The mental health of transgender and gender non-conforming people in China: a systematic review

Yezhe Lin, Hui Xie*, Zimo Huang, Quan Zhang, Amanda Wilson, Jiaojiao Hou, Xudong Zhao, Yuanyuan Wang, Bailin Pan, Ye Liu, Meng Han, Runsen Chen*

Transgender and gender non-conforming (TGNC) individuals are at a high risk of adverse mental health outcomes due to minority stress—the stress faced by individuals categorised as stigmatised social minority groups. This systematic review sought to summarise the key mental health findings of the research on TGNC individuals in mainland China. We also aimed to consolidate research on the topic, identify specific mental health disparities, and offer new perspectives for future research to inform both policy and clinical practice. An extensive search of the literature, published in English and Chinese, was done between Jan 1, 1990, and Aug 1, 2021, using PubMed, PsycINFO, Scopus, Wanfang (in Chinese), and CNKI (in Chinese). Overall, two qualitative and 28 quantitative articles were identified. The quantitative findings showed a high prevalence of mental health problems, such as depression, anxiety, substance use disorders, and stress-related issues, and greater disparities in psychological wellbeing. High prevalence is also reported in suicidality and self-harm behaviours in this group. Across the two qualitative studies, attributable factors included gender-related discrimination, barriers to accessing health services, low social support, decreased knowledge and awareness of HIV prevention, and demographic characteristics—such as marital status, educational level, and gender identity. This Review also found little evidence of gender-affirming care and mental health interventions in mainland China. Following from these results, the next step is to integrate multi-level, social-psychological interventions with education to reduce cultural stereotypes and transphobia in mainland China. Political and social implications are also discussed to inform a standard set of guidelines for transgender-inclusive health-care services, including advocating for funding to create these special care programmes and services.

Introduction

Transgender and gender non-conforming (TGNC) is an umbrella term that refers to individuals whose gender identities are incongruent with their assigned sex at birth, including transgender men, transgender women, non-binary individuals, gender-fluid, and genderqueer individuals.[1,2] In the last 5 years, there has been a growing interest in research on TGNC individuals living in China, particularly as this population has an increased risk of HIV.[3–5] However, there is little mental health literature on this vulnerable population with regards to various barriers (ie, not qualifying or being able to afford hormonal treatment). Difficulties with researching TGNC individuals include cultural perceptions of gender identity, family pressure, and systemic transphobia (prejudice against transgender people). Thus, TGNC individuals might choose not to disclose their gender identity, creating additional barriers in recruiting participants and collecting data, and limiting the ability to conduct a systematic study.[6,7]

Traditional Chinese values of the family unit contribute to the social ostracisation and discrimination against TGNC individuals. Peng and colleagues reported that 92·8% of the transgender youth experienced parental abuse or neglect, and 76·6% experienced abuse or bullying in school due to their TGNC identity.[8] Absence of written school policies to prohibit discrimination and bullying based on gender identity could explain the high rates reported in the research.[9] In the larger context of social settings, anti-discriminative regulations have been legislated to prevent gender discrimination; however, the definition of gender remains vague and unclear as to whether this includes TGNC individuals.[10] Furthermore, TGNC individuals can only change their legal name or gender after gender-affirming surgery;[11] thus, the process is explicitly hard for those without the surgery.

Accessing gender-affirming surgery and other gender-affirming care is complicated, requiring legal documents and medical diagnosis of gender dysphoria.[10] Also, limited financial resources are available to support such medical procedures, with most costs being incurred by the individual.[12] Obtaining finances can be difficult given the lack of protection against discrimination in the workplace, resulting in lower employment rates for TGNC individuals.[10] Based on the reported gender-affirming surgery cases, there are at least 400 000 TGNC individuals in China.[13] Nevertheless, targeted medical services are scarce, with few medical facilities providing transgender-related health care. Few TGNC individuals reported taking veterinary medications or attempted self-castration.[12] This can lead to irreversible physical damage, trauma, and life-threatening complications.[10] Additionally, the prevalence of mental health problems, suicidality, and self-harming behaviours among TGNC individuals living in China still require further investigation before recommendations can be made.[12,14] Given the limited evidence around the mental health of TGNC individuals, it can be a challenge to plan and coordinate effective care and develop standardised medical and health guidelines.

To address the existing limitations and minimal interventions available to this group, we conducted this

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*Contributed equally

Clinical Research Center for Mental Disorders, Shanghai Pudong New Area Mental Health Center (Y Lin MD, J Hou MD, X Zhao MD), **and Department of Psychiatry, Shanghai East Hospital** (Y Lin, J Hou, X Zhao), **School of Medicine, Tongji University, Shanghai, China; Department of Psychiatry and Behavioral Science, Carilion Clinic–Virginia Tech Carilion School of Medicine, Roanoke, VA, USA** (Y Lin); **Joseph J Zilber School of Public Health, University of Wisconsin-Milwaukee, Milwaukee, WI, USA** (H Xie PhD); **Vanke School of Public Health, Tsinghua University, Beijing, China** (Z Huang, Q Zhang MSc, M Han MBBS, R Chen DPhil); **Department of Neuroscience, Physiology, and Pharmacology, University College London, London, UK** (Z Huang); **Division of Psychology, Faculty of Health and Life Sciences, De Montfort University, Leicester, UK** (A Wilson PhD, Y Wang PhD); **National Clinical Research Center for Mental Disorders, Department of Psychiatry, and China National Technology Institute on Mental Disorders, The Second Xiangya Hospital of Central South University, Changsha, China** (Y Wang); **Department of Plastic Surgery** (B Pan MD), **Transgender Clinic** (B Pan MD) **and Department of Endocrinology and Metabolism** (Y Liu MD), **Peking University Third Hospital, Beijing, China; Department of Medical Psychology, The School of Health Humanities, Peking University, Beijing, China** (M Han); **Department of Psychiatry and Psychotherapy, Philipps University of Marburg, Marburg, Germany** (J Hou); **University Hospital of Giessen and Marburg, Marburg, Germany** (J Hou)

Correspondence to:
Prof Runsen Chen, Vanke School of Public Health, Tsinghua University, Beijing 100084, China
runsenchen@tsinghua.edu.cn

systematic review, in which we summarise the key mental health difficulties faced by TGNC individuals in mainland China. We aimed to consolidate research to 1) synthesise current evidence on the most frequent mental health conditions reported in the TGNC population in China; 2) identify social risk factors of poor mental health using theoretical guidance from the minority stress model; and 3) offer suggestions for researchers, policy makers, and practitioners that might lead to better mental health outcomes for TGNC individuals.

Methods

This systematic review was based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and its protocol is available in the appendix (pp 7–16).

See Online for appendix

Search strategy and selection criteria

We searched five electronic databases: PubMed, PsycINFO, Scopus, Wanfang (in Chinese), and CNKI (in Chinese). For PubMed, PsycINFO, and Scopus, we used variations and combinations of several search terms including: "gender minority", "transgender", "transsexual", "mental health" and "mainland China". The detailed search strategies are available in the appendix (p 1). ZH and QZ independently screened titles and abstracts from PubMed, PsycINFO, Scopus, Wanfang, and CNKI. They then hand searched the reference lists of relevant articles and corresponded with experts in the field to identify additional publications. RC, ZH, and QZ reviewed the final full texts with over 90% agreement on the selected articles.

To meet the inclusion criteria, articles had to: 1) be peer-reviewed articles published from Jan 1, 1990, to Feb 1, 2021 (original search), and Aug 1, 2021 (updated search); 2) be original articles using qualitative, quantitative, or mixed-methods; 3) identify or examine the psychological or mental health conditions of TGNC participants; and 4) be conducted in mainland China. The search process was guided by the PRISMA guidelines[15] and methodological review findings.[16] Quantitative findings with a p value of less than 0·05 were considered significant and qualitative studies had to report at least one identified domain of mental health. Exclusion criteria included: 1) grey literature (ie, dissertations, conference abstracts); 2) publications primarily testing a scale or reporting prevalence of suicidality or mental health problems; 3) literature reviews or theoretical discussion papers;[17] or 4) policy statements or a policy agenda.

