

Review Article

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Should we be concerned about stigma and discrimination in people at risk for psychosis? A systematic review

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Abstract

Background. Previous studies have provided initial evidence that people at risk for psychosis (PR) suffer from stigma and discrimination related to their condition. However, no study has systematically reviewed stigma and discrimination associated with being at PR and the potential underlying mechanisms.

Methods. This work aimed to systematically review all studies addressing stigma and discrimination in PR people in order to assess: (1) the occurrence of this phenomenon and its different components (public, internalized, perceived, and labeling-related), (2) whether stigma affects outcomes of the PR state, and (3) whether other factors modulate stigma among PR individuals.

Results. The reviewed studies ($n = 38$) widely differ in their design, methodological quality, and populations under investigation, thus limiting direct comparison of findings. However, converging evidence suggests that the general public endorses stigmatizing attitudes towards PR individuals, and that this is more frequent in people with a low educational level or with no direct experience of the PR state. PR individuals experience more internalized stigma and perceive more discrimination than healthy subjects or patients with non-psychotic disorders. Further, PR labeling is equally associated with both positive (e.g. validation and relief) and negative effects (e.g. status loss and discrimination). Moreover, stigma increases the likelihood of poor outcome, transition to full-psychosis, disengagement from services, and family stigma among PR individuals. Finally, very limited evidence awaiting replication supports the efficacy of cognitive therapies in mitigating the negative effects of stigma.

Conclusions. Evidence confirms previous concerns about stigma and its negative consequences for PR individuals, thus having important public health implications.

Introduction

People with mental health problems do not only suffer from symptoms related to their condition, but also from disadvantages through society's reactions. Society stereotypes, misconceptions on mental disorders (e.g. dangerousness, unpredictability, incompetence), and prejudicial reactions against people suffering from mental health problems lead to stigma (WHO, 2001). Stigma arises from the co-occurrence of processes reflecting labeling, stereotyping, separation, status loss, and discrimination (Link, Struening, Cullen, Shrout, & Dohrenwend, 1989). These processes can operate in a number of settings and are evident through various direct and indirect social interactions. Stereotypes, prejudice, and discrimination endorsed by the general population represent the 'public stigma'. People with mental health problems may become aware of the stereotypes about mental illness held by the general population, agree with such stereotypes, and believe that they apply to them. This process is referred to as 'internalized stigma' (Corrigan & Watson, 2002). Because of internalized stigma and related self-discriminating behavior, individuals with mental health problems may lose self-esteem, self-confidence, and self-efficacy, and fail to pursue work, social relations, and independent living opportunities (Link, Struening, Neese-Todd, Asmussen, & Phelan, 2001). Public and internalized stigma may affect life of people with severe mental disorders in terms of social isolation (Lysaker, Davis, Warman, Strasburger, & Beattie, 2007), exclusion from employment (Stuart, 2006), reduction of intimate relationships and parenting (Lasalvia et al., 2014), difficulties or delay in help-seeking (Clement et al., 2015), and poorer physical health care (Henderson et al., 2014).

Over the past two decades, there has been a growing interest to identify young people at risk for psychosis with the aim of modifying the early course of illness and preventing the onset of full-blown psychosis and its long-term consequences. The psychosis risk state refers to people presenting with prodromal or subsyndromal psychotic symptoms suggestive of a pre-psychotic phase or attenuated psychosis syndrome (APS) (Fusar-Poli et al., 2013). However, the

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psychosis risk state may be associated with stigmatizing responses (Corcoran, Malaspina, & Hercher, 2005). This is relevant, also in light of stigma potentially affecting all individuals referring to early intervention services for psychosis independent of whether they ever progress to full-blown psychosis (Yang, Wonpat-Borja, Opler, & Corcoran, 2010). In fact, within 2–2.5 years from identification only 30–35% of people at risk for psychosis eventually develop the disorder (Fusar-Poli *et al.*, 2012). Also, transition rates seem to have declined more recently, possibly because of earlier referral and intervention (Riecher-Rossler & Studerus, 2017). Thus, the large majority of people at risk for psychosis may be exposed to stigma for a condition they will never develop.

Recently, an increasing number of studies have weighted harms and benefits associated with early intervention services for psychosis in terms of stigma and related consequences for patients and their families (Moritz, Gawęda, Heinz, & Gallinat, 2019). Also, a previous review specifically focusing on pathways to care suggested a detrimental effect of stigma among people at their first episode of psychosis as well as in the psychosis-risk state (Gronholm, Thornicroft, Laurens, & Evans-Lacko, 2017). However, to date no study has systematically reviewed how stigma affects people at risk of psychosis on a wider range of domains, and the potential underlying mechanisms.

The present review aims to summarize all available data generated by studies that have investigated stigma and discrimination associated with being at risk for psychosis by carrying out a systematic literature search for all such data.

Objectives

Our main objective is to systematically review findings from qualitative, quantitative, and mixed-methods research studies examining stigma and discrimination in people at risk for psychosis. Specifically, our aim is: (1) to review the occurrence of internalized stigma, stigma stress, and perceived discrimination in people at risk for psychosis as well as public stigma of the psychosis risk state and psychosis risk label-related stigma. If this is the case, our subsequent aims is: (2) to review the effect of stigma on outcomes of the psychosis risk state; and (3) to review whether other factors such as socio-demographic variables modulate stigma in people at risk for psychosis.

Methods

Inclusion/exclusion criteria

In order to summarize previous literature on the topic, inclusion criteria for studies were: (1) human studies; (2) studies investigating the occurrence of any form of stigma in individuals at risk for psychosis; (3) studies investigating the effect of stigma on outcomes of the psychosis risk state; and (4) studies investigating factors modulating stigma in individuals at risk for psychosis. In order to provide a comprehensive evaluation of the association between stigma and psychosis-risk state, a wide range of different measures of outcomes that have been reported in the literature were considered, including, but not limited to, questionnaire data, (semi-structured) interviews, performance, and psychopathological and behavioral measures. Exclusion criteria were: (1) studies where stigma measures were not investigated with reference to the psychosis-risk state; (2) studies in which the psychosis risk state was not differentiated from other clinical

conditions; and (3) studies that primarily assessed psychosis-risk state distress parameters other than stigma.

Search strategy and data extraction

A literature search was performed using electronic databases (MEDLINE, Web of Science and Scopus) for any published original English-language research, using a combination of search terms describing the psychosis-risk state ('clinical high risk,' 'ultra-high risk,' 'at risk mental state,' 'attenuated psychosis,' 'brief psychotic episodes/disorders,' 'prodromal psychosis') and the condition of stigma ('stigma,' 'discrimination,' 'prejudice'), on 26 July 2019. Reference lists of eligible studies were also screened to identify additional relevant studies. Publication data was extracted and cross-checked by two authors (MC and AL).

Risk of bias

Risk of bias and quality assessment of the methodologically heterogeneous group of studies reviewed here (Table 1) required a suitably inclusive and flexible approach. For this purpose, an adapted set of criteria suggested by the Agency for Healthcare Research and Quality guidance (West *et al.*, 2002), amended as appropriate for interventional studies in humans was used (Table 2). Risk of systematic bias across human studies was further identified by assessing all papers for possible confounding factors such as comorbid non-psychotic mental health disorders and substance use (Table 2).

Nomenclature across studies

For the purpose of this review, in order to adopt a consistent nomenclature throughout the paper, we subsumed under the umbrella term of 'psychosis-risk' (PR) a large array of substantially overlapping conditions referring to the broad concept of elevated risk for developing psychosis, including clinical high risk (CHR), ultra high risk (UHR), at risk-mental-state (ARMS), APS, and prodromal psychosis, as it has been done before (Yang *et al.*, 2019).

Results

Evidence at a glance

In total 643 records were identified. All abstracts of the records were screened against the inclusion and exclusion criteria (Fig. 1). A final list of 38 studies reporting on 8642 study participants (male = 3754, female = 4027; not specified = 861; Table 1) were identified which specifically investigated: (i) the occurrence of stigma in the PR state; (ii) the effects of stigma on outcomes of the PR state; and (iii) additional sources of stigma among PR individuals. These studies have used different experimental designs and studied heterogeneous populations. Further information on methodological quality of studies is reported in Table 2.

Occurrence of stigma in the PR state

Internalized stigma and related emotions among PR individuals

Out of 38 studies included in this systematic review, 7 specifically focused on internalized stigma (Table 1). However, two studies are not analytic, being in one case a descriptive study (Uttinger *et al.*, 2018) and in the other a case report (Baer, Shah, &

Table 1. Summary of studies investigating stigma and discrimination in individuals at risk for psychosis

Study (Country)	Aim of study	Population	<i>n</i>	Outcome measure (test name or description)	Results
Wong et al. (2009) (USA)	To assess generalized and associative stigma in CHR-/ROP-fam as a function of ethnic minority	1. CHR-fam (<i>n</i> = 9); 2. ROP-fam (<i>n</i> = 11)	20	Generalized (OMI modified and expanded version) and associative stigma (FEIS)	1. OMI: each supportive item endorsed by $\geq 40\%$, a few negative items endorsed by $> 75\%$, CHR-fam $>$ ROP-fam on some supportive items, CHR-fam $<$ ROP-fam on some negative items; 2. OMI generalized stigma: CHR-fam <i>v.</i> ROP-fam NS, \uparrow in ethnic minority but NS; 3. FEIS associative stigma: CHR-fam $<$ ROP-fam, \uparrow in ethnic minority but NS, subjective or objective family burden NS
Welsh and Tiffin (2012) (UK)	To assess label-related stigma in ARMS	ARMS	6	Label-related stigma (interview)	1. Gratitude at being told about the 'probable' condition; 2. Few significant negative changes in the interactions with peers and family; 3. Talking to a clinician perceived as a form of treatment and support
Morrison et al. (2013) (UK)	To assess the effect of CT <i>v.</i> monitoring only on internalized stigma in ARMS in a 1-year-FU	1. ARMS with CT + monitoring (<i>n</i> = 144); 2. ARMS with only monitoring (<i>n</i> = 144)	288	Internalized stigma (PBEQ)	1. Negative appraisals: CT group $<$ monitoring group at FU, \downarrow over time, time \times treatment arm NS; 2. Social acceptability: CT group $>$ monitoring group (trend), \uparrow over time (trend), time \times treatment arm NS; 3. Dose-response effect: number of sessions NS
Rusch et al. (2013) (Switzerland)	To assess the effects of self-labeling and stigma stress on help-seeking attitudes in CHR/UHR	1. CHR (<i>n</i> = 138); 2. UHR (<i>n</i> = 85); 3. Risk for bipolar disorder (<i>n</i> = 135)	172	Attitudes towards psychiatric medication and psychotherapy (scale/questionnaire)	1. Positive attitudes: psychotherapy $>$ medication; 2. \uparrow positive attitudes towards psychotherapy: \uparrow towards medication; 3. \uparrow positive attitudes towards medication: \uparrow self-label, \downarrow stigma stress; 4. \uparrow positive attitudes towards psychotherapy: \downarrow stigma stress, \downarrow negative symptoms, female gender, \uparrow age, anxiety disorder diagnosis, \uparrow self-label (trend); 5. Help-seeking attitudes: perceived stigma NS
Stowkowy and Addington (2013) (Canada)	To assess label-related public stigma in FHR as a function of CHR status	1. FHR + CHR (<i>n</i> = 25); 2. FHR-non-CHR (<i>n</i> = 25); 3. HC (<i>n</i> = 25)	75	Label-related public stigma (PDS)	1. Last year discrimination: FHR + CHR $>$ HC, FHR-non-CHR $>$ HC, FHR + CHR <i>v.</i> FHR-non-CHR NS; 2. Lifetime discrimination: FHR + CHR $>$ HC, FHR-non-CHR <i>v.</i> HC NS, FHR + CHR <i>v.</i> FHR-non-CHR NS
Yang et al. (2013) (USA)	To assess label-related public stigma in peers in response to a vignette description of CHR	Undergraduate college students	153	Label-related public stigma (scale/questionnaire)	1. Status loss and discrimination: CHR $>$ non-psychotic diagnoses (\uparrow desire for casual social distance, \downarrow willingness to help); 2. Overall stigma: CHR <i>v.</i> SCZ NS, CHR with informational insert $<$ CHR without informational insert; 3. Informational insert: \downarrow belief in violence towards self, \downarrow desire for casual social distance
Anglin et al. (2014) (USA)	To assess label-related public stigma in peers in response to a vignette description of CHR	Undergraduate college students	49	Label-related public stigma (Attribution Questionnaire)	1. 33 different labels: most 'paranoid'- (<i>n</i> = 11, 22%) and 'depressed'-labels (<i>n</i> = 5, 13%); 2. Diagnostic labels: only 1 'schizophrenic' diagnosis, few others (<i>n</i> = 4, 11%, 'mental illness or instability'); 3. Non-diagnostic labels: frequent (<i>n</i> = 17, 35%, 'troubled, disturbed, weird'); 4. Fear: psychosis labels (<i>n</i> = 20) $>$ other non-psychotic labels (<i>n</i> = 12) and non-psychiatric labels (<i>n</i> = 17); 5. Dangerousness and avoidance: labels NS

(Continued)

Table 1. (Continued.)

