Foundation University Journal of Psychology
Vol 7, No.2 (July, 2023)

FUJP Open Access Journal

Research Article DOI 10.33897/fujp.v7i2.639

Risk and Protective Factors of Suicidal Ideation among Eastern and Western Countries: A Systematic Review

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Abstract

Background. Suicide is the second consumer of life among 15 to 29 years old adults. Extant literature is invested in psycho-social determinants of suicidal behavior, whereas little synthesized evidence about determinants of suicidal ideation in Eastern and Western countries is available. Hence, this study aimed to deliver a thorough, updated, and methodical review of the available literature on risk and protective factors of suicidal ideation in Eastern and Western countries, and a critical appraisal of selected studies.

Method. A total of 41 out of 273 full-text articles were included as per PRISMA guidelines. Data was extracted from the database of PubMed Central, Embase, and ScienceDirect. The articles with risk and/or protective elements of suicidal ideation, published in English language were included. The sampling populations were young students lying in most vulnerable age group between 15 to 29 years old. For critical appraisal, SIGN and AXIS criteria were employed. The instruments administered to assess the level of suicidal ideation among studies varied from a single item to complete questionnaire.

Results. Consistent risk and protecting determinants of suicidal ideation in both Eastern and Western countries like psychological disorders, personality traits, childhood and adult maltreatment, familial conflicts, anhedonia, strain, sleep disturbances, emotional reactivity, rumination, and negative coping were observed. Hardiness, resilience, social support, autonomy, and extraversion had a protective role. Physical risk elements like allergic diseases and defecation disorders were identified in Eastern countries.

Conclusion. More similarities than differences were found in Eastern and Western countries. Policymakers should take into account the modifiable risk elements and employ protective elements to manage risk at the ideation level before its progression to complete suicide.

Keywords. *Suicidal ideation, risk factors, protective factors, Eastern and Western countries, systematic review*

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Introduction

Suicide claims more than 800, 000 lives every year which approximates one life in every 40 seconds. It accounts for 8.5% of all deaths among 15 to 29 years old adults (World Health Organization 2014). For every complete suicide, there are approximately 25 suicidal attempts (SA) and for every attempt, there are at least two to three people suffering from suicidal ideation (SI) (Goldsmith, 2002; Nock et al., 2008), estimating the figures for SI far more alarming than complete suicides. SI is defined as "having thoughts, ideas, and desire to claim one's life" (Silva et al., 2014). SI is a gateway to SA (Herba et al., 2007), having a lifetime prevalence of SI (11.5%) much higher than SA (3.1%) (Nock et al., 2008). With prevalence rates ranging between 19.8% and 24.0% among youth, one-third of adolescents suffering from SI go on to attempt suicide (Nock et al., 2013) and are 12 times more likely to attempt under the age of 30 (Reinherz et al., 2006). Most of the literature is centered on suicidal behavior (SB) or SA, neglecting SI, the strongest predictor of suicide (Wolff et al., 2017). Therefore, addressing SI among the most vulnerable population is inevitable to prevent SI.

Previously conducted systematic reviews have either completely neglected SI (Goodfellow, Kõlves & de Leo, 2018; Hill et al., 2020) or addressed with attempts and behavior (Torok et al., 2019). The term "suicidality" blurs the boundary between ideation, attempt, and behavior. Individual risk elements were addressed in literature, but very few studies focused on protective factors. Risk and protective factors (RPFs) of SI are the attributes in a person or his environment that increase or decrease the prospect of SI respectively (Centers for Disease Control and Prevention, 2022). There is a need to address RPFs of SI to prevent and intervene at ideation level before its progression to behavior.

79% of the suicide cases occur in low and middle-income countries, whereas the highest suicide rates are reported in high-income countries (WHO, 2018). It is speculated that suicide is under-reported in Middle Eastern and Islamic countries, due to the stigma, shame (Ziaei et al., 2017) and legal implications associated with it (Naveed et al., 2017). The variability in suicidal rates and cultural norms demands comparison of studies conducted in Eastern and Western countries (EWCs). The countries falling in Asia and Middle East regions would be deemed as Eastern in this study, while those in regions of America, Europe, Australia and New Zealand as Western countries. Coentre and Góis (2018) conducted a review among 13 Western and non-Western studies to assess the prevalence of risk determinants only, whereas protective elements were ignored. To our knowledge, no previous or recent systematic review on RPFs for SI, comparing EWCs, among young adults has been conducted.