Mental health outcomes in the present Review included: 1) a psychiatric disorder according to the International Classification of Diseases (ICD-10/11) or the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV or DSM-V); 2) psychologically related conditions or characteristics (eg, psychological distress, wellbeing, self-esteem, etc); 3) experiences of mental health as defined by validated psychometric measures; 4) themes, concepts, or stages related to mental health from qualitative or mixed-method studies (eg, quality of life, violence, etc); and 5) self-harm ideation, self-harm attempt, suicidal ideation, suicide plan, or suicide attempt.

Quality assessment

We assessed the quality of each article extracted using the Standard Quality Assessment Criteria for Quantitative and Qualitative Studies[15] to determine article inclusion. Detailed information about the quality of included papers is listed in the appendix (pp 2–3). In this Review, articles had to meet a stringent threshold of 0·75 in the quality rating system.

Publication selection

First, title and abstract screening were completed independently by ZH and QZ. After articles were selected, ZH and QZ independently reviewed and summarised the full-text articles, using a pre-determined standardised extraction Excel spreadsheet with the following information: first author with publication year, study setting, study design, recruitment method, sample size, demographic information of participants, assessed aspects of the participants, main findings, and domains. Any uncertainty regarding whether publications met the inclusion criteria were resolved through discussions among ZH, QZ, YezL, HX, and RC. Next, the articles were clustered into domains to highlight any existing empirical trends.

Data analysis

A quasi meta-analysis was done to calculate the prevalence of depressive symptoms, anxiety symptoms, suicidal ideation, suicide attempt, self-harm ideation, and self-harm attempt. We included studies that used reliability and validity of self-report scale for depressive and anxiety symptoms, and reporting of the prevalence (with cutoff points); and reported prevalence of suicidal ideation, suicide attempt, self-harm ideation, and self-harm attempted, sufficient for calculating the prevalence. We also attempted to exclude data from studies presented in separate publications. Prevalence was calculated as the median (interquartile range).

Results

The search identified 522 English and 574 Chinese articles, of which 373 English and 551 Chinese remained after duplicates were removed. 279 English and 530 Chinese articles were considered irrelevant and further excluded after title and abstract screening. A further 85 articles were excluded after the full-text screening. The remaining 30 articles published between Jan 1, 2015, and Aug 1, 2021, were analysed in this Review (figure 1): two qualitative and 28 quantitative studies.

The eligible articles used self-reported gender identity identification that followed the American Psychological Association's definition except of Zhao and colleagues.[18]

All 28 quantitative articles were cross-sectional, examining the roles of mental health as predictors, mediators, or outcomes. Two research articles were on TGNC adolescents (aged 12–18 years) only.[8,19] Four research articles recruited LGBT participants, and datasets of the transgender population were specifically analysed.[18,20–22] Eight research articles recruited both cisgender and TGNC participants,[19,20,23–28] and five were on TGNC individuals.[8,12,29–31] 14 research articles were on transgender women only,[14,32–44] among which, seven articles were on transgender women sex workers (TWSW).[33,37–39,41,42,44] Most articles were collected in first or second-tier cities in mainland China (metropolitan cities). Eleven articles collected data from multiple sites.[8,12,20,21,24,26,27,29–31,43] Among the two qualitative articles, one was an ethnographic study, and the other was phenomenological.[14,44]

In the appendix (p 4), the articles reviewed are presented with regions they were done in, year of publication, study design, methodology, and sampling. Main findings based on the six domains described here are shown in table 1. Six domains emerged: depression, anxiety, suicidality and self-harming behaviours (suicide ideation, suicide plan, suicide attempt, self-harm ideation, and self-harm attempt), substance use or addiction (illicit drugs, alcohol, and internet dependence), stress-related issues (eg, post-traumatic stress disorder [PTSD]), and other psychological conditions (eg, quality of life, sleep, self-esteem). We merged only variables with the same measurement method, drawing on a quasi meta-analytical style (see table 2), owing to the absence of detailed reports of related prevalence in TGNC individuals.

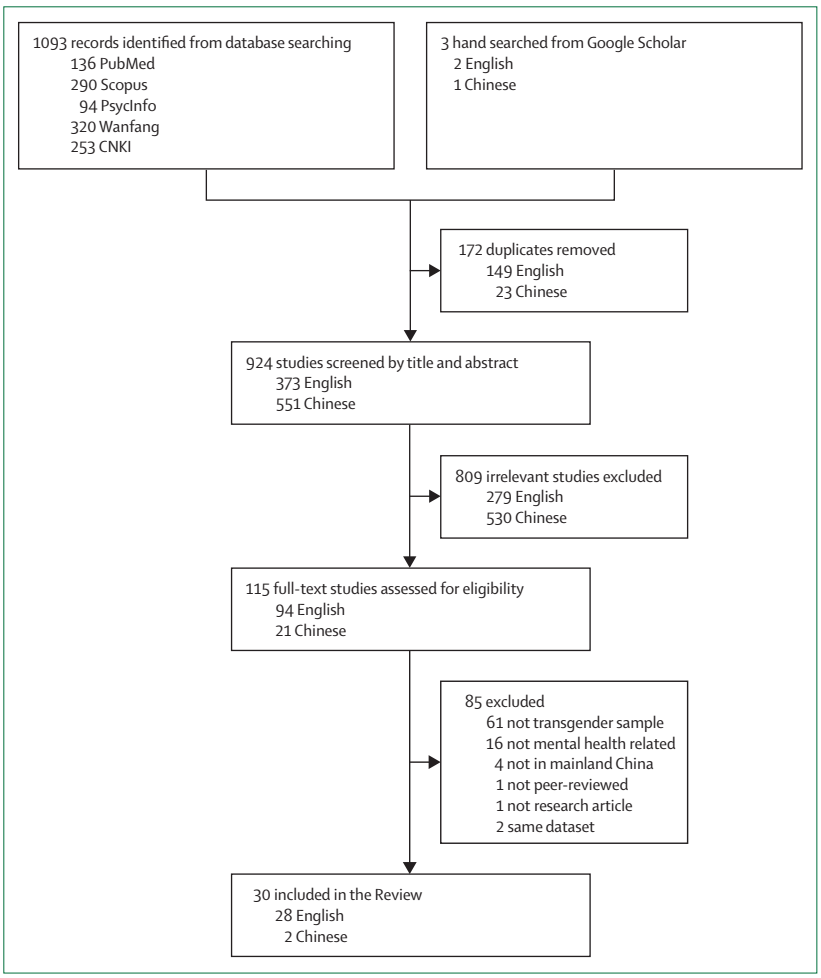

Figure 1: **Literature search**

Depression

19 articles revealed that TGNC individuals were at a greater risk of depressive symptoms across different psychometric measurements (table 1).[8,12,18–20,25,27–34,37–39,43,44] Among them, four were selected for the quasi meta-analysis after excluding the duplicate studies.[12,32,34,38] The rates of depression ranged from 32·0% to 54·5% (mean 45·3% [SD 9·6]; median 47·3% [IQR 35·4–53·2]) in TGNC individuals.[12,32,34,38]