Study (Country)	Aim of study	Population	n	Outcome measure (test name or description)	Results
Rusch et al. (2014a) (Switzerland)	To assess the effects of self-labeling and perceived public stigma on well-being in CHR/UHR as a function of stigma stress	1. CHR (n = 138); 2. UHR (n = 85); 3. Risk for bipolar disorder (n = 135)	172	Well-being (MANSAs, RSES, GSE) and psychopathology (PANSS)	1. ↑ perceived public stigma: ↑ shame, ↑ self-label; 2. Shame: self-label NS; 3. ↑ perceived public stigma, shame and self-label: ↑ perceived harm, ↓ perceived coping resources; 4. ↑ perceived public stigma and shame: ↑ stigma stress (self-label NS controlling for confounders); 5. ↑ stigma stress: ↓ well-being; 6. Wellbeing: stigma stress partial mediator of effects of perceived public stigma and self-label, full mediator of effect of shame
Rusch et al. (2014b) (Switzerland)	To assess the effects of self-labeling and perceived public stigma on well-being in CHR/UHR in a 1-year-FU as a function of stigma stress	1. CHR (n = 69); 2. UHR (n = 38); 3. Risk for bipolar disorder (n = 59)	77	Well-being (MANSAs, RSES, GSE) and psychopathology (PANSS)	1. Stigma stress at FU: perceived public stigma, shame and self-label at baseline NS; 2. Well-being at FU: stigma stress at baseline NS; 3. ↑ self-label at FU: ↑ stigma stress at FU; 4. ↑ stigma stress at FU: ↓ well-being at FU
Saleem et al. (2014) (USA, Canada)	To assess perceived discrimination and psychopathology in CHR	1. CHR (n = 360); 2. HC (n = 180)	540	Perceived discrimination (BCSS) and psychopathology (APS)	1. Last year discrimination: CHR > HC on appearance, age, skin color, religion, disability, sexual orientation (gender and ethnicity NS); 2. Negative schema about self/other people: CHR > HC; 3. APS: perceived discrimination/negative schemas NS; 4. ↑ Perceived discrimination: ↑ Negative schemas, ↑ age
Pyle et al. (2015) (UK)	To assess internalized stigma and psychopathology in ARMS in a 6-month-FU	ARMS	288	Internalized stigma (PBEQ) and psychopathology (CAARMS, BDI-pc, SIAS)	1. ↑ NAE at baseline: ↑ BDI-pc, ↑ SIAS, ↑ NBI (other CAARMS subscales NS), ↑ NBI distress, ↑ DS distress (UTC distress NS), ↑ self-harm/suicidality at baseline; 2. ↑ SAE at baseline: ↓ BDI-pc, ↓ SIAS, ↓ self-harm/suicidality at baseline (CAARMS subscales and distress NS); 3. ↑ BDI-pc at baseline: ↑ NBI, ↑ self-harm/suicidality at baseline (UTC and PA distress NS); 4. ↑ BDI-pc at FU: ↑ BDI-pc at baseline, ↑ NAE at baseline; 5. ↑ SIAS at FU: ↑ SIAS at baseline; 6. Self-harm/suicidality at FU: predictors NS
Rüsch et al. (2015) (Switzerland)	To assess the effect of stigma stress on transition to psychosis in CHR/ UHR in a 1-year-FU	1. CHR (n = 138); 2. UHR (n = 85); 3. Risk for bipolar disorder (n = 135)	172	Transition to psychosis (SCZ ICD-10 criteria)	1. ↑ transition at FU: ↑ stigma-related harm and stress at baseline (coping resources NS), ↑ APS (age, gender, and baseline functioning NS); 2. ↑ transition at FU: ↑ positive symptoms, ↑ stigma-related harm and stress (controlling for confounders); 3. Transition at FU: high stigma-related group > low stigma related group
Yang et al. (2015) (USA)	To assess label-related stigma, symptom-related stigma, and psychopathology in CHR	CHR	38	Label-related stigma, symptom-related stigma, and psychopathology (BAI, BDI)	1. Awareness of stereotypes: CHR > impaired sample with non-psychotic disorder; 2. Stereotypes: awareness > agreement; 3. ↑ agreement with stereotypes: ↑ awareness of stereotypes; 4. ↑ negative emotions: ↑ agreement with stereotypes; 5. ↑ anxiety: ↑ label-related negative emotions; 6. Anxiety: symptom-related negative emotions NS; 7. Depression: label-related negative emotions NS; 8. ↑ depression: ↑ symptom-related negative emotions (trend); 9. Stigma: label-related < symptom-related

Anglin et al. (2016) (USA)	To assess the effect of racial discrimination on psychopathology in ethnic minorities and immigrants as a function of RS-race	Undergraduate college students with APS	644	Psychopathology (PQ-Likert)	1. ↑ racial discrimination: ↑ RS-race; 2. ↑ APS-distress: ↑ RS-race; 3. ↑ APS-distress: ↑ racial discrimination; 4. RS-race: Black ethnicity > other groups; 5. Racial discrimination: Black ethnicity > other racial category, Black v. Hispanic v. Asian NS; 6. APS-distress: ethnic groups NS, RS-race × racial discrimination NS, RS-race partial mediator of effect of racial discrimination
Lawrence et al. (2016) (USA)	To assess stigma in CHR in response to potential genetic tests for SCZ	CHR	15	Genetic testing-related stigma (questionnaire, interview)	1. Concerns about test reliability and privacy maintenance; 2. Concerns whether clients/clinicians interpret results correctly; 3. Concerns whether results increase stigma/discrimination, cause psychological harm, and complicate family planning
Lee et al. (2016) (China)	To assess label-related public stigma in general public and health carers in response to a vignette description	1. General public (<i>n</i> = 154); 2. Health carers (<i>n</i> = 50)	204	Label-related public stigma (SDSS)	1. Total stigma: SCZ > APS > depression > PLE; 2. APS-stigma: disclosure spill-over > perception of dangerousness > treatment carryover > social distance > traditional prejudice > negative affect > exclusionary sentiments; 3. APS-stigma: general public > health carers, diploma > other education groups, worked/volunteered in mental health < not worked/volunteered in mental health, encountering someone mentally ill > no encounters (gender and age NS); 4. Effects of characteristics on stigma scores: APS > other conditions
Shaikh et al. (2016) (UK)	To assess perceived ethnic discrimination and psychopathology in UHR	1. UHR (<i>n</i> = 64); 2. HC (<i>n</i> = 43)	107	Ethnic discrimination (PEDQ-cv) and psychopathology (SSPS in VR environment, PQ)	1. SSPS in VR, PQ, and PEDQ-cv: UHR > HC; 2. ↑ SSPS in VR: ↑ PEDQ-cv in the entire sample or HC (UHR NS); 3. ↑ PQ: ↑ PEDQ-cv in the entire sample and UHR (HC NS); 4. ↑ SSPS in VR: ↑ PQ in entire sample and UHR
Stowkowy et al. (2016) (USA, Canada)	To assess the effect of trauma and public stigma on transition to psychosis in CHR in a 2-year-FU	1. CHR (<i>n</i> = 764); 2. HC (<i>n</i> = 280)	1044	Transition to psychosis (SOPS and POPS criteria)	1. Bullying, trauma, and discrimination: CHR > HC; 2. ↑ discrimination: ↑ ethnic minority in CHR and HC; 3. ↑ APS: ↑ trauma, ↑ discrimination; 4. Transition to psychosis: high discrimination > low discrimination, trauma NS, bullying NS
Xu et al. (2016a) (Switzerland)	To assess the effects of perceived public stigma and stigma stress on suicidal ideation in CHR/UHR in a 1-year-FU	1. CHR (<i>n</i> = 138); 2. UHR (<i>n</i> = 85); 3. Risk for bipolar disorder (<i>n</i> = 135)	172	Suicidal ideation (HRSD)	1. Suicidality at baseline/FU: perceived stigma/stigma stress at baseline NS; 2. ↑ Suicidality at FU: ↑ perceived stigma/stigma stress at FU; 3. Becoming suicidal at FU: stigma stress at FU > stigma stress at baseline (perceived stigma NS); 4. Suicidality ended at FU: perceived stigma at FU < perceived stigma at baseline (stigma stress NS); 5. Suicidality at FU: stigma stress ↑ over time (controlling for confounders)
Xu et al. (2016b) (Switzerland)	To assess the effects of self-labeling, perceived public stigma, and stigma stress on help-seeking attitudes in CHR/UHR in a 1-year-FU	1. CHR (<i>n</i> = 59); 2. UHR (<i>n</i> = 34); 3. Risk for bipolar disorder (<i>n</i> = 60) (FU completers)	172	Attitudes towards psychiatric medication and psychotherapy (scale/questionnaire)	1. Attitudes towards psychotherapy and medication at FU: self-label, perceived stigma, stigma stress, and clinical symptoms at baseline NS; 2. ↑ positive attitudes towards medication at FU: ↑ self-label over time, ↓ negative symptoms over time; 3. ↑ negative attitudes towards psychotherapy at FU: ↑ perceived stigma over time, ↑ stigma stress over time, ↑ positive symptoms over time; 4. ↑ positive attitudes towards psychotherapy at FU: female gender
Xu et al. (2016c) (Switzerland)	To assess the effects of self-labeling and stigma stress on suicidal ideation in CHR/UHR as a function of social isolation and low self-esteem	1. CHR (<i>n</i> = 138); 2. UHR (<i>n</i> = 85); 3. Risk for bipolar disorder (<i>n</i> = 135)	172	Suicidal ideation (HRSD)	1. ↑ self-label: ↑ suicidality, ↑ social isolation, ↑ depressive symptoms, ↓ self-esteem; 2. ↑ stigma stress: ↑ social isolation, ↑ depressive symptoms, ↓ self-esteem (suicidality NS); 3. ↑ social isolation: ↑

(Continued)

Table 1. (Continued.)

