction

Globally, men who have sex with men (MSM) are disproportionately burdened by poor mental health [1–3]. Across

geographic regions, studies consistently find that MSM experience elevated rates of mood and anxiety disorders as well as a higher burden of alcohol and substance use disorders compared to their heterosexual peers [4–9]. Such mental health disparities contribute to “syndemic” conditions surrounding HIV infection risk behaviors [10, 11] and interfere with the uptake of HIV-related behavioral interventions among MSM [12]. Mental health issues are particularly concerning among MSM in China, the world's most populous country. Along with the significant uptrend in the HIV epidemic among MSM in China [13, 14], recent reports suggest that Chinese MSM also suffer from a variety of mental health issues, including depression, anxiety, suicidal ideation, and alcohol dependence [15–18].

Similar to their western counterparts, Chinese MSM largely live in a heteronormative, stigmatizing environment [19, 20]. One explanation for the mental health disparities in sexual minorities is minority stress theory, which posits that stressors induced by a homophobic environment specific to sexual

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minority status can lead to adverse psychological outcomes for sexual minorities [21, 22]. Clear and consistent evidence supports this theory in MSM, suggesting that minority stress-related experiences such as discrimination, victimization, and internalized homophobia contribute to psychological distress and stress-sensitive illness [23–28]. However, this evidence is primarily established in Western, predominately US-based samples, which limits the potential utility of this theory to understand and address the burden of mental health in MSM in the global context.

Despite the growing HIV epidemic in Chinese MSM, recent reports on mental health concerns, and increased research interests in this population, empirical evidence on mental health and the role of minority stress among Chinese MSM has not been synthesized. This review paper, thereby motivated by the need to address this gap in the literature, aims to articulate a comprehensive understanding of minority stress and mental health among Chinese MSM and offer recommendations for future mental and behavioral health interventions targeting Chinese MSM. By gaining a minority stress-informed understanding of mental health in Chinese MSM, this research synthesis may also offer insight into the adaptation and application of this perspective in efforts to improve to the mental health of MSM in other global regions. Thus, the key scientific inquiry leading this review is *how minority stress may be linked to Chinese MSM's psychological health*. To answer this question, we structure the review of research findings in three sections: (1) overview on empirical evidence on mental health issues among Chinese MSM; (2) minority stress as a determinant of Chinese MSM's mental health; and (3) mental health services and relevant interventions for Chinese MSM. After synthesizing research findings in the above areas, we provide recommendations on future interventions aiming at reducing minority stress and improving mental health among Chinese MSM.

Search Strategy

A comprehensive literature search was conducted using PsycINFO, ProQuest, SAGE, and Google Scholar. The search was limited to papers published in the past 6 years (from 2013 to 2019). Similar to previous reviews on Chinese MSM [29], articles published in peer-reviewed English language journals are emphasized so that readers can access them. We used search terms including *minority stress, stigma, discrimination, mental health, depression, anxiety, China, men who have sex with men, men who have sex with men and women, gay, bisexual men, and sexual minority men*. Quantitative research findings are emphasized, with qualitative studies included as supplemental materials to provide relevant context and supportive evidence. To be included, studies needed to focus on MSM in China or report findings from a subsample of MSM

in China. Studies also needed to measure and report mental health in Chinese MSM. In summary, the following inclusion criteria were employed: (1) focus on Chinese MSM; (2) published or in press from 2013 to May 2019; (3) written in English; and (4) measured and reported mental health.

Table 1 presents the details and key findings of the 37 studies focused on mental health among MSM in China identified through this search. Some studies ($n = 26$, 70.3%) targeted HIV-negative, serostatus-unknown, or serostatus-varied MSM whereas others ($n = 11$, 29.7%) focused on MSM living with or newly diagnosed with HIV. The majority of the studies used nonprobability sampling, including snowball sampling ($n = 15$, 40.5%) and convenience sampling ($n = 20$, 54.1%), usually in the context of HIV and MSM-related community outreach in HIV prevention and care. Stratified random sampling was used in two studies (5.4%). Seven studies' recruitment methods also included online-based efforts as part of their recruitment methods (18.9%). The majority of studies were cross-sectional ($n = 36$, 97.3%), and one study (2.7%) was longitudinal. Most studies investigated mental health of MSM using a within-group approach by focusing on MSM ($n = 35$; 94.6%), while two studies (5.4%) compared MSM to their heterosexual peers in a larger sample.

Empirical Evidence Regarding Mental Health Issues among Chinese MSM

In this section, we review extant evidence documenting prevalent mental health concerns to shed light on potential mental health disparities that MSM in China experience and offer targets for interventions. Below, we summarize study findings concerning prevalent mental health issues in Chinese MSM. We also review study findings documenting the heterogeneity of Chinese MSM and subpopulations with particularly high rates of mental health problems, including MSM living with HIV.

Measurement of Mental Health In terms of mental health measurement, most studies ($n = 35$; 94.6%) employed non-face-to-face, survey methods, using scales such as the Symptoms Checklist-90 (SCL-90) and the Center for Epidemiological Studies-Depression (CES-D) scale. In-person, diagnostic interviews were employed in two study publications (derived from the same dataset), using the Composite International Diagnostic Interview (CIDI). This non-population-based study with 807 MSM in Northeast China found a 35.2% lifetime prevalence of psychiatric disorders [17], which is more than twice as high compared to 16.6% in the general Chinese population [77]. In this sample, among MSM who met criteria for at least one diagnosis, 29.2% and 37.6% had comorbid disorders during the past 12 months and

Table 1 Published papers (2013–May 2019) focused on mental health in Chinese MSM

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & identifying measure	Stigma & measure	Key findings
Chen, Li, Wang, Zhang 2015 [30]	MSM	Nationwide (9 large cities)	Recruited participants from gay bars in large cities	1530	M = 26, Range = [22, 31]	Not reported	Suicidal behaviors, measured by five questions on suicidal intent, attempt, and reasons for suicidal ideation	N/A	26.0% considered suicide and 12.55% attempted suicide at least once
Choi, Steward, Miede, Hudes, & Gregorich 2016 [32]	MSM	Beijing	Snowball sampling and peer recruitment in MSM-identified venues (public parks, brothels)	493	M = 30, Range = [18, 33]	70%	Depression & anxiety, measured by Center for Epidemiological Studies Depression Scale (CES-D; 20 item)[34] & Brief Symptom Inventory[35]	Internalized MSM stigma, measured by a 15-item scale adapted by Authors[36] based on their work in India; anticipated MSM stigma, measured by an adapted scale from anticipated stigma measures used in other countries[37]	There were significant indirect effects of anticipated MSM stigma on symptoms of both depression and anxiety via avoidant coping.
Choi, Steward, Miede, Hudes, & Gregorich 2017 [31]	MSM	Beijing	Snowball sampling and peer recruitment in MSM-identified venues (public parks, brothels)	493	M = 30, Range = [18, 33]	70%	Depression & anxiety, measured by Center for Epidemiological Studies Depression Scale (CES-D; 20 item)[34] & Brief Symptom Inventory[35]	Three aspects of MSM stigma, including internalized stigma, measured by a 15-item scale adapted by Authors[36] based on their work in India; anticipated MSM stigma, measured by an adapted scale from anticipated stigma measures used in other countries[37]	Longitudinal pathway analysis revealed anticipated MSM stigma is linked to social support and avoidant coping at baseline, which both are linked to anxiety at 6 months and subsequently linked to difficult sexual situations at 12 months and unprotected anal intercourse at 12 months
Chong, Mak, Tam, Zhu, & Chung 2017 [38]	MSM living with HIV	Hong Kong	Patients recruited during their visit at an HIV outpatient clinic in Hong Kong	126	M = 39.25	91.0%	Psychological distress, measured by 5-item Mental Health Inventory[39]	Internalized HIV stigma, measured by the self-stigma scale[40]	Path analysis showed that negative reactions toward HIV stigma within MSM community mediated the relationship between perceived HIV stigma within MSM community and