Factors like regular and casual sexual partners,[34] low self-efficacy,[34] and low self-esteem[37] put transgender women at a higher risk of depressive symptoms. Zhao and colleagues[18] identified the negative impacts of childhood maltreatment and school bullying on TGNC individuals' mental health problems. Furthermore, having a minority identity (non-cisgender) increased the likelihood of depressive symptoms occurring in adulthood among young Chinese men with a feminine gender expression. Also, depression mediated the association between victimisation and condomless anal intercourse in transgender women.[32] Chen and colleagues[29] further found that having a recent episode of depression and having suffered from major depressive disorder (MDD) at any point were positively associated with suicide ideation, and the relationships were varied by sex. It is reported that transgender women were more likely to suffer from MDD at some point of their lifetime than transgender men, and a higher risk of having MDD currently. Suffering from MDD was positively associated with suicide attempt and a recent episode of depression.[29] Additionally, Han and colleagues' research[20] revealed a positive correlation between social media dependency and depression when seeking online social support. The sum scores of the Gender Identity/Gender Dysphoria Questionnaire for Adult and Adolescents were positively associated with depression.[27]

Anxiety

11 articles indicated that TGNC individuals were at risk of anxiety disorders.[8,12,19,23,27,29,31,33,35,39,40] Three studies were chosen for the quasi meta-analysis study (table 2).[12,35,41] An estimated 28·5–51·0% (mean 38% [SD 11·7]) of TGNC participants suffered from anxiety disorder.[12,35,41] Zhu and colleagues[12] reported that transgender women had the highest score for anxiety when compared to TGNC peers. Anxiety was associated with greater

	Study design	Sample	Area of China	Collection year	TGNC definition	Sample size	Age, years	Outcomes (metric)	Main findings
Peng et al (2019)[8]	Cross-sectional	TGNC	Nationwide	2017	Self-identified	385	12–18	Discrimination at school, aversion to assigned sex, depression (CESD-9), anxiety (GAD-7), and suicidal ideation	Experiencing bullying at school was associated with suicidal ideation; however this association was not significant after controlling for education, aversion to assigned sex, pain and depressed mood at the onset of puberty
Zhu et al (2019)[12]	Cross-sectional	TGNC	Nationwide	2017	Self-identified	1922	24	Demographics, depression (CESD), and anxiety (GAD-7), self-harm ideation and attempts, suicidal ideation, suicidal attempt, access to gender-affirming surgery and gender affirming hormone treatment	Higher rate of depression, anxiety, suicidal ideation, suicidal attempt, and self-harm ideation or attempt in transgender women than transgender, genderqueer, or cross-dressing men; transgender men who were willing but unable to have surgery had significantly higher self-reported depressive and anxiety symptoms, compared with transgender men who had received chest wall masculinisation or so-called top surgery (bilateral mastectomy surgery); in transgender women, those who were willing but unable to have surgery had higher self-reported depressive symptoms compared with transgender women who had received vaginoplasty
Yan et al (2019)[14]	Qualitative study	Transgender women	Nanjing and Suzhou city	2018	Self-identified	14 in two focus groups	25·5 (9·27)	Reported adverse mental health (gender dysphoria, depressive thoughts, distress, anxiety, suicidal attempt, and self-mutilation)	Most depressive, distressful, and anxiety-provoking thoughts were associated with an inability to access gender-affirming services and the frustration over not being able to achieve gender transition-related goals; abuse from family, social discrimination, financial struggles, and domestic violence affect transgender people's mental health; extremely distressing thoughts and emotional burdens led to histories of suicidality, alcohol use disorder, and self-mutilation
Zhao et al (2021)[18]	Cross-sectional	LGBT and heterosexual men	Guangzhou	2017–19	APA definition of gender conformity*	1731	18–35	Sexual orientation, childhood gender expression, childhood maltreatment (CTQ), bullying victimisation, depressive symptoms (CESD-20)	The levels of exposure to childhood maltreatment were higher in sexual minorities than in heterosexual men. The mediating analysis showed that sexual minority status predicted an increased risk of depressive symptoms via childhood maltreatment. The results also showed that childhood gender non-conformity predicted greater depressive symptoms via family and school bullying
Wang et al (2020)[19]	Cross-sectional	TGNC and cisgender	Suzhou (18 public secondary schools)	2019	Self-identified	1319 TGNC	15·8 (1·0)	Demographics, depression (PHQ-9), anxiety (GAD-7), sleep (CPSQI), frequency of being bullied, self-harm and suicidality (SRC)	TGNC adolescents had significantly higher health concerns (poorer overall health, poorer sleep, higher depressive and anxiety symptoms, and higher rate of self-harm behaviours and suicidality); TGNC adolescents assigned male at birth were more likely to be bullied at school; assigned female at birth had lower level of overall health, higher depressive and anxiety symptoms, higher sleep problems, and higher suicidal ideation, but a lower frequency of being bullied at school than youth who were assigned male at birth; these patterns were not found in cisgender counterparts; the sex and gender identity interaction was significant for the frequency of being bullied at school
Han et al (2019)[20]	Cross-sectional	LGBT	Weibo users	2018	Not specified	1391 (343 transgender)	25·13 (5·84 [≥16])	Depression, dis-identification, social support (psychologically dependent on social media)	Depression and self-identification as a result of perceived online social support were related to social media dependency for LGBT; this association was mediated by time spent online, social support seeking, and social support offering; however, perceived online support is not related to better offline mental health

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	Study design	Sample	Area of China	Collection year	TGNC definition	Sample size	Age, years	Outcomes (metric)	Main findings
Zhang et al (2020)[25]	Cross-sectional	TGNC	Shanghai	2018–19	Self-identified	144 (71 transgender)	24·15 (>16)	Personality profiles (MMPI), depression (SCL-90)	The depression level and personality profile of transgender individuals distribute normally; transgender individuals presented higher moderate or major depressive symptoms and poorer personality profiles than cisgender counterparts; paranoia and psychotic deviate are positively associated with severity of depression in transgender individuals
Chen et al (2019)[29]	Cross-sectional	TGNC	Nationwide	2017	Self-identified	1309	23·31 (6·49)	Discrimination, violence, depression (CESD-9), and anxiety (GAD-7), self-harm, suicidal ideation, suicidal attempt (seeking mental health services), self-esteem (RSES)	Transgender people have higher rates of suicidal ideation and attempt; disliking biological sex, seeking gender reassignment surgery, intense conflicts with parents, ever suffered from MDD and depression, self-harm attempt, and seeking mental health service predicted increased risk of suicidal ideation in all transgender people; a similar pattern was not found in the logistic regression model for suicide attempt; having a degree from high school or equivalent, being married or separated or divorced, having intense conflicts with parents, even suffering from MDD, experiencing self-harm, and seeking mental health services were associated with increased risk of suicidal attempt in all transgender people; but these associations were varied by gender identity
Wang et al (2020)[32]	Cross-sectional	Transgender women	Shenyang	2017	Self-identified	198	33·5 (9·6 [18–62])	Violence victimisation (physical, psychological, verbal, and sexual); depression (PHQ-9) moderate	Depression mediated the association between participants' violence victimisation and condomless anal intercourse
Fan et al (2021)[33]	Cross-sectional	TWSW	Shenyang	2014	Self-identified	220	>18	Depression (CESD-20), and anxiety (GAD-7), sexualised drug use	Depressive symptoms and anxiety symptoms were associated with higher likelihood of sexualised drug use during sex work
Yang et al (2015)[34]	Cross-sectional	Transgender women	Shenyang	2014	Self-identified	209	26·7 (4·4 [18–45])	Sex partnership, social support (MSPSS), self-efficacy (GSES), depression (SDS)	Regular and casual partnerships were associated with depression in transgender women; self-efficacy had positive effects on attenuating depression resulting from a gender transition
Yang et al (2016)[35]	Cross-sectional	Transgender women	Shenyang	2014	Self-identified	209	26·7 (4·4 [18–45])	Casual partnership, friend discrimination, social support (MSPSS), anxiety (SAS), knowledge of HIV prevention (UNGASS)	The presence of a casual sex partner, friend discrimination, and absence of social support predicted more anxiety symptoms; the disclosure of their gender identity, knowledge of HIV prevention, and health service had no effect on anxiety
Yang et al (2016)[36]	Cross-sectional	Transgender women	Shenyang	2014	Self-identified	209	26·7 (4·4 [18–45])	Demographics, gender-affirming hormone treatment, partnership, friend, social, or law enforcement officials' discrimination, knowledge of HIV prevention (UNGASS), hope (ADHS), resilience (ERS), QOL (36-SF: mental component summary): physical QOL (PCS), mental QOL (MCS)	Being young and insulted or chased by law enforcement officials were negatively associated with physical wellbeing; not using gender-affirming hormone treatment, having no casual sex partners, less discrimination from friends, knowledge of HIV prevention, hope, and resilience had positive effects on physical wellbeing; less educated and experiencing discrimination from law enforcement officials were negatively associated with mental wellbeing; not using hormone therapy, having no regular partners or casual partners, less discrimination from friends, less social discrimination, knowledge of HIV prevention, and hope had positive effects on mental wellbeing in transgender women.