This review highlighted complex etiology of SI, addressing the wide range of RPFs in psychological, biological and social domains and caters the suicidal risk at active rather than reactive stage. The findings would be of interest to youth vulnerable to highest risk of suicide aged 15 to 29, their families and caregivers to predict suicide with the help of individualized determinants at ideation stage before it's progression to behavior. This evidence based study would offer a better outlook on the critical nature of the suicide statistics in EWCs than precarious media portrayals of suicide. SI seems a relevant problem, with few differential determinants in the Eastern and Western region. This study highlighted the common precipitants that need to be addressed among youth of both

EWCs. It addressed methodological discrepancies in the study and measurement of SI. Standardized approaches to the study of SI will open avenues to further explore inter and intra-individual characteristics that may result in effective and tailored SI treatment.

The main objective of the study was to deliver a thorough, updated (recent), and methodical review of the available literature on RPFs of SI in EWCs. In recent years, there has been rapid economic changes, global pandemic and related mental health issues (Mann & Metts, 2017). These intra-individual attributes like economic recession, unemployment is associated with increased risk of suicidality at both population and individual level as observed in recent systematic review (Methieu et al., 2022). Similarly, in the last decade, suicidal presentation is documented to have increased globally in emergency departments, and the COVID-19 pandemic has worsened the situation (Sara et al., 2022). If the rates of reported cases has increased dramatically in the past 10 years, the number of people suffering silently from SI might be exponential. Hence, there is a need to document recent update on the RPFs of SI.

Secondly, to carry out critical appraisal and assessment of methodological precision of selected studies.

Method

Search Strategy and Information Sources

The authors independently searched the literature using 3 major databases, namely PubMed Central, Embase, and ScienceDirect for studies published from January 2015 to May 2020. For search terms, Boolean terms like “Suicidal” AND “Ideation”, “Suicidal” OR “Ideation”, “Suicidal” AND “Thoughts”, “Suicidal” OR “Thoughts” were used for Embase and ScienceDirect databases. The Medical Subject Heading (MeSH term) for PubMed Central was (("risk"[MeSH Terms] OR "risk"[All Fields]) AND ("protective factors" [MeSH Terms] OR ("protective"[All Fields] AND "factors"[All Fields]) OR "protective factors"[All Fields]) AND ("suicidal ideation"[MeSH Terms] OR ("suicidal"[All Fields] AND "ideation"[All Fields]) OR "suicidal ideation"[All Fields])). No existing review protocol other than what was described above was used for this study.

Selection Criteria for Studies

The inclusion criteria adopted for the systematic review were “peer-review, English language publications (with at least one RPF as a predictor variable) and SI as an outcome variable”. The age of the recruited sample was set between 15 to 29 years to be included in the review. Articles were published between the set date of January 2015 to May 2020 were included.

The exclusion criteria were adopted maintaining the discrepancy between SI and SB. Studies with outcome variables other than SI, assessing SI through SB’s questionnaire, or solely examining suicidal risk without specifying discrete outcome (SI or thinking) were excluded. Studies conducted for the prevention and treatment of SI were beyond the scope of this review. Qualitative studies were excluded due to their limited generalizability.

Data extraction

The authors systematically extracted study type, years of publication, predictors, outcome and control variables, sample country, sample age group and size, gender ratio, instruments administered, theoretical evidence, RPFs, sampling technique, and analysis from each article included in this systematic review. Initially, the data search was conducted by one author, which was then independently checked for accuracy by the other author. Any discrepancies were discussed and resolved until both authors reached an agreement.

Assessment of Study Quality

To assess methodological precision, relevance, and critical evaluation, a set of predetermined criteria derived from the Scottish Intercollegiate Guidelines Network checklist (SIGN, 2001) and a critical appraisal tool for cross-sectional studies (AXIS; Downes et al., 2016) were used by the authors. SIGN offers a suitable checklist for observational and case-control studies while AXIS for cross-sectional studies.