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Hu et al. 2018 [41]	Men who have sex with men and women (MSMW) and men who have sex with men only (MSMO)	Four provinces (Chongqing, Sichuan, Xinjiang, & Guangxi) in Western China	Non-probability sampling; recruited via online and advertising with local organizations	1809	37.1% 18–25 years old, 39.1% 26–35 years old, & 23.8% older than 35 years old	83.9% reported having sex with men only	Depression, measured by Center for Epidemiological Studies Depression Scale (CES-D; 20 item)[34]; Anxiety, measured by Self-Rating Anxiety Scale (20 items)[42]	N/A	psychological distress Prevalence of depression, anxiety, and comorbidity was 50.86%. 36.43%, & 32.65% for MSMW and 35.18%, 23.52% and 18.91% for MSMO. Depression and anxiety associated with young age, lower education, lower income, less HIV knowledge, no HIV testing, and risky sexual behaviors 21.6% males who experience same-sex attraction and 34.7% males experience both-sex attraction report past-year suicide ideation
Huang et al. 2018 [43]	Sexual minority adolescents (grades 7–12), including sexual minority men	National survey collected in 506 high schools in 7 provinces of China	Four-stage, stratified-cluster, random sampling method	150,822 students total, including 2483 sexual minority adolescent boys	$M = 15.1$	41.8% reported same-sex attraction only	Suicide ideation and suicide attempts in past 12 months, measured by two single-item questions	N/A	21.6% males who experience same-sex attraction and 34.7% males experience both-sex attraction report past-year suicide ideation
Ibragimov et al. 2017 [44]	MSM and money boys	Shanghai	Community samples, recruited via respondent-driven sampling, community leaders, and internet and venue-based sampling	1352	$M = 29.5$	63.8%	Depression, measured by CES-D-12[34]; drug use, measured by a single-item question asked participants if they ever used any illicit drug over the course of their lifetime	N/A	29.7% had “somewhat elevated depressive symptoms,” and 6.6% had “very elevated depressive symptoms” in whole sample. Depression was higher in respondent-driven recruited through sample and sample community leaders. 19.8% ever used illicit drug in their lifetime, and drug use report was

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Li, Cai, Wang, Gan, & Shi 2016 [45]	MSM	Shanghai	“Snowball” technique	547	M = 30.5, Range = [17.3, 65.3]	71.3%	Suicidal ideation in past year, measured by a single item	N/A	highest in internet and venue-recruited sample 10.6% had suicidal thoughts. Suicidal ideation was predicted by perceived defeat and entrapment, which was predicted by temperament (i.e., impulsivity & sexual compulsivity) and perceived social support 10.6% MSM endorsed SI in past year, 12.2% had high anxiety; 30.9% had high depression; 26.3% had high impulsivity; and 42.4% reported high level sexual compulsivity 9.8% reported moderate depression, & 31.8% reported severe depression; 17.8% reported moderate anxiety and 3.4% reported severe anxiety. MSM who had more experiences of enacted HIV stigma reported significantly higher depression 55.8% had mild to severe depression. Self-stigma had a
Li, Cai, Wang, Sun, & Zhu 2016 [46]	MSM	Shanghai	“Snowball” recruitment	547	M = 30.5, Range = [17.3, 65.3]	71.3%	Suicide ideation in past year (one-item question); anxiety; depression; impulsivity	N/A	
Li, Mo, Kahler, Lau, Du, Dai, & Shen 2016 [47]	MSM living with HIV	Chengdu (Southwest China)	Authors’ NGO collaborator possessed 600 contact information of MSM living with HIV in Chengdu. Potential participants were contacted and interviewed	321	27.4% aged 18–25, 31.2% aged 26–30, 29.9% aged 31–40, 11.5% older than 40	85%	Depression, measured by Center for Epidemiological Studies Depression Scale (20 item) [34]; 7-item General Anxiety Disorder (GAD) Scale [48]	Enacted HIV stigma did not specify measure (frequency of enacted stigma experience was rated on a 4-point Likert Scale)	
Li, Mo, Wu, & Lau 2017 [49]	MSM living with HIV	Chengdu (Southwest China)	Participants recruited through peer fieldworkers at a local	321	27.4% aged 18–25, 31.2% aged 26–30, 29.9%	85%	Depression, measured by Center for Epidemiological	Self HIV stigma, measured by the 9-item	

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Liu et al. 2016 [51]	HIV-negative and status-unknown MSM	Beijing	nongovernmental organization	3588	aged 31–40, 11.5% older than 40	Not reported	Studies Depression Scale (20 item) [34]; positive and negative affect, measured by the 20-item Positive and Negative Affect Schedule (PANAS) scale[50]	Self-Stigma Scale-Short Form (SSS-S)[40]	direct effect on depression, and this effect was mediated by positive and negative affect. Further, the links between self-stigma and positive and negative affects were mediated by social support.
Liu et al. 2016 [51]	HIV-negative and status-unknown MSM	Beijing	MSM recruited in Phase I for a baseline survey and HIV and syphilis testing via short message service, website advertisement, gay-frequented venues, peer referral, and self-referral	3588	Median age = 28	Not reported	Alcohol use, measured by the Alcohol Use Disorders Identification Test (AUDIT)[52]	N/A	14.4% reported hazardous drinking (AUDIT-C score ≥ 4) & 16.8% reported binge drinking (≥ 6 standard drinks on one occasion). MSM with higher AUDIT scores were more likely to be infected by HIV and syphilis
Liu et al. 2018 [53]	MSM	Liaoning Province (Northeast China)	MSM recruited using a standardized respondent-driven sampling (RDS) procedure	807	71.3% age 18–29, 16.5% 30–39 years old, and 12.3% 40–64 years old	47.21%	Depression, measured by Self-Rating Depression Scale (SDS, 20 items)	Gay Related Stressful Life Events Scale [54], which measures occurrence of stressful incidents related to sexual orientation	Prevalence of depression (SDS > 52) was 33.09% significantly elevated in those aged over 40, married with a female, lacked social support, experienced gay-related stressful life events, and infected with HIV. More than one-fourth in subjects experienced GRSEs. Although arguments with family members and

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Liu et al. 2018 [55]	Gay men	Nationwide	Online and offline methods: survey links sent to participants using gay dating apps and an offline survey was conducted by research group at China CDC at China CDC's several pilot sites	367	$M = 27.9$, Range = [15, 56]	100%	Psychological distress, measured by Symptoms Checklist-90-R (SCL-90-R)	N/A	teachers or classmates regarding same-sex behavior are common GRSEs, they had no significant effects on depression. Yet, recent troubles with a boss or workmate had the greatest effects on depressive symptoms, followed by loss of a close friend, argument with a close friend, and being physically assaulted Scores of seven dimensions were significantly higher than the national norm ($p < .0001$), with phobia, hostility, interpersonal sensitivity, and depression being most salient. Being older, higher education, and more publicly out were associated with better mental health. Being the only child was more likely to obtain higher symptoms
Liu, Yi, Zhao, Qu, & Zhu 2018 [15]	MSM	Data collected in two cities, Zhengzhou (central China) and Huludao	Recruited from an internet advertisement, bars, and saunas	226	$M = 28.3$, Range = [18, 57]	58.4%	Psychological distress, measured by Symptoms Checklist-90-R (SCL-90-R)	Disclosure to family or friends about sexual orientation, measured by one-single item in demographic information	Four most frequently experienced psychological distresses by MSM were depression, disclosure to family or friends about sexual orientation, measured by one-single item in demographic information