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	Study design	Sample	Area of China	Collection year	TGNC definition	Sample size	Age, years	Outcomes (metric)	Main findings
(Continued from previous page)									
Chang et al (2019)[37]	Cross-sectional	TWSW	Shenyang and Guangzhou	2017	Self-identified	198	18–62	Self-esteem (RSES); feelings of entrapment (ODES) and defeat (GADS) mediate depression (PHQ-9)	The association between self-esteem and depression is mediated by feelings of entrapment and defeat in TWSW
Wang et al (2020)[38]	Cross-sectional	TWSW	Shenyang, Shanghai, and Guangzhou	2014–17	Self-identified	397	32·3 (8·8 [18–62])	Depression (CESD-20), loneliness (ULS-8), self-esteem (RSES), social support(MSPSS), unknown HIV status, drug and alcohol use before sex work	Before sex work, low self-esteem was associated with higher risk of exclusive alcohol consumption; higher levels of loneliness with higher risk of exclusive illicit drug use; depression, and unknown HIV status with higher risk of combined use of alcohol and drugs
Wang et al (2017)[39]	Cross-sectional	TWSW	Shenyang	2014	Self-identified	183	18–30	Violence experiences, attitudes of using PrEP, perceived risk of contracting HIV, partner support of PrEP, depression(CESD-20), anxiety (GAD-7), and acceptability of daily use of free oral PrEP	Experiencing violence during sex work, perceived risk of contracting HIV from clients, and probable anxiety were significantly associated with daily use of free oral PrEP
Chen et al (2020)[40]	Cross-sectional	Transgender women	Jiangsu (internet-based)	2018–19	Self-identified	250	27·9 (8·2)	Official residency in Jiangsu, mental health status (depression and anxiety, K10), PTSD (4-items), stress, alcohol and substance use, sexual orientation, suicidal ideation and suicidal attempt	Transgender women experienced greater rates of violence (verbal, physical, and sexual); severe psychological distress was correlated with being bisexual or unsure of sexual orientation, with experience of verbal abuse, and less severely correlated with alcohol use; compared with no suicidal ideation, moderate or severe psychological distress was associated with previous suicidal attempt
She et al (2021)[41]	Cross-sectional	TWSW	Shenyang	2017–18	Self-identified	204	33·4 (9·4)	Social demographics, gender minority stress (discrimination, victimisation, family rejection), anxiety (GAD-7), life dissatisfaction, condomless anal intercourse	Discrimination, victimisation, and life dissatisfaction were significantly associated with higher odds of condomless anal intercourse with male clients; condomless anal intercourse with male regular partners was more frequently reported by participants who experienced higher levels of victimisation, rejection, and anxiety; no significant interaction in the effects of gender minority stress and mental health on sexual behaviours was reported

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	Study design	Sample	Area of China	Collection year	TGNC definition	Sample size	Age, years	Outcomes (metric)	Main findings
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Wang et al (2021)[21]	Cross-sectional	LGBT	Nationwide	2015	Self-identified	18 193 (3195 (17·6%) transgender)	22·87 (5·52)	Demographics, minority stress, refused treatment, verbal abuse, or sexual harassment by health-care professional, counselling and psychotherapy service use	Among those who had used services, 80·2% of participants had perceived discrimination due to their minority identity, 1·1% reported that they had been refused treatment by a counsellor or psychotherapist, 1·6% had experienced verbal harassment, and 0·6% had experienced sexual harassment in counselling and psychotherapy; 8·4% of participants reported that their counsellor or psychotherapist lacked sufficient knowledge or experience in treating sexual minorities; additionally, of 12 965 (71·3%) individuals who reported psychological distress, 12·4% sought help from counselling and psychotherapy; divorced or widowed, no psychological stress, discrimination, violence, adverse experiences or rejection by health professional, disclosure of sexual minority identity increased the likelihood of using counselling and psychotherapy services
Zhang (2020)[23]	Cross-sectional	Transgender and cisgender	Beijing, Shanghai, Guangdong, Hebei, Jiangsu, Shandong, Chongqing, Henan, Sichuan, Hunan (26 public colleges)	2018	Self-identified	10 590 (30 transgender)	Undergraduate, graduate, doctorate students	Suicidal ideation (SCL-90)	Transgender participants had higher depression and anxiety scores than cisgender people; transgender (*vs* cisgender) suicidal ideation was 16·7% moderate (8·9%), 10% severe (4·6%), and 10% very severe (1·2%)
Wei (2019)[24]	Cross-sectional	LGBT	Nationwide	2014	Not specified	732 (46 transgender)	20·7 (2·5 [16–38])	Coming out, inclusive environment, comfortable with transgender identity, self-esteem (RSES), subjective wellbeing, social support (PSSS), suicidal thoughts, depressive feelings, LGBT role models	Most Chinese schools are not supportive to LGBT students, although students might feel safe at school and came out to some one; however, they might remain closeted to their relatives and family members; they also have greater risk of psychological distress, for example suicidal ideation and depression; a more inclusive school climate with more resources should be promoted to reduce the suicidal ideation
Tsang (2020)[44]	Qualitative study	TWSW	Tianjin	2016–19	Self-identified	25	23–48	Intimate partner violence influence on mental health	"When I am alone and feel depressed about being bullied by my partner, I can text my 'sister' and she will stop by for a chat"[32]; finding social support from sisterhoods (other transgender women in the social groups)

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	Study design	Sample	Area of China	Collection year	TGNC definition	Sample size	Age, years	Outcomes (metric)	Main findings
(Continued from previous page)									
She et al (2021)[42]	Cross-sectional	TWSW	Shenyang	2017–18	Self-identified	204 (126 and 109)	34·7 (9·9) and 33·5 (9·4)	Demographics, probable depression (CESD-20), anxiety (GAD-7); social anxiety disorder (Mini-SPIN), suicidal ideation, perceived needs of help seeking; victimisation, gender-non-confirming, disclosure of transgender women identity, social support, adaptive coping, mental health services use, perceived barriers against using mental health services	Discrimination, unwillingness to disclose gender identity, social support, adaptive coping, and victimisation associated with low mental health service use
Yan et al (2021)[43]	Cross-sectional	Transgender women	Nanjing and Suzhou	2018–19	Self-identified	222	>18	Social-demographic data, mental health (diagnosis of depression, suicidal attempt), HIV-related questions, PrEP awareness and willingness, alcohol and drug use	Awareness and willingness of using PrEP among transgender women is associated with alcohol use during or before sex, number of sex partners, and education level
Zhang et al (2021)[30]	Cross-sectional	TGNC	Nationwide (online)	Not specified	Self-identified	361	25·13 (4·83 [18–52])	Demographics, gender-related rejection, victimisation, discrimination, resilience, repression	TGNC individuals who experienced gender-related discrimination and victimisation showed higher level of depression; gender-related discrimination and resilience contribute to the variance of depression; resilience has a moderating role between discrimination and depression
Duan et al (2021)[26]	Cross-sectional	TGNC MSM	Wuhan, Changsha, and Nanchang	2017–18	Self-identified	63	16–59	Demographic, resilience(CD-RISC-10), HIV-related sexual behaviours, identity concealment (non-disclosure subscale of GMSR scale), depression (CESD-20), social support (MSPSS)	Transgender MSM are more likely to have HIV risk-related sexual behaviours with lower score of identity concealment, which might increase their risk of HIV infection
Wang et al (2021)[27]	Cross-sectional	TGNC	Ningxia	2020	Self-identified	103	19·30 (1·19)	Demographics, level of gender dysphoria (GIDYQ-AA), and mental health problems, anxiety (GAD-7); depression (PHQ-9), suicidal ideation	The level of gender dysphoria is positively associated with anxiety, depressive symptoms, and suicidal ideation
Liu et al (2020)[31]	Cross-sectional	TGNC	Nationwide	2017	Self-identified	1036	22 (19–26)	Depression, anxiety, self-harm ideation and self-harm attempts (thoughts and behaviours), access and willingness to use gender-affirming hormone treatment and gender-affirmation surgery	There is a high prevalence of intention to use gender-affirming care including gender-affirming hormone treatment and gender-affirming surgery; however, the resources are considered inadequate; TGNC individuals who are unable to access wanted hormone therapy reported self-harm ideation and self-harm attempts