Critical Appraisal

The included studies were evaluated against the following criteria: clearly Stated aims and objectives, sample size and generalizability, sampling frame and selection process, measures to address response rate bias and non-responders, predictor and outcome variable reflecting the aims of the study, and measured adequately, quality of instruments used to operationalize predictor and outcome variable, statistical significance, sufficiently described methods, adequately described basic results/data, internal consistency, discussions, and conclusions adequately addressing the results, sufficiently addressed limitations, funding, conflict of interest and ethical approval. For detailed information see supplementary data file.

Results

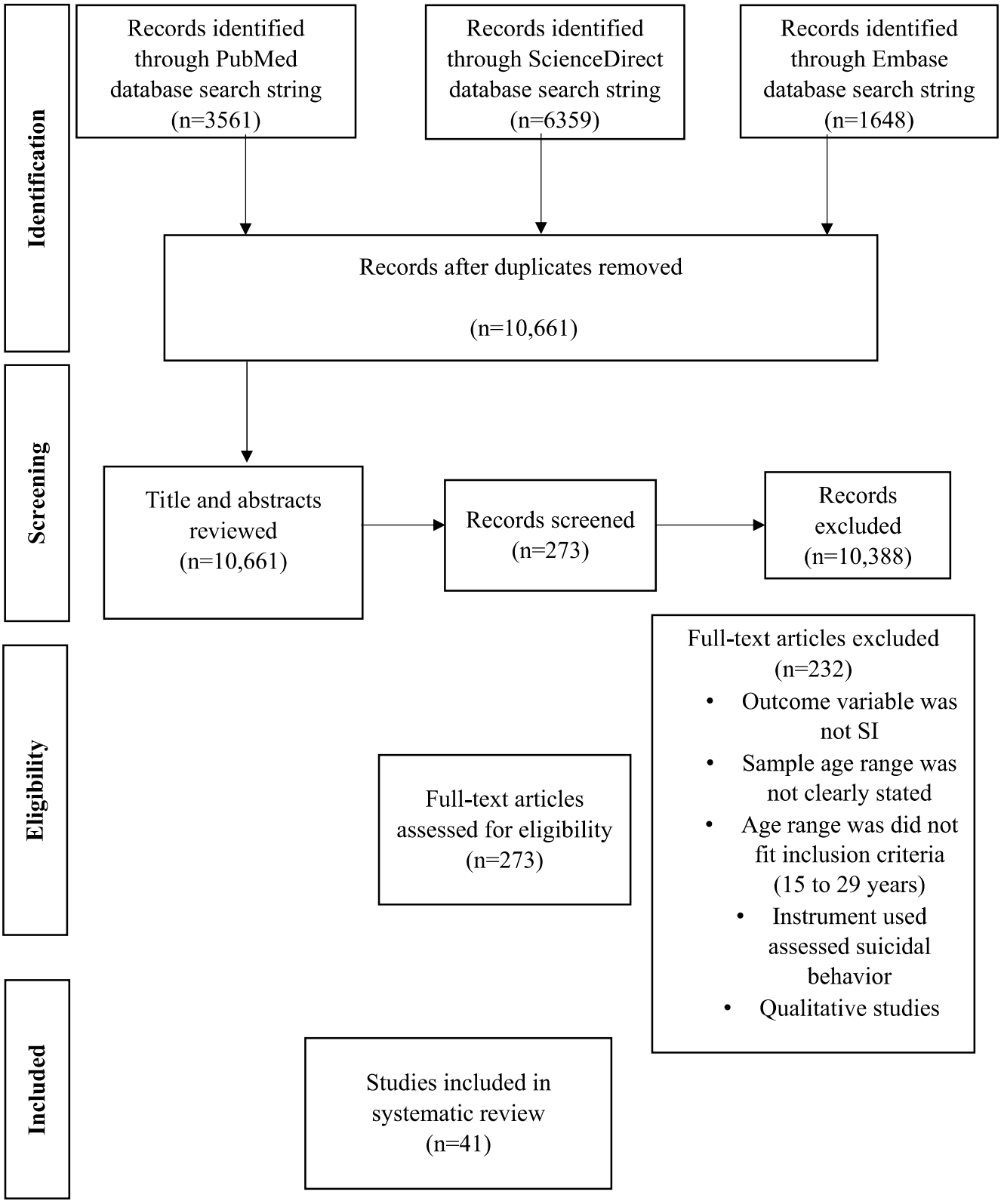
The initial search generated a total of 11,568 peer-reviewed publications which were screened based on titles and abstracts (inclusion criteria). Out of all the above-generated results, 11, 295 articles were excluded, and the remaining 273 articles were reviewed. After the second round of screening of 273 full-text articles, 41 were retained. A flow chart of systematic identification following PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analysis) guidelines is presented below in **Figure 1**. Grey or unpublished literature was not reviewed during the selection of the paper. The reason for exclusion of 232 articles included that 3% were duplicates, almost 4% were not fully acces sible, while the rest were irrelevant as per criteria.