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Mo, Lau, Lau, & Kim 2018 [58]	Two samples, including MSM at risk of mental health problems and MSM who self-perceived to have had mental health problems in the past 12 months	Hong Kong	MSM recruited using respondent-driven sampling (RDS)	175 in first sample; 143 in second sample	57.7% and 60.7% in subsamples 1 and 2 were 18–25 years old	87.4% in sample 1 and 81.8% in subsample 2	Depression and anxiety, measured by CES-D and GAD-7	Stigma toward MSM, including public stigma, self-stigma, and enacted stigma, measured by Public Stigma Scale and Self-Stigma Scale; Disclosure	Mild to severe depression was 84.6% in sample 1 and 60.1% in sample 2; mild to severe anxiety was 78.9% in sample 1 and 65% in sample 2; only 9.7% sought help from a mental health professional in past 12 months in sample 1 and 17.5% did in sample 2. Self-disclosure of MSM behavior to family members related to having sought help from mental health professionals in both samples, as well as positive attitudes toward seeking
		(Northeast China)							obsessive-compulsive behavior, interpersonal sensitivity, and anxiety. 11.9% MSM disclosed sexual orientation to family or friends. High distress associated with being married, condomless anal intercourse, more male sexual partners, identity concealment, and lack of psychological counseling usage

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Mu et al. 2016 [17]	MSM	Liaoning Province (Northeast China)	MSM recruited using a standardized respondent-driven sampling (RDS) procedure	807	71.3% age 18–29, 16.5% 30–39 years old, and 12.3% 40–64 years old	47.21%	Suicide behavior, assessed by the World Mental Health CIDI by a series of questions about suicide behaviors; psychiatric disorders, measured by the composite International Diagnostic Interview Version 1.0 (CIDI 1.0)	N/A	professional psychological help and perceived empathy from mental health service providers. Enacted stigma associated having sought help and public and self-stigma associated with lower intention to seek help among those self-perceive to have mental health problems Lifetime prevalences of suicide ideation, plan, and attempt were 18.3%, 8.7%, and 4.6%, correspondingly. Lifetime prevalence for mood disorder: 11.4%, major depression: 6.8%, dysthymia: 3.5% bipolar disorder: 2.4%; anxiety disorder: 20.9%; simple phobia: 8.6%, social phobia: 5.1% alcohol disorder: 20.7%, alcohol dependence: 15.4%, drug disorder: 3.2% Any disorder: 35.2%. MSM with any psychiatric disorders were 4–7 times more likely to think about, plan or

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Pan et al. 2017 [16]	MSM	Wenzhou (East China)	MSM recruited using a respondent-driven sampling (RDS) method	454	22.2% <26 years old, 37.0% 26–35 years old, & 40.7% >35 years old	40.5%	Depression, measured by CED-20; suicide ideation in past year, measured by a single-item question	N/A	attempt suicide than those MSM with no disorder Prevalence of major depressive symptoms: 34.6%; 53.5% participants had moderate to major depressive symptoms. Suicide ideation in the past year was reported by 16.1% participants. Depression associated with inconsistent condom use in anal sex, multiple oral male sexual partners, suicidal ideation, experience of adult sexual violence from male partners, and being at least once drunk in the past year
Su et al. 2017 [59]	HIV-negative/unknown MSM	Jiangsu Province (East China)	Two sampling methods, including time-location sampling (TLS) and online convenience sampling	507	30.0% aged 18–25, 36.9% aged 26–35, & 33.1% aged 36+	67.9%	Depression, measured by short version of CES-D 10	Internalized homophobia, measured by 5 items on reactions to homosexuality scale	26.8% with moderate to severe depressive symptoms; 35.5% endorsed loneliness in the past week. 46.2% had high levels of internalized homophobia. Depressed individuals had greater levels of internalized homophobia. MSM who endorsed loneliness were more likely to have UAI in the past 6 months.

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Sun et al. [60]	HIV status varied MSM	National recruited sample	Online recruited sample	753	$M = 25.4, SD = 6.5$	80.5%	Symptoms Checklist-90	Sexual identity stigma, measured by China MSM Stigma Scale; Internalized homosexuality and identity acceptance concerns, measured by subscales of the Lesbian, Gay, and Bisexual Identity Scale (LGBIS); Concealment, measured by two scales including motivation to conceal subscale of LGBIS and a behavioral concealment measure	Psychological distress was associated with lower family support, more interpersonal stigmatization and higher value in norm conformity. Psychological distress did not associate with internalized homophobia and concealment. Both norm conformity and lower family support were associated with concealment, and these associations were mediated by negative sexual identity
Tao et al. 2017 [61]	Newly HIV-diagnosed MSM	Beijing	Participants recruited from a large trial focused on testing and linking HIV-positive MSM to care	364	Median age = 28	Not reported	Depression and anxiety, measured by Hospital Anxiety and Depression Scale	N/A	36% likely/borderline depression; 42% likely/borderline anxiety. Both anxiety and depression associated with earlier ART initiation
Tao et al. 2017 [62]	Newly HIV-diagnosed MSM	Beijing	Participants recruited from a large trial focused on testing and linking HIV-positive MSM to care	367	Median age = 28	Not reported	Depression, measured by Hospital Anxiety and Depression Scale	HIV-related stigma, measured by Steward's HIV stigma scale, which had 4 subscales (enacted, felt, vicarious, & internalized stigma)	16% had borderline depression and 20% had suspected depression. Higher HIV stigma score was associated with increased odds of depression, and internalized HIV stigma had the strongest association with depression

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Wang et al. 2018 [63]	MSM	Shanghai	Snowball sampling method	547	$M = 30.50$, Range = [17.33, 65.33]	71.3%	Depression, measured by CES-D; anxiety, measured by GAD Anxiety: self-esteem, measured by Rosenberg Self-Esteem Scale, loneliness, measured by UCLA Loneliness Scale; sexual compulsivity, measured by Sexual Compulsivity Scale (10 items)	N/A	among all stigma types 12.2% evidenced significant generalized anxiety disorder; 30.9% had significant depression, and 42.4% reported sexual compulsivity. Concurrence of psychosocial health problems (more than one) resulted in a magnifying effect in engaging multiple sexual partner activities
Wang et al. 2017 [64]	MSM	Shanghai	Snowball sampling method	547	$M = 30.50$, Range = [17.33, 65.33]	71.3%	Depression, measured by CES-D; anxiety, measured by GAD Anxiety: self-esteem, measured by Rosenberg Self-Esteem Scale, loneliness, measured by UCLA Loneliness Scale; Sexual compulsivity, measured by Sexual Compulsivity Scale (10 items)	N/A	At least a third participants experienced more than two psychosocial symptoms. Lower self-esteem associated with UAI
Wang et al. 2019 [65]	MSM living with HIV	Shenzhen (Southern China)	Recruited participants at a public HIV clinic	410	$M = 42.4$	Not reported	Suicide, measured by two items inquiring suicidal ideation and plan; depression, measured by CES-D; anxiety, Generalized Anxiety Disorder	N/A	10.7% endorsed suicidal thoughts. MSM with suicidal thoughts were more likely to be younger, unmarried, unemployed, have more frequent insomnia, and