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sexualised drug use[33] and lower acceptance of daily use of oral pre-exposure prophylaxis (PrEP) among TWSW.[39] The presence of a casual sex partner, having experienced discrimination from friends, and absence of social support predicted greater anxiety symptoms.[35] Those with a desire for gender-affirming hormone therapy and no access had higher levels of anxiety symptoms.[12] Anxiety also was positively associated with gender dysphoria in TGNC individuals.[27]

Suicidality and self-harm

11 articles reported suicidality (suicide ideation, suicide attempt, and suicide plan).[8,12,19,23,24,27,29,31,40,41,43] Four articles have been included for suicide attempt (table 2).[12,19,40,43] Six suicide ideation studies were included in the quasi meta-analysis (table 2).[12,19,23,24,33,40] The prevalence of suicide attempt ranged from 11·1% to 25·7% (mean 18·8% [SD 7·9]; median 19·2% [IQR 11·5–25·7]),[12,19,40,43] and suicide ideation was between 12·7% and 50·0% (mean 34·8% [15·3]; median 38·8% [19·7–47·5]).[12,19,23,24,33,40] Wang and colleagues[19] reported that having a suicide plan in the past month occurred in 8·2–14·8% of TGNC youth. TGNC youth (12–18 [mean 15·8] years) had higher rates of suicide ideation, suicide attempt, and suicide plan than their cisgender peers.[19] Gender differences were found in suicide ideation and suicide attempt. Chen and colleagues' research[29] found a higher prevalence of suicide ideation in transgender women than transgender men (60·7% *vs* 51·5%). Compared with transgender men, the study also showed that transgender women had higher rates of suicide attempt (20·7% *vs* 11·0%) and seeking support from mental health services (34·4% *vs* 20·6%). No quasi meta-analysis of suicide plan was conducted due to scarce literature (n=1).

Self-harm behaviours were investigated in four articles.[12,19,29,40] Two studies were included for the quasi meta-analysis of self-harm ideation and self-harm attempt (table 2).[12,19] The prevalence of self-harm attempt in TGNC individuals was 21·6–22·7% (mean 22·2% [SD 0·8]).[12,19] Self-harm ideation rates ranged from 32·3% to 44·7% (38·5% [8·8]).[12,19] Per Chen and colleagues,[29] self-harm attempt was significantly higher in transgender women than in transgender men (28·1% *vs* 20·6%). Opposite findings were reported by Wang and colleagues,[19] where the prevalence was higher in assigned females than assigned males (transgender men 33·5% *vs* transgender women 27·3%, non-binary assigned females 31·3% *vs* non-binary assigned males 25·9%). These studies suggest both gender identity and sex assigned at birth impact self-harm attempt. Rates of self-harm ideation were significantly higher in TGNC individuals when compared to cisgender counterparts.[19] One article reported that TGNC individuals might have self-harm ideation when they are unable to access gender-affirming hormone therapy.[31]

	Study design	Sample	Area of China	Collection year	TGNC definition	Sample size	Age, years	Outcomes (metric)	Main findings
(Continued from previous page)									
Wang et al (2020)[22]	Cross-sectional	LGBT	Nationwide	2015	Self-identified	3195	Not specified	Social demographics, perceived rejection, and discrimination (scale from 0–100), perceived violence, self-reported acceptance towards LGBT population	Transgender individuals reported a higher level of perceived discrimination and rejection
Zhao et al (2018)[28]	Cross-sectional	TGNC	Shanghai	2014–15	ICD-10 definition of transsexualism	84	Not specified	Mental health (SCL-90, MMPI), depression, anxiety, suicidal thoughts	Transgender individuals had higher scores in psychotic, depression, and phobia subscale

Data are mean, range, mean (SD), or mean (range), unless otherwise stated. 36-SF=36-item Short-Form Health Survey. ADHS=Adult Dispositional (Trait) Hope Scale. APA=American Psychological Association. CD-RISC-10=Connor-Davidson Resilience Scale 10-items. CESD-20=Center for Epidemiological Studies Depression-20 items. CESD-9=CESD-9 items. CPSQI=Pittsburgh Sleep Quality Index. CTQ=Childhood Trauma Questionnaire. ERS=the EGO Resilience Scale. GAD-7=Generalised Anxiety Disorder-7 items. GADS=Gilbert and Allen's Defeat Scale. GIDYQ-AA=Gender Identity/Dysphoria Questionnaire for Adolescents and Adults. GMSR=Gender Minority Stress and Resilience. GSES=General Self-Efficacy Scale. ICD-10=International Classification of Diseases-10th revision. K10=Kessler Psychological Distress Scale 10 items. MCS=Mental Component Summary score. MDD=major depressive disorder. Mini-SPIN=Mini-Social Phobia Inventory. MMPI=Minnesota Multiphasic Personality Inventory. MSM=men who have sex with men. MSPSS=Multidimensional Scale of Perceived Social Support. ODES=One-Dimensional Entrapment Scale. PCS=Physical Component Summary score. PHQ-9=Depression-Patient Health Questionnaire-9 items. PrEP=pre-exposure prophylaxis. PSSS=Perceived Social Support Scale. PTSD=post-traumatic stress disorder. QOL=quality of life. RSES=Rosenberg Self-Esteem Scale. SAS=Zung Self-Rating Anxiety Scale. SCL-90=Sypmtom Checklist-90 items. SDS=Zung Self-Rating Depression Scale. SRC=suicide risk checklist. TGNC=transgender and gender non-conforming. TWSW=transgender women sex workers. ULS-8=UCLA Loneliness Scale-8 items. UNGASS=United Nations General Assembly Special Session. *APA definition of gender conformity (self-identified 5-point Likert scale of gender expression in childhood [≤12]: masculine).

Table 1: **Included study characteristics**

	Prevalence in TGNC individuals, %
Depressive symptoms	47·3% (35·4–53·2); 32·0–54·5%[12,32,34,38]
Anxiety symptoms	28·5–51·0%[12,35,41]*
Suicidality and self-harm behaviours	
Suicidal ideation	38·8% (19·7–47·5); 12·7–50·0%[12,19,23,24,33,40]
Suicide attempt	19·2% (11·5–25·7); 11·1–25·7% [12,19,40,43]
Self-harm ideation	32·3%–44·7%[12,19]†
Self-harm attempt	21·6%–22·7%[12,19]†

Data are median (IQR); range unless otherwise specified. Depressive symptoms metrics: Center for Epidemiological Studies Depression (CESD)-9 items,[12] Depression-Patient Health Questionnaire-9 items,[32] Zung Self-Rating Depression Scale,[34] and CESD-20 items.[38] Anxiety symptoms metrics: Generalized Anxiety Disorder-7 items,[12,41] and Zung Self-Rating Anxiety Scale.[35] Suicidal ideation: last week ideation,[23] last month suicide ideation,[19] lifetime suicide ideation,[12] last year suicide ideation,[24,33] and lifetime suicide ideation.[12,40] Suicide attempt: lifetime suicide attempt.[12,19,40,43] Self-harm ideation: last month self-harm ideation,[19] and lifetime self-harm ideation.[12] Self-harm attempt: last month self-harm attempt,[19] and lifetime self-harm attempt.[12] TGNC=transgender and gender non-conforming.*Reported as range only, as n=3. †Reported as range only, as n=2.