Study (Country)	Aim of study	Population	<i>n</i>	Outcome measure (test name or description)	Results
					depressive symptoms, ↑ suicidality; 4. ↓ self-esteem: ↑ depressive symptoms, ↑ suicidality; 5. Suicidality: social isolation partial mediator of effect of self-label and full mediator of effect of stigma stress; 6. ↑ depression linked with suicidality: ↑ social isolation, ↓ self-esteem
Baba et al. (2017) (Japan)	To assess label-related stigma in general public, health carers, and patients in response to a vignette description	1. General public (<i>n</i> = 149); 2. Health carers (<i>n</i> = 119); 3. Patients (<i>n</i> = 97)	365	Label-related stigma (scale/questionnaire)	1. Prejudice and discrimination: SCZ > depression > ARMS > PLE in general public, health carers and patients; 2. ARMS-related prejudice: general public > patients > health carers (general public v. patients NS); 3. ARMS-related discrimination, group NS; 4. SCZ-related prejudice and discrimination: general public > patients > health carers (patients v. health carers NS); 5. PLE-related prejudice: patients > health carers > general public (general public v. health carers NS); 6. PLE-related discrimination: group NS
Kim et al. (2017) (Australia)	To assess label-related stigma in health carers and patients	1. Health carers (<i>n</i> = 55); 2. Patients (<i>n</i> = 50)	105	Label-related stigma (scale/questionnaire)	1. UHR and APS stigma: patients < health carers; 2. APS shame: patients < health carers (trend); 3. Renaming: APS < UHR and SCZ; 4. UHR shame and renaming: patients with family history > no family history; 5. UHR shame: patients with transition to psychosis > no transition; 6. UHR help: patients with transition to psychosis < no transition; 7. ↑ negative attitudes for all 3 labels: ↑ stigma; 8. ↑ UHR and SCZ renaming: ↑ stigma; 9. Health carers: ARMS use > UHR and other terms use
Lee et al. (2017) (China)	To assess label-related public stigma in general public and health carers in response to a vignette description	1. General public (<i>n</i> = 149); 2. Health carers (<i>n</i> = 51)	200	Label-related public stigma (PDS)	1. Label preference: developing period > precursor period > risky period > early sign period > high risk period, general public v. health carers NS, other demographic characteristics (age, gender, education) NS; 2. Devaluation and discrimination: labels NS
Anglin et al. (2018) (USA)	To assess the effect of racial discrimination and ethnic identity on psychopathology	Undergraduate college students with APS	644	Psychopathology (PQ-Likert)	1. ↑ APS: ↓ age, ↑ depression, ↑ anxiety, ↑ ethnic discrimination, ethnic discrimination × low ethnic identity (gender, ethnicity, immigrant status, income, ethnic identity NS); 2. Ethnic discrimination: very low < moderate and high ethnic identity; 3. Depression and anxiety: low > moderate/high ethnic identity
Ben-David et al. (2018) (USA)	To assess decision-making process to engagement in mental health care in CHR	CHR	30	Perspective of engagement of mental health service use (interview)	1. Attitudes towards help-seeking: positive > negative; 2. Social norms: approval > disapproval; 3. Self-concept/social image (reasons to refuse to seek help): denial, stigma, negative emotions, no confidence in services; 4. Emotions: positive (30%), negative (30%), and mixed; 5. Self-efficacy/strategies: tangible and motivational strategies; 6. Disapproval of services, reasons to engage/refuse help, and overall emotions: 'clinical + research' > 'research only' participants

Kotlicka-Antczak et al. (2018) (Poland)	To assess demographic and clinical characteristics of ARMS	ARMS	99	Psychopathology (CAARMS) and dropout from observation period	1. CAARMS: age, gender, and SOFAS NS; 2. ↑ age: ↑ CAARMS DS (NS after Bonferroni correction); 3. Dropout from observation period: 19%; 4. Reasons for dropout: stigmatization 53% (10% of whole sample), non-acceptance of psychopharmacological treatment 47%, change of residence 32%, no need for care 21%
Uttinger et al. (2018) (Switzerland)	To assess internalized stigma in ARMS	ARMS	11	Internalized and public stigma (interview)	1. Perception of first symptoms; 2. Perceived triggers; 3. Coping with symptoms; 4. Images of psychosis/stereotypes; 5. Helpful aspects of contact with the early detection clinic; 6. No changes; 7. Negative aspects; 8. Needs of patients; 9. Positive experiences/support; 10. Expected discrimination; 11. Experienced discrimination; 12. Self-efficacy
Ward et al. (2018) (USA, Canada)	To assess the effect of tobacco use and public stigma on transition to psychosis in CHR in a 2-year-FU	1. CHR ($n = 587$); 2. HC ($n = 274$)	861	Transition to psychosis (SIPS interview and POPS criteria)	1. Perceived discrimination, stress/events, trauma, poor academic functioning, depression, anxiety, cannabis use, and tobacco use: CHR > HC; 2. CHR status: ↑ tobacco use (NS controlling for confounders); 3. Time to transition: tobacco use NS; 4. ↑ tobacco use in CHR and HC: ↑ perceived discrimination
Baer et al. (2019) (Canada)	To assess the effect of internalized stigma on psychopathology and of CBT on internalized stigma	CHR	1	Internalized stigma and psychopathology (psychological therapy)	1. Cognitive model for anxiety: ↑ anxiety, ↑ self-stigma (-fam speak disparagingly of mental illness, ideas of 'crazy' v. 'normal', prejudicial beliefs about mental illness and SCZ, patient's beliefs that life would be over if a diagnosis of psychosis is received, coping statements, negative v. neutral appraisals); 2. Belief that brain is damaged and psychosis will develop: CBT (30%) < prior to treatment (80%)
Baron et al. (2019) (USA)	To assess associative stigma in CHR-fam	CHR-fam	12	Associative stigma (interview)	1. Major domains: perceptions of stigma and coping with stigma; 2. Perception of stigma themes: anxiety and depression as less stigmatized than psychosis, stigma and treatment delay, disclosure, privacy v. disclosure, equating mental and physical illness to ameliorate stigma, psychosis literacy; 3. Coping with stigma themes: finding commonality in others, research participation as de-stigmatizing
Ben-David et al. (2019) (USA)	To assess facilitators and barriers to engagement in mental health care in CHR	CHR	30	Perspective of engagement of mental health service use (interview)	1. Contextual factors: community, social, online; 2. Individual factors: awareness, stigma, emotions; 3. Environmental factors: facilitators, barriers; 4. Stigma: public (67%), internalized (30%), disclosure (83%), hierarchical (27%), absence of stigma (10%)
Georgopoulos et al. (2019) (USA, Canada)	To assess demographic and clinical characteristics of CHR as a function of FH	1. CHR + FH ($n = 119$); 2. CHR-non-FH ($n = 643$)	762	Public stigma (PDS), psychopathology (SIPS, SOPS), risk factors (AUS/DUS, GFS, CTAS, WASI), and transition to psychosis	1. Age, trauma, last month cannabis use: CHR + FH > CHR-non-FH (other demographic characteristics and risk factors including perceived discrimination NS); 2. APS: CHR + FH < CHR-non-FH (removing genetic risk and deterioration syndrome CHR + FH NS); 3. Transition to psychosis in the early period: CHR + FH < CHR-non-FH; 4. Transition to psychosis in the later period: CHR + FH > CHR-non-FH; 5. Transition to psychosis survival rates: CHR + FH v. CHR-non-FH NS

(Continued)

Table 1. (Continued.)

Study (Country)	Aim of study	Population	n	Outcome measure (test name or description)	Results
He et al. (2019) (USA)	To assess public stigma in ethnic minorities and immigrants in response to a vignette description	General public	215	Public stigma (DDS; DCFS; ATSPPH-SF)	1. ↑ CHR family stigma: ↑ CHR stigma, ↑ CHR help-seeking attitudes; 2. CHR help-seeking attitudes: women > men, high education > middle/low education, symptoms only and family obligations > aspirations (nativity NS); 3. ↑ CHR help-seeking attitudes: ↑ CHR family stigma (CHR stigma NS controlling for confounders); 4. CHR help-seeking attitudes for family obligations and aspirations: women > men (symptoms only NS)
Larsen et al. (2019) (USA)	To assess stigma shame and face emotion recognition in CHR	CHR	28	Stigma shame (scale) and FER (ER-40)	1. ↓ fear accuracy: ↑ stigma shame, low shame > high shame (happy, angry, sad, and neutral face NS); 2. ↑ misattribution of fear to non-fearful faces: ↑ stigma shame
Parrish et al. (2019) (USA)	To assess label-related public stigma in peers in response to a vignette description of CHR	Undergraduate college students	96	Label-related stigma (scale/questionnaire)	1. Personal responsibility stigma: breakup (control condition) > SCZ (other stigma dimensions NS), Asian > White/mixed ethnicity; 2. ↑ knowledge: ↓ stigma; 3. Stigma: familiarity and exposure (psychology course) NS; 4. Stigma dimensions and ratings: gender and race NS
Trask et al. (2019) (USA)	To assess label-related public stigma in peers in response to a vignette description	Undergraduate college students	455	Label-related stigma (scale/questionnaire)	1. Impairment: SCZ and APS > none, SCZ > APS; 2. Mentally ill, stigmatized, and negative emotional state: SCZ > APS and none, APS > none; 3. Physical help: SCZ > APS and none (APS v. none NS); 4. Psychosocial help: none > SCZ > APS; 5. Alternative help: SCZ and APS > none (SCZ v. APS NS); 6. Psychological help: SCZ > APS > none; 7. Psychological factor: SCZ > APS > none; 8. Community factor: APS and SCZ > none (APS v. SCZ NS); 9. Alternative factor: APS and SCZ > none (APS v. SCZ NS); 10. Social factor: label NS
Yang et al. (2019) (USA)	To assess self-labeling and label-related public stigma in CHR	CHR	148	Label-related stigma	1. Self- and public label, and impact on thinking about self: 'depression'/'anxiety' > 'psychosis'/'SCZ'/'bipolar', PR < non-PR; 2. ↑ PR-related impact on thinking about self: ↑ PR-related self-label, ↑ public label

USA, United States of America; UK, United Kingdom; CHR, Clinical High Risk; ROP, Recent Onset Psychosis; -fam, family members; OMI, Opinions about Mental Illness scale; FEIS, Family Experiences Interview Schedule; NS, Not Significant; ARMS, At Risk Mental State; CT, Cognitive Therapy; FU, Follow-Up; PBEQ, Personal Beliefs about Experiences Questionnaire; UHR, Ultra High Risk; FHR, Family High Risk; HC, Healthy Controls; PDS, Perceived Discrimination Scale; SCZ, schizophrenia; MANSA, Manchester Short Assessment of Quality of Life; RSES, Rosenberg's Self-Esteem Scale; GSE, General Self-Efficacy Scale; PANSS, Positive and Negative Syndrome Scale; BCS, Brief Core Schema Scale; APS, Attenuated Psychotic Symptoms; CAARMS, Comprehensive Assessment for At-Risk Mental States; BDI-pc, Beck Depression Inventory for primary care; SIAS, Social Interaction Anxiety Scale; NAE, Negative Appraisals of Experiences; SAE, Social Acceptance of Experiences; UTC, Unusual Thought Content (UTC), NBI, Non-Bizarre Ideas (NBI), PA, Perceptual Abnormalities (PA), DS, Disorganized Speech; ICD-10, International Classification of Diseases 10th revision; BAI, Beck Anxiety Inventory; PQ-Likert, Prodromal Questionnaire-Likert; RS-race, race-based rejection sensitivity; SDSS, Seven-Domain Stigma Scale; PLE, Psychosis-Like Experiences; SSPS, State Social Paranoia Scale; VR, Virtual Reality; PEDQ-cv, Perceived Ethnic Discrimination Questionnaire-community version; SOPS, Scale of Prodromal Symptoms; POPS, Presence Of Psychotic Symptoms; HRSD, Hamilton Rating Scale for Depression; SOFAS, Social and Occupational Functioning Assessment Scale; SIPS, Structured Interview for Prodromal Syndromes; CBT, Cognitive Behavioral Therapy; FH, Family History; AUS/DUS, Alcohol and Drug Use Scale; GFS, Global Functioning Scale; CTAS, Childhood Trauma and Abuse Scale; WASI, Wechsler Abbreviated Scale of Intelligence; DDS, Devaluation and Discrimination Scale; DCFS, Devaluation of Consumer Families Scale; ATSPPH-SF, Attitudes towards Seeking Professional Psychological Help; ER-40, Penn Emotion Recognition Task; FER, face emotion recognition; PR, Psychosis Risk; >, higher than; <, lower than; ↑, increase; ↓, decrease