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Wang et al. 2019 [66]	Newly HIV-diagnosed MSM	Beijing	Participants recruited from a large trial focused on testing and linking HIV-positive MSM to care	367	<i>M</i> = 29.6	Not reported	Depression; anxiety, measured by Hospital Anxiety and Depression Scale; self-efficacy, measured by the General Self-Efficacy Scale (GSES)	N/A	higher anxiety scores 19.1% likely depression; 27.3% likely anxiety. Higher self-efficacy associated with lower anxiety and depression
Wu et al. 2015 [67]	MSM living with HIV	Anhui	Participants were recruited through facilitation by local CDC and using a national official entry point	184	<i>M</i> = 31.4	62.0%	Suicidal behaviors, measured by two questions inquiring suicidal ideation and attempt; depression, measured by CES-D	Perceived HIV Stigma	31% HIV-positive MSM had suicidal ideation within past 6 months; SI was associated with learning about HIV status, perceived HIV stigma, depression, and anxiety
Xu et al. 2017 [68]	MSM	Southwest China	Online-based recruitment through ads on chat-room websites, dating apps, and QQ groups	435	63% between age 18–24 and 37% older than 24	75%	Psychological distress, measured by Kessler Psychological Distress Scale	Internalized homophobia, measured by the Internalized Homophobia Scale	Internalized homophobia associated with greater psychological distress and sexual compulsions and less outness Prevalence of “possible depressive symptoms” was 57.9% (70.0% among money boys and 46.1% among general MSM). Younger MSM were more depressed.
Yan et al. 2014 [69]	serostatus-varied MSM, including “money” boys and general MSM	Shanghai	Respondent-driven sampling	404	42.1% age 18–24	62.4%	Depression, measured by 12-item CES-D	N/A	Prevalence of “possible depressive symptoms” was 57.9% (70.0% among money boys and 46.1% among general MSM). Younger MSM were more depressed.
Yan et al. 2019 [70]	MSM living with HIV	Nanjing	Convenience sampling in a hospital at Nanjing, China	347	22.8% age < 25, 59.6% between age 25 and 44, and 17.6% more than 44 years old	Not reported	Depression, assessed by 20-item CES-D	Perceived HIV stigma	38.6% had depressive symptoms, which was directed associated with perceived HIV stigma. Perceived

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Yang, Mak, Ho, & Chidgey 2017 [71]	MSM living with HIV	Hong Kong	Part of a study with PLWH being recruited in the only community outpatient clinic specialized in treating HIV-related illnesses in the city	211	41.77	Not reported	General mental health, assessed by the Mental Health Inventory (MHI-18)	Self-HIV stigma, assessed by the Self-Stigma Scale (Mak & Cheung, 2010)	HIV stigma also indirectly associated with depression through social support and self-esteem HIV self-stigma strongly predicted mental health. Relationship between “love attitude” and mental health was mediated by HIV self-stigma Did not report prevalence. PTSD and PTG were negatively related, and coping strategies mediated this association 33.1% reported depression and 13.0% reported anxiety. The 12-month prevalences of suicidal ideation, plan, and attempt were 9.7%, 4.0%, and 3.0%. A total of 26% experienced GRSE in the past 3 months, and most common ones were arguments with close friends (11.3%), losing a close friend (6.8%), arguments with parents (6.4%), and physical assault (3.5%). Experience of gay-related
Ye, Chen, & Lin 2018 [72]	MSM living with HIV	Beijing	Recruited from CDC	140	26.6 (SD = 3.3)	Not reported	PTSD, assessed by the Impact of Events Scale (IES); Positive changes, conceptualized as posttraumatic growth (PTG)	Not assessed	
Yu et al. 2018 [73]	MSM	Four cities in northeastern China	Respondent-driven sampling	807	71.3% younger than 30 years old	47.2%	Suicide behaviors, assessed by a series of questions about suicidal behaviors including suicidal ideation, planning, and attempting suicide; anxiety and depression, assessed by Self-rating Anxiety Scale (Wu, 1993) and Self-rating Depression Scale (Shu, 1993)	Gay Related Stressful Life Events Scale [54], a 12-item scale that measures occurrence of stressful incidents related to sexual orientation	

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Yu et al. 2013 [18]	MSM	Four cities in Northeastern China	Respondent-driven sampling	807	71.3% younger than 30 years old	47.2%	Used a Chinese version of CIDI to conduct face-to-face interviews, which generates diagnoses according to both the ICD-10 and DSM-III-R diagnostic criteria	Not reported/ assessed	stressful life events significantly increased suicidal ideation and plan Adjusted 12-month and lifetime prevalence rates of any psychiatric disorder were 27.5% and 32.3% for MSM. The 12-month prevalences for anxiety disorder was 13.7% and for alcohol disorder was 17.4%. For those diagnosed with a condition, MSM were twofold more likely to experience two or more disorders in the past 12 months and in their lifetime compared to urban males. The 12-month comorbid disorders were 29.2%, and 37.6% for lifetime prevalence of comorbid disorders among MSM who received a diagnosis Depression was linked to smoking behaviors. Lower gay identity comfort associated with more smoking behavior Gay and bisexual boys reporter poorer
Yu et al. 2013 [74]	MSM	Shanghai	Respondent-driven sampling	404	29.7	Not reported	Depression, measured by 12-item CES-D	“Gay identity”, assessed by 18-items on the Lesbian, Gay, and Bisexual Identity Scale	
Zhang et al. 2017 [75]	Adolescents in Hong Kong	Hong Kong	Schools were stratified	A total of 3776	15.7	1.5% in whole	Family atmosphere measured by one	Not assessed	

Table 1 (continued)

Authors & year	Population	Region	Sampling method	Sample size	Age	% Gay-identifying MSM	Mental health & measure	Stigma & measure	Key findings
Zhu et al. 2018 [76]	including gay and bisexual boys	Dalian (Northeast China)	Data was used in a convenience sample in a cross-sectional study	365	28.48	sample and 25.9% among sexual minority boys	item: physical and mental health, measured by the Physical and Mental Component Summary of the Short Form (SF-12); smoking, alcohol, and drug use, assessed by several items on each	Homosexual stigma, assessed by SSS-S	physical and mental health than heterosexual peers, as well as more likelihood in smoking, frequent drinking, engaging in vaginal sex, and be subjected to STDs
	MSM					Not reported	Mental health, assessed by GHQ-12	Homosexual stigma, assessed by SSS-S	49.4% in the sample had psychological problems and most prevalently experienced include seldom feeling happy, under stress, and thinking of oneself as worthless. 10.5% had childhood physical abuse, and they were more likely to engage in unprotected anal intercourse. Poorer mental health and self-stigma also predicted UAI. Community engagement negatively associated with UAI

lifetime, respectively, equivalent to double the comorbidity risk compared to their urban male counterparts in China [18].

Notably, none of the identified studies assessed trauma symptoms (e.g., post-traumatic stress disorder symptoms), which therefore is not documented in this review. Psychological trauma may be a potentially fruitful area for future investigation, given that literature in the USA and other western societies has documented that MSM experience elevated risk for PTSD symptoms, which is associated with minority stress and linked to HIV-related risk behaviors [78–80].

Depression Depression is among the most researched mental health issues among Chinese MSM. Among studies of Chinese MSM of varied HIV status, moderate-to-severe depressive symptoms have been documented with varied rates ranging from 26.8% [59] to 53.5% [16]. Depression increases the vulnerability of HIV for Chinese MSM, such that those who suffer from depressive symptoms are more likely to engage in inconsistent condom use during anal sex [16, 31, 59, 64].

Anxiety Survey studies that report anxiety symptoms among samples of serostatus-varied Chinese MSM found anxiety symptoms to be prevalent (varying from 12.2% [46] to 25.6% [41]) but with higher rates in exclusive samples of MSM living with HIV (21.2% [47] to 42% [61]). A study that employed diagnostic interviews documented anxiety disorders as the most prevalent lifetime mental disorder among Chinese MSM (20.9%; [17]). In a longitudinal study with MSM in China, anxiety predicted subsequent difficult sexual situations (i.e., settings and situations that made it difficult for one to practice safe sex such as sex within interpersonal relationships of unequal power) and condomless anal intercourse [31].