Table 2: **Prevalence of depressive and anxiety symptoms, suicidality, and self-harm behaviours in TGNC population**

Several factors potentially affecting suicide were investigated. Compared with individuals with no suicide ideation, those with moderate or severe psychological distress were more likely to have a previous suicide attempt.[40] In Peng and colleagues' univariate analysis,[8] being bullied by a classmate or teacher was significantly associated with suicide ideation, but moderated by educational attainment, aversion to assigned sex, and depressive mood. Chen and colleagues[29] found different factors associated with suicide ideation and suicide attempt. Having an education level of high school or equivalent, being married, separated, or divorced, having intense conflicts with parents, being survivors of discrimination or violence in public places, past or currently suffering from MDD, self-harm attempt, and seeking mental health services were significantly associated with an increased risk of suicide attempt.[29] Aversion to sex assigned at birth and seeking gender-affirming surgery was significantly associated with an increased risk of suicide ideation, while disliking sex assigned at birth, having a tendency of depression, being at risk for MDD, self-harm attempt, and seeking mental health services contributed to the risk of suicide ideation.[29] The level of gender dysphoria was also positively associated with suicide ideation.[27]

Substance use and addiction

Five studies looked at either substance use or addiction. Both behaviours were usually comorbid with other mental health problems such as depression, anxiety, and low self-esteem.[20,26,33,38,43] Social media dependency harmed perceived social support; however, a long history of using Weibo (Chinese counterpart of Twitter) predicted better mental health outcomes and less dependency.[20]

It is worth noting that substance use disorders, as a behavioural pattern, were investigated and viewed from an interdisciplinary perspective in the articles on TWSW.[33,38] The prevalence of sexualised drug use was 20·9%, and those TWSW who had anxiety and depressive symptoms were more likely to engage in sexualised drug use during sex work. A reduction in sexualised drug use led to a reduction in HIV transmission.[33] Wang and colleagues found differences between alcohol consumption and drug use during sex work.[38] TWSW who had low self-esteem scores were at risk of increased alcohol consumption, and those who had a high level of loneliness were 3 times more likely to use drugs during sex work. Having an unknown HIV status and depressive symptoms resulted in TWSW being 3 times more likely to consume alcohol and illicit drugs.[38] TWSW who consumed alcohol during or before sex work were associated with a lower awareness of PrEP.[43] On the other hand, transgender women who have sex with cisgender men were more likely to have sex after using drugs compared with cisgender men who have sex with men.[26]

Stress-related disorders or behaviours

Four articles discussed stress-related problems, such as psychological distress, PTSD, and minority stress (long and short-term stress related to gender minority identity).[12,21,23,40] In Chen and colleagues' study,[40] 43·6% of transgender women reported moderate or severe psychological distress, whereas 24·0% reported PTSD. Severe psychological distress was positively correlated with bisexuality, being unsure of sexual orientation, history of suicide attempt, experiencing verbal abuse, and reporting a lower alcohol consumption.[40] In Chen and colleagues' study,[29] over 27% of TGNC adults had experienced discrimination or violence in a public place, and over 50% were insulted or bullied at school during childhood. In Wang and colleagues' study, over 59·1% of transgender women had experienced at least one type of violence (physical, emotional or psychological, verbal, or sexual).[32]

Additionally, transgender women were at risk of violence from their clients,[39] regular sexual partners,[30] and in public facilities.[29] Experiencing violence during sex work was related to accepting free oral PrEP.[39] Path analysis showed that the association between participants' victimisation from violence and the likelihood to engage in condomless anal intercourse was fully mediated by depression (indirect effect: 0·083, p=0·014; direct effect: 0·137, p=0·121).[32]

Other psychological conditions

Our study defined other psychological conditions as a range of conditions that could affect wellbeing. One research article reported quality-of-life disparities among TGNC individuals. Not using gender-affirming hormone therapy, no regular or casual sexual partners, experiencing less social and friend-based discrimination, knowledge of HIV prevention, and being hopeful were all positively associated with better psychological well-being.[36] Wang and colleagues' research identified that assigned female individuals reported significantly

poorer sleep than their assigned male peers.[19] TGNC adolescents reported significantly poorer sleep than their cisgender counterparts.[19] Three research articles identified that self-esteem[24,37,38] was negatively associated with depression (as presented in the depression section),[37] and negatively associated with alcohol consumption before sex work (as presented in the substance use and addiction section).[38] It is reported that TGNC individuals who had higher self-esteem scores were more comfortable with their sexual orientation.[24] In schools, having more social support, a better subjective wellbeing, fewer suicide ideation episodes, less depressive feelings, as well as more inclusive school climates, and more school resources were effective buffers against school discrimination.[24]

Social risk factors

Four articles assessed health service use with a low prevalence of service use reported by transgender individuals.[21,31,40,42] In Chen and colleagues' research, less than a quarter of transgender women (22·8%) accessed professional mental health services in the past 12 months.[40] Among those who used mental health services, over 91% sought gender-affirming services, and 68·4% reported that the health-care service was helpful. Wang and colleagues' research, also found that sexual minority individuals (including TGNC people), who had experienced discrimination, verbal harassment, and rejection of treatment by medical professionals, had an increased likelihood of using counselling and psychotherapy services.[21] She and colleagues reported a low rate of mental health service use among TWSW, while also reporting a higher rate of unmet needs.[42] The unwillingness to disclose their gender identity was associated with mental health service use in TWSW with probable mental health problems and TWSW who perceived they needed a professional practitioner in a past year. Victimisation was significantly and positively associated with the behavioural intentions of mental health service use. Confidentiality and perceived discrimination were the two most common reasons for the low behavioural intentions of mental health service use among TWSW.[42]

Liu and colleagues[31] reported that approximately 79·4% of TGNC individuals from the national survey expressed a desire for gender-affirming hormone therapy. However, 71·5% considered it was hard to obtain from a doctor. About 43·1% had thought of self-harm as a result of the lack of gender-affirming hormone therapy.[31] Among the TGNC individuals using gender-affirming hormone therapy, 67·6% obtained their medication illegally, and 61·8% used their medications without regular professional monitoring.[31] Meanwhile, 81·8% of TGNC individuals who wanted gender-affirming surgery considered the surgical-related medical resources were inadequate or very scarce. These findings showed that although there was a high prevalence of intention to access gender-affirming medications, limited medical resources were available and accessible in China. Zhu and colleagues revealed that better wellbeing was found in TGNC individuals receiving gender-affirming hormone therapy than those who did not.[12] However, there was no longitudinal study investigating the long-term effects of gender-affirming hormone therapy on mental health outcomes, no evidence of mental health interventions alongside gender-affirming hormone therapy for TGNC people, and no longitudinal studies examining the associations between mental health service use and mental health outcomes.

Minority stress model

The minority stress model posits that sexual or gender minorities face chronic, unique, and high levels of stressors on various levels (eg, individual, community, and society) concerning their minority identity. Consequently, these stressors have adverse effects on physical or mental health, or both.[45,46] We acknowledge that this model has been primarily tested in high-income countries (HICs) and has not been fully adapted to the Chinese context; however, it has been used as a framework for presenting the results to explore how this model might apply in low-income and middle-income countries. The minority stress variables were presented using six different subdomains: distal minority stressors, proximal minority stressors, health service access, sociodemographics, sexual health, and resilience or buffer.