Table 2. Methodological quality of studies investigating stigma and discrimination in individuals at risk for psychosis

Study	Study design	Defined study population	Age (years)	Gender	Stigma measure	Adequate stigma evaluation	Control group (s)	Comparability of subjects	Other comorbidity	Excluded/adjusted for confounding factors	(Statistical) Analyses	Funding or sponsorship
Wong et al. (2009)	✓ Descriptive, analytic, observational	✓ 1. CHR-fam; 2. ROP-fam, (85% parents); CHR and ROP diagnosed with SIPS, SOPS, DIGS, and chart review	✓ 1. CHR-fam, 41.1 ± 7.9; 2. ROP-fam, 47.7 ± 7.8 (M ± s.d.)	✓/× 1. CHR, male (n = 8), female (n = 1); 2. ROP, male (n = 8), female (n = 3)	✓ Scale, schedule	✓ Attitudes about mental illness (stereotypes, difference, status loss, discrimination), family burden (family worries, concern, shame)	✓ ROP-fam	✓/× Matched for gender, not for age and ethnicity	×/NA	× However study participants evaluated as a whole group for some outcome measures	✓ χ ²	✓
Welsh and Tiffin (2012)	✓ Descriptive, qualitative	✓ ARMS diagnosed with Melbourne UHR criteria and CAARMS	✓ 13–18 (range)	✓ Male (n = 3), female (n = 3)	✓ Semi-structured interview	✓ Transcripts and records of themes (personal understanding, thoughts, and feelings) emerged during the 25–40 min interview	×	NA	×	×	✓ IPA	✓
Morrison et al. (2013)	✓ Analytic, experimental, multisite, randomised (parallel), controlled, single-blind	✓ ARMS diagnosed with CAARMS	✓ 14–35 (range), 20.7 ± 4.3; 1. ARMS CT + mon., 20.7 ± 4.2; 2. ARMS mon. only, 20.75 ± 4.5 (M ± s.d.)	✓ Male (n = 180), female (n = 108); 1. ARMS CT + mon., male (n = 89), female (n = 55); 2. ARMS mon. only, male (n = 91), female (n = 53)	✓ Scale, questionnaire	✓ Negative cognitive appraisals (stereotypical social and scientific beliefs), experienced social acceptability	✓ ARMS with only mon.	✓ Matched for age and gender	×	✓ Adjusted for the stigma subscale scores at baseline and the site of the participant	✓ Regression, ITT, repeated measures with random effects	✓
Rusch et al. (2013)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13–35 (range), 21.4 ± 5.8 (M ± s.d.)	✓ Male (n = 102), female (n = 70)	✓ Scale, questionnaire	✓ Self-label measurement, stress, cognitive appraisals (perceived harmfulness and perceived resources to cope), experienced devaluation and discrimination	×	NA	✓ Anxiety (42%) and depressive (55%) disorder, alcohol/substance abuse (12%)	✓ Excluded schizophrenic, substance-induced/organic psychosis, bipolar disorder, current substance/alcohol dependence, IQ < 80; adjusted for age, gender, symptom levels/psychiatric comorbidity	✓ Multiple linear regression	✓
Stowkowy and Addington (2013)	✓ Analytic, observational	✓ 1. FHR + CHR; 2. FHR-non-CHR; 3. HC; FHR determined with FIGS (first degree relative with psychosis); CHR diagnosed with COPS and SIPS	✓ 12–35 (range); 1. FHR + CHR, 17.9 ± 3.2; 2. FHR-non-CHR, 20.8 ± 5.85; 3. HC, 19.6 ± 5.2 (M ± s.d.)	✓ 1. FHR + CHR, male (n = 12), female (n = 13); 2. FHR-non-CHR, male (n = 10), female (n = 15); 3. HC, male (n = 10), female (n = 15)	✓ Scale	✓ Experienced discrimination in the past year or lifetime	✓ HC	✓ FHR + CHR and FHR-non-CHR matched for affected -fam; all 3 groups matched for age, gender, education, ethnicity, marital/work status	✓ Anxiety (FHR + CHR > FHR-non-CHR) and depressive disorder	× FHR + CHR < FHR-non-CHR on age at first cannabis use and IQ; FHR + CHR and FHR-non-CHR > HC on trauma; not adjusted for symptom levels/psychiatric comorbidity and functioning	✓ χ ² , ANOVA, binary logistic regression, Kruskal Wallis, Mann Whitney test	✓
Yang et al. (2013)	✓ Analytic, observational	✓ Undergraduate college students (Psychology courses); vignette character at CHR	✓ > 18; 20 ± 4.4 (M ± s.d.)	✓ Male (n = 51), female (n = 102)	✓ Scale	✓ Attitudes about mental health (stereotypes, status loss, discrimination, dangerousness,	✓ Label groups other than CHR	✓ all 5 diagnostic label groups matched for demographic characteristics	NA	✓ Gender and ethnicity were randomly varied across the vignette descriptions	✓ χ ² , t test ANOVA, MANOVA	✓

(Continued)

Table 2. (Continued.)

Study	Study design	Defined study population	Age (years)	Gender	Stigma measure	Adequate stigma evaluation	Control group (s)	Comparability of subjects	Other comorbidity	Excluded/adjusted for confounding factors	(Statistical) Analyses	Funding or sponsorship
		assigned 1 of 5 illness labels				social distance, unwillingness to help, coercive treatment)						
Anglin et al. (2014)	✓ Descriptive, qualitative, analytic, observational	✓ Undergraduate college students (Psychology courses); vignette character at CHR using SIPS and SOPS	✓ 17–33 (range; 80% 18–22); 19.65 ± 2.9 (M ± s.d.)	✓ Male (n = 23), female (n = 26)	✓ Scale, questionnaire	✓ Attitudes about mental health (dangerousness, fear and avoidance)	×	NA	NA	✓ Gender and ethnicity were randomly varied across the vignette descriptions	✓ ANOVA	✓
Rusch et al. (2014a)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13–35 (range), 21.4 ± 5.8 (M ± s.d.)	✓ Male (n = 102), female (n = 70)	✓ Scale, questionnaire	✓ Self-label measurement, stress, cognitive appraisals (perceived harmfulness and perceived resources to cope), experienced devaluation and discrimination, shame	×	NA	✓ Anxiety (42%) and depressive (55%) disorder, neither diagnosis (26%)	✓ Excluded schizophrenic, substance-induced/organic psychosis, bipolar disorder, current substance/alcohol dependence, IQ < 80; adjusted for age, gender, symptom levels/psychiatric comorbidity	✓ Pearson's correlation, multiple linear regression, Williams' test	✓
Rusch et al. (2014b)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13–35 (range), 20.3 ± 5.5 (M ± s.d.)	✓ Male (54%), female (46%)	✓ Scale, questionnaire	✓ Self-label measurement, stress, cognitive appraisals (perceived harmfulness and perceived resources to cope), experienced devaluation and discrimination, shame	✓ Dropouts	✓/× Matched for some, not other characteristics (discrimination (trend) and age, dropouts > completers; CHR, dropouts < completers)	✓ Depressive disorder, dropouts (61%) > completers (48%) (trend)	✓ Adjusted for age, gender, symptom levels/psychiatric comorbidity	✓ Multiple linear regression	✓
Saleem et al. (2014)	✓ Analytic, observational	✓ 1. CHR diagnosed with COPS and SIPS; 2. HC	✓ 1. CHR, 19 ± 4.2; 2. HC, 19.5 ± 4.8 (M ± s.d.)	✓ 1. CHR, male (n = 211), female (n = 149); 2. HC, male (n = 87), female (n = 93)	✓ Scale	✓ Experienced discrimination in the past year, negative cognitive appraisals (beliefs about the self/others)	✓ HC	✓/× Matched for age, ethnicity, immigrant/marital/work status, not for gender and education	×/NA	✓ 1. CHR, excluded current/lifetime axis I psychotic disorder, current/past history of CNS disorder, IQ < 70; 2. HC, excluded first degree relative with current/past psychotic disorder	✓ χ^2 , t test, Spearman's correlation, Mann Whitney test, Kendall's tau coefficient	✓
Pyle et al. (2015)	✓ Analytic, observational	✓ ARMS diagnosed with CAARMS	✓ 14–35 (range)	✓ Male (n = 180), female (n = 108)	✓ Scale, questionnaire	✓ Negative cognitive appraisals (stereotypical social and scientific beliefs), experienced social acceptability	×	NA	×	✓ Adjusted for symptom levels/psychiatric comorbidity at baseline	✓ Pearson's correlation, PCA	✓

Rüsch et al. (2015)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13-35 (range), 21.4 ± 5.8 (M ± s.d.)	✓ Male (n = 102), female (n = 70)	✓ Scale, questionnaire	✓ Stress, cognitive appraisals (perceived harmfulness and perceived resources to cope)	✓ Dropouts	✓/X Matched for functioning, stigma stress, gender, negative symptoms, not for age and positive symptoms (trends)	✓ Anxiety (42%) and depressive (55%) disorder, conversion to schizophrenia (13%)	✓ Excluded schizophrenic, substance-induced/organic psychosis, bipolar disorder, current substance/alcohol dependence, IQ < 80; adjusted for baseline characteristics and antipsychotic medication	✓ χ^2 , t test, Pearson's correlation, multiple logistic regression	✓
Yang et al. (2015)	✓ Analytic, observational	✓ CHR diagnosed with SIPS and SOPS	✓ 12-30 (range), 22.3 ± 3.1 (M ± s.d.)	✓ Male (n = 24), female (n = 14)	✓ Scale	✓ Stereotypes (awareness and agreement), negative emotions (shame), status disclosure (secrecy), experienced discrimination, symptom-related stigma	✓ Published data (impaired sample with non-psychotic disorder)	X	✓ Anxiety (42%), depressive (39%), bipolar (6%), personality (6%), psychotic (3%) disorder, ADHD (22%)	✓ Excluded psychosis/psychiatric disorders, substance-induced psychosis, serious risk of self-harm/violence, major neurological/medical disorders, IQ < 70; adjusted for gender, age, ethnicity, education, income, employment, symptom levels/psychiatric comorbidity and antipsychotic medication	✓ t test, Pearson's correlation, linear regression	✓
Anglin et al. (2016)	✓ Analytic, observational	✓ Undergraduate college students assessed with PQ-Likert	✓ 18-29 (range), 19.9 ± 2.1 (M ± s.d.)	✓ Male (n = 215), female (n = 429)	✓ Scale, questionnaire	✓ Experienced ethnic discrimination, race-based rejection sensitivity	X	NA	X/NA	✓ Symptoms experienced in the absence of alcohol, drugs and other medications; adjusted for age	✓ t test, ANOVA, Pearson's correlation, linear regression	✓
Lawrence et al. (2016)	✓ Descriptive, qualitative	✓ CHR diagnosed with SIPS	✓ 18-29 (range), 22.3 (M)	✓ Male (n = 11), female (n = 4)	✓ Interview, questionnaire	✓ Transcripts and records of themes (perceived drawbacks to genetic testing, anticipated emotional reactions, and privacy concerns) emerged during the 30 min. interview	X	NA	X	✓ Excluded psychosis/psychiatric disorders, substance-induced psychosis, serious risk of self-harm/violence, major neurological/medical disorders, IQ < 70	✓ Codebook to describe answers	✓
Lee et al. (2016)	✓ Analytic, observational	✓ 1. General public; 2. Health carers; vignette character assigned 1 of 4 illness labels	✓ 27.3 ± 10.5 (M ± s.d.)	✓ Male (n = 62), female (n = 142)	✓ Scale, questionnaire	✓ Attitudes about mental health (prejudice, dangerousness, social distance, exclusionary sentiments, negative affect, treatment and disclosure carryover)	✓ General public	✓/X However scores assessed by worked/volunteered in mental health status	✓ 88-92% no relatives/close friends hospitalized in psychiatric unit	✓/X However scores assessed by study participants' characteristics	✓ Kruskal-Wallis, Mann Whitney test	✓
Shaikh et al. (2016)	✓ Analytic, observational	✓ 1. UHR diagnosed with CAARMS; 2. HC	✓ 1. UHR, 22.55 ± 4; 2. HC, 24 ± 4.1 (M ± s.d.)	✓ 1. UHR, male (n = 38), female (n = 26); 2. HC, male (n = 20), female (n = 23)	✓ Scale, questionnaire	✓ Experienced ethnic discrimination (lifetime/past week exposure, in the	✓ HC	✓ Matched for age, gender, ethnicity, immigrant status	X/NA	✓ HC, excluded personal/family history of psychotic disorder (PQ)	✓ χ^2 , t test, Pearson's correlation,	✓