Study country. The shortlisted 41 peer-reviewed articles involving RPFs for SI in EWCs were critically evaluated. Of the 19 Western studies, 7 were conducted in the United States of America, 2 each in France, Spain, and the Netherlands, and 1 each in Australia, Germany, Portugal, Belgium, Poland, Sweden, and Ireland. Of the 21 studies conducted in Eastern studies, 10 were in China, 3 in Malaysia, 2 in South Korea, and 1 each in Japan, Mongolia, Turkey, Egypt, Iran, Vietnam, and Taiwan. A comparison study between the USA and China was also included in the review.

Study design.Out of 41 studies, only 9 were longitudinal, while the rest of them were cross-sectional. Results indicated that most studies investigating SI were conducted in China and the USA. The sample size in Western countries ranged from 72 members in a study conducted in the USA (Stange et al., 2015) to a nation-wide sample in China (Huang et al.,2019). The variation in the study sample leads to variation in the generalizability of the results.(See table 1)

Instruments to assess SI. SI was operationalized in various ways ranging from a single-item inquiring about thoughts of killing oneself to 10-item suicidal ideation scale and the Beck Scale for Suicide Ideation (For details see supplementary data). Although administering a complete questionnaire to assess SI becomes very difficult among large sample size, but single-item measures may result in greater estimates of false positives and negatives (Milller, Lee & Nock, 2015). This might lead to misclassification bias and possibly distorted findings. Most of the instruments used were self-reports that might lead to information bias. Socially desirable answers might be provided to avoid stigma and shame or legal implications (Ziaei et al., 2017).

Figure 1. PRISMA flowchart indicating the study selection procedure



Note. For Characteristics of Included Studies Contact Corresponding Author

RPFs for SI. The study included the most vulnerable population to SI, youth aged 15 to 29 years old. Due to the set age range most of the studies included in the review recruited students as sample. Young age, student status (Ahmed et al., 2016; Blasco et al., 2019; Chow et al., 2018) and female gender were demographic risk factors of SI found in the review. Females reported higher rates of SI in the majority of studies, indicating greater susceptibility to SI, with one exception (Ibrahim et al., 2017). Poly-victimization (Le et al., 2016), higher-level stress in members of LGB (Baams et al., 2015), disputes with parents (Chiu et al., 2017) and alcohol drinking (Davaasambuu et al., 2017) acted as determinants of SI in females. Literature suggests females contemplating more about ending their lives as compared to males, whereas, more males die by suicide (World Health Organization, 2018). The higher rates of SI might be attributed to higher rates of depression among females (Adlina et al., 2007), more than twice among young females aged 14 to 25. The sample size, gender ratio and educational level in each study is indicated in the table 1.

Several psychological determinants like autistic and borderline traits (Chabrol & Raynal, 2018) depression (Polanco-Roman et al., 2018), anxiety (Doering et al., 2019) anhedonia (Loas et al., 2019), negative affect and chronic stress (Rosiek et al., 2016) were identified Western countries. Other identified psycho-social determinants include dimensions of masculinity (conformity to violence norms and self-reliance norms) (King et al., 2020), LGB coming out stress, sexual orientation victimization (Baams et al., 2015), 1st year of enrollment (Chow et al., 2018), and coercive control (i.e., dominance/ intimidation and restrictive engulfment) (Wolford-Clevenger et al., 2017) and personality traits like Impulsivity, neuroticism, and five factors of personality were also identified (Salami et al., 2015; DeShong et al., 2015). Somewhat similar risk elements were identified in Eastern countries along with other physical risk elements such as allergic diseases and defecation disorders (Lee et al., 2015; Jiang et al., 2019). Sleep disturbance and cognitive factors like negative cognitive style, brooding, reflection, and perceived knowledge of sexual identity, all significantly predicted SI across both genders in adolescents and young adults (Baams et al., 2015; Bernert et al., 2017; Stange et al., 2015). Protective elements like social, peer and parental support (Chan et al., 2016; Ziaei et al., 2017; M.Wang et al., 2019) were associated with decrease in levels of SI. Hardiness, problem-solving (Abdollahi et al., 2015) and work-related personality stability buffered against SI (Chow et al., 2018).