Suicidal Behaviors Studies have repeatedly documented that sexual minorities in western countries are more vulnerable to suicidal behaviors than their heterosexual peers. A recent meta-analysis summarizing results in the USA, Canada, Europe, Australia, and New Zealand concluded that 11% of sexual minority adults have attempted suicide in their lifetime compared to 4% of heterosexual adults in population surveys [81]. Similarly, suicidal behaviors are significantly elevated among Chinese MSM compared to the general population. Studies in this review reported varying prevalence of lifetime suicide attempt in Chinese MSM varied from 4.6% [17] to 12.6% [30], compared to an estimated 0.8% prevalence of suicide attempt in the general Chinese population in a reported recent meta-analysis documenting studies from 2007 to 2013 [82]. For HIV status-varied Chinese MSM, the prevalence of suicidal ideation has been documented to be between 10.6% [45] and as high as 26.0% [30]. Similar to the USA, the risk might be even more elevated in adolescent sexual minority

adolescent boys in China. In a large and nationally representative survey with more than 150,000 adolescent students from 506 high schools collected in 2014–15, one in five (21.6%) adolescent boys who reported same-sex attraction and one in three (34.7%) boys who reported both-sex attraction reported having experienced suicide ideation in the past year [43]. Further, this study found that 6.9% of boys reporting same-sex attraction and 12.2% of those reporting both-sex attraction attempted suicide in the past year, compared to 2.2% of their heterosexual peers [43].

Alcohol and Recreational Drug Use Injection drug use is relatively rare among Chinese MSM, yet use of alcohol and recreational drugs (i.e., club drugs), particularly before sex, is common. A recent meta-analysis summarizing 19 studies focused on alcohol use among Chinese MSM found a pooled prevalence of 23% for using alcohol more than once a week as well as for drinking prior to sex with male partners [83]. MSM who drank more than once per week were more likely to engage in drug use and sexual risk behaviors including condomless anal sex with men and trading sex for money [83]. Inhalant nitrites, also called poppers, are most popular recreational drugs reported among Chinese MSM [84]. For instance, a study sample of 3588 MSM from a HIV prevention intervention focusing on HIV testing in Beijing found 26.8% used poppers in the past month, which was associated with HIV infection and sexual risk behaviors (multiple male sex partnership and condomless anal intercourse) [85].

The Mental Health of MSM Subpopulations

Certain subgroups of MSM are found to be at heightened risk for mental health issues. “Money boys” refers to male sex workers in China who engage in sex with men for economic survival. Compared to the general MSM population, money boys have been found to experience more psychological distress. A study with MSM in Shanghai using respondent-driven sampling found that 70.0% money boys had depression symptoms compared to 46.1% of MSM not engaged in sex work [69]. Another study focusing on money boys in Shandong (northeast China) using respondent-driven sampling documented a similar rate of depression (68.1%), with heterosexual-identified money boys more likely to suffer from psychological distress than their nonheterosexual counterparts [86]. Compared to MSM overall, money boys are more socio-economically disadvantaged, at greater risk of sexual violence, substance abuse, and HIV and other STIs [86]—all could contribute to the high prevalence of depression in this group.

MSM who do not identify as gay (e.g., those who identify as bisexual, queer, unsure, or heterosexual) or those who also have sex with women may be even more vulnerable to mental

health problems compared to their gay-identified peers. This is evident in the large national sample of Chinese adolescents in which boys who experienced both-sex attraction had far higher rates of suicide ideation and almost twice the rate of suicidal attempts than their male peers who report exclusively same-sex attraction [43]. A recent study conducted in Western and Southwestern cities of China using convenience sampling showed that 50.9% of men who have sex with men and women (MSMW) experienced depression compared to 35.2% of men who have sex with men only [41]. This is similar to research findings conducted in western countries suggesting that bisexual men (variously defined by identity, behavior, or attractions) are at greater risk for mental health issues compared to gay men [1, 87, 88]. The reason for such disparities in China has not been clearly identified, and as indicated by findings from western-based study samples [89], poor mental health experienced by bisexual people could be related to bisexual invisibility/erasure, experiences of bisexual-specific discrimination, biphobia in the gay community, and lack of support for bisexuality.

Despite many public health initiatives and evolved attitudes toward people living with HIV (PLWH) in China, HIV stigma is still pervasive in Chinese society [90, 91]. Thus, Chinese MSM living with HIV must adjust to living with a highly stigmatized health condition, which could further damage their mental health. A study in Southwest China found that 42.6% of MSM living with HIV suffered from moderate-to-severe depression and 21.2% reported anxiety [47]; such high rates of psychological distress could adversely affect antiretroviral therapy adherence and quality of life [92–95]. For MSM living with HIV, the period following diagnosis and initiation of ART may be a particularly vulnerable time to distress and critical to successful care. A study in Beijing using convenience sampling from a HIV prevention and linkage-to-care trial found high rates of depression (39%) and anxiety (42%) among MSM newly diagnosed with HIV [61]. However, contrary to hypotheses, this study further found that depression and anxiety associated with early care initiation, suggesting that MSM who were aware of their high distress may be motivated to seek help during this period [61]. This could also be potentially due to ART initiation, and managing HIV care contributes to psychological distress. In another study using convenience sampling in Anhui Province among MSM living with HIV, one in three (31%) endorsed suicide ideation in the past 6 months, which was associated with perceived distress in learning about one's HIV diagnosis, perceived HIV stigma and other mental health issues including depression and anxiety [67].

In summary, compared to the general population, MSM across regions in China are disproportionately affected by a range of mental health issues, including depression, anxiety, suicidal behaviors, and alcohol and substance dependence. Certain subgroups, such as those who engage in sex for

money and those who are HIV positive and bisexual MSM are at an even heightened risk.

Minority Stress as a Determinant of Mental Health Issues among Chinese MSM

Derived from social psychological theories of stress, minority stress theory describes a process through which minority stressors negatively affect sexual minorities' mental health [21, 96]. The model outlines a continuum of distal to proximal stressors specific to sexual orientation. Distal stressors may constitute objective, external stressful events such as prejudice and discrimination. Proximal stressors represent more internally oriented processes such as anticipation of prejudice events and internalization of stigmatizing attitudes such as internalized homophobia and concealment.

Given the primacy placed on the social context in generating minority stress [21], further highlighted in theories of structural stigma applied to sexual minorities [56], in this section, we first attend to the historic and cultural context of minority stress in China and provide a summary of distinct culturally related characteristics of minority stress concerning MSM. We then present a summary of research findings on the relationship between minority stress specific to sexual orientation/behavior, organized in terms of the distal-proximal continuum, and mental health in MSM. As minority stress theory has been called to be extended to HIV-related stress among MSM living with HIV [97], we also review findings on the relationship between HIV stigma and mental health among MSM in China.

Minority Stress for MSM in a Chinese Context To understand minority stress and its impact on Chinese MSM, it is important to situate their experiences in the relevant historic and socio-cultural context in China. Societal attitudes toward same-sex behaviors among men in China have evolved over time. Generally speaking, pre-modern Chinese societies had fairly tolerant views toward MSM, often as long as these men fulfilled their family duty of marriage (with a woman) and procreation [19, 98]. The traditional cultural values which emphasize heterosexual marriage, having children, and filial piety (i.e., obedience to parents) still persist today [20]. Further, in the late twentieth century, early viewpoints of western psychiatry were promulgated in China, leading homosexuality to be listed as a psychiatric disorder [19]. Although this diagnosis was removed from the Chinese Classification and Diagnostic Criteria of Mental Disorders in 2001, the view that same-sex attraction is pathological persisted, both among the public and the mental health professions [98]. Same-sex behaviors are not criminalized in China. However, same-sex marriage is illegal, and there are currently no laws prohibiting

discrimination based on sexual orientation or gender identity/expression [19, 99].