In the distal minority stressor subdomain, ten articles assessed discrimination or conflicts; most of them primarily addressed the source of discrimination, including law enforcement officials,[36] friends and other acquaintances,[35,36] families,[29] and teachers and pupils.[18] Four articles were about different types of discrimination that included emotional, physical, and sexual victimisation.[8,18,39,40] Zhang and colleagues specifically investigated gender-related discrimination, rejection, and victimisation among TGNC individuals living in China and reported that gender-related discrimination significantly contributed to the variance of depression.[30] Fear of being discriminated against has also been a common reason for the low intention to use mental health services among TWSW.[41] Transgender individuals have also reported a higher ratio of concealing their gender identity when compared with bisexual and lesbian communities.[22]

In the proximal minority stressors subdomain, four articles assessed personal traits or attributes, including self-esteem, entrapment, and defeat,[37,38] loneliness,[38] history of mental health problems,[8,29] gender-related self-hatred or self-loathing,[8,29] and self-harm behaviours.[29]

Three studies assessed health services accessibility. Liu and colleagues reported a high prevalence of unmet need for gender-affirming-related medical resources,[31] whereas She and colleagues reported a high prevalence of need for mental health services.[42] Transgender men who were unable to access wanted bilateral mastectomy surgery

had significantly higher rates of self-reported anxiety and depressive symptoms. Transgender women who were unable to access vaginoplasty reported significantly higher depressive symptoms.[12]

Nine articles assessed demographic factors of TGNC individuals living in China: education level,[8,29,36] marital status,[29] access to gender-affirming hormone therapy,[36] being a sex worker,[33] sexual orientation,[40] household income,[40] gender identity,[18,19,25] and alcohol consumption.[40] Of the four articles that reported gender minority identity, three measured current gender identity at the point of the survey,[19,23,25] and one study examined childhood gender non-conforming identity in relation to depressive symptoms.[18]

Six articles assessed sexual health, including sexual partnership type,[33–36] knowledge, awareness, and willingness around HIV prevention and PrEP,[35,43] and HIV testing or status.[38] Transgender women who had regular partners or casual partners were more likely to have depression,[33] and a poor mental component summary (a domain of quality of life).[35] TWSW who had casual partners were more likely to have anxiety[35] and a poor physical component summary (physical component summary scale in quality of life).[35] Knowledge of HIV prevention was positively associated with both mental and physical component summaries in transgender women.[35] In transgender women, both willingness and awareness of using PrEP were associated with the number of sexual partners, whereas the willingness to use PrEP was also associated with having an incident of condomless anal intercourse in the last 6 months.[43] An unknown HIV status raised the odds of combining alcohol and drug consumption before sex work among TWSW three fold.[38] Using alcohol before or during sex was associated with less awareness of using PrEP in TWSW.[43] Yan and colleagues reported that 3·2% of transgender women have been diagnosed with sexually transmitted infections (STIs).[43] In addition, using sexualised drugs during sex work increased the likelihood of HIV transmission in TWSW.[33] However, no articles discussed the relationship between STIs and mental health outcomes.

Four articles addressed the positive predictors of resilience.[20,24,30,35] Social support was negatively associated with anxiety symptoms;[35] furthermore, online social support was negatively associated with depression and concealment of gender minority identity offline.[20,24] Using Weibo for a longer period was a buffer against social media dependency.[20] High self-esteem is negatively associated with alcohol consumption and sexualised drug use among TWSW, whereas the level of loneliness is positively associated with these activities.[38] Resilience was found to buffer against gender-related discrimination and depression.[30]

Results of the qualitative studies

In the qualitative studies, Yan and colleagues did both individual interviews (n=14) and focus groups (n=2) with diverse transgender women in two first-tier cities in mainland China. They found that transgender women faced social rejection and discrimination along with an unmet need for various forms of health care.[14]

Tsang discussed lived experiences of intimate partner violence from 25 in-depth interviews with TWSW.[44] By building a so-called sisterhood with other peers for support, individuals could protect and help each other manage threats to their physical and mental health. The impact of this sisterhood acted as a better buffer against intimate partner violence than the criminal justice system and current policies that aim to protect TGNC individuals.[44]

Discussion

To our knowledge, this is the first review of the existing literature on mental health and TGNC individuals in mainland China, a population that is stigmatised and hidden in this country. TGNC individuals are disproportionately affected by discrimination, have poor social support, and face a transphobic social climate with little legal protection.[10,47] The six domains from the research articles have added to the existing evidence of transgender mental health disparities around the world.[2,48–50]

According to the minority stress model, this risk of distal and proximal stressors could lead to poor mental health outcomes. TGNC individuals had higher prevalence of poor mental health, self-harm, and suicidality.[51–53] This systematic review is consistent with the impact of minority stress, and similar social determinants for TGNC individuals, as presented in other studies from HICs.[45,54,55] However, further research is required in the Chinese context recommendations can be made. Several actions are necessary to combat different forms of discrimination to improve the mental health of TGNC individuals in mainland China (figure 2).

Gender-diverse groups are more likely to be bullied in Chinese schools, and the experience of being bullied,[9] as a distal stressor, is further associated with negative mental health outcomes.[8,18,29] Adolescents who have suffered abuse and were bullied by classmates showed higher odds of suicide ideation and risk of MDD and anxiety disorders.[8] It is thus essential to protect TGNC students from bullying and violence on campus. Educational institutions, including K-12 schools (from kindergarten to 12th grade) and higher education institutions, should introduce appropriate written policies and specific measures against violence and discrimination towards gender minorities. Regulative guidelines focusing on gender minorities should also be implemented as a part of faculty training in school. All these efforts benefit TGNC students in increasing visibility and public awareness in school settings, promoting a positive learning environment to improve their mental health outcomes.

Our study has shown that TGNC individuals have higher odds of being exposed to childhood maltreatment