(Continued)

Table 2. (Continued.)

Study	Study design	Defined study population	Age (years)	Gender	Stigma measure	Adequate stigma evaluation	Control group (s)	Comparability of subjects	Other comorbidity	Excluded/adjusted for confounding factors	(Statistical) Analyses	Funding or sponsorship
						media, against family members, in different settings)					logistic regression	
Stowkowy et al. (2016)	✓ Analytic, observational	✓ 1. CHR diagnosed with COPS and SIPS; 2. HC	✓ 1. CHR, 18.5 ± 4.2; 2. HC, 19.7 ± 4.7 (M ± s.d.)	✓ 1. CHR, male (n = 436), female (n = 328); 2. HC, male (n = 141), female (n = 139)	✓ Scale	✓ Experienced discrimination lifetime	✓ HC	✓/X Matched for gender, ethnicity, marital/work status, not for age and education	×/NA	✓ 1. CHR, excluded current/lifetime axis I psychotic disorder, treatment with antipsychotic, current/past history of CNS disorder, IQ < 70; 2. HC, excluded first degree relative with current/past psychotic disorder	✓ χ^2 , t test, Spearman's correlation, Mann Whitney test	✓
Xu et al. (2016a)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13–35 (range); 20 ± 5.4 (M ± s.d.; completers)	✓ Male (n = 40), female (n = 33) (completers)	✓ Scale, questionnaire	✓ Stress, cognitive appraisals (perceived harmfulness and perceived resources to cope), experienced devaluation and discrimination	✓ Dropouts	✓/X Matched for stigma stress and symptoms, not for age and public stigma (dropouts > completers)	✓ Depressive disorder (55%)	✓ Excluded schizophrenic, substance-induced/organic psychosis, bipolar disorder, current substance/alcohol dependence, IQ < 80; adjusted for baseline, clinical characteristics and antipsychotic medication	✓ χ^2 , t test, Spearman's correlation, logistic regression	✓
Xu et al. (2016b)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13–35 (range); 20 ± 5.85 (M ± s.d.; completers)	✓ Male (n = 38), female (n = 29) (completers)	✓ Scale, questionnaire	✓ Self-label measurement, stress, cognitive appraisals (perceived harmfulness and perceived resources to cope), experienced devaluation and discrimination	✓ Dropouts	✓/X Matched for some demographic and clinical characteristics, not for age and perceived stigma (dropouts > completers)	✓ Anxiety and depressive disorder	✓ Excluded schizophrenic, substance-induced/organic psychosis, bipolar disorder, current substance/alcohol dependence, IQ < 80; adjusted for baseline, age, gender, symptom levels/psychiatric comorbidity	✓ χ^2 , t test, multiple linear regression	✓
Xu et al. (2016c)	✓ Analytic, observational	✓ CHR/UHR diagnosed with SPI and SIPS	✓ 13–35 (range), 21.4 ± 5.8 (M ± s.d.)	✓ Male (n = 102), female (n = 70)	✓ Scale, questionnaire	✓ Self-label measurement, stress, cognitive appraisals (perceived harmfulness and perceived resources to cope)	×	NA	✓ Depressive symptoms	✓ Excluded schizophrenic, substance-induced/organic psychosis, bipolar disorder, current substance/alcohol dependence, IQ < 80; adjusted for age, gender, symptom levels/psychiatric comorbidity	✓ χ^2 , correlation, maximum likelihood estimation	✓
Baba et al. (2017)	✓ Analytic, observational	✓ 1. General public; 2. Health carers; 3. Patients; vignette character assigned 1 of 4 illness labels; ARMS diagnosed with SIPS and SOPS	✓ <30 (n = 102), 30–39 (n = 127), 40–49 (n = 81), 50–59 (n = 32), ≥60 (n = 22) (range)	✓ 1. General public, male (n = 75), female (n = 74); 2. Health carers, male (n = 62), female (n = 57); 3. Patients, male (n = 49), female (48)	✓ Scale, questionnaire	✓ Attitudes about mental health (prejudice, discrimination, social distance)	✓ General public	✓/X Matched for age and gender, not for education	×/NA	✓ Excluded individuals with dementia and mental retardation	✓ χ^2 , ANOVA	✓

Kim et al. (2017)	✓ Analytic, observational	✓ 1. Health carers; 2. Patients (individuals at risk for psychosis) diagnosed with CAARMS	✓ 1. Health carers, 36.6 ± 9.8; 2. Patients, 15–25 (range), 19.1 ± 3.1 (M ± s.d.)	✓ 1. Health carers, male (36.4%), female (63.6%); 2. Patients, male (40%), female (60%)	✓ Scale, questionnaire	✓ Attitudes about mental health (prejudice, discrimination), experienced discrimination, shame, help, renaming labels	✓ Health carers	×	✓ Patients, family history of a psychiatric illness (66%)	✓/× However scores assessed by study participants' demographic and clinical characteristics (NS)	✓ χ^2 , <i>t</i> test, ANOVA, Pearson's correlation	✓
Lee et al. (2017)	✓ Analytic, observational	✓ 1. General public; 2. Health carers; vignette character assigned 1 of 5 illness labels	✓ 18–59 (range), 27.2 ± 9.8 (M ± s.d.); 1. General public, 27 ± 10; 2. Health carers, 27.7 ± 9.2 (M ± s.d.)	✓ 1. General public, male (<i>n</i> = 38), female (<i>n</i> = 111); 2. Health carers, male (<i>n</i> = 20), female (<i>n</i> = 31)	✓ Scale, questionnaire	✓ Attitudes about mental health (devaluation, discrimination)	✓ General public	✓/× Matched for age and gender, not for education (health carers > general public)	NA	✓ Excluded individuals with/treated for mental health disorder; scores assessed by worked/volunteered in mental health status and study participants' characteristics	✓ χ^2 , Kruskal Wallis, Mann Whitney test	✓
Anglin et al. (2018)	✓ Analytic, observational	✓ Undergraduate college students assessed with PQ-Likert	✓ 18–29 (range), 19.9 ± 2.1 (M ± s.d.)	✓ Male (<i>n</i> = 215), female (<i>n</i> = 429)	✓ Scale, questionnaire	✓ Experienced ethnic discrimination	×	NA	✓ Anxiety and depressive symptoms	✓ Adjusted for age, symptom levels/psychiatric comorbidity	✓ <i>t</i> test, ANOVA, Pearson's correlation, linear regression	✓
Ben-David et al. (2018)	✓ Descriptive, qualitative	✓ CHR diagnosed with SIPS and SOPS	✓ 18–30 (range), 23 ± 3.4 (M ± s.d.)	✓ Male (<i>n</i> = 18), female (<i>n</i> = 12)	✓ Semi-structured interview	✓ Transcripts and records of themes (UTB) emerged during the 60–120 min interview	×	NA	×	✓ Excluded actively psychotic, risk of harm to self/others	✓ Codebook to describe answers	✓
Kotlicka-Antczak et al. (2018)	✓ Analytic, observational	✓ ARMS diagnosed with CAARMS	✓ 15–32 (range), 19 ± 3.6 (M ± s.d.)	✓ Male (<i>n</i> = 45), female (<i>n</i> = 54)	✓ Semi-structured interview	×	×	NA	✓ Anxiety (19%), depressive (44%), and personality (28%) disorder; substance abuse (13%), family history of psychosis (23%)	✓/× However scores assessed by study participants' demographic and clinical characteristics (NS)	✓ χ^2 , <i>t</i> test, Spearman's correlation, multivariate logistic regression, Mann Whitney test	✓
Uttinger et al. (2018)	✓ Descriptive, qualitative	✓ ARMS diagnosed with the Basel Screening Instrument for Psychosis	✓ 26.7 ± 7.7 (M ± s.d.)	✓ Male (<i>n</i> = 7), female (<i>n</i> = 4)	✓ Semi-structured interview	✓ Transcripts and records of themes (derived from literature) emerged during the 20–60 min interview	×	NA	×	×	✓ IPA	✓
Ward et al. (2018)	✓ Analytic, observational	✓ 1. CHR diagnosed with COPS and SIPS; 2. HC	✓ 1. CHR, 18.5 ± 4.3; 2. HC, 19.7 ± 4.7 (M ± s.d.)	×	✓ Scale	✓ Experienced discrimination lifetime	✓ HC	×	✓ Anxiety and depressive symptoms (CHR > HC)	✓ 1. CHR, excluded current/lifetime axis I psychotic disorder, current substance dependence, current/past history of CNS disorder, IQ < 70; 2. HC, excluded first degree relative with current/past psychotic disorder; adjusted for age,	✓ χ^2 , <i>t</i> test, logistic regression, Kruskal Wallis	✓

(Continued)

Table 2. (Continued.)