These historical and cultural characteristics give rise to distinct minority stress experiences among Chinese MSM. We characterize three salient patterns of a culturally embedded minority stress experience for MSM in China: (a) traditional family-oriented values of filial piety and fertility; (b) collectivistic culture that emphasizes norm conformity; and (c) identity concealment as a prevalent coping strategy.

First, traditional family-oriented values in filial piety and fertility are emphasized in Chinese men's social roles and duties, which shape the minority stress experience of MSM in China. Although minority stress experiences in the family context have been described among sexual minorities in western societies [100], this may be even more pronounced for Chinese MSM. In a national survey with more than 18,000 LGBT individuals in China, rejection from family was the most prevalent source of nonacceptance, experienced by 57.6% participants, compared to all other sources [101]. A study with LGB young adults in China found that a negative sexual identity was associated with parents' attitudes toward marriage, especially for young adults who placed higher value in filial piety [57]. Similarly, a study with Chinese MSM found that low levels of family support specific to sexual identity were linked to both internalized homophobia and psychological distress [60].

Second, experiences of minority stress for Chinese MSM occur in a collectivistic culture that emphasizes on social norms and norm conformity [20, 60]. In a national survey with MSM, 96.9% of MSM reported being told that “homosexuality is not normal” by others [102]. As a largely collectivistic culture, Chinese society places high value in conforming to existing rules and norms. Another study with Chinese MSM found that endorsement of cultural value of norm conformity was associated with Chinese MSM's psychological distress, and internalized homophobia mediated the association between norm conformity and concealment of their sexual behavior and identity [60]. Being different from the heterosexual norm is regarded as “being abnormal,” which in the Chinese context implies a problematic form of deviance and disease [103]. This view is still prevalent: in a recent survey with college students in China regarding their view of homosexuality, the agreement was strongest viewing it as a psychological disorder [104].

Third, in response to the prevalent heteronormative culture and conformity-focused values in China, Chinese MSM remain relatively hidden and largely conceal their sexual identity [33, 59]. A national survey of Chinese MSM found that two thirds (68.7%) had pretended to be heterosexual for social acceptance [102]. As a result of the strong familial and cultural pressure to marry and bear children, which has been intensified by the one-child policy from the 1980s to 2010s, a large proportion of MSM (as much as 80% by certain estimates)

eventually marry a woman [105]. The cultural pressure to form a heterosexual marriage have resulted in a recent rise of “fake marriage markets” designed to help gay men and lesbians further conceal their sexual identity [105]. Qualitative analysis of minority stress in Chinese MSM suggests concealment as part of a coping process regarding to what degree MSM perform a heterosexual life [103]. This study further found that the concept of coming out was considered as “selfish” and “inconsiderate” to some MSM, insofar as the open declaration of one's personal sexual identity undermines cultural values of norm conformity, social harmony, and self-sacrifice [103].

Distal Sexual Minority Stress and Mental Health As noted, distal minority stress refers to external, objective prejudice events, such as discrimination and victimization due to one's sexual orientation. As Chinese MSM largely conceal their sexual orientation, exposure and experience of overt discrimination may be limited, especially in comparison with cultural contexts where openness about one's sexual identity is more common. In a national survey conducted with more than 700 MSM in China, 5.0% reported experiences of physical violence, 3.7% had lost housing, and 5.2% lost a job in their lifetime due to sexual orientation [102]. Research findings are mixed regarding the role of discriminatory events in affecting the mental health of Chinese MSM. A longitudinal study in Beijing and a cross-sectional survey of a national sample of MSM in China reported no associations between experiences of discrimination (or enacted sexual identity stigma) and psychological distress, although both studies found discrimination to be associated with sexual risk behaviors [31, 102]. However, a study with MSM in Liaoning Province revealed that gay-related stressful life events in the past 3 months were associated with elevated risks of depression and suicidal behaviors [53, 73]. Specifically, depression was most strongly linked to workplace-based gay-related stressful events (e.g., “trouble with boss or supervisor about same-sex behavior”) [53]. In addition, “Getting in trouble with the police because of same-sex behavior” as a stressful event was associated with highest elevated risks of suicidal ideation, plan, and attempt, though the overall prevalence of this event was low [73].

In addition to discrimination, interpersonal-based victimization (e.g., bullying) could also lead to adverse psychological health. In a stratified and nationally representative sample of Chinese adolescents, 16.1% of LGB youth experienced school victimization (i.e., kicked, made fun of with sexual jokes, excluded from participation) in the past 30 days compared to 8.0% of heterosexual youth [106]. The study further found that school victimization mediated the association between sexual minority status and suicidal behavior, and this mediating effect was further moderated by peer and teacher relations such that those with poorer classmate or teacher relations experienced stronger victimization-associated suicidal

behaviors [106]. Although not solely focused on MSM, this study supports research findings from western samples on experiences of bullying associated with suicidal behaviors among adolescents [107] and the association between sexual minority status and school victimization [108]. Similarly, another study with MSM in China found that experiencing interpersonal victimization (e.g., being rejected by others, humiliated, and bullied) were associated with psychological distress and internalized homophobia [60].

Anticipated Stigma and Internalized Stigma and Mental Health As a result of living in a heteronormative and discriminative environment, sexual minorities may expect rejection, anticipate negative interactions, and internalize homophobic attitudes. Such processes are proximal to the self and maybe therefore likely to lead to psychological distress. A longitudinal study with MSM in Beijing found that anticipated MSM stigma affected both depression and anxiety through its association with increased avoidant and decreased social support-based styles of coping with sexual identity-based stigma [32]. Thus, MSM who anticipate prejudice and rejection from others may attempt to avoid confronting problems and socially withdraw, which could further increase isolation and heighten distress. This finding provides support for the psychological mediation framework, which articulates that stigma creates elevations in maladaptive coping processes such as social avoidance, which in turn mediates the relationship between stigma and psychopathology [109].

Research on internalized homophobia in western societies finds that it plays a key role in shaping MSM's mental health [27, 110, 111]. However, research in China has yielded contradictory results: several studies, including both cross-sectional and longitudinal, did not find internalized homophobia (or internalized sexual identity stigma) to be associated with or predict psychological distress [32, 60, 112]. A survey study of a large national sample of MSM in China found that minority stress process proximal to the self (i.e., internalized homonegativity, identity concealment) was not associated with psychological distress but that interpersonal-oriented identity concerns (i.e., acceptance concerns) and interpersonal victimization were associated with distress [60]. Similarly, a longitudinal study with MSM in Beijing did not find significant direct or indirect effects of internalized sexual identity stigma on depression and anxiety, but that anticipated stigma was predictive of these mental health issues [32]. Another study with Chinese LGB young adults did not find associations between proximal minority stress (i.e., internalized homophobia, self-concealment, and rejection sensitivity) and psychological maladjustment, yet social support, specifically perceived support from parents regarding one's sexuality, was associated with positive psychological outcomes [112]. On the other hand, two additional studies found that internalized homophobia was associated with poor psychological health.

One study, with MSM in Jiangsu Province, found that participants with high levels of depression had higher internalized homophobia compared to MSM with lower depression, and the group difference was significant [59]. Another study, with gay and bisexual men in Southwest China, categorized participants into two profiles based on their levels of internalized homophobia, and being in the "high internalized homophobia" group associated with more psychological distress and sexual compulsions [68]. However, both studies dichotomized the key variables (depression or internalized homophobia), which could reduce measurement sensitivity and increase the risk of a false positive and biased findings [113, 114].