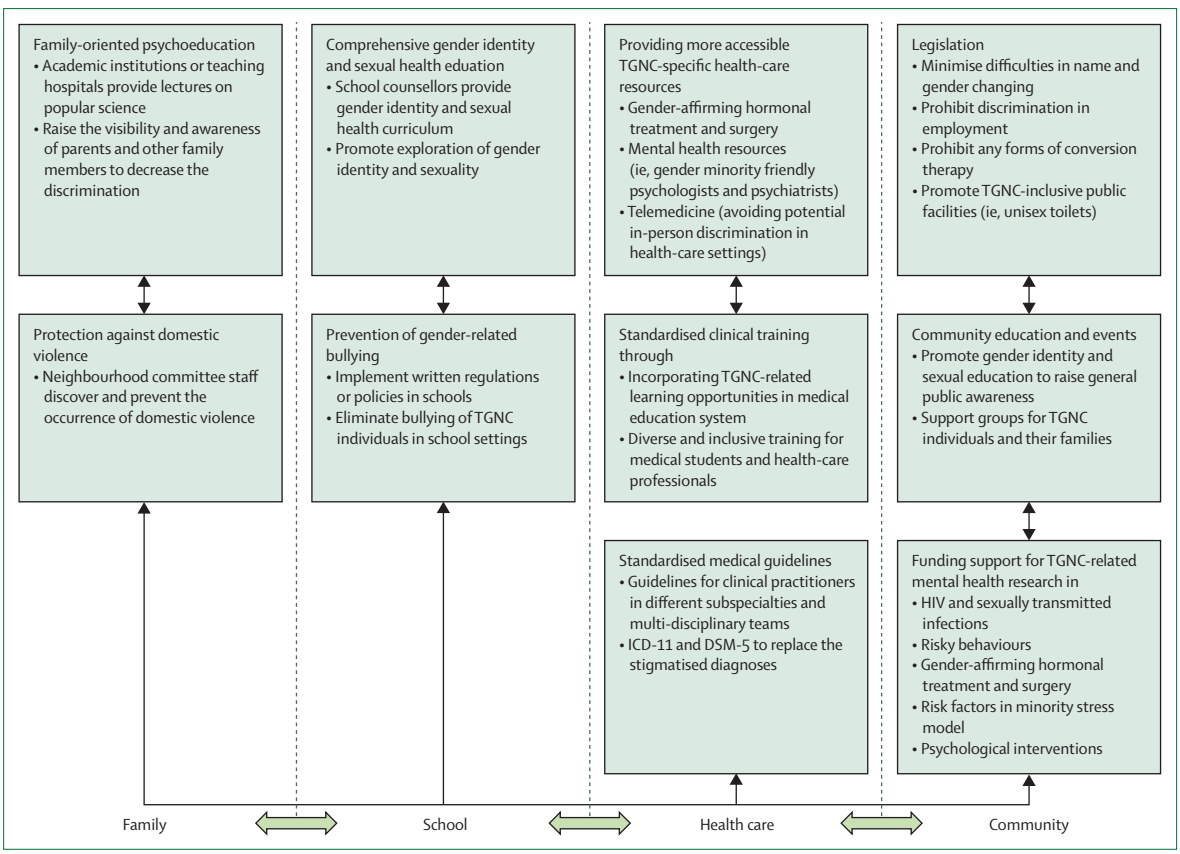

Figure 2: **Proposed actions to improve the mental health of TGNC individuals**
TGNC=transgender and gender non-conforming. ICD-11=International Classification of Diseases-11th revision. DSM-5=Diagnostic and Statistical Manual of Mental Disorders-5th edition.

or being abused due to their gender identity, and that this further increases their risk of having depressive symptoms.[14,18,41] Conflicts between parents and TGNC individuals were also associated with an increased risk of suicide ideation and suicide attempt.[29] Therefore, it is essential to have experts and health-care professionals from academic institutions, including hospitals, provide proper education to parents to understand being a gender minority and the actual dilemmas caused by an incongruent gender identity. Support from family members could be crucial to reducing the distress from mental health problems.[35,56–58]

In addition, this systematic review showed that it was common for TGNC individuals to have complex health needs, requiring both medical and psychological interventions. Due to the absence of transgender-related medical resources and official standardised guidelines instructing transgender-related health care in mainland China, individuals tend to experience higher levels of depression, stressful thoughts, self-harm ideation, and self-harm attempts, as compared with the general population, and struggle to access standardised gender-affirming therapies (including gender-affirming hormone therapy and gender-affirming surgery).[31] Our Review also identified that TGNC individuals might use medications without a professional prescription, purchasing them illegally. These illegal medications might cause severe side-effects. However, scarce literature has focused on the unofficial use of gender-affirming hormone medication in the Chinese transgender population to draw conclusions. Discrimination and harassment by health-care professionals[21] further decreased the possibility of TGNC individuals receiving medical services. Health-care professions should have anti-discriminative training like that given to civil servants working at health-based governmental authorities. This should decrease the discrimination experienced by TGNC individuals in medical settings, minimise the distal stressors they might experience, and increase access to the medical resources.

The sparsity in medical resources could be improved by standardised medical guidelines for health-care professionals; standardised guidelines should include instructions for practitioners in medical sub-specialties like plastic surgery, endocrinology, psychiatry, and reproductive medicine. From the psychiatric perspective, the ICD-10 is currently the most common diagnostic criteria in hospitals and localised diagnostic guidelines; however, Chinese classification of mental disorders[59] still

keep the outdated diagnoses of gender identity disorders and transsexualism that stigmatise TGNC individuals. Clinicians in mainland China should adhere to the diagnostic system of ICD-11 to depathologise transgenderism.[60] Workshops and courses on transgender-related health care could be offered to medical students and practitioners, inviting experienced researchers and practitioners as guest speakers, consequently raising interests of young health-care providers and medical students, as training systems in the USA have provided transgender-specific training.[61] We hope this provides insight into this under-researched area in mainland China.

Furthermore, evidence-based and targeted guidelines for mental health professionals when treating TGNC individuals are necessary for mainland China. Considering the propensity of poor mental health outcomes of TGNC individuals identified in this Review, mental health practitioners (ie, psychiatrists and psychologists) should be provided training to support this population. In HICs, a standardised framework for TGNC psychological treatment has been developed to assist psychologists practising gender-affirmative services.[62] Also, introducing evidence-based psychometric instruments to Chinese scholars and clinicians can facilitate better understanding of the TGNC population.[27]

Limited research has been conducted on HIV infections and STIs and their current relation to mental health problems of TGNC individuals. HIV infection can have a substantial effect on mental health conditions, with HIV-risky sex behaviours occurring (ie, condomless anal intercourse and sexualised drug use). There is scarce research focusing on drug or alcohol use, addiction, and substance use disorders related to HIV and STIs. No study has researched addiction to nicotine and electronic cigarette use among TGNC individuals. Although this restricted availability might be due to unique Chinese policy that involves strict monitoring of illicit and prescription drugs, further research is required to investigate their relationship with risk behaviours and mental health to add to the epidemiological and interventional research.

Our Review has revealed some of the limitations of current studies on TGNC communities in China. First of all, based on the availability of the existing research, we opted to summarise the information instead of synthesising all the data into a quasi meta-analysis. Only 30 articles were eligible for this Review, which indicated that further research is required in mainland China. Second, as all eligible quantitative studies were cross-sectional, it is not possible to draw causal relations on mental health. Future studies should include various study designs (eg, longitudinal studies, intervention programmes including pharmacological interventions and psychological interventions, regular comprehensive medical evaluations during or after gender-affirming hormone therapy,[63] potential side-effects of gender-affirming hormone therapy medications) to investigate the mental health of TGNC individuals compared with cisgender populations and provide more compelling data to support evidence-based medicine and better health-care service. Third, most studies only focused on adolescents or emerging adults (18–29-year olds). Further research covering the diversity of this vulnerable population across the lifespan is needed. Fourth, we have seen an imbalance in literature availability and research interest between different transgender subgroups. We believe the reasons behind these imbalances deserve future attention for harms to be minimised. Future studies should investigate the different transgender subgroups, including gender-queer and other gender minority groups, developing an official definition of these subgroups to ensure the consistency. Last, the research articles included in this Review only contain populations in first-tier or second-tier cities in mainland China and more studies should be conducted in rural areas, which are less developed and economically disadvantaged. In addition, all included studies identified TGNC individuals through self-identified items as a part of epidemiological study. Overall, there is scarce transgender-related data collected in routine health-care surveys,[6] and there is not a global consensus on how to define TGNC individuals through such a method. Detailed clinical interviews, with official identification guidelines, could be introduced in future research for accurate identification.

Conclusion

This Review showed a high prevalence of mental health problems among TGNC individuals living in China. It is essential to improve mental health by reducing discrimination and fostering social awareness and acceptance. Improving public awareness, understanding, and acceptance of TGNC communities, can occur by building an alliance between academic institutions, communities, governmental authorities, and medical institutions to reduce stereotypes, social prejudice, and discrimination in several domain aspects. Furthermore, this Review found little evidence of gender-affirming care and mental health interventions in mainland China, which requires further investigation.

Contributors

YezL, HX, and RC conceived the study and developed the protocol. ZH and QZ contributed to the search strategy, screened the search results, and extracted the data. QZ produced the figures and the quasi meta-analysis. YezL, HX, XZ, YW, BP, YeL, MH, RC, and ZH participated in the data interpretation and comments on the paper. YW, MH, XZ, BP, YeL, and JH provided consultation on the clinical practice and political suggestions. YezL, HX, RC, and AW wrote the original manuscript. YezL, HX, RC, AW, JH, and ZH participated in manuscript revision. YezL, HX, and RC took the responsibility of making the decision for submission.

Declaration of interests

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