Study	Study design	Defined study population	Age (years)	Gender	Stigma measure	Adequate stigma evaluation	Control group (s)	Comparability of subjects	Other comorbidity	Excluded/adjusted for confounding factors	(Statistical) Analyses	Funding or sponsorship
										ethnicity, academic functioning, perceived discrimination, stress/ events, substance use, and symptom levels		
Baer et al. (2019)	✓ Case report	✓ CHR diagnosed with CAARMS	✓/× 14–35 (range)	✓ Female	✓ Psychological therapy	✓ Themes (maladaptive core beliefs) emerged during CBT	×	NA	✓ Anxiety symptoms, substance use	×	×	✓
Baron et al. (2019)	✓ Descriptive, qualitative	✓ CHR-fam (Parents)	✓ 40–66 (range)	✓ Male (n = 4), female (n = 8)	✓ Interview	✓ Transcripts and records of themes (experience, perceptions, labels, coping) emerged during the 60–90 min interview	×	NA	×/NA	×	✓ IPA	✓
Ben-David et al. (2019)	✓ Descriptive, qualitative	✓ CHR diagnosed with DSM-5 APS, SIPS, and SOPS	✓ 18–30 (range), 23 ± 3.4 (M ± s.d.)	✓ Male (n = 18), female (n = 12)	✓ Semi-structured interview	✓ Transcripts and records of themes (barriers, facilitators) emerged during the 60–120 min interview	×	NA	×	✓ Excluded actively psychotic, risk of harm to self/others	✓ Grounded theory, codebook to describe answers	✓
Georgopoulos et al. (2019)	✓ Analytic, observational	✓ 1. CHR + FH; 2. CHR-non-FH; FH determined with FIGS (first degree relative with psychosis); CHR diagnosed with SIPS and SOPS	✓ 1. CHR + FH, 19.3 ± 4.8; 2. CHR-non-FH, 18.4 ± 4.1 (M ± s.d.)	✓ 1. CHR + FH, male (n = 60), female (n = 59); 2. CHR-non-FH, male (n = 376), female (n = 267)	✓ Scale	✓ Experienced and discrimination in the past year or lifetime	✓ CHR + FH	✓/× CHR + FH and CHR-non-FH matched for gender, education, ethnicity, and marital/work status, not for age	×	✓ Excluded current/ lifetime axis I psychotic disorder, current/past history of CNS disorder, IQ < 70	✓ χ^2 , t test	✓
He et al. (2019)	✓ Analytic, observational	✓ General public; vignette character at CHR assigned 1 of 3 conditions	✓ 18–78 (range); 30.65 ± 13.7 (M ± s.d.)	✓ Male (n = 71), female (n = 144)	✓ Scale	✓ Attitudes about mental health (devaluation, discrimination (also family), help-seeking)	×	NA	NA	✓ Randomly assigned to 1 of 3 vignettes; also scores assessed by/ adjusted for study participants' demographic characteristics	✓ t test, ANOVA, ANCOVA, linear regression	✓
Larsen et al. (2019)	✓ Analytic, observational	✓ CHR diagnosed with SIPS and SOPS	✓ 18–27 (range); 22.2 ± 3 (M ± s.d.)	✓ Male (n = 18), female (n = 10)	✓ Scale	✓ Negative emotions (shame, embarrassment, feeling different, experiences)	×	NA	×	✓ Adjusted for age, sex, and symptom levels	✓ Spearman's correlation, regression	✓
Parrish et al. (2019)	✓ Analytic, observational, between-subjects design	✓ Undergraduate college students (Psychology courses); vignette character at CHR assigned 1 of 5 illness labels	✓ 18–22 (range), 19 ± 1.1 (M ± s.d.)	✓ Male (n = 31), female (n = 65)	✓ Scale, questionnaire	✓ Attitudes about mental health (personal beliefs, pity, anger, fear, social distance, unwillingness to help, coercive treatment)	✓ Label groups other than CHR	✓ Labels counterbalanced, matched for familiarity with psychosis and knowledge of psychosis	NA	✓/× However scores assessed by study participants' demographic and clinical characteristics; adjusted for familiarity with psychosis and knowledge of psychosis	✓ ANOVA, MANOVA, MANCOVA	✓

Trask et al. (2019)	✓ Analytic, observational	✓ Undergraduate college students (psychology courses); vignette character assigned 1 of 3 illness labels (APS and psychosis diagnosed with DSM-IV-TR)	✓ 20.4 ± 4.9 (M ± s.d.)	✓ Male (n = 126), female (n = 329)	✓ Scale, questionnaire	✓ Attitudes about mental health (personal beliefs)	✓ Label groups other than APS	NA	×	✓ t test, Repeated ANOVA, EPA, maximum likelihood estimation	✓
Yang et al. (2019)	✓ Analytic, observational	✓ CHR diagnosed with SIPS	✓ 12–35 (range); 18.6 ± 4.2 (M ± s.d.)	✓ Male (n = 97), female (n = 51)	✓ Questionnaire	✓ Impact on thinking about self	×	NA	✓	✓ Excluded psychosis/psychiatric disorders, substance-induced personality (1%), psychosis, serious risk of self-harm/violence, major neurological/medical disorders, IQ < 70; adjusted for demographic and clinical characteristics and site of the participant	✓ χ ² , McNemar's test, correlation, logistic regression

CHR, Clinical High Risk; ROP, Recent Onset Psychosis; fam, family members; SIPS, Structured Interview for Prodromal Syndromes; SOPS, Scale of Prodromal Syndromes; DIGS, Diagnostic Interview for Genetic Studies; M, Mean; s.d., Standard Deviation; NA, Not Applicable; ARMS, At Risk Mental State; UHR, Ultra High Risk; CAARMS, Comprehensive Assessment of At-Risk Mental States; min, minutes; IPA, Interpretative Phenomenological Analysis; CT, Cognitive Therapy; mon, monitoring; ITT, Intention to Treat; SPI, Schizophrenia Proneness Interview; IQ, Intelligence Quotient; FHR, Family High Risk; HC, Healthy Controls; FIGS, Family Interview for Genetic Studies (FIGS); COPS, Criteria of Prodromal Syndromes; ANOVA, Analysis of Variance; MANOVA, multivariate ANOVA; CNS, Central Nervous System; PCA, Principal Component Analysis; ADHD, Attention Deficit and Hyperactivity Disorder; PQ-Likert, Prodromal Questionnaire-Likert; NS, Not Significant; DSM-5 APS, Diagnostic and Statistical Manual of mental disorders 5th edition Attenuated Psychotic Syndrome; UTB, Unified Theory of Behaviour; ANCOVA, analysis of covariance; MANCOVA, repeated measures multivariate ANCOVA; DSM-IV-TR, Diagnostic and Statistical Manual of mental disorders 4th edition; EPA, Exploratory Factor Analysis; CBT, Cognitive Behavioral Therapy; FH, Family History; PTSD, Post-Traumatic Stress Disorder; SAD, Substance Abuse Disorder; >, greater than; <, lower than

Lepage, 2019). Three studies compare PR individuals with a control group of (i) healthy subjects with reference to multiple sources of stigma other than mental health such as appearance, age, gender, ethnicity, skin color, religion, disability, and sexual orientation (Saleem et al., 2014), (ii) an impaired sample with non-psychotic disorders (Yang et al., 2015), and (iii) PR individuals receiving cognitive therapy (Morrison et al., 2013) (Table 2).

Research indicates that PR individuals do experience negative thoughts and emotions about themselves more frequently than healthy subjects (Saleem et al., 2014), and do report higher stereotype awareness related to their condition compared to patients with non-psychotic disorders (Yang et al., 2015). Also, the higher the stereotype awareness, the higher is the agreement with them, which in turn is associated with the experience of negative emotions (Yang et al., 2015). Complementary evidence from semi-structured interviews indicates high levels of internalized stigma in PR individuals (Uttinger et al., 2018). PR individuals reporting internalized stigma, negative appraisals of their unusual experiences, reduced social acceptance of such experiences, and shame are more likely to experience high levels of distress related to their condition (Baer et al., 2019; Pyle et al., 2015) and to misattribute fear to non-fearful stimuli (Larsen et al., 2019). It is however interesting that a cognitive component of internalized stigma, i.e. negative appraisal of unusual experiences, seems to decrease overtime (Morrison et al., 2013), and along with anxiety due to fear of transitioning to psychosis (Baer et al., 2019), may be treated by specific cognitive therapies.

Stigma stress among PR individuals

This review identified three studies specifically quantifying the occurrence of stigma stress among PR individuals (Rusch et al., 2013, 2014a, 2014b) (Table 1). All of them are analytic, and one study has a control group, comparing PR individuals with PR individuals dropping out of care (Rusch et al., 2014b) (Table 2). Stigma may become a stressful condition when stigma-related harm is perceived as exceeding the person's coping resources (Rusch et al., 2013). In turn, high levels of stigma stress among PR individuals are associated with higher shame (Rusch et al., 2014a) and the persistence of increased stigma stress over time is also associated with a higher likelihood of self-labeling as mentally ill (Rusch et al., 2014b).

Perceived discrimination among PR individuals

This review identified four studies specifically assessing whether PR individuals perceive discrimination in the society because of their condition (Georgopoulos et al., 2019; Rusch et al., 2014a; Saleem et al., 2014; Uttinger et al., 2018) (Table 1). All of them indicate that discrimination plays an important role in the experience of a PR state. Also, two have a control group, specifically comparing (i) PR individuals with and without a family history of psychosis (Georgopoulos et al., 2019) and (ii) PR individuals and healthy subjects with reference to multiple sources of stigma other than mental health such as appearance, age, gender, ethnicity, skin color, religion, disability, and sexual orientation (Saleem et al., 2014). Another study is not analytic (Uttinger et al., 2018) (Table 2). In particular, most PR individuals report being aware of psychosis' negative image in the public opinion and the media as well as of stereotypes associated with it, preferring not to disclose their condition because of expected or previously experienced negative reactions (Uttinger et al., 2018). Moreover, perceived discrimination among PR individuals seems to be higher than that experienced by healthy peers (Saleem et al., 2014), independent

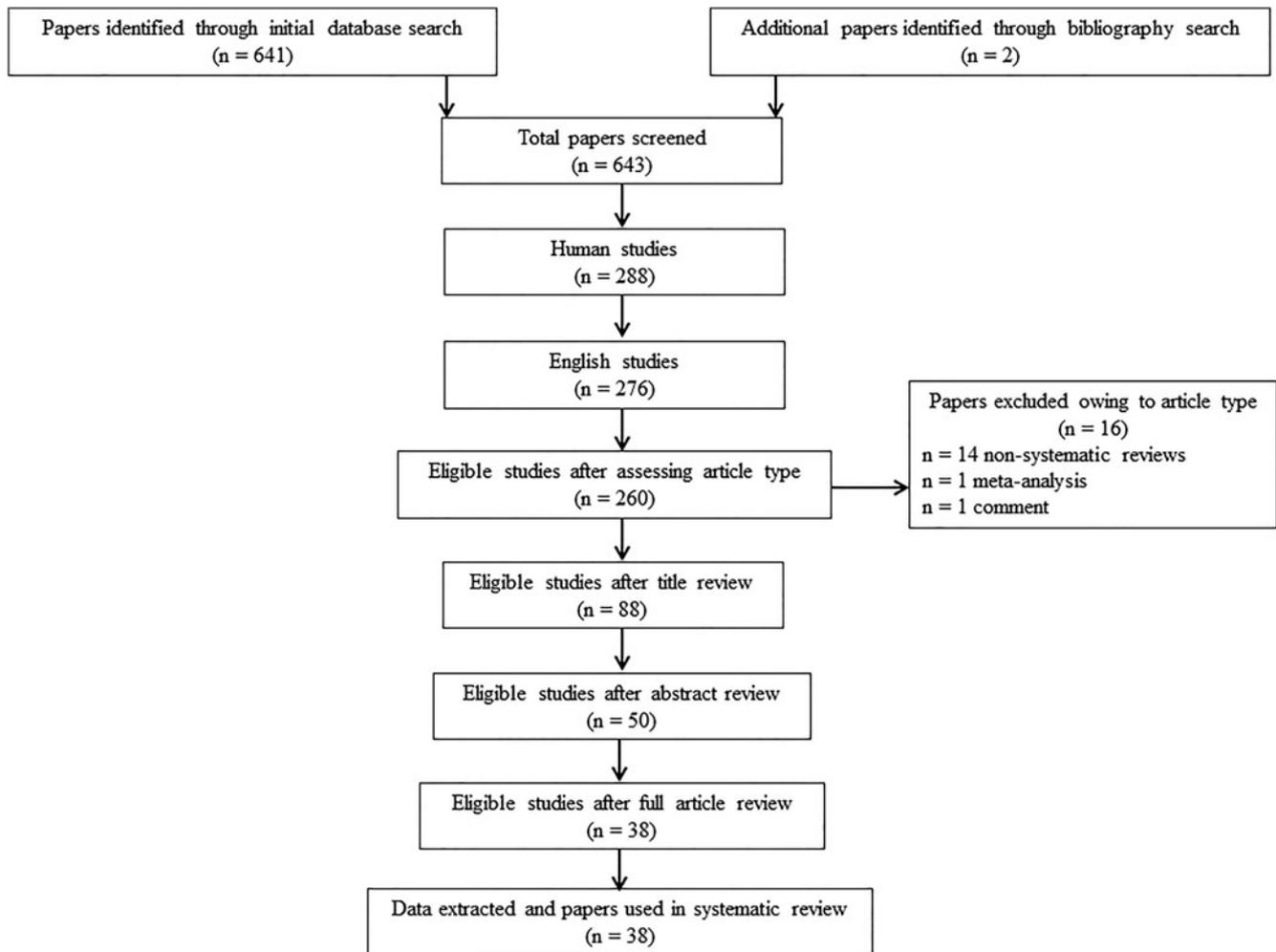


Fig. 1. PRISMA flowchart of search strategy for systematic review.

of having also a family history of psychosis (Georgopoulos et al., 2019), and to positively correlate with shame about the condition, self-labeling as mentally ill, and stigma stress (Rusch et al., 2014a).