Discussion

Socio-demographics and SI. Young age, especially 15 to 29, and students are vulnerable to a higher risk of suicide due to study pressure and the transitional phase (Abdollahi, 2015). A prospective study conducted in Spain provided evidence for the onset of SI in the 1st year of enrollment in university and the persistence of baseline SI in university (Blasco et al., 2019). A comparable study in Egypt (Ahmed et al., 2016) and Germany (Chow et al., 2018) reported similar findings among medical students. Literature suggests females contemplate more about ending their lives as compared with males, whereas more males die by suicide (Altangerel et al., 2014; WHO, 2018). The gender discrepancy can be attributed to cross-cultural emotional expression. Among most Asian cultures, emotional expression is considered a sign of weakness for men, as they are expected to hold back their sad emotions as compared to women (Balhara, Verma, & Gupta, 2012).

Psychological Determinants of SI.

1.1.1 Mental disorders. Results revealed that

individuals suffering from comorbid borderline and autistic traits experienced a higher level of SI than those suffering from borderline traits (Chabrol & Raynal, 2018). Also, borderline, and other atypical categories were found to be associated with *SI, i*n nationwide, twin population studies both in Sweden and the Netherlands (Doering et al., 2019). Most suicides are found to be associated with some psychiatric disorders worldwide like depression, psychosis, substance use, anxiety, and personality-related disorders (Brådvik, 2018). A review study indicated that people suffering from mental disorders *have an 8*-fold amplified risk of SI as compared to those who are not (Too et al., 2019). Major depressive disorder and generalized anxiety disorder significantly predicted SI at 12 months follow-up in a longitudinal study (de Beurs et al., 2019). Similarly, depression was found to be the strongest predictor of SI, even after 18 months of follow-up, with post-traumatic stress disorder and loss of family members *as* other significant predictors (Ran et al., 2015). Alcohol drinking (Chan et al., 2016), smoking, and thoughts surrounding alcohol and drug use were related to greater chances of SI (Ziaei et al., 2017).

1.1.2 Anhedonia and SI. Not only depression, but one of its characteristics, anhedonia, correlated significantly with SI. State anhedonia and negative affect independently predicted SI even after controlling for depression (Loas et al., 2019). Comparable findings were reported in a longitudinal study in China, where state social anhedonia significantly predicted SI (Yang et al., 2020). A meta-analysis conducted from 1965 to 2016 declares anhedonia as an independent, significant determinant for SI when the effect of depression was controlled (Ducasse et al., 2018). This indicated that youth who experience lack of interest in previously enjoyed activities might contemplate on ending their lives.

1.1.3 Rumination and SI. Rumination acted as a mediator between negative life events and SI (S.Wang et al., 2020). Self-criticism and reflection combined were significant predictors of SI onset (Stange et al., 2015). A review study by Morrison & O'Connor (2008) provides evidence in favor of the association between rumination, its subtypes, and SI. This indicates that youth who constantly brood over negative thoughts is more likely to think about suicide.

1.1.4 Personality and SI. Personality traits like impulsivity and neuroticism significantly predicted SI, whereas extraversion was found to decrease the risk of SI (Chow et al., 2018). Similar results were reported in Eastern studies (Huang et al., 2019; Salami et al., 2015). This indicated that youth suffering from neurotic or impulsive issues tend to think more about ending their lives, whereas those with extrovert traits are less likely to think about suicide.

1.1.5 Interpersonal Needs and SI. Psychological factors like perceived burdensomeness (PB) and thwarted belongingness (TB) were found to be independent risk factors (Lafuente-Castro et al., 2018) as well as intermediates in different studies, enhancing the likelihood of thinking about killing oneself (Chu, Rogers, et al., 2017). Neuroticism was positively, while extraversion was negatively associated with TB and PB (DeShong et al., 2015; Campos et al., 2020).