Concealment and Mental Health Concealment can be conceptualized as a coping mechanism as well as a type of proximal minority stress [21, 22]. Concealing a stigmatizing identity, although intended to protect oneself against discrimination and stigma, can nonetheless generate psychological distress that negatively affects one's mental health [22]. Across 157 studies largely derived from western samples, sexual identity disclosure among LGB individuals promotes social support and lowers psychological distress [115]. Among MSM in China, concealment has been found to be associated with higher internalized homophobia [60, 116]. However, findings on the association between concealment and mental health of MSM in China have been mixed. Two large sample studies with Chinese MSM that measured concealment as a continuous variable did not find it to be significantly associated with mental health outcomes [60, 112]. By contrast, using between-group comparison methods based on binary categories (concealment versus non-concealment), studies have found that Chinese MSM who disclosed their sexual orientation had better psychological health compared to their counterparts who concealed their sexual orientation, supporting the positive role of identity disclosure [15, 55].

The lack of stronger evidence regarding the role of internalized homophobia and concealment in Chinese MSM's mental health does not imply that these experiences are irrelevant or unimportant to the overall wellness of Chinese MSM. In fact, these variables are associated with less frequent HIV testing, more frequent sexual risk behaviors, and more smoking behaviors [31, 33, 74, 102, 117, 118]. However, their relationship to mental health warrants further inquiry and understanding, especially since various established psychosocial-based interventions informed by minority stress theory aim to reduce internalized homophobia and often promote disclosure as a pathway to lower distress and enhance well-being [24, 119, 120]. Features of the sociocultural and political environment both in the general public in China as well as the LGBTQ (lesbian, gay, bisexual, transgender, & queer or questioning) community in China might explain the limited role of internalized homophobia and concealment in Chinese MSM's mental health. First, being in a collectivistic,

relationship-oriented culture, Chinese MSM's psychological health may be more influenced by processes that are more relational compared to their western counterparts. This has been supported by cross-cultural research with the general Chinese population [121] and future comparison research focused on MSM is needed. In a related vein, internalized homophobia and concealment may influence mental health through relational-oriented (rather than self-oriented) processes such as anticipated stigma, social isolation, and avoidance coping [32, 60]. Second, since Chinese MSM largely conceal their sexuality, sexual identity may not be particularly salient to participants' everyday life or integrated into their sense of self, especially in a culture where the construction of self is relatively more context-based [122, 123]. This could impact the magnitude of influence that internalized homophobia has on the psychological health of MSM. Third, there is less pressure for "coming out" in the LGBT community in China compared to western countries due to the community's understanding of the larger sociocultural environment as well as cultural differences in the perception of "coming out" [103, 124]. Thus, concealment may be considered as a culturally appropriate and adaptive coping strategy. Further, due to MSM community's hiddenness, coming out may not necessarily facilitate MSM to easily access and gain support from a larger MSM community.

HIV-Related Stigma and Mental Health Similar to a sexual identity and behavior, HIV infection is also a concealable and stigmatizing status. It has been argued that the minority stress framework concerning MSM should be extended to include HIV status, as suggested by empirical evidence noting the deleterious effect of HIV stigma as a stressor for MSM living with HIV [97, 125, 126]. Among Chinese MSM living with HIV, studies highlight the detrimental influences of enacted, perceived, and internalized HIV stigma. A study in Chengdu City (Southwest China) with MSM living with HIV found enacted HIV stigma to be associated with depression [47]. In another study of MSM living with HIV in Anhui (Northcentral China), perceived HIV stigma was associated with suicidal ideation in the past 6 months [67]. In yet another study among MSM living with HIV in Nanjing (Central China), perceived HIV stigma was associated with depression, and this relationship was mediated through poorer social support and self-esteem [70]. This suggests that perceived HIV stigma might affect MSM's self-evaluation and social support, which then impacts their mental health. A study with MSM in China newly diagnosed with HIV measured four types of HIV stigma (enacted, felt, vicarious, and internalized) and found that internalized HIV stigma to most strongly correlate with depression [62]. Two other studies also found internalized HIV stigma to strongly predict mental health [49, 71]. A study with MSM living with HIV in Hong Kong measured both perceived and internalized HIV stigma and specifically

focused on perceived HIV stigma within the MSM community [38]. This study revealed an association between perceived HIV stigma within the community and psychological distress, and this relationship was mediated by internalized HIV stigma, HIV disclosure concerns, and negative reactions toward facing stigmatizing attitudes from HIV-negative MSM [38]. Findings from this study reveal the importance of MSM's experience of HIV stigma within their community, which can create further social isolation and degraded self-worth for MSM living with HIV. For HIV-negative or serostatus-unknown MSM, anticipatory HIV stigma can also be detrimental to behavioral health. A study of more than 2000 MSM and transgender individuals in China found that anticipated HIV stigma was associated with less disclosure of one's sexual orientation to healthcare provider as well as likelihood of not being tested for HIV [127].

The Need for LGBT-Affirmative Care in China

The field of counseling and psychotherapy services is new and underdeveloped field in China for the general population overall. Awareness of mental illness is still lacking in the general public, and stigma for seeking professional psychological services remains prevalent, resulting in only 10% of those with a psychiatric illness that actually seek care [128]. It is estimated that approximately 173 million people in China suffer from mental illnesses, with only 40,000 certified counselors practicing on an either full- or part-time basis [128, 129]. In the past decade, the government responded to the high demand for mental health by issuing a certification process for counselors with relatively low standards (e.g., no requirement for a graduate degree or for supervision or practicum experience), which has resulted in mixed quality of training among providers [130]. A national survey of practitioners found that 70% had a bachelor's level education or lower degree, and only 36.4% had majored in psychology [130].

The lack of sufficient professional training in China, along with the history of pathologizing same-sex behaviors, have resulted in prevalent malpractice in mental health services for LGBT clients. Conversion therapy has been advertised by many clinics, with an emphasis on aversion-based treatment [131]. A 2014 lawsuit in Chongqing against conversion therapy, which produced a ruling in favor of the patient, has brought this issue to the public eye [131]. A 2015 national survey with more than 1000 counselors in China, however, revealed many concerning issues: despite 88.6% counselors reporting that they "accept homosexuality," only 67.5% endorsed acceptance for bisexuality and 41.7% endorsed acceptance for transgender people [132]. More concerning, 86.9% of counselors reported that sexual orientation can be changed. From a list of possible reasons for the development of nonheterosexual sexual orientation, "family-related influence" was

the most commonly endorsed by counselors (87.7%), followed by sexual experiences (72.5%) and genetics (62.0%) [132]. This may not be surprising given that psychoanalysis was among the first western psychotherapy approaches introduced in China in the 1980s, and early psychoanalytic views of sexuality has gained popularity in the profession [133]. In this survey, more than a third of counselors (35.3%) viewed homosexuality as a psychological illness [132]. The pathological view of same-sex behaviors, along with the belief that same-sex attraction is due to environmental factors, may explain the common endorsement of conversion therapy among professionals. More than a third of counselors (36%) reported support for conversion therapy, and among them, 86% reported that they had practiced conversion therapy [132]. Adverse experiences in therapy due to professionals' discriminatory views and behaviors, including conversion therapy, can further damage LGBT clients' mental health [134, 135]. A qualitative inquiry with MSM in Hong Kong regarding their experiences in counseling suggests that many MSM experienced overt judgments from counselors about their sexual orientation (e.g., counselors asking the client to stop talking about it) as well as their sexuality being dismissed and pathologized [136], discouraging them from seeking care in the future.