Public stigma of the PR state

Only two analytic studies assessed public stigma of the PR condition (He, Eldeeb, Cardemil, & Yang, 2019; Lee et al., 2016) (Table 1), in one case comparing it with that expressed by mental health professionals (Lee et al., 2016) (Table 2). Public stigma results to be higher among the general public compared to mental health professionals as well as in people with an intermediate level of education (e.g. diploma), who have never worked or volunteered in mental health, and who have frequently encountered in the public someone who appeared to be mentally ill (Lee et al., 2016). In addition, the general public is more likely to support the PR individuals' help-seeking process if their condition affects their family obligations rather than their aspirations, and male and low-educated members of the public are overall less supportive (He et al., 2019).

The labeling process in PR individuals

Research on labeling-related issues (both studies focusing on self-labeling and those addressing labeling from external sources) represents the area mostly investigated, with 15 studies conducted

over the last 10 years. Overall, six studies seem to indicate mainly positive effects of being labeled as PR individuals in terms of increasing knowledge, help-seeking, and help-giving behaviors (Parrish, Kim, Woodberry, & Friedman-Yakoobian, 2019; Rusch et al., 2013; Stowkowy & Addington, 2013; Trask, Kameoka, Schiffman, & Cicero, 2019; Welsh & Tiffin, 2012; Yang et al., 2015). Instead, six other studies report negative consequences (Anglin, Greenspoon, Lighty, Corcoran, & Yang, 2014; Baba et al., 2017; Kim et al., 2017; Lee et al., 2016; Rusch et al., 2014a, 2014b). Three more studies report mixed effects (Lee et al., 2017; Yang et al., 2013; Yang et al., 2019). The discrepancies across studies seem to be largely due to the outcome measure (Table 1) and heterogeneity of the reference group, when present (Table 2).

Early studies suggest that the PR label elicits feelings of validation and relief (Welsh & Tiffin, 2012), increases mental health service use (Rusch et al., 2013), and does not increase further the potential discrimination perceived because of a family risk of psychosis (Stowkowy & Addington, 2013). Studies of comparison with other labels suggest that PR labels elicit only slightly more (Trask et al., 2019) or no different stigma (Parrish et al., 2019) than control labels (e.g. breakup) in healthy peers, and have lower impact than non-psychotic labels (e.g. depression or anxiety) on PR individuals themselves (Yang et al., 2019).

Moreover, symptom-related stigma seems to have a greater impact than labeling-related stigma on PR individuals, suggesting that labeling-related stigma, if present, does not fully permeate self-concept at this early stage (Yang et al., 2015).

In contrast, other studies found that labeling as PR individual is associated with higher stigma and a number of potential adverse health effects (Rusch et al., 2014a, 2014b), with self-labeling mattering more other-labeling (Yang et al., 2019). In particular, investigations conducted among college students (Yang et al., 2013), patients with full-blown mental disorders (Baba et al., 2017), as well as members of the general public and mental health professionals (Baba et al., 2017; Lee et al., 2016), indicate that the PR label may elicit similar (Baba et al., 2017) or greater (Lee et al., 2016; Yang et al., 2013) status loss, discrimination, and overall stigma than non-psychotic disorders such as major depression and generalized anxiety disorder. The belief that the PR state might be a long lasting condition contributes to such a high level of stigma (Lee et al., 2016), which in some cases does not differ from that endorsed for schizophrenia (Yang et al., 2013). Also, PR individuals who have transitioned to psychosis or with a family history of psychosis find the identification of the PR state of little help, reporting more stigma associated with it, and urging for its renaming (Kim et al., 2017). Complementary evidence suggests that college students who spontaneously label the PR state with psychosis-related terms endorse higher levels of stigma compared to those who consider the PR state as a non-psychotic or non-psychiatric condition (Anglin et al., 2014). However, providing accurate information to students about the PR state seems to mitigate some misconceptions about the condition, reducing by one-third PR label-related stigma (Yang et al., 2013).

A label such psychotic-like experiences (PLE), indicating brief and self-remitting symptomatic manifestations and not necessarily reflecting an underlying mental disorder, results to be the least stigmatizing label, followed by PR and depression, and then schizophrenia as the most stigmatizing condition (Baba et al., 2017; Lee et al., 2016). Recent findings, despite disconfirming that discrimination would differ across psychiatric labels, indicate that a term reflecting uncertainty, potential reversibility, and neutrality, and not dangerousness or inevitable progression to full-blown psychosis, is better accepted (Lee et al., 2017).

Effects of stigma on outcomes of the PR state

As accumulating evidence converges on the presence of different forms of stigma related to the PR state, most interest is given to its effect on well-being of PR individuals and their families as well as and their engagement with services (Tables 1 and 2).

Mental health

Apart from one study (Saleem et al., 2014), eight other studies indicate an association between different forms of stigma and poor mental health (Pyle et al., 2015; Rusch et al., 2014a, 2014b, 2015; Stowkowy et al., 2016; Xu et al., 2016a, 2016c; Yang et al., 2015). Evidence indicates that stigma stress negatively influences general wellbeing of PR individuals (Rusch et al., 2014a), even in the longer-term (Rusch et al., 2014b), also mediating the harmful effect of perceived public stigma, self-labeling, and shame (Rusch et al., 2014a). Moreover, stigma stress (Rusch et al., 2015) and perceived discrimination (Stowkowy et al., 2016) increase the risk of transition to psychosis at follow up, after adjusting for patients' characteristics at baseline (Rusch et al., 2015)

and independent of trauma and bullying (Stowkowy et al., 2016). These two studies (Rusch: R; Stowkowy; S) are broadly similar in terms of PR diagnostic criteria and age, while differing for follow-up duration (R: 1 year; S: 2 years), sample size (R: 170; S: 1044, the largest study reviewed here), and transition to psychosis criteria (R: schizophrenia diagnosis; S: symptom intensity threshold). Due to their longitudinal design, they support stigma as a stressor that could be an additional risk factor for psychosis. However, this effect is likely to be indirect. In fact, both perceived discrimination and internalized stigma seem to have a modest or no effect on the severity of the prodromal symptoms of psychosis (Pyle et al., 2015; Saleem et al., 2014), whereas internalized stigma is suggested to exacerbate depression and social anxiety, with the effect on depression that persists at a 6-month assessment (Pyle et al., 2015). Further, label-related negative emotions seem to predict anxious reactions while symptom-related negative emotions tend to be associated with depression (Yang et al., 2015), thus suggesting that the detrimental effect of stigma on transition to psychosis, if present, does not necessarily occur through its worsening effect on symptoms of psychosis. Finally, internalized stigma (Pyle et al., 2015), self-labeling (Xu et al., 2016c), and an intensification of stigma stress over time (Xu et al., 2016a), but not perceived stigma (Xu et al., 2016a), seem to increase the rate of suicidality at follow-up, independent of socio-demographic and clinical characteristics (Xu et al., 2016a). Social isolation results to lie on the causal pathway between self-labeling and stigma stress on the one hand and suicidality on the other hand (Xu et al., 2016c).

Service engagement

Of six studies evaluating service engagement among PR individuals, four report negative effects of stigma-related factors, including perceived discrimination (Rusch et al., 2014b) as well as negative beliefs, emotions, and image consideration (Ben-David, Cole, Brucato, Girgis, & Munson, 2018; Ben-David, Cole, Brucato, Girgis, & Munson, 2019), with an estimated 20% of PR individuals prematurely interrupting their contact with treating services (Kotlicka-Antczak et al., 2018). Another study indicates negative effects only if stigma persists overtime and especially in reducing engagement with psychotherapy, while self-label would improve medication acceptance (Xu et al., 2016b). Finally, depending on the type of stigma, one more study suggests either negative (stigma stress) or no effects (perceived public stigma) (Rusch et al., 2013).

Family members

Of three studies evaluating the impact of stigma on families of PR individuals (associative stigma), one suggests no effects (Wong et al., 2009), one negative effects (Baron, Salvador, & Loewy, 2019), and the latter both positive and negative effects (He et al., 2019), with high heterogeneity mostly accounting for such discrepancies (Table 2). Specifically, a both descriptive and analytic early study comparing families of PR individuals with families of people at their psychosis onset found in the former a relatively low associative stigma (Wong et al., 2009). Instead, a subsequent descriptive study with no control group indicates that stigma represents a serious problem also for family members of PR individuals as it affects disclosure decisions because of potential repercussions and public's judgment (Baron et al., 2019). The latter study indicates a direct relationship between public stigma towards PR individuals and that towards their family members, even though family stigma is also associated with

positive attitudes in the public towards the PR individuals' help-seeking process (He et al., 2019).

Additional sources of stigma among PR individuals

This systematic review identified eight studies, mainly analytic ($N = 7$), evaluating whether other factors may contribute to stigma in the prodromal phases of psychosis (Table 1). Most of them have a control group ($N = 5$), mainly a group of healthy controls ($N = 4$) (Table 2). Studies indicate higher levels of perceived discrimination in a number of domains, including appearance, age, skin color, religion, disability, and sexual orientation, in PR individuals compared to a control group of healthy subjects (Saleem et al., 2014; Stowkowy et al., 2016; Ward et al., 2018). PR individuals reporting higher levels of perceived discrimination are also more likely to be older (Saleem et al., 2014) and smokers (Ward et al., 2018). Other studies suggest that racial discrimination is higher among PR individuals compared to healthy subjects (Shaikh et al., 2016). Also, along with anxious expectations of rejection (Anglin, Greenspoon, Lighty, & Ellman, 2016), racial discrimination seems to exacerbate the distress associated with prodromal psychotic symptoms (Anglin, Lui, Espinosa, Tikhonov, & Ellman, 2018), making ethnic minorities and immigrants particularly vulnerable to stigmatizing reactions. In this regard, sense of shame and need to conceal the patient's illness are higher in family members of PR individuals from ethnic minorities (Wong et al., 2009). Finally, when interviewed on the opportunity to undergo genetic testing for schizophrenia, PR individuals express the fear of being stigmatized because of genetic information (Lawrence, Friesen, Brucato, Girgis, & Dixon, 2016).

Discussion

To our knowledge, this is the first systematic review examining all studies published so far that addressed stigma and discrimination in people at risk for psychosis (PR). A summary of evidence is provided in Box 1.