In South Korea, interpersonal needs were studied where high TB, sociotropy (exhibiting a desire for social relations and societal acceptance) acted as a defense against SI. Conversely, with high levels of PB, highly autonomous individuals had enhanced vulnerability to SI. Conversely, with low levels of PB, autonomy acted as a buffer to SI (Park et al., 2019). A review study and meta-analysis over decades of exploration of interpersonal determinants supports the above-mentioned findings (Chu, Buchman-Schmitt, et al., 2017). The interpersonal theory of suicide (Joiner, 2005), reinforces similar idea by emphasizing the lethality of suicidal risk when PB and TB are combined.

1.1.6 Stress and SI. Under the influence of severe stress, students were found to be vulnerable to SI. Almost 23% of students reported feeling stressed every day, while 34% testified being stressed several times a month, and 37% informed struggling with it 3 to 4 times a week (Rosiek et al., 2016). Students suffering from academic or chronic stress might think about ending their lives when unable to cope with it.

1.1.7 Psychological strain and SI. A comparison study was conducted in China and the USA to assess the impact of psychological strain on SI. Young age and strain in Chinese undergraduates, while female gender and strain in their American counterparts were identified as possible determinants of SI (Zhang et al., 2017). This indicated that not only stress, but strain can also lead to SI among young students. Unable to decide between two equally important yet contradicting choices might trigger young minds to find escape in thinking to end their lives.

1.1.8 Coping and SI. Stress alone is not a determining factor of SI, rather coping in the face of stress also plays its role in mitigating or mediating to SI. Avoidance coping was considered a risk element while hardiness and problem-solving were protective elements against SI (Abdollahi et al., 2015). Those who reported better emotion-focused coping had .80 times fewer chances to suffer from SI (Yoon et al., 2018). Some coping skills had a negative association with SI like active coping and positive reframing. Coping skills like self-distraction, substance abuse, behavioral disengagement, and self-blame are positively associated with SI, after controlling for socio-demographics and mental health variables (Liang et al., 2020). Resilience factors such as life satisfaction and expectation for future life have a protective effect against SI (Davaasambuu et al., 2017). This indicated that among young adults, chronic stress and strain may not lead to SI if hardiness, resilience and problem-solving mitigate the impact of those stressors.

1.1.9 Emotional Reactivity and SI. Emotional reactivity and comfort in expressing emotions predicted SI at 12 months follow-up (Polanco-Roman et al., 2018). The impact of this risk factor can be found in literature as well, e.g., in a review study, alexithymia, i.e., difficulty with identifying and expressing emotions had strongly predicted SI (Hemming et al., 2019).

Psycho-social Determinants of SI

1.1.10 Social connectedness. Stress and strain is associated with higher rates of SI among young students. Conversely, a sense of membership at the university was found as a significant protective element against SI (Blasco et al., 2019). In a prospective study,

peer and family connectedness (Czyz, Liu & King, 2012), and social connectedness (Reyes et al., 2020) reduced the risk for SI among adolescents. The literature also alludes connectedness as protective element and intervention against SI among students (Robert et al., 2018).

Contrarily, lack of support is deemed as a risk element for SI. A lack of Perceived Parental Support was found to be related with 9-fold augmented threat of frequent SI (Macalli et al., 2018). A conflicting family environment like negative family events, parental divorce and death, and low socioeconomic status were other identified determinants of SI (Goldstein et al., 2009). Similar findings were reported in Eastern countries where a lack of close friends, supportive peers, parental supervision, connectedness, and bonding, predicted an increase in SI (Chan et al., 2016). Having understanding parents predicted a protective effect (Ziaei et al., 2017). In another longitudinal Eastern study, quarrels with parents were the strongest predictor of SI for girls under the age of 18 (Chiu et al., 2017). Family factors that influenced SI both, directly and indirectly, are the most powerful determinants of SI (M.Wang et al., 2019).

1.1.11 Maltreatment and SI. Maltreatment of any nature (including physical, psycho-emotional, and sexual) were significant predictors of SI (Yoon et al., 2018) in both Eastern and Western studies. Emotional security, anxious attachment, and disengagement were also associated with SI, even after controlling for the effect of abuse (Cantón-Cortés et al., 2020). Regardless of any protective factor, sexual abuse remained the strongest determinant of SI (Yoon et al., 2018). Literature suggests similar findings as in a review study, a 2 to 3-fold amplified risk of SI and SA is seen among adults (Angelakis, Gillespie & Panagioti, 2019) and adolescents (Miller et al., 2013) with history of childhood maltreatment.