In addition to counselor-related factors, minority stress also affects MSM's help-seeking behaviors. In a sample of MSM in Hong Kong who reported having mental health issues in the past year, those who reported higher internalized homophobia and perceived public stigma toward seeking professional psychological help were less willing to seek help, while those who perceived more empathy from mental health professions had higher levels of intention to seek service [58]. On the other hand, counseling can facilitate disclosure: MSM who reported ever receiving counseling were more likely to disclose their same-sex behavior with their family [58]. Minority stress, mental health stigma, and the prevalent pathological view of same-sex behaviors (along with the practice of conversion therapy) by many mental health professionals can result in maintenance of psychological distress, underutilization of mental health services, and ineffective treatment for MSM in China. Therefore, it is critical to train counselors to provide competent, culturally relevant, LGBT-affirmative care for MSM in China.

Despite the high need to address minority stress and mental health among MSM in China, we could only locate one intervention that focused on the psychological health of Chinese MSM, specifically MSM newly diagnosed with HIV [137]. This culturally tailored, brief 3-session CBT skills-based pilot study with ten MSM recently diagnosed with HIV was found to improve coping with their HIV diagnosis, reduce depression, and increase perceived social support [137]. Interventions in the USA and other global regions (e.g., Canada, India, Thailand) that focused on stigma reduction and improving psychological health of MSM have shown to

be effective in reducing minority stress and psychological distress, promoting disclosure, and increasing safe sex behaviors [24, 138–140]. More interventions in China focusing on minority stress and mental health of MSM are needed to address mental health and treatment disparities.

Addressing Minority Stress and Mental Health in Chinese MSM: Recommendations for Intervention Development

Current HIV-related efforts with MSM in China mostly focus on educational and behavioral aspects of HIV prevention and treatment, such as HIV education and condom distribution. While important and necessary, HIV prevention and treatment efforts with MSM that solely focus on behaviors are likely to have limited effects, if factors leading to HIV risk such as sexual identity stigma and depressive symptoms are not adequately addressed [12, 141]. More psychosocial-focused interventions are needed to address barriers to health behaviors for the many MSM in China who are affected by minority stress and psychological distress. If designed and delivered properly, such interventions may successfully reduce the burden of HIV among MSM in China while enhancing their mental health. Based on findings summarized in this review, we provide the following suggestions and recommended considerations in the development of such interventions.

First, interventions that aim to reduce minority stress and associated distress among Chinese MSM may benefit from a culturally relevant conceptualization of minority stress and mental health [60, 103]. As illustrated in a grounded theory analysis where researchers proposed a culturally-responsive model of minority stress theory for Chinese MSM, important cultural constructs including heterosexual marriage, procreation, and filial piety organize the heteronormative cultural context in which they live [103]. Collectivistic cultural values, particularly norm conformity, can further elevate distress related to minority stress [60]. Though individual-level interventions are not designed to change the larger sociocultural norms, they can help MSM develop awareness of their environment, produce insight into how environmental factors affect their mood and behaviors, and enhance skills for coping with minority stress and navigating through a non-affirming environment. When considering culturally relevant intervention, it is also important to pay attention to nuances regarding what may be considered as healthy versus maladaptive coping in the cultural context. For example, disclosure could bring the benefits of social support and decrease the psychological and cognitive burden associated with concealment, yet concealment can also be an adaptive (and widely employed) strategy for Chinese MSM who live in non-affirming environments [103]. Further, given the relational and collectivistic cultural context surrounding Chinese MSM, interventions that target

proximal types of minority stressors (i.e., internalized homophobia) may want to offer a relational-informed conceptualization to make it culturally congruent and to help MSM bring enhanced skills (e.g., assertiveness, self-advocacy) and self-worth into their social and romantic relationships [60, 103]. In this regard, an affirming, supportive, and validating therapeutic stance is also critical to provide a relational context where MSM can experience corrective emotions and cognitions regarding their sexual identity.

Second, individual-level interventions such as psychotherapy are needed to address the psychosocial challenges facing MSM and serve as an alternative to conversion therapy. In particular, interventions need to target a wide array of commonly experienced mental health issues by Chinese MSM such as depression, anxiety, suicidal behaviors, and alcohol dependence. Given the important role of minority stress in shaping the experience of mental health issues by Chinese MSM, targeting common pathways through which minority stress generates distress can be a promising, transdiagnostic approach to engage and empower MSM [142]. For example, such treatments may help to normalize and “de-pathologize” MSM’s experiences of same-sex attractions and behaviors, enhance self-acceptance, promote supportive relationships, and facilitate skills development to help them cope with minority stress at familial, community, and cultural levels.

Third, group-based interventions may be helpful for MSM to decrease isolation, build community, and learn from others’ experiences and strategies of coping with familial and culturally related minority stressors. This may serve as a helpful bridge to mental health services for MSM who experience stigma related to seeking professional psychological help and/or are cautious about counselors’ potential judgmental and non-accepting view of their sexuality. Family-based interventions may also be beneficial to reduce stigma in MSM’s familial environment. For instance, an attachment-focused family therapy in Israel has been found to be effective for resolving conflict between non-accepting parents and sexual minority children [143]. Adaptations of such an intervention could be promising for MSM in China.

Fourth, intervention development and implementation efforts are needed to train mental health professionals in China to provide culturally relevant, competent, LGBT-affirmative therapy. Such efforts have been made by nonprofit community organizations such as the Beijing LGBT Center and other psychology training institutions in China as continued education programs. While these trainings have not been empirically evaluated, anecdotal evidence and evidence from other high-stigma countries [144] suggest they can be a promising way to facilitate counselors to develop an affirmative conceptualization of their sexual and gender minority clients as well as raise awareness regarding the harms of conversion therapy. Barriers to achieve more effective training, per personal observation through providing such education programs in

China, may include (a) reaching a relatively limited pool of counselors who are already LGBT affirmative; (b) counselors’ varied training backgrounds and lacking basic counseling skills training and supervision experiences; and (c) the lack of continued support and supervision for counselors following training and education programs. More systematic efforts, such as guidelines for LGBT-affirmative therapy, prohibitive regulations on conversion therapy, and competency courses as part of the requirement for counselor training, could bring fruitful results.

Fifth, given the harmful effect of minority stress on the well-being of MSM, this population requires interventions that address the larger, societal forms of prejudice against sexual minorities and that promote LGBT-affirmative policies in order to diminish this ultimate source of distress. Given the structural and cultural barriers in China, intervention developers need to work collaboratively with the MSM community to skillfully navigate the complex sociocultural and political environment in China. One strategic position for achieving this goal would be to highlight the damaging role of mental health issues in HIV risk of MSM as well as to the need to address this public health concern through psychosocial interventions and advocacy efforts.

Conclusions

In conclusion, Chinese MSM experience elevated risks of various mental health conditions, which are linked to minority stress. Addressing minority stress in a culturally relevant way is imperative to reduce stigma and promote mental health, and this effort is needed on individual and community levels, engaging both MSM and their providers. Additional research, ideally using population-based sampling, is needed to further identify the prevalence of mental health problems among Chinese MSM. Additional research is also needed to delineate the mechanisms through which minority stress compromises mental health among Chinese MSM. Finally, intervention research is needed to evaluate a minority stress-informed approach for reducing minority stress and other relevant stigmas (e.g., HIV stigma) and their adverse psychological and behavioral health impact. If shown to be effective, this approach may have implications for prevention and treatment to the syndemic risks and achieve optimal health outcomes among MSM in China and broader global regions where cultural nuances shape manifestations of stigma and mental health.

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Compliance with Ethical Standards

Conflict of Interest None of the authors have any conflict of interest to declare.

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