Box 1. Should we be concerned about stigma in the PR state? Summary of evidence

- (i) PR individuals do experience more internalized stigma and perceive more discrimination than healthy subjects or patients with non-psychotic disorders, with negative consequences in terms of distress, shame, and fear.
- (ii) Stigma does occur in the general public, especially in those with a low level of education or holding stereotyped beliefs because of no direct experience of the PR state.
- (iii) PR labeling is equally associated with both positive (e.g. validation and relief) and negative effects (e.g. status loss and discrimination).
- (iv) Stigma associated with the PR label is not unequivocally higher than that elicited by non-psychotic labels neither always similar to that elicited by the schizophrenia label, probably because psychiatric labels are understood differently in different countries and populations as well as depending on the personal background.
- (v) A label reflecting the uncertainty and potential reversibility of the PR state, highlighting that progression to full-blown psychosis is not a given, is however less stigmatizing and

better accepted among the general public, despite still considered carrying a stigma for the PR individuals themselves.

- (vi) Stigma is associated with a worse outcome of PR individuals, including higher rates of transition to psychosis and suicidality, probably through an exacerbation of non-psychotic symptomatology and social isolation respectively.
- (vii) Stigma, especially when internalized and sustained overtime, results in a poorer engagement with services.
- (viii) Family members of people at PR may suffer from associative stigma.
- (ix) Other factors worsen the stigma experienced by PR individuals, including being older, smoker, and of an ethnic minority as well as being subject to a genetic investigation for psychosis.
- (x) Internalized stigma and related maladaptive beliefs may benefit from cognitive behavioral therapies.

Psychosis-risk state: a potentially stigmatizing condition

Studies reviewed here indicate that being at risk for psychosis may trigger a stigmatizing process. When stigma towards the PR individual develops among the general public (He et al., 2019; Lee et al., 2016), the PR person becomes aware of it (Uttinger et al., 2018), tends to agree with it, and experiences negative emotions (Yang et al., 2015), that are significantly higher than those normally experienced by healthy people (Saleem et al., 2014). When outweighing the person's coping resources, such negative emotions determine a stressful state (Rusch et al., 2013) that in circle amplifies any negative reaction such as shame (Rusch et al., 2014a), self-labeling as mentally ill (Rusch et al., 2014b), and fear (Larsen et al., 2019), as well as overall distress (Baer et al., 2019; Pyle et al., 2015). Worryingly, convergent evidence suggests that PR individuals reporting stigmatizing experiences are more likely to have a poor outcome (Rusch et al., 2014a, 2014b), suicidality (Pyle et al., 2015; Xu et al., 2016a, 2016c), develop full-psychosis (Rusch et al., 2015; Stowkowy et al., 2016), disengage from services (Ben-David et al., 2018; Ben-David et al., 2019; Kotlicka-Antczak et al., 2018; Rusch et al., 2013, 2014b; Xu et al., 2016b), and have family members distressed by associative stigma (Baron et al., 2019; He et al., 2019). Moreover, people at PR may suffer more than their healthy peers because of their age, ethnicity, religion, disability, sexual orientation, and habits (Anglin et al., 2016; Anglin et al., 2018; Saleem et al., 2014; Shaikh et al., 2016; Stowkowy et al., 2016; Ward et al., 2018). Thus, clinicians must remain cognizant of such risks, reconciling the interests and feelings of the young individual at PR with those of their parents in the interest of the family as well as facilitating any attempt to break down public stigma in the community.

Good and harm of labeling psychosis-risk states

While evidence converges on the occurrence of both public and internalized stigma with reference to the PR state, less clear is the role of the labeling process in evoking stigmatizing responses. Studies reviewed here suggest two major determinants of stigma in the context of labeling. First, labeling the PR state may not

be harmful as much as the PR individual's behavior and associated disability. Labeling-related stigma would derive from symptom-related stigma, i.e. symptoms and anomalous experiences perceived by PR individuals. Further, with reference to labeling-related stigma, self-labeling would have a greater negative impact than other-labeling, i.e. the external label of PR given by the treating service. In fact, other-labeling *per se* may even confer considerable benefit to young people at risk, as it offers an explanatory framework for curable symptoms, a quantification of risk for psychosis, and potential strategies for minimizing such risk (Yang et al., 2015). Second, the PR label could be interpreted differently worldwide, as already shown for full-blown disorders such as schizophrenia (Jorm & Griffiths, 2008). It is therefore possible that the association of a PR label with stigmatizing reactions could vary from society to society and across time depending on its interpretation. Evidence reviewed here suggests that the effect of socio-demographic and other individual characteristics on stigma scores is even higher for the PR state compared to other major psychiatric disorders such as schizophrenia or depression (Lee et al., 2016).

In clinical settings, psychiatric diagnoses serve to guide a plan of care and are therefore viewed as useful. However, receiving a formal diagnosis of a mental health disorder can have considerable impact, implying that how diagnoses are decided, communicated, and used by services is important (Perkins et al., 2018). Evidence reviewed here suggests some potential similarities between the stigma elicited by major mental health disorder labels and that elicited by the PR label. In order to avoid emotional risks of stigma associated with the PR label, especially when working with young people, diagnostic or prognostic information should be tailored to each individual's characteristics, including age, social context, identity formation, cognitive capacity, and comorbidities (Corcoran, 2016; Mittal, Dean, Mittal, & Saks, 2015). In a complementary way, addressing the potential stigma of a PR label at the public health level, even simply providing accurate information about the PR state, may significantly cut down negative reactions and misconceptions about mental illness (Yang et al., 2013). Finally, hope-oriented labels distancing the PR state from a mere prodromal phase of inevitable psychosis should be preferred (Lee et al., 2017; Moritz et al., 2019).

Advancing the understanding of stigma mechanisms in the PR state

Two lines of research were particularly informative, focusing on whether stigma differed (i) between baseline and follow-up assessments and (ii) across different mental health conditions, including the PR state, between potential stakeholders other than patients (family members, mental health professionals, and general public).

Eight studies conducted follow-up assessments ranging from 6 months to 2 years (Morrison et al., 2013; Pyle et al., 2015; Rusch et al., 2014b, 2015; Stowkowy et al., 2016; Ward et al., 2018; Xu et al., 2016a, 2016b). Evidence indicates that stigma reduces overtime and may benefit from cognitive therapies (Morrison et al., 2013) while its persistence or increase overtime is decisive to induce stressful reactions and affect wellbeing (Rusch et al., 2014b) as well as increase suicidality (Xu et al., 2016a) and poor help-seeking attitudes (Xu et al., 2016b). Instead, it is less clear whether high baseline levels of stigma when receiving a PR diagnosis are sufficient *per se* to predict a poorer outcome. While this effect seems to be negligible in two studies

(Pyle et al., 2015; Rusch et al., 2014b), higher stigma at baseline predicted an increased likelihood to develop psychosis at follow-up in two other studies (Rusch et al., 2015; Stowkowy et al., 2016). Future studies need to clarify this issue.

Four studies included at least one more group of stakeholders, particularly health carers and members of the public, when evaluating stigma elicited by the PR state compared to other labels (Baba et al., 2017; Kim et al., 2017; Lee et al., 2016, 2017). Stigma endorsed by the public is lower than that of health carers for PLE, but higher for depression, schizophrenia, and PR itself (Baba et al., 2017; Lee et al., 2016). However, patients, who seem to stigmatize the PR condition the least compared to the general public and health carers (Kim et al., 2017), surprisingly are those stigmatizing the PLE label the most (Baba et al., 2017). Anyway, both members of the public and health carers would prefer people at PR to receive a neutral diagnostic label (e.g. developing period). Conversely, terms overemphasizing on the dangerousness of the condition (e.g. high-risk period), or implying that transition to psychosis is inevitable (e.g. early sign period), are perceived as more judgmental and reason for concern, with no significant differences between health carers and members of the public (Lee et al., 2017).

Methodological limitations

The studies reviewed here widely differ in terms of design, methodological quality, and contexts. It is worth reporting that 16% of studies are purely qualitative. Moreover, the strategy of using the umbrella term PR, while offering advantages in terms of summary of results, may at the same time limit the generalizability of the present results to the heterogeneous population of people presenting with subsyndromal or prodromal symptoms of psychosis. In fact, populations under investigation differ considerably across studies in terms of labels as well diagnostic criteria used (see methodological quality of studies in Table 2), thus limiting the comparison of the findings across the domains investigated. These aspects are partially mitigated in studies that compare the PR label with other psychotic (e.g. schizophrenia), non-psychotic (e.g. depression), non-psychiatric (e.g. weird), and different PR (e.g. UHR *v.* ARMS) labels as well as a label describing an acute and potentially transitory state (e.g. PLE), as the stigma phenomenon is investigated across different mental health conditions. Also, a substantial proportion of studies (42%) did not report on PR individuals' other psychiatric comorbidity (e.g. anxiety, depression) or substance use (e.g. alcohol, cannabis). Even when they did, such information was not always added to the analyses as a potential confounding factor. Thus, based on the available information, it is not possible to disentangle the stigma potentially arising from labels for other psychiatric comorbidity or substance use from the stigma purely attributable to the PR label. Further, even though two studies reviewed here indicate that stigma may benefit from cognitive therapies (Baer et al., 2019; Morrison et al., 2013), suggesting the importance of including such interventions in early intervention services for psychosis, it was not possible to draw information from studies on their PR service configuration. This is likely to be heterogeneous, with potential implications for levels of stigma among PR individuals.

Independent of these limitations, differences in sample size across studies (range: 1–1044 subjects) should also be taken into account. However, even for labeling-related stigma, the domain showing the highest inconsistent evidence, studies showing positive ($M = 140.3 \pm 164.2$; range: 6–455) and negative effects of

labeling ($M = 162 \pm 115.2$; range: 49–365) grossly overlap in their samples size. Instead, evidence seems to suggest that the labeling process is a multi-faceted one, thus limiting clear-cut conclusions from results obtained with different measures.

Moreover, the large majority of the studies reviewed here (79%) report a static representation of stigma in PR individuals. However, very limited evidence suggests that stigma is a dynamic process which tends to reduce overtime, also independent of any intervention (Morrison et al., 2013), and whose changes overtime are crucial for PR individuals' wellbeing (Rusch et al., 2014b). Thus, this limits the possibility of disentangling whether the high levels of stigma reported by most studies have followed a recent diagnosis of the PR state or are the consequence of a more consolidated process. Likewise, it is not clear whether stigma would persist after an adequate period from receiving the PR diagnosis. Finally, all studies reviewed here converge on the occurrence of experiences of self-labeling or internalized stigma in PR individuals. However, an important factor for internalized stigma is the degree of the person's identification with the larger group of individuals with mental illness (Corrigan & Watson, 2002), raising the issue of what is driving the high rates of internalized stigma in individuals who have not developed the full disorder yet, and mostly will never develop. For instance, do PR individuals experience internalized stigma because of their fear to develop psychosis or they consider themselves affected already? Future studies need to address this issue.

Future directions and conclusions

Available evidence suggests that the PR state elicits stigmatizing responses among the general public as well as patients themselves. Moreover, labeling-related stigma seems to be inconsistent across studies, thus future studies need to better elucidate the mechanisms leading to the manifestation of positive or negative responses when receiving a PR label. Further, stigma has an overall negative impact on PR individuals' wellbeing and engagement with services, including increasing the risk of transition to psychosis, and some socio-demographic factors including age and ethnicity may exacerbate the detrimental effects of stigma. Very limited evidence awaiting replication supports the efficacy of cognitive therapies in mitigating the negative effects of stigma among PR individuals. This is of crucial relevance and future clinical research studies need to evaluate this aspect more deeply. Despite data is too limited to draw any solid conclusions, evidence presented here has important public health implications, as it indicates that stigma should be treated in the same way as any other risk factor for psychosis.

Conflict of interest

The authors declare that they have no conflict of interest.

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