A Part from childhood maltreatment, abise in adult relationships can be a risk factor for SI. A hostile withdrawal was related to SI. (Wolford-Clevenger et al., 2017). Similarly, in Eastern studeis, sexual victimization, and poly-victimization (suffering from a chronic disease, living with a stepparent, living in a less developed region, experiencing harsh events) are other predictors of SI (Le et al., 2016). Bullying was found as another significant determinant of SI (Canbaz & Terzi, 2018). Individuals having a greater intensity of LGB coming-out stress and victimization exhibited an increased level of SI (Baams et al., 2015). This shows that victims of emotional, physical and sexual abuse are more likely to contemplate about ending their lives and think suicide as a solution to their problems.

Physical Determinants of SI

In Eastern studies, physical determinants of SI were found. The presence of allergic diseases (Lee et al., 2015), chronic abdominal discomfort, defecation disorder, and low satisfaction with defecation predicted a high risk of SI when depression and anxiety were controlled (Jiang et al., 2019). Evidence from literature also supports medical (Hirsch, Duberstein & Unützer, 2009), and physical problems increasing the risk for SI (Kavalidou et al., 2019). The youth suffering from physical illness is more likely to think about ending one's life as compared to a physically healthy person.

Not only physical ailment, but sleep deprivation is another risk element found to drastically increase the prevalence of SI in both Eastern (Supartini et al., 2016) and Western study (Bernert et al., 2017). Self reported insomnia appeared as critical alarming signal of SI.

Conclusion

Although there are cultural differences between both geographical regions, fewer differences and more similarities were found in terms of RPFs of SI. The studies regarding biological risk factors were conducted in the Eastern region, while western studies were more dominated by psychological problems. Due to the attached stigma regarding mental health and suicide, Eastern people tend to somatise their symptoms for social acceptability. As research indicates that Eastern samples like Chinese report more somatic symptoms than psychological symptoms (Dere et al., 2013), it is more likely for people in Eastern countries to emphasize physical health conditions instead of psychological problems. There is a need to study physical/somatic risk factors for SI. Similarly, a smaller number of studies highlighted protective factors, an area that deserves further attention in the future and must be explored further in both Eastern and Western countries. There is no Eastern study regarding LGBT in Eastern countries, reflecting the stigma and shame attached to LGBT in Eastern countries. The attached shame and stigma might contribute to the coming out of stress, thus leading to a greater risk of SI in LGBT people (Hequembourg & Dearing, 2013).

Implications

To our knowledge, this is the first review to compare the RPFs of SI between EWCs. However, this review has its limitations. First, due to strict inclusion criteria, a limited chunk of the population has been addressed. Studies with age samples 15-29 were included in the review, with the majority of participants being students. Future studies can target the geriatric, children, and employed population. Second, only 3 databases were considered in the review, there is a large body of literature that remained unaddressed. Future studies can focus on data from other databases as well. Third, most of the studies included in the review are of a cross-sectional design that prevents drawing causal inferences. In the future, a review can be conducted to include all the longitudinal studies to draw causal inferences from certain risk factors. Fourth, a limited number of countries were studied in this review as most of the studies are from two countries i.e., China and the USA. Future studies can target the maximum number of studies involving samples with increased generalizability. Lastly, few studies have focused on protective factors regarding SI. Future studies can target protective factors exclusively to help in the prevention and intervention of SI.

Mental health and suicide prevention must be on the primary agenda in global health. Interventions could be designed to exclusively target more vulnerable groups first to curb the risk for SI. With somewhat similar RPFs among Eastern and Western countries, similar interventions may suffice globally with their cultural modifications. Policymakers should take into account both proximal and distal RPFs to prevent SI before its progression to suicidal attempt or behavior.

Declaration

Funding This study was not funded by any organization.

Conflict of Interest The authors have no conflicts to declare.

Availability of data and materials. Data and materials for the present study have not been made publicly available due to privacy concerns. Data analyzed in the current study are available on request from the corresponding author via email at dr.sumara@s3h.nust.edu.pk

Ethical Approval This study was conducted following the ethical guidelines provided by the American Psychological Association and the ethical committee of the National University of Sciences and Technology.

Competing interest. The authors declare to have no competing interests

Consent for Publication. The authors have agreed upon the publication of this manuscript